

# Incommensurability and rational inquiry

Context-sensitivity and realism reconciled in light of Putnam's pragmatist  
theory of knowledge

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# Introduction

Objectivity, truth, scientific progress and scientific realism constitute key topics in science and philosophy of science. Since the middle of the 20<sup>th</sup> century, these questions underwent deep reconsideration under the pressure of Post-Positivist thinkers such as Feyerabend and Kuhn as well as Hanson, Polanyi or Toulmin (Kuhn 1996 [1962], Feyerabend 1993 [1975], Sankey and Hoyningen-Huene 2001, vii). Prolonging “a historiographic revolution in the study of science” (Kuhn 1996 [1962], 3), Kuhn famously challenged the “the master narrative of modern science” inherited from the Enlightenment promoting “the grand story of human progress toward the ultimate truth about the world and the resulting emancipation from ignorance and from the social problems that it engenders” (Nickles 2003, 5). Through his analysis of scientific change in history and the concomitant development of the notion of incommensurability, Kuhn disputed the modern view of scientific progress:

I do not doubt, for example, that Newton's mechanics improves on Aristotle's and that Einstein's improves on Newton's as instruments for puzzle-solving. But I can see in their succession no coherent direction of ontological development. On the contrary, in some important respects, though by no means in all, Einstein's general theory of relativity is closer to Aristotle's than either of them is to Newton's. (Kuhn 1996 [1962], 206-207)

This criticized modern view is rooted in the Enlightenment turn during which epistemology and theory of knowledge took over metaphysics as first philosophy. Discourses about reality cannot be safely established without first elucidating nature and limits of knowledge. From this ground emerges the belief in the existence of a privileged scientific method leading to knowledge under the form of correct representation of reality (Nickles 2003, 4). This method is conceived of through the lens of foundationalism according to which knowledge is derived from “foundational beliefs which are epistemologically basic.” For instance, Descartes based his theory of knowledge upon “clear and distinct intuitions” while empiricists mobilized “sense experience and observation” (Irzik 2008).

Consecutively to the scientific revolution, the empiricist trend in foundationalism about knowledge became predominant and culminated, in the first half of the 20<sup>th</sup> century, in logical empiricists or Popperian accounts of scientific method. Natural sciences such as physics are henceforth considered as paradigmatic instances of knowledge production providing basic empirical data interpreted in a logical framework – as opposed to discourses relying on religious beliefs or metaphysical speculations (Castle and Jones-Imhotep 2007, 270-271). The legitimate foundation of knowledge is “the pure, uninterpreted “given,” the theory-free “observation-language”” that only logic can complement (Shapere 1984, xvi). For logical positivists, this given even constitutes the source of meaningfulness (semantic principle of verifiability). They consider as meaningful only basic propositions directly established through observation (known by acquaintance, Russell would say) and statements composed of basic propositions articulated by logical operators (McGuire 1992, 138-140, Castle and Jones-Imhotep 2007, 271). Whatever this may be, the fact remains that knowledge can be established only based on observation-language. For instance, Carnap defends an inductive logic that aims to settle “the probability of truth of an *inductive* conclusion, given the evidence” (Bird 2000, 4). In the same vein, Hempel advocates a hypothetico-deductive model according to which scientific hypotheses are confirmed by verified empirical predictions that can be *deduced* from them (Earman and Salmon 1992, 44-47, Castle and Jones-Imhotep 2007, 272). As Carnap's inductive logic, Hempel's hypothetico-deductive model is



an inductive inference from observational consequences to hypotheses (only the inference from premises to empirical predictions is deductive). Both are confronted with Hume's famous criticism of the notion of induction (Hume 2009 [1740]). Acknowledging the problem of induction, Popper restricts scientific method to deduction and falsificationism (Bird 2000, 4, Ladyman 2002, 62-74). He argues that theories cannot be confirmed deductively but can, instead, be falsified in a deductive way. Consequently, only falsifiable statements deserve being considered as scientific and only theories resisting falsification should be rationally accepted.

These different approaches of scientific method are at the ground of what may be called the "received view" in the philosophy of science (McGuire 1992, 140-144 and 173), "the Old Rationalism" (Bird 2000, 3-4), the "orthodoxy in the philosophy of science" (Sankey 2008a, 254) or the "objectivist conception of science" (Baghramian 2008). All views gathered under these umbrella terms share the foundationalist belief in the existence of a universal scientific method permitting to infer knowledge from empirical evidence (believed to be intersubjectively available to all impartial observers) and tools of logic. Structured according to modern logic, settled propositions are supposed to "mimic the structures of outer reality" (McGuire 1992, 144). Their truth is thus conceived as correspondence with matter of fact of reality. Similarly, they consider scientific method as context-independent. The manner scientific claims are developed and the social, cultural or historical contexts of their development are irrelevant. Only justification based on logic and neutral observations matters (Shapere 1984, xiv, Castle and Jones-Imhotep 2007, 271 and 279). Inherited notably from Popper and Reichenbach (Kordig 1978, Ladyman 2002, 74-77), a sharp distinction between contexts of discovery and contexts of justification is admitted. Furthermore, the scientific method ensures scientific progress. Successive outcomes it produces are conceived as convergent and cumulative (Baghramian 2008). Broadly speaking, scientific theories constitute "the paradigm of knowledge" (Sharrock and Read 2002, 15). Positive sciences deploying the scientific method are understood as exemplifications of human rationality by opposition to other bodies of knowledge considered as less rational (Castle and Jones-Imhotep 2007, 273-274).

### **Beyond the modern positivist view of science**

According to Kuhn, these features of received or orthodox views about scientific inquiry raise several problems. In light of history of science, "positivist accounts of scientific practice" appears empirically inadequate (Castle and Jones-Imhotep 2007, 270). Kuhn denies that science delivers a "linear, continuous, cumulative, unified story" progressively unveiling the "master text of reality" in the "privileged language of nature" (Nickles 2003, 5). This belief overlooks historical episodes during which pre-established theories associated with whole world-views and systems of fundamental categories are abandoned. Kuhn for example indicates that theory of energy conservation became accepted only in conjunction with the rejection of pre-admitted caloric theory of heat. In the same vein, Einstein's theory could not have been adopted without recognizing Newton's one as false. Lavoisier's chemistry similarly replaced its phlogistic predecessor (Kuhn 1996 [1962], 97-98 and 148). In addition, Kuhn believes that positivist accounts of scientific methods misrepresent rationality of theory choice in reducing it to processes based on neutral empirical evidence and logic only:

Observation and experience can and must drastically restrict the range of admissible scientific belief, else there would be no science. But they cannot alone determine a particular body of such belief. An apparently arbitrary element, compounded of personal and historical accident, is always a formative ingredient of the beliefs espoused by a given scientific community at a given time. (Kuhn 1996 [1962], 4)

In general, scientific theories are not abandoned only because of failed empirical testing. Kuhn notably provides the counterexample of the scientific revolution during which Copernicus' celestial theory took over Ptolemy's. No decisive empirical experience was available at that time to decide between both alternative. Copernicus' theory was not more empirically accurate than its rival (Kuhn 1996 [1962], 75-76 and 154, 1977, 277). In the same vein, Kuhn argues that positivist understandings of scientific method conflicts with historical analyses of past scientific beliefs. According to positivist readings, past beliefs are discarded as mere errors or superstitions. However, historical studies show that some of them (such as results of Aristotelian dynamics, phlogistic chemistry, or caloric thermodynamics) have been produced through same sorts of methods and admitted through the same sorts of reasons "that now lead to scientific knowledge" (Kuhn 1996 [1962], 2). And there is more. Past beliefs cannot in general be evaluated through positivist methods because their understanding is far from straightforward. Lexicons systematically differing from current one have to be acquired. Past scientific beliefs are often untranslatable in current language (Kuhn 1996 [1962], 198). Furthermore, this criticism about positivist assessments of past scientific beliefs is tightly connected with a broader issue. Kuhn thinks that positivist criteria for distinguishing scientific knowledge from myths and irrational beliefs based on the neutral empirical given – Popper's criterion of falsifiability or logical positivist principle of verifiability – are inadequate (Nickles 2003, 1-2). If falsification were a decisive feature, astrology could be validly discarded as pseudo-science by opposition to, for instance, surveying and navigation. But taxonomy, historical geology or Darwin's theory of evolution should then be judged as pseudo-sciences too (Kuhn 1977, 274-276). In the same line of thought, if sensitivity to specificities of social, cultural and historical contexts were sufficient to discard discourses and methods permitting to establish them, social and human sciences should not be considered as fully rational. But, Kuhn advocates that the same would apply to natural sciences (Kuhn 1990b, 308).

Consequently, Kuhn claims that the modern foundationalist picture of knowledge should be abandoned. There is "no Archimedean platform is available for the pursuit of science other than the historically situated one already in place" (Kuhn 2000a [1991], 95). Neither clear and distinct ideas nor sense or empirical data constitute permanent foundations or source of certainty for knowledge (Sharrock and Read 2002, 17, Nickles 2003, 5). In addition, science is not guided by a universal "set of rules that would permit any *individual* who followed them to produce sound knowledge." For Kuhn, epistemology and sociology are entangled. Scientific knowledge needs being understood as the product of collective practices. Its "efficacy" and "the manner in which it develops" cannot be properly accounted for "without reference to the special nature of the groups that produce it" (Kuhn 1977, xx). In sum, Kuhn rejects the dichotomy between context of justification – focused on "the relations between finished theories and evidence" – and context of discovery (Nickles 2003, 13-14, Bird 2008a, 67). The "local aspects of scientific communities" such as "the wisdom and intelligence (and intelligibility) of local, discipline-specific, historical traditions" matter for theory justification (Nickles 2003, 7). Through this contextualized lens, Kuhn notices that, in "a given scientific field, long periods of conservative, tradition-bound normal science are punctuated by an occasional crisis and, still less frequently, by a revolution" (Nickles 2003, 1). He therefore proposes the crucial distinction between normal science and revolutionary or extraordinary science. Mature and established sciences can be understood as functioning under the normal mode. They are

characterized by the fact that they rely on “paradigms” formed by networks of (conceptual, theoretical, instrumental, and methodological) commitments shared by scientific communities and reflecting “universally recognized scientific achievements that for a time provide models problems and solutions” (Kuhn 1996 [1962], x). Under normal mode, science can be considered as “puzzle-solving” activity during which such paradigms are not questioned. On the contrary, they are indispensable components of problems framing and radically constrain range of admissible solutions:

The existence of this strong network of commitments – conceptual, theoretical, instrumental, and methodological - is a principal source of the metaphor that relates normal science to puzzle-solving. Because it provides rules that tell the practitioner of a mature specialty what both the world and his science are like, he can concentrate with assurance upon the esoteric problems that these rules and existing knowledge define for him. What then personally challenges him is how to bring the residual puzzle to a solution. In these and other respects a discussion of puzzles and of rules illuminates the nature of normal scientific practice. (Kuhn 1996 [1962], 42)

Paradigms fall under scrutiny only through the conjunction of the occurrence of anomalies (resisting puzzles) and of the emergence of competing alternatives to admitted paradigms. Such features are characteristic of extraordinary or revolutionary phases in science like are the “major turning points in scientific development associated with the names of Copernicus, Newton, Lavoisier, and Einstein” (Kuhn 1996 [1962], 6). During revolutionary or crisis phases, debates about competing alternatives cannot receive logically compelling answers for no absolute criteria for theory choices are available. Criteria for theory choice are tightly associated with paradigms. Premises and values involved in theory acceptance are insufficiently shared among tenants of competing paradigms who cannot rationally convince each other (Kuhn 1996 [1962], 93-94, 1977, 320-321). For Kuhn, “the competition between paradigms is not the sort of battle that can be resolved by proofs.” On the contrary, Kuhn describes the “transfer of allegiance from paradigm to paradigm” as “a conversion experience that cannot be forced” (Kuhn 1996 [1962], 148 and 151).

These mismatches between paradigms during crisis states or across scientific revolutions are nothing but phenomena of incommensurability. Notably, incommensurable paradigms generate disagreement about problems deserving scientific scrutiny and about the way they should be addressed (Kuhn 1996 [1962], 6 and 148). For instance, after Newtonian revolution, the new paradigm imposes designing explanation in “mechanico-corpuscular” terms based on “size, shape, position and motion of the elementary corpuscles of base matter.” “Aristotelian and scholastic explanations expressed in terms of the essences of material bodies” (of their nature) are not admitted anymore (Kuhn 1996 [1962], 103-105).

Because of these divergences between paradigms supporting competing theories in crisis or revolutionary phases, “no universal or common measure” is available for common evaluation of conflicting alternatives; in the jargon, they are incommensurable” (Bird 2000, 27). Nevertheless, divergences between lists of legitimate problems, between methods for solving them and between standards of evaluation do not exhaust what Kuhn means through the notion of incommensurability. More radically, Kuhn indicates that paradigms influence the manner facts are described. Thereby, proponents of incommensurable competing paradigms may well disagree about experimental facts:

I have argued that the parties to such debates inevitably see differently certain experimental or observational situations to which both have recourse. Since the vocabularies in which they discuss such situations consist, however, predominantly of the same terms, they must be attaching some of those terms to nature differently, and their communication is inevitably only partial. (Kuhn 1996 [1962], 198)

Following this line of thought up to its most provocative consequences, Kuhn defends the famous ‘World-Change thesis’ according to which revolutionary shift in admitted paradigms generate “transformation of the world within which scientific work was done” (Kuhn 1996 [1962], 8). Through this rather extreme framing of incommensurability, Kuhn intends to capture the idea that paradigmatic shifts at the occasion of scientific revolutions induce changes in perceptual experience itself (Kuhn 1996 [1962], chapter 10, Sharrock and Read 2002, 56). Accordingly, experimental facts and perceptual data cannot be considered as neutral grounds on which competition between paradigms can be compellingly settled (Sharrock and Read 2002, 62).

Recognizing the provocative character of his initial framing in connection with the World-Change thesis, Kuhn refines the notion of paradigm and better elucidates phenomena of incommensurability (Kuhn 1977, chapter 12). **In a first and primary sense**, a paradigm consists of a set of exemplars that provides shared basis for interpreting the common conceptual network structuring a specific research activity. It corresponds to a basic cognitive adhesion of all the members of a research community that cannot be explicated fully by language or rule-based formulations. In particular, ontological categories (or natural kinds) are provided along with their interconnections (Bird 2000, 68-69). Moreover, exemplars indicate the similarity relationships allowing to determine extensions of mobilized concepts (Kuhn 1977, 17). A complete ‘lexical taxonomy’ (or ‘lexicon’) with its semantic structure is thus settled (Kuhn 2000 [1993], 245, 1990a, see also: Sharrock and Read 2002, 181-189). Along this essential function, paradigms ensure research communities possess clear and shared interpretations of common structured languages, capable of expressing the different concepts, laws and methods to be employed in any meaningful problem framing (Kuhn 1996 [1962], chapter 4, 1990a). Mismatches between incommensurable paradigms considered along this semantic or taxonomic function can thus lead to the difficulties in inter-translation between parts of associated scientific discourses (between “localized cluster of interdefined terms”) (Sankey 1994, 17 and 29, Kuhn 2000 [1993], 238, Sharrock and Read 2002, 148 and 166). These phenomena can be designated by the term “**taxonomic incommensurability**” (Oberheim and Hoyningen-Huene 2013, section 2.3.1).

**Understood in a broader manner**, paradigms (as disciplinary matrixes) also fulfil a methodological function in shaping the way the problems are to be framed and solved, and in indicating what it means to deploy a ‘good’ research process or to build a ‘good’ scientific discourse. Accordingly, paradigms provide standards for problem identification, specific methodological principles and epistemic values involved in problem solving and theory assessment as well as knowledge for applying these standards, principles and values (Kuhn 1996 [1962], 176-187, 1977, 322 and 331, 1990a, Bird 2000, 68-69). Discrepancies between incommensurable paradigms taken along this second methodological function generate disagreements between proponents of each alternative about what count as acceptable research processes and admissible scientific discourses. This second type of phenomena can be called “**methodological incommensurability**” (Oberheim and Hoyningen-Huene 2013, section 2.3.2). Taken under these two elucidated forms, phenomena of incommensurability still ensure Kuhn central claim: disagreements between proponents of competing perspective cannot be compellingly decided (based on empirical evidence and logic).

By contrast with the modern positivist account of science, Kuhn thinks that the notions of paradigms, of normal and revolutionary sciences and of incommensurability permits better picturing scientific activity. First, scientific progress is cumulative only during normal phases (Sharrock and Read 2002, 125). During revolutionary phases, fundamental lexicons are reshaped. There is no absolutely cumulative advance toward the elucidation of reality's fundamental ontology. The idea of correspondence between theories ontologies and their real counterpart is illusive. For Kuhn, "lexicons are not, in any case, the sorts of things that can be true or false" (Kuhn 2000 [1993], 244). The notion of scientific progress is not rejected, but cannot be conceived as a movement toward a pre-given goal. Rather, science "progresses way from its primitive, earlier stages" (Bird 2000, 27). It is pushed from behind through the appearance of anomalies in normal phases that trigger crisis and revolutions. Kuhn proposes an evolutionary view of scientific progress according to which science develops in a concomitantly changing context. Paralleling living beings adaptation in an evolving environment, successive theories can be seen as improving tools for problem-solving confronted with always renewed puzzles (Kuhn 1996 [1962], 205-206, Nickles 2003, 3, Oberheim and Hoyningen-Huene 2013, section 2.1). Second, empirical evidence is not the overarching criterion for theory change positivists advocated for. Although verification and falsification remain important features of scientific method in Kuhn's perspective, they cannot alone drive scientific change. Falsified empirical predictions only constitute puzzles to be solved in normal scientific phases. Admitted theories can be rejected only when paradigms are undermined through the appearance of several resisting puzzles (anomalies) and when competing alternatives become available (Kuhn 1996 [1962], 8, 75-76 and 145-146). Finally, falsifiability and verifiability are not anymore considered decisive criteria to distinguish between scientific claims and mere irrational beliefs as well as, by extension, between sciences and pseudo-sciences. Instead, what is indispensable for a process of knowledge production to be considered as a science is to rely on a paradigm. The latter first determines puzzles to be solved. Furthermore, it provides specific methodological principles and epistemic values that act as constraints on admissible solutions (Kuhn 1996 [1962], 35-51, 1977, 274-276). Accordingly, the title of science can be denied to astrology (which should be considered as a practical art governed by craft rules deprived from any precise puzzle to solve) without discarding taxonomy, historical geology or Darwin's theory of evolution.

Nevertheless, Kuhn's theses prove extremely controversial and undergo numerous criticisms. Notably, it is argued that key notions such as those of paradigm, meaning, reference or conceptual system are insufficiently clarified (Shapere 1984, xv-xvi, Nickles 2003, 3, Barker 2011). Shapere (1984) deplores the lack of elucidation of the way paradigms govern scientific activity and believes such blind spots open the door to disastrous interpretations of Kuhn's work (p. xvi). This might be the reason why Kuhn's theses are often understood as leading to inadmissible consequences. For instance, Quine, Davidson and Putnam argue that taxonomic incommensurability and the impossibility of translation it induces are self-refuting ideas generating total isolation between incommensurable semantic systems (Sharrock and Read 2002, 141-142). Similarly, Kuhn's ideas are commonly interpreted as conducting to relativism in claiming that no rational discussion can be conducted about the endorsement of paradigms (Shapere 1984, xvi, Laudan 1996, 3-4). In the same line of thought, Kuhn's World-Change thesis is considered as opening the road for anti-realism or idealism (Bird 2000, 124, Sharrock and Read 2002, 98). In addition, Kuhn is often considered as a precursor for radicalized post-Kuhnian trends in philosophy of science that, for instance, claim that the notion of truth is exhausted by rational acceptance in situated contexts (Friedman 2008, 239-240). Other radicalized followers of Kuhn

can be mentioned. According to proponents of the strong program in sociology of scientific knowledge, nature plays no role in the settling of scientific beliefs. The latter are only constrained by the negotiations taking place between groups of researchers (Nola and Sankey 2000a, 37-38, Nola and Sankey 2007, 6). Similarly, post-modernists or post-structuralists believe that “the so-called “tools of science” – reason, logic and rationality – are instruments of political and cultural domination” (Baghramian 2008). In the same vein, social constructivists argue that scientific facts are relative to social communities (Bird 2000, 8-9) and “emerge out of social and conceptual practices” (Baghramian 2008).

Yet, it seems that Kuhn disagrees with the radical consequences some derive from his ideas as well as with the uses radicalized followers make of them. As already mentioned, Kuhn neither rejects the notion of scientific progress nor advocates that claims accepted in virtue of rational procedures admitted in a given time cannot turn out false (Kuhn 2000a [1991], 91, Friedman 2008, 240). He rather urges to reconceive notions of scientific progress and truth. In the same vein, Kuhn indicates that he is “among those who have found the claims of the strong program absurd: an example of deconstruction gone mad” (Kuhn 2000b [1991], 110). In particular, although relying or not on a specific paradigm is the decisive criterion to distinguish between science and pseudo-science, the settling of a paradigm is not something that can be decided or forced, “by design” (Sharrock and Read 2002, 128-129). In addition, Kuhn also rejects any anti-realist, idealist or social constructivist readings of his claims:

First, the world is not invented or constructed. The creatures to whom this responsibility is imputed, in fact, find the world already in place, its rudiments at their birth and its increasingly full actuality during their educational socialization, a socialization in which examples of the way the world is play an essential part. That world, furthermore, has been experientially given, in part to the new inhabitants directly, and in part indirectly, by inheritance, embodying the experience of their forebears. As such, it is entirely solid: not in the least respectful of an observer’s wishes and desires; quite capable of providing decisive evidence against invented hypotheses which fail to match its behavior. (Kuhn 2000a [1991], 101)

Furthermore, Kuhn indicates that taxonomic incommensurability should not be seen as implying absolute untranslatability but rather impossibility of ‘word-for-word’ translations (Sharrock and Read 2002, 98). Moreover, in no case taxonomic incommensurability prevents language learning (Kuhn 1990b, 300). Taxonomic incommensurability does not degenerate in total enclosure between incommensurable languages. In consequence, it seems that Kuhn’s approach of scientific or rational inquiry based on paradigms and phenomena of incommensurability is worth-considering despite these important criticisms.

### **Incommensurability between contemporary disciplines and interdisciplinarity**

Another reason supporting the pursuit of the analysis of Kuhn’s view is the renewed interest they receive in connection with the recent development of interdisciplinary or “boundary crossing” research initiatives (Thompson-Klein 1996, Miller et al. 2008). In fact, recent and crucial research topics such as global environmental change, public health, and sustainability of socioeconomic systems are considered as “wicked problems” that resist standard monodisciplinary approaches (Jasanoff 1997, Veldkamp and Verburg 2004). Accordingly, the need for “methodological pluralism” (Norgaard 1989) and for boundary-crossing research gathering various disciplines is

more and more acknowledged. As a strong witness of this trend, a whole issue of *Nature* (2015)<sup>1</sup> highlights “how scientists and social scientists are coming together to solve the grand challenges of energy, food, water, climate and health.” Regarding the topic of boundary-crossing research, Kuhn’s approach of science may prove highly relevant. His evolutionary account of scientific progress provides a striking picture of the development of science up to a contemporary epistemic landscape embedding distinct disciplines:

Imagine an evolutionary tree representing the development of the modern scientific specialties from their common origins in, say, primitive natural philosophy and the crafts. A line drawn up that tree, never doubling back, from the trunk to the tip of some branch would trace a succession of theories related by descent. (Kuhn 1996 [1962], 205)

Therefore, incommensurability arising through local scientific revolutions in specific communities of science appears preponderant in the generation and stabilization of new disciplines through processes of disciplinary fields’ fragmentation through ‘specialization’ (Dogan 1997, 435) or disciplines ‘speciation’ (Sharrock and Read 2002, 189). Phenomena of incommensurability seems to count as constitutive elements of disciplinary boundaries (Kuhn 1996 [1962], 179-180, 2000 [1993], 238).

As such, phenomena of incommensurability may well play important role in boundary-crossing research processes. For instance, investigations about common-pool resources require interconnecting “concepts related to resource systems and those concerning property rights” (Ostrom et al. 1999, 278). Cross-categorization and taxonomic incommensurability are thereby likely to occur when resource systems’ spatial scales are large enough to involve several distinct property right beneficiaries (e.g. a lake extending across several national territories). In the same line of thought, assessments of knowledge produced by young interdisciplinary fields such as Neuroeconomics involve very diverse communities that do not share the same understanding and priorities about methodological principles or that do not conceive evidence in the same way (Mäki 2010, 107-109). Methodological incommensurability is thus likely to occur. Notably, colorful diagrams are considered to be valid evidence by neuroscientists while being of little meaning to economists (ibid, p. 111). Consequently, recognizing and accounting for phenomena of incommensurability might prove crucial for boundary-crossing research (Dogan 1997, 435, Sharrock and Read 2002, 154-155, Holbrook 2013, 1871-1873). Notably, Andersen (2013) highlights – in redeploying the Kuhnian tension between convergent and divergent modes of thought – the necessary trade-off between the need for novelty to which boundary crossing research answers and the requirement for any scientific activity “to rest on solid disciplinary grounds” (p. 4). Furthermore, unnoticed occurrence of incommensurability may threaten research process themselves. For instance, taxonomic incommensurability might disrupt integration across knowledge types (Lang et al. 2012)<sup>2</sup>. In the same vein, methodological incommensurability could degenerate into misunderstanding and mistrust between interdisciplinary actors (Poteete, Janssen, and Ostrom 2010, 258-270), lead to unfortunate reductions in complexity of studied systems or open the door to hijacking of cross-disciplinary efforts by dominant disciplines (Campbell 2005, Miller et al. 2008, Lang et al. 2012). In sum, phenomena of incommensurability appear crucial not only to understand the opening of new disciplinary fields in a dynamics of increasing

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<sup>1</sup> <http://www.nature.com/news/interdisciplinarity-1.18295>

<sup>2</sup> In research initiatives providing practical results, such mismatches can even become dramatic. For instance, the loss in 1999 of a NASA Mars space probe was due to the mobilization, by different groups involved in the whole boundary-crossing process, of incompatible semantic relationships between physical magnitudes: they employed different systems of units (Hartley-Brewer 1999).

specialization, as Kuhn suggests, but also to account for and suitably manage paradigmatic transitions taken in the reverse way, when hybridization and mutual enrichment between disciplines are at stake.

Accordingly, the value of Kuhn's insights can be reconsidered in an enriched way. When approached in link with scientific revolutions and crisis, **Kuhn's theses about incommensurability** between scientific investigations based on differently contextualized paradigms constitute provocative criticisms of, and alternative picture to, modern positivist views of science. In this configuration, Kuhn's views dangerously echo antirealism, relativism or social constructivism. However, when **deployed with respect to contemporary co-existing research processes, they may allow settling valuable accounts of disciplinary boundaries that can be of great interest for analysis and management of boundary-crossing research.** Consequently, trying to merely discard these theses to avoid relativism or antirealism seems as problematic as radicalizing them in the manner of proponents of the strong program in sociology of scientific knowledge or of social constructivism. This reflects the question the present work intends to focus on: is it possible to settle an account of scientific (or rational) inquiry and of associated phenomena of incommensurability that could resist this tension? Such an account needs at least to satisfy three requirements:

- (1) It has to do justice to the indispensable and irreducible influence of contexts in which rational inquiries are conducted without opening the door to relativism or antirealism.
- (2) It has to oppose positivist misrepresentations of scientific enterprise leading to discard any process of knowledge production sensitive to its social, cultural or historical context as mere pseudo-science.
- (3) It has to demonstrate the possible legitimacy of phenomena of incommensurability, notably when standing between contemporary co-existing disciplines.

Crucially, these features have to be established without relinquishing the meaningfulness of notions such as (scientific) realism, objectivity, truth and scientific progress. In light of already mentioned criticisms of Kuhn's theses, the plausibility of an account of this type cannot be evaluated without refined delineation of relationships standing between the notion of incommensurability and those of meaning, reference, rationality, truth or realism. These points of connections have been intensively debated in philosophy of science (Lakatos and Musgrave 1970, Rouse 1998, Sankey and Hoyningen-Huene 2001).

### **Important debates associated with incommensurability in philosophy of science**

To replace context-sensitivity and incommensurability in the broader landscape of philosophy of science, it is worth-recalling that Kuhn's radical positions about theory acceptance prolong prior attacks against the modern positivist picture and its illusory foundationalism about scientific knowledge. Famously, Quine (1976 [1951]) criticized the analytic-synthetic dichotomy employed by positivist to sharply distinguish between analytic statements that are true (or false) "come what may" and synthetic statements that are supported (or undermined) by evidence. Thereby, Quine blunts the logical positivist distinction between meaningful and meaningless propositions and the associated separation between positive sciences and metaphysical speculations (Roth 2008, 4). Together with Duhem, Quine also argued that scientific hypotheses



cannot be tested in isolation. This confirmational holism (also known as Duhem-Quine Thesis) stipulates that auxiliary hypotheses (Duhem) or even whole networks of interrelated knowledge claims (Quine) are involved in confirmation or refutation of scientific hypothesis. In such a conception of science, nothing prevents rejecting or modifying some auxiliary statements to maintain otherwise tested claims, when some empirical predictions are not verified (Glymour 1992, 125, Brenner et al. 2011, Stanford 2013). Duhem also inaugurated the idea of contrastive underdetermination: empirical evidence and logic only are not in general sufficient for theory choice because certain competing alternatives lead to equivalent empirical predictions (Stanford 2013, Belousek 2005). Kuhn's theses can be seen as continuation of these precursory criticisms of modern positivist foundationalism about scientific knowledge.

For instance, confirmational holism and contrastive underdetermination highlight the fact that empirical facts and logic alone cannot exhaust processes of rational acceptance or justification of scientific hypotheses and theories. Confirmational holism subsumes these processes to the conjoint admission of auxiliary bodies of knowledge (that are not questioned). Contrastive underdetermination imposes resorting to non-necessary inference methods such as inference to the best explanation (or abduction) that irreducibly mobilize auxiliary elements (like methodological principles or epistemic values) in addition to logic and empirical facts (Lipton 2008, Douven 2011). In this respect, Kuhn's claim that paradigms (taken along their methodological function) are indispensable for compelling rational choice or acceptance of scientific theories meets confirmational holism and contrastive underdetermination<sup>3</sup>. The consequences of this claim have been intensively debated. As already mentioned, it has been argued that, in denying that there can be a unique overarching scientific method (an overarching unique set of auxiliary hypotheses or of methodological principles) disconnected from contextualized paradigms, Kuhn raises the risk of condemning theory choice to irrationality or relativism. Nevertheless, it seems that this threat does not necessarily follow from Kuhn's affirmations. In particular, Kuhn himself recognizes that some principles guiding theory choice are shared by all paradigms (empirical accuracy, internal and external consistency, broad scope, simplicity and fruitfulness). But he insists on the fact that they do not provide univocal guidance independently of specific features of paradigms. They only influence theory choice and often conflict (Kuhn 1977, 321-322). Furthermore, Laudan (1996) indicates that the lack of unicity of scientific methods degenerate into irrationalism and relativism only insofar as one endorses non-cognitivism about methodological principles and treats specific methodological commitments as mere conventions or matter of taste (p. 14). He believes this non-cognitivism is shared by logical positivists as well as by Kuhn himself. As an alternative, Laudan proposes his normative naturalism according to which choices of methodologies can be rationally evaluated as means to reach specific contextualized cognitive ends (Laudan 1996, 125-141). Similar position is adopted by Teller (2008a) who advocates that, once one relaxes the requirement that scientific inquiries pursue the ideal of exact truths, different theories can be rationally admitted as means to achieve specific and contextualized ends.

In addition to paradigmatic influence upon methodological standards guiding rational choice of scientific theories, another point of Kuhn's approach has been intensively debated. As we

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<sup>3</sup> While the connection with contrastive underdetermination is straightforward (Kuhn explicitly mentions methodological principles or epistemic values as components of paradigms), the link with the broader thesis of confirmational holism may be less direct. However, it can at minimum be argued that confirmational holism mobilizing auxiliary hypotheses is "a helpful way to understand Kuhn's claim about the fact that anomalies or resisting puzzles do not directly lead to theory rejection" (Rowbottom 2011).

have seen, Kuhn argues that paradigms are indispensable to fix the meaning of terms mobilized in scientific theories. This move can be seen as prolonging Duhem's and Quine's attacks against the modern positivist foundationalism about scientific knowledge. Paradigms are required not only to provide auxiliary elements permitting the connection between empirical evidence and theoretical hypotheses to be tested, but also, in a more radical way, to fix the meaning of terms deployed in scientific theories. According to this semantic dependency, mismatches between paradigms can lead to taxonomic incommensurability with divergences between the meanings of terms of scientific theories. Such phenomena of taxonomic incommensurability have been understood as leading to semantic relativism (total semantic isolation between theories or whole languages) and self-refutation because preventing translation between (scientific) terms and concepts associated with incommensurable paradigms (Baghranian 2008, Sharrock and Read 2002, 98 and 141-142). However, these conclusions about total isolation between theories or languages follow from the admission of taxonomic incommensurability only when coupled with the thesis of meaning holism (McGuire 1992, 148).

Kuhn's thesis about semantic divergences occurring between terms of theories relying on incommensurable paradigms have less radical consequences than semantic relativism that have also been the object of intense controversies. Among scientific terms whose meaning is influenced by paradigms, observational terms are no exception. Their meaning is not invariant across theoretical changes associated with taxonomic incommensurability (McGuire 1992, 145, Nickles 2003, 3). Through this theory- or paradigm- ladenness of observation, theory acceptance is again confronted with the threats of relativism and irrationality. Not only empirical evidence cannot guide rational theory choice alone (or rather complemented by logic only), but more fundamentally it cannot constitute a common ground from which theories relying on incommensurable paradigms could be neutrally compared. Nevertheless, relativism and irrationality of theory choice may not directly follow from theory-ladenness of empirical observation. The latter does not necessarily mean that empirical evidence cannot contribute to theory choice (Brewer and Lambert 2001). In this respect, it may be fruitful to distinguish between two types of neutrality that could be required from observational statements (Sober 2008). 'Absolute theory neutrality' demands the existence of a set of observation statements that is independent of any theory and can be employed to test any theory. Absolute theory neutrality seems prevented by the occurrence of phenomena of taxonomic incommensurability. More modestly, 'relative theory neutrality' imposes mobilizing observation statements that are independent of the theory to be tested. This second moderate requirement may suffice to escape relativism.

Beside the lack of neutrality of empirical evidence, another consequence of the semantic influence of paradigms upon scientific languages underwent refined analysis. In fact, post-positivists argues that meaning qua *reference* of scientific terms changes with scientific revolutions (Baghranian 2008, Teller 2008b). Again, the rationality of theory acceptance, or at least of theory comparison, may be threatened by such referential shifts between theories relying on incommensurable paradigms. If taxonomic incommensurability prevents stability of reference, incommensurable scientific theories cannot be understood as providing conflicting descriptions of a common set of real entities (Sankey and Hoyningen-Huene 2001, xvi). This issue of stability of reference has been illuminatively informed by Israel Scheffler who, mobilizing the Fregean distinction between sense and reference, suggested that variations in the reference of a term do not necessarily follow from variations in its sense or meaning (ibid, p. x). Accordingly, claiming that reference is necessarily disrupted by the occurrence of phenomena of taxonomic

incommensurability at the level of meanings of scientific terms amounts endorsing descriptivism about reference which stipulates that reference of terms is determined by conceptual content associated with them (Sankey 2009, 197-198). Several alternatives have been proposed to descriptivist accounts of reference. For example, Putnam and Kripke advocated for a causal theory of reference based on an extension of the process of rigid designation to natural kind terms (Kripke 1972, Putnam 1975 [1973], 1996 [1975]). This proposal have been criticized by Kuhn himself as relying on problematic essentialist views and as misconceiving consequences of taxonomic incommensurability (Kuhn 1990b, Read and Sharrock 2002). While he recognizes that a purely causal approach seems unsuitable, Sankey nevertheless defends that stability of reference can be secured despite taxonomic incommensurability through a causal-descriptive account (Sankey 1994, 2009). He also indicates that consequences of incommensurability with respect to reference highly depend upon background commitments about the “ontological status granted to entities referred to.” His approach could not operate in conjunction with the claim – which Kuhn seems to admit – that “theories constitute their own domains of reference” (Sankey and Hoyningen-Huene 2001, xvi).

This remark highlights an additional important controversial point. Philosophical topics that are crucial for the discussions of the incommensurability thesis do not restrict to methodological and semantic issues. Questions about the nature of the reality scientific theories bear upon are also highly relevant. Is this reality mind-independent or is it influenced (one may say, is it shaped) by conceptions and descriptions actual scientists possess about them? Raising this question in turn amounts wondering: does incommensurability happen only in the mind of scientists or does it propagate up to reality? (Nickles 2003, 15) In this regard, Kuhn’s provocative World-Change thesis seems to conduct to the second option. According to this World-Change thesis, shifts between taxonomically incommensurable lexicons occurring at the occasion of scientific revolutions transform the world scientists work in. As already reported, Kuhn denies that ontologies of theories provided by such lexicons possess real mind-independent counterparts. For him, lexicons or ontologies are not capable of truth as correspondence with the entities of a mind-independent reality. Truth as correspondence with pre-given structures of mind-independent reality cannot be the goal of scientific inquiry (Kuhn 2000a [1991], 95).

Nonetheless, the interpretation of the World-Change thesis is far from straightforward. For instance, it can be understood in different manner depending upon background accounts of perception (Bird 2000, 102-104). In particular, one can analyze consequences of taxonomic incommensurability in terms of ‘strong objectual seeing’, in which the visual awareness of an object does not require possession of concepts related to that object. Along these lines, the World-Change thesis receives a rather radical framing: raw perception and experienced reality (in the strong sense of experiencing) are influenced by paradigms. But one could also mobilize the weaker notion of ‘intensional seeing’ according to which perceivers need conceptual resources to interpret their visual experience. In consequence, the World-Change thesis can be associated with a weaker formulation bearing only on intensional perception. Paradigmatic shifts influence conceptual frameworks available to scientists to interpret their perceptual experiences without impacting raw perceptions or reality experienced in the strong sense. Note that this more moderate account of the influence that paradigms may have on perceptual experience still conflicts with the modern positivist conception of science in ruling out the possibility of neutral observation on which theory framing and assessment processes could be based. In fact, observations, being reports of perceptual experience, involve intensional seeing. Thereby, they remain influenced by paradigm

modifications, even if effects on strong seeing or raw perception are not considered (Bird 2000, 114-116). Moreover, one can wonder whether the world-change thesis applies to any possible notion of world or whether one may be entitled to distinguish between scientific worlds that change with paradigm shifts and an empirical ordinary world that is left untouched during such modifications (Ghins 2003).

Many of the controversial elements mentioned in previous paragraphs converge in fundamental debates about scientific realism and about the threats incommensurability may generate against it. Various definitions of scientific realism can be found in the literature that associate it with different sets of requirements (Psillos 2000, 706-707, Sankey 2000a, 226 note 6, Almeder 2008, Baghramian 2008, Devitt 2008, Ladyman 2012, 33-34). However, certain common elements shared by these definitions. For instance, all of them claim that there is a mind-independent reality and that terms of scientific theories refer to entities and properties of this mind-independent reality. Scientific theories are true or false in virtue of correspondence with these mind-independent entities and their properties. The extent to which incommensurability conflicts with such components of scientific realism highly depends upon the way incommensurability is understood. On the one hand, incommensurability understood as extending up to reality itself radically oppose to these components. In this framework, reality described by scientific theories is not mind-independent. Rather, it is shaped by lexicons admitted in different contexts. Moreover, this prevents conceiving scientific progress as an advance toward the discovery of truth about nature seen as mind-independent reality. On the other hand, we have seen that interpreting incommensurability as impacting reality itself is nonetheless not necessary. It may be argued that, despite incommensurability, there is mind-independent reality whose entities are referred to by scientific terms. But even in such realist interpretations, phenomena of incommensurability could still threaten other components of scientific realism. In particular, most of the definitions mentioned just above picture science as effectively possessing enough epistemological power to provide objective knowledge about reality, in particular in progressing toward truth about mind-independent reality along history. Whether or not incommensurability enters in conflict with these hypotheses again highly depends upon the manner the former is interpreted. For instance, if methodological shifts associated with methodological incommensurability are understood as leading to relativistic or irrational theory choice, scientific inquiries could not be presented as possessing enough epistemological power to provide knowledge about reality. In the same vein, the defense of the idea that scientific inquiries are capable of providing objective knowledge about reality may be deeply impacted by the type of theory neutrality that is required from legitimate empirical evidence (with absolute theory neutrality, no empirical evidence could be admissible). Finally, the possibility of defending stability of reference across (taxonomically) incommensurable paradigms also appears crucial for the viability of scientific realism. In fact, if taxonomic incommensurability prevents stability of reference, successive scientific theories cannot be understood as providing improved descriptions (as progressing toward truth about) a common set of real entities (Sankey and Hoyningen-Huene 2001, xvi). The idea of scientific progress and the epistemological power it endows scientific inquiries with would then be severely undermined.

This overview of prominent debates in philosophy of science around the topic of incommensurability brings to the fore the fact that no consensual account of the latter and of its consequences is available. On the contrary, approaches of incommensurability and of repercussions it generates (in particular with respect to the just mentioned issue of scientific

realism) appear extremely dependent upon background philosophical commitments concerning realism and truth as well as meaning, reference, objectivity and rationality. In particular, Kuhn explicitly acknowledges his (neo-) Kantian background. He describes his position as “a sort of post Darwinian Kantianism” according to which “lexical categories, unlike their Kantian forebears, can and do change, both with time and with the passage from one community to another” (Kuhn 2000a [1991], 104). Accordingly, Kuhn does not reject the idea of mind-independent reality, but conceives it as remaining beyond cognitive reach:

Underlying all these processes of differentiation and change, there must, of course, be something permanent, fixed, and stable. But, like Kant’s *Ding an sich*, it is ineffable, undescribable, undiscussible. Located outside of space and time, this Kantian source of stability is the whole from which have been fabricated both creatures and their niches, both the “internal” and the “external” worlds. (Ibid)

Philosophers such as Hoyningen-Huene follow Kuhn’s neo-Kantianism. They agree with him to claim that phenomena of incommensurability decisively undermine scientific realism in evidencing that reality referred to by scientific terms depends upon contextually admitted lexicons. In the framework of neo-Kantianism, subjective and objective features of scientific theories are irremediably entangled (Hoyningen-Huene 1993, 2008). Other authors like Hacking or Clarke defend entity realism (notably about entities referred to by scientific theories) but deny that kinds in which they are gathered are natural kinds, that is to say, that they are fixed by nature itself (Sankey and Hoyningen-Huene 2001, xvii, Clarke 2008, Soler 2008, 10).

By contrast, other authors believe that phenomena of incommensurability do not propagate up to reality referred to by terms of scientific theories. Notably, Bird (2008b) mobilizes cognitive psychology and considers phenomena of incommensurability as mismatches between cognitive habits of researchers. In the same vein, Sankey argues that incommensurability does not lead to anti-realism and that the challenge it presents to scientific realism can be disposed of (Sankey 1994, 2009). He for example argues that Laudan’s normative naturalism can be combined with scientific realism to the extent one can always defend the idea that cognitive ends pursued in various contexts all ultimately subserve the overarching realist goal of truth as correspondence (Sankey 2000a, 215-216). In sum, features of accounts of incommensurability and of its consequences concerning relativism, scientific realism or anti-realism radically diverge in function of philosophical backgrounds supporting them.

### **Towards a context-sensitive and realist account**

The present study aims at settling a context-sensitive *and* realist account of scientific or rational inquiries and of the phenomena of incommensurability they may be confronted with. Such an account would be context-sensitive in recognizing the irreducibility of contextual influence in rational inquiries as well as its possible legitimacy in some cases. It would be realist in preserving the possibility to interpret contextual influence as contextual pollution in other circumstances (thus escaping relativism and antirealism that dilute truth and reality in contextual influence). In addition, this account would be context-sensitive in doing justice, in some cases, to the possible legitimacy and irreducibility of phenomena of incommensurability. It would nonetheless remain realist in preventing relativist or antirealist generalization of such an irreducibility. In some configurations, the possibility to interpret incommensurability as cognitive limitation should

remain open (notably to preserve compatibility with scientific realism)<sup>4</sup>. As evidenced through the overview proposed above, the elaboration of such a context-sensitive and realist account cannot be conducted in disconnection from specific philosophical background commitments, in particular with respect to the topics of realism, reference, truth and rationality. In this regard, none of the two main interpretative streams upon incommensurability delineated just above appear totally suitable. On the one hand, Kuhn and other authors endorse philosophical frameworks of a neo-Kantian type which permits making room for legitimate contextually-driven divergences in scientific investigations and in the results they produce. Nevertheless, approaches of this stream radically conflict with scientific realism. On the other hand, positions such as the ones of Sankey or Bird permit defending scientific realism *against* phenomena of incommensurability (at least taxonomic ones) through confinement in psychological, cognitive or epistemic sphere of researchers. However, they do not seem to open room for thinking that contextual influences and associated incommensurability may also reflect genuine features of (mind-independent) reality. Therefore, none of these main streams seem perfectly adequate for the here targeted elaboration of a context-sensitive and realist account of rational or scientific inquiries and of the phenomena of incommensurability they may encounter.

The core contention of the present work is that **Putnam's philosophical work can be mobilized to open an alternative path** toward this context-sensitive and realist account. First, Putnam can be seen as “polymath of philosophy” (De Caro and Macarthur 2012). He produced major contributions in domains of philosophy of science that are central for questions related with the notion of incommensurability (realism, truth, reference, rationality ...). Second, Putnam is famous to have endorsed different successive forms of realism. Initially admitting ‘metaphysical realism’, he later evolved to internal realism in his mature work, while developing a position associated with direct or commonsense realism in his latest writings (Putnam 1981, 1999, 2013f). Interestingly, while metaphysical realism may not be at odd with background commitments of the approaches of Bird and Sankey (Sankey 2008b, 31-34), internal realism, as a Kantian-inspired form of (anti-) realism, clearly meets some of the philosophical positions of Kuhn and Hoyningen-Huene (Putnam 1981, 60-61, 2012b [2010], 97 note 15). Such symmetry with important interpretative streams about incommensurability suggests that the position Putnam reaches in the late phase of his philosophical journey may prove particularly fruitful as a ground to elaborate the context-sensitive and realist account of scientific or rational inquiries and of incommensurability aimed in the present work.

To support this central claim and consequently develop this context-sensitive though realist account of phenomena of incommensurability, the argument in this thesis is structured as follows. **The first chapter** is devoted to the elucidation of Putnam's philosophical ideas concerning realism, reference, truth and rationality (or rational acceptability). Putnam is famous for his ability to adapt or even radically rework his philosophical views. Although such evolutions are sometimes understood as self-repudiation of previous broad positions (see for instance: Devitt 1983), this work aims at showing that they may be fruitfully reconsidered as progressive fine-tunings taking place in a general effort to reach a balanced realist approach that provides an alternative to both

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<sup>4</sup> As introduced above, this context-sensitive and realist account may allow a better representation of the processes at play in scientific and rational enterprises. In particular, it could open an alternative between modern positivist views that tend to discard context-sensitive investigations as ‘pseudo-science’ and relativist or antirealist approaches that deny rational investigations any access to mind-independent reality and any pretention to truth. In addition, this combination between context-sensitivity and realism may be required to suitably understand the diversity of contemporary scientific investigation and to adequately manage boundary-crossing research initiatives.

metaphysical realism and antirealism, which Putnam sees as constituting a kind of “antinomy of realism” (Putnam 1999, 12-13). Consequently, continuities and ruptures between Putnam’s ideas concerning realism, reference, truth and rationality (or rational acceptability) in metaphysical realist, internal realist and commonsense realist periods are carefully analyzed. This allows suitably delineating the complex and subtle positions defended in the later phase. Equipped with this elucidation of Putnam’s late views about realism, reference, truth and rationality, **the second chapter** is focused on the development of basic tools required to settle our context-sensitive and realist account of incommensurability. It begins in systematizing and extrapolating commonsense realist theses of the latest works of Putnam, to establish what we label ‘Putnam’s pragmatist theory of knowledge’. Nevertheless, this theory of knowledge cannot be directly deployed to account for incommensurability. Preliminarily, it is required to precisely define the medium in which phenomena of incommensurability may take place. Therefore, to complement the argument in this second chapter, Putnam’s pragmatist theory of knowledge is mobilized in the elaboration of a picture of rational inquiry that does justice to the irreducible role played by contextual features without relinquishing notions of realism, truth or rationality. Finally, **the third chapter** deploys the tools developed in the second chapter to elaborate the context-sensitive and realist account of incommensurability and draws some consequences with respect to the problems raised in this introduction. In particular, possibilities for compatibility between incommensurability and scientific realism are explored.

# **Chapter 1: Knowing reality, Putnam's insights about realism, reference, truth and rationality**

As exposed in the general introduction of this manuscript, a context-sensitive but realist consideration of the notion of incommensurability in philosophy of science requires a refined approach of the topics of realism, reference, truth and rationality. Such insights may be found in Putnam's philosophical work that borrows many elements from pragmatism. Accordingly, the present work intends to elucidate the core features of Putnam's reflections concerning realism, reference, truth and rationality (or rational acceptability) to reconstruct what may be called Putnam's pragmatist theory of knowledge. In turn, this theory of knowledge could be mobilized to elaborate a refined understanding of the notion of incommensurability. But, achieving the formulation of a pragmatist theory of knowledge inspired from Putnam is far from trivial. Understanding properly Putnam's positions concerning realism, reference, truth and rationality constitutes a preliminary challenge requiring careful and detailed analysis.

## **1. Ruptures and continuities in Putnam's philosophical trajectory**

As a "polymath of philosophy" (De Caro and Macarthur 2012), Putnam offered philosophical contributions in extremely diverse domains ranging from physics, logic and mathematics, to linguistic, psychology or ethics. However, his views (in particular about realism, reference, truth and rationality) are not often exposed in a systematic way. Putnam seems to favor critical dialogue and mutual enrichment with philosophical approaches diverging from the one he admits at a given time (including his own earlier ones). In consequence, grasping Putnam's philosophical ideas may constitute a thorny enterprise. Notably, an excessive focus on the way Putnam deploys his thinking in a particular domain may lead to confuse pieces of reasoning and illustrations with core philosophical arguments. It has for example been argued that ruptures in Putnam's approach of realism are largely prompted by implications of quantum mechanics as understood along the orthodox (Copenhagen) interpretation (Norris 2001). If this were the whole story, Putnam's arguments could be defused in noticing that interpretative issues of quantum mechanics are far from settled and that the orthodox interpretation has various competitors (such as David Bohm's hidden-variables theory) in which Putnam's conclusions do not follow. However, Putnam's reflections about realism are exposed in link with broader arguments and insights from quantum mechanics are mobilized more as illustrations than as premises of the reasoning (see for instance: Putnam 1981, 1983b). Accordingly, understanding properly Putnam's positions demands a broad exploration that transcends specialized domains of philosophy or precise environments in which philosophical arguments are deployed. In addition to this requirement imposed by Putnam's polymathy, his ability at constantly interrogating and improving his own former views may impose another type of constraint. Presenting Putnam's evolutions as radical ruptures generates the risk of missing important continuities that illuminate his general thinking. For instance, the endorsement of internal realism has been presented as an antirealist turn, in consequence of which Putnam has been qualified as renegade of realism (Devitt 1983). Although internal realism may fail constituting a genuine form of realism, this does not indicate that Putnam rejected realism per se (as attested by the names of the various positions he considered and or endorsed at some point: metaphysical realism, internal realism, natural realism, commonsense realism, etc.). This suggests that



evolutions of Putnam's philosophical ideas should not be seen as radical ruptures with general rejections of previous views but as adaptations and improvements propagating diverse core positions across transitions.

Nonetheless, this remark should not be understood as claiming that no meaningful distinctions or separations can be established in Putnam's philosophical trajectory. In particular, the topic of realism constitutes a useful marker with respect to the present undertaking because Putnam's ideas concerning realism are likely to influence or constrain his positions about other issues like reference and truth. In this respect, Putnam's positions can be organized along three main periods, in which Putnam progressively elaborates and deepens his nuanced criticism of metaphysical realism. During the early period, metaphysical realism, understood as the traditional conception of reality as a fixed and pre-given totality of mind-independent objects and properties, is uncritically admitted. Nonetheless, this period is characterized by the criticism and the rejection of traditional and positivistic conceptions of meaning and reference, which can be summarized through the slogan "meaning is not in the head" (see for instance: Putnam 1975 [1970], 1996 [1975]).

Refining and deepening his criticism of the notion of reference, Putnam is progressively led to the repudiation of metaphysical realism. With this rejection, Putnam enters in his second period (from 1976 to 1989) and develops an alternative form of realism famously called 'internal realism' (Putnam 1981, 1988, 2013f), according to which "there isn't a ready-made world" (Putnam 1982b). This approach rejects the metaphysical realist conception of reality and the associated correspondentist view of truth as a unique substantive property operating independently of the circumstances it is deployed in. Internal realism nonetheless aims at maintaining the other intuitions of realism. Inspired by the post-positivistic and pragmatist insights of the historical and the linguistic turns (Bernstein 2005, Bird 2008a, Gattei 2008, Dostie Proulx 2012), internal realism is characterized by the adoption of an 'internalist perspective' that admits the impossibility of decoupling discourses about reality from admitted conceptual schemes and associated background elements (Putnam 1981, De Caro and Macarthur 2012). In this view, the notion of truth becomes tightly connected to the one of "rational acceptability" and a "verificationist semantics" is endorsed (Putnam 1981, 2012c [2011]). However, Putnam insists on the fact that internal realism, to be consistent, should not degenerate into a radical form of relativism. While truth is intimately dependent upon rational acceptability, any attempt at reducing the former to the latter would be wrongheaded. In fact, Putnam unsuccessfully attempt at securing a gap between truth and rational acceptability in conceiving the former as an idealization of the latter under sufficiently good epistemic conditions (Putnam 1981, 50-55).

Realizing that this talk about sufficiently good epistemic conditions implicitly mobilizes some aspects of metaphysical realism he previously rejected (Putnam 2013f), Putnam abandons internal realism, thereby opening his third period (from 1990 to present time). Putnam attributes the recurrence of the semantic problem raised by metaphysical realism to the so-called 'causal theory of perception'. This conception, originating in Descartes' philosophy, pictures perceptions as an interface between the mind and external objects, the latter being causally responsible for our perceptions, but never cognitively reached (Putnam 1999, 2013f). Abandoning this theory, Putnam proposes a 'commonsense realism' that, grounded in the 'actual person point of view', integrates the main post-positivists insights. The unavoidable dependency of any discourse about reality upon admitted conceptual backgrounds becomes the very corollary of access and openness to the world

(Putnam 1999, Bernstein 2005). In general, perceptions are experiences of genuine “aspects of reality” (and not mere inner representations caused by an external reality). In addition, this reconsidered account of our cognitive contact with reality permits grounding a consistent and contextualized notion of truth (Putnam 2013f, 30-33).

The present work intends to mobilize the core idea Putnam endorses about realism, reference, truth and rationality in the most recent period to open the road for a reconstruction of a pragmatist theory of knowledge based on which incommensurability could be better apprehended. As a first step, it is therefore required to elucidate as precisely and faithfully as possible these core ideas. But the preliminary remarks just above warns us against the temptation of focusing too much on the last period only. In fact, the division of Putnam’s philosophical trajectory is meaningful and useful but also coarse-grained. Many important elements preexisting in previous phases are (sometimes implicitly) exported in the commonsense realist period (one can mention Putnam’s constant attempts at complying with semantic externalism). Furthermore, certain original features of a given period are hardly understandable without insights in what they oppose to (for instance, the internalist conception of reality does not oppose the idea of mind-independent reality but rather its deployment according to an externalist perspective based on an absolute God’s eye point of view). Accordingly, a proper understanding of commonsense realist theses about realism, reference, truth and rationality can be achieved only by carefully considering the whole philosophical journey that has engendered them. In addition, Putnam’s intellectual path may possess its own intrinsic relevance with respect to the present work because Putnam constantly pursues the elucidation of a consistent form of realism that avoids as well the metaphysical excesses of traditional conceptions of reality and truth as the deflationary retreats of antirealist and relativist approaches. The notion of incommensurability is itself discussed in connection with such problems. Some authors seek for a defense of traditional realism despite incommensurability while others mobilize incommensurability as an argument in favor of relativism or antirealism. Consequently, the elaboration of a refined understanding of incommensurability may benefit from the consideration of Putnam’s philosophical gesture as a whole.

Therefore, the following sections propose an exposition of this general gesture to reach an elucidation of Putnam’s core ideas about realism, reference, truth and rationality during the commonsense realist period. The discussion is divided in three main bodies respectively focused on Putnam’s three successive periods as delineated following the marker of realism. Nevertheless, careful analyses of the transitions and articulations between them are conducted. Additionally, preliminary points of connections between the positions of Putnam and Kuhn’s notion of incommensurability are delineated. Before entering in the exposition of Putnam’s philosophical ideas, two methodological remarks are here in order. First, emblematic writings can be found for each period of Putnam’s intellectual trajectory (Putnam 1996 [1975], 1981, 1999). They constitute the primary guides of our exploration. A large fraction of Putnam’s other writings is mobilized for enrichment, deepening and clarification. Second, as the reader might notice, bibliographic references belonging to later periods are, in some places, mobilized to discuss elements of previous periods. These apparent anachronisms have two (sometimes overlapping) explanations. On the one hand, Putnam sometimes provides, in later works, complementary discussions of some of his former positions. On the other hand, some features of Putnam’s approach survive the transitions from a period to another. Complementary expositions can then be found in different periods. This being said, we can now turn to the study of Putnam’s early philosophical phase.

## 2. Putnam's early account of meaning and semantic externalism

In his early period, Putnam does not yet question metaphysical realism and its associated notion of truth as correspondence. Some of Putnam's investigations of this period nonetheless constitute crucial elements of the insights about realism, reference, truth and rationality we intend to mobilize for the elaboration of a refined account of incommensurability. In particular, the early criticisms Putnam addresses to the traditional conception of meaning (under its initial form as well as framed according to the tools of modern logic) can be understood as the first exposition of his semantic externalism and as seeds whose germination will contribute to the later development of internal and commonsense realisms. Therefore, the elucidation of Putnam's views about realism, reference, truth and rationality can naturally begin with a focus on these criticisms.

### 2.1. Putnam's early criticism of the traditional view of meaning

The early criticism Putnam addresses to the traditional view of meaning is exposed, in particular, in his famous article *The meaning of 'meaning'* (Putnam 1996 [1975]). Put in a nutshell, the traditional view argues that the meaning of a term can be accounted for relying only on thinkers' psychological states and that meaning so conceived determines what the term refers to. This traditional conception embeds four main features. First, it recognizes the widely acknowledged need for distinguishing between the meaning and the reference of a term. This distinction is motivated by the fact that, in many cases, different terms with distinct meanings refer to the same thing. For example, the two expressions "the first heavenly body visible in the morning" and "the first heavenly body visible in the evening" possess different meanings while both referring to the planet Venus (Bertolet 2008, 36). Second, the meaning of a term "is understood in terms of a set of concepts analytically associated with the term giving necessary and sufficient conditions of a term falling in its extension" (Sterelny 1996, 99). According to this Fregean conception, "the meaning of a term is given by some description expressing a concept grasped by any competent speaker (...), and the term refers to whatever thing or class or set of things which that concept applies to" (Bertolet 2008, 37). Third, it is then assumed that the meaning of a term is entirely reducible to the elements of the thinker's psychological (or mental) states or to his "notional world," as defined by Dennett through Husserl's bracketing device subtracting "all the entailments that refer to the external world, or to what is external to the thinker's mind" (Putnam 1981, 28). Finally, "methodological solipsism" is assumed: "no psychological state, properly so called, presupposes the existence of any individual other than the subject to whom the state is ascribed" (Putnam 1996 [1975], 6-7). The talk about psychological states not even requires the existence of the thinker's body: "it must be logically possible for a 'disembodied mind' to be in [a given psychological state]" (ibid). Consequently, the traditional view holds that the "thinker's notional world" determines the meanings and the extensions of his terms (Putnam 1981, 29). More precisely, the traditional view rests on two assumptions corresponding to Frege's understanding of meaning and reference (Pessin and Goldberg 1996b, 53). As framed by Putnam these hypotheses are:

- (I) That knowing the meaning of a term is just a matter of being in a certain psychological state (in the sense of “psychological state,” in which states of memory and psychological dispositions are “psychological states”; no one thought that knowing the meaning of a word was a continuous state of consciousness, of course).
- (II) That the meaning of a term (in the sense of “intension”) determines its extension (in the sense that sameness of intension entails sameness of extension). (Putnam 1996 [1975], 6)<sup>5</sup>

Because no psychological state presupposes the existence of any individual other than the subject to whom the state is ascribed, “knowledge of meanings is private mental property”; “one individual in isolation” can grasp the concepts associated with any term, thereby totally determining its extension (Putnam 1996, xv-xvi). According to Putnam, this traditional view of meaning is invalid.

To begin with, Putnam highlights that indexicals terms like as ‘I’, ‘this’ or ‘now’ constitute counterexamples to which the traditional view does not apply (Putnam 1996 [1975], 18-19, 1981, 22). In fact, the term ‘I’ can correspond to the same psychological state in my head and in the one of a friend of mine while not referring to the same entity. However, the most famous set of counterarguments he proposes to support his attack remains based on the “twin earth” science fiction story he first exposed in 1975 in *The meaning of ‘meaning’* (Putnam 1996 [1975]). As indicated in the introductory remarks of this chapter, Putnam’s philosophical path is characterized not only by several deep ruptures but also by diverse overarching lines of thought that transcend these ruptures. The rejection of the traditional view of meaning constitutes one of these important continuities. For instance, in *Reason, Truth and History* (characteristic of the internalist period), Putnam remobilizes and consolidates his ‘twin earth’ arguments (Putnam 1981, 18 and 22-25)<sup>6</sup>. Through them, Putnam criticizes the cotenability of the two Fregean theses about meaning (assumptions I and II exposed above) characterizing the traditional view and its restriction to thinkers’ psychological or mental states (Pessin and Goldberg 1996a, xii). The argument relies on an imagined story according to which earth has a twin, “twin earth,” that can be conceived to exist in our actual world “somewhere in the galaxy” (Putnam 1996 [1975], 9). The story can even be generalized in thinking of earth and twin has hosted in two different possible worlds obeying the same laws of nature (Putnam 1990a, 69, 1996 [1975], 16). The central premise of the rationale is that earth and twin earth are identical copies. I can have a doppelganger on twin earth that has the exact same psychological states as me. The only relevant difference between earth and her twin is the following:

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<sup>5</sup> Putnam mobilizes in this quotation the term ‘intension’ he equates with the traditional understanding of ‘meaning’: “Supposing that there is a sense of “meaning” in which meaning = extension, there must be another sense of “meaning” in which the meaning of a term is not its extension but something else, say “the concept” associated with the term. Let us call this “something else” the *intension* of the term. The concept of a creature with a heart is clearly a different concept from the concept of a creature with a kidney. Thus the two terms have different intension. When we say they have different “meaning,” meaning = intension” (Putnam 1996 [1975], 5). This use of ‘intension’ complies with the Fregean notion of meaning. Putnam mobilizes this term to clarify the notion of meaning as related both to intension and extension. In this understanding, meaning *qua* intension can be recollected in speakers’ psychological states. However, it conflicts with other occurrences of the same term in *Reason, Truth and History*: “What the intension does is to specify how the extension depends on the possible world. It thus represents what we are interested in, the extension associated with a term, in a very complete way, since it says what that extension would have been in any possible world” (Putnam 1981, 27). It is therefore crucial to distinguish both uses of ‘intension’. To avoid misunderstandings, in the following ‘intension’ is employed to designate the Fregean understanding of meaning *qua* sense by contrast with reference or denotation.

<sup>6</sup> The rejection of the traditional conception of meaning also survives the transition from internal realism to commonsense realism (see for instance: Putnam 1999, 6-7 or 119-120).

One of the peculiarities of Twin Earth is that the liquid called “water” is not H<sub>2</sub>O but a different liquid whose chemical formula is very long and complicated. I shall abbreviate this chemical formula simply as XYZ. I shall suppose that XYZ is indistinguishable from water at normal temperatures and pressures. In particular, it tastes like water and it quenches thirst like water. Also, I shall suppose the oceans and lakes and seas of Twin Earth contain XYZ and not water, that it rains XYZ on Twin earth and not water, etc. (Putnam 1996 [1975], 9-10)

According to Putnam, while my doppelganger and I are in the same psychological state when using the word ‘water’, we do not mean the same thing. When I use ‘water’, I refer to H<sub>2</sub>O. When my doppelganger uses ‘water’, he refers to XYZ. Our psychological states alone do not determine the extension of the term. Briefly put, “the reference is different because the stuff is different” (Putnam 1981, 23). This contradicts the claim that the thinker’s psychological states determine the extension of a term he employs.

A first rejoinder to this criticism relies on the claim that there could be two kinds of water. We might simply have failed noticing the fact up to this moment. Putnam answers that we could imagine water on twin earth being far more different from our water (e.g. a mix of water and alcohol) provided that my doppelganger is biologically adapted to his water and that both liquids have the same taste. In fact, in a functionalist perspective of psychological states, my doppelganger’s biochemistry and mine can differ (be for instance based respectively on XYZ and on H<sub>2</sub>O) while our psychological states remain the same (Sterelny 1996, 100). Thereby, the conclusion of Putnam’s criticism still holds: in the twin earth story, two persons with identical psychological states refer to different things (and not to two kinds of the same thing).

However, a second point can be raised to counter Putnam’s conclusions. We might suppose that, as it is the case on earth, twin earth society includes experts in chemistry who might know that water in their case refers, not to H<sub>2</sub>O, but to XYZ. If this can be granted, then it becomes possible to claim that at least the collective mental state of twin earthians determines what ‘water’ refers to. In such settings, it could be argued that “the total mental state of all the members of the language community fixes the reference of the term” (Putnam 1981, 24). Putnam does not reject the idea that collective mental states can contribute to what constitutes the meaning of a term. On the contrary, Putnam recognizes as a quite general phenomenon the fact that meanings of terms are partly determined collectively, through “interactions with other language users” (Putnam 1996, xvi). In fact, he admits the “hypothesis of the universality of the division of linguistic labor” stating that every linguistic communities “possesses at least some terms whose associated [ways of recognizing if something is in the extension] are known only to a subset of the speakers who acquire the terms, and whose use by the other speakers depends upon a structured cooperation between them and the speakers in the relevant subsets” (Putnam 1996 [1975], 14). Nonetheless, this acknowledgement of the role of the linguistic community as a whole does not resolve the problem of the cotenability of the hypotheses the traditional view about meaning relies on (knowing the meaning of a term is nothing but being in a given psychological state; and the meaning of a term, in this intensional sense, determines its extension). Psychological states alone (conceived as individual as well as collective) cannot do the job of determining what a term refers to. Discussing the case of ‘water’, Putnam explains that we might return to a time prior to the appearance of experts in chemistry. In this time of pre-Daltonian chemistry, even the collective mental states of earthian and twin earthians would have been identical when using the term ‘water’. It would not be reasonable to argue that the reference of ‘water’, for earthian as well as for twin earthian, changed with the settling of adequate chemistry. This would mean that almost any

scientific discovery changes the reference of our terms, inducing the impossibility to claim, for example, that we discovered that our ‘water’ is H<sub>2</sub>O, forcing us to admit that we only stipulated it (Putnam 1981, 24). Therefore, in spite of the identity of relevant psychological states, reference of ‘water’ on earth and twin earth remains different. Again: “What goes on inside people’s heads does not fix the reference of their terms. In a phrase due to Mill, ‘the substance itself’ completes the job of fixing the extension of the term” (Putnam 1981, 25).

In sum, the traditional conception of meaning still appears untenable. In the light of preceding arguments, one cannot maintain conjointly its two associated theses: (1) the meaning of a term is constituted by the concepts we associate to it (grasping the meaning of a term becoming thus a matter of being in certain individual psychological or mental states); and (2) the meaning of a term determines its reference or extension. When considering purely indexical terms like ‘I’ or ‘this’, one might be tempted to reject the second hypothesis. However, Putnam argues that this does not seem suitable for terms like ‘water’. On earth, ‘water’ *means* H<sub>2</sub>O. On twin earth the same term *means* XYZ. Claiming that the term has the same meaning in both cases appears rather odd. Putnam thinks preferable to reject the first thesis of the traditional conception (Putnam 1996 [1975], 28-29). In this perspective, the meaning is not constituted only by concepts associated with a term. It also includes its referents or extension. Such an account allows maintaining that meaning determines extension and understanding how ‘water’ means something different on earth and twin earth, even when the speakers of the two planets know nothing about differences in their respective intended referents.

This conclusion of Putnam’s criticism of the traditional view about meaning is crucial to understand properly Putnam’s intellectual path and the way it can be mobilized in connection with Kuhn’s notion of incommensurability. In his commonsense realist period, Putnam names “semantic externalism” this thesis about the necessary involvement of external factors in the determination of terms’ meaning (Putnam 1999, 119, Bertolet 2008, Burge 2013). Semantic externalism opposes to the naïve view of meaning of a term as constituted only by its intension, by a predicate (or a set of predicates) pointing at a property (or a set of properties) shared among all the elements of the extension (Putnam 1999, 9, Bertolet 2008). The account of ordinary meaning of our terms cannot rely only on our notional worlds (our psychological states), but also have to integrate an external factor, “an indexical component” (Putnam 1996 [1975], 28, Bertolet 2008, 40). While semantic externalism does not deny the role of our psychological states, it claims that “the content of sentences (...) is at least partly dependent on the determination of the reference in the particular context (...) of the terms used in the sentence or in the expression of belief, and that reference depends on factors that are external to the speaker’s body and brain” (Putnam 1999, 119). The thesis of semantic externalism is illuminatively summarized by Burge:

It is trivial that many entities that are in fact objects of linguistic reference are external to – independent for their nature and existence of – language. It is *not* trivial that some factors *constitutively determining* which objects linguistic terms refer to are irreducibly external to – independent of – idiolects, dialects, and communal languages. Such factors include causal chains, contextual parameters, and molecular structures, none of which individuals need not be able to specify. (Burge 2013, 263)

It is this non trivial point that is established by Putnam with the twin earth examples (about natural kinds such as water or gold). The same conclusion is reached about demonstrative reference by Strawson and about proper names by Kripke and Donnellan (Burge 2013). Psychological states *alone* cannot do the job. As famously stated by Putnam, “meanings just aren’t in the head” (Putnam 1981, 19).

Furthermore, semantic externalism is a crucial component of the complex relationship standing between Kuhn's view about incommensurability and Putnam's philosophy. In fact, Putnam grants an irreducible role to a relation of sameness between the deep structures of the actual world's entities we refer to when using a given term. Referents of prior uses of a term constitute "paradigms" or paradigmatic examples whose "actual nature" determines what it means to be a member of the extension of the term, even if this actual nature is not, in general, fully known to the speaker" (Putnam 1996 [1975], 28). Thereby, semantic externalism opens promising leads to bridge Putnam's approach of meaning and reference with Kuhn's insight concerning the taxonomical role of exemplars. This point of junction will be further explored in the rest of this manuscript. But for now, it is important to investigate to which extent an approach of the problem of meaning and reference through the lenses of modern logic can offer a solution to the obstacles evidenced by Putnam.

## **2.2. The received view of interpretation and the model-theoretic argument**

In the perspective of semantics and model theory, an abstract formal language is susceptible to describe the world (or any possible world) provided it receives an interpretation, that is to say, provided (external world) referents are assigned to its elements (Bunge 1973, Glymour 1992). In such a framework, one might hope to be in position (at least ideally) to fix the reference of the terms of a set of statements (say a theory) in imposing some constraints on the class of its admissible interpretations. This view about reference determination, Putnam names the "received view of interpretation" (Putnam 1981, 29), states that by fixing truth-values of whole sentences (or sentences of whole theories and formalized languages) through compliance with operational and theoretical constraints, a correct interpretation can be singled out and reference of individual terms can be established. If this view were correct, it would be possible to escape Putnam's criticism of the traditional view of meaning and its associated requirement for semantic externalism. If operational and theoretical constraints were enough to interpret a sign, a group of signs or a theory, this could be done in relying only on individual mental experience (Putnam 1981, 32).

However, the received view of interpretation is incorrect according to Putnam. He establishes this conclusion through his famous 'model-theoretic argument' (Putnam 1981, chapter 2, 1983b, 1994 [1989]). The central claim of this argument consists in a rejection of the idea that fixing the truth-values of whole sentences permits determining the extension or the reference of the terms composing them. The way Putnam builds his argumentation renders the argument extremely general. First, Putnam concedes that we managed to formalize sentences, languages or theories we seek to interpret (Putnam 1994 [1989], 352). Second, Putnam grants that operational and theoretical constraints can become restrictions on the class of admissible interpretations in fixing the truth-values of the sentences of these languages or theories. Putnam notices that a "crude operationalism" based on operational constraints understood as perfect correlations (bi-conditional of the type: "a certain sentence [...] is to be true if and only if a certain test result is observed") constitutes a too naïve approach unable to account for probabilistic links between theory and experience and for the dependence of these links upon theory revisions. Putnam admits that one can nonetheless rely on relaxed "operational" constraints (of the type: "an admissible interpretation is such that most of the time the sentence S is true when the experiential condition E is fulfilled") to fix the truth-values of sentences and to restrict the class of admissible interpretations (Putnam 1981, 30). Following Peirce, Putnam even accepts to mobilize a kind of

“ideal set of operational constraints” we might successively and progressively approximate in the course of the inquiry:

one can take the view that the ideal set of operational constraints is itself something that we successively approximate in the course of empirical inquiry, and not something we just stipulate. In short, one can take the view that it is the operational constraints that rational inquirers would impose, if they observed and experimented and reasoned as well as is possible, the constraints that they would adopt in the state of ‘reflective equilibrium’. (Putnam 1981, 30)

In addition to operational constraints, Putnam recognizes that theoretical constraints of the type usually involved in the processes of theory acceptance (epistemic values such as simplicity or theoretical principles like the one of causality, ‘all effects have causes’) can also be employed to restrict the class of admissible interpretations of a formalized language. Theoretical constraints can thereby contribute to truth-valuation of its sentences. For instance, a theoretical constraint can take the following form: “an admissible interpretation is such that it renders true sentences which have been accepted for a long time, except where this would require undue complication in the theory consisting of the set of sentences true under the interpretation, or too great a revision in the operational constraints” (Putnam 1981, 31). For Putnam, operational and theoretical constraints (potentially ideal constraints we would apply at the Peircean limit of the inquiry) might well permit fixing the truth-values of each sentence of formalized languages to be interpreted. Even more radically, what Putnam calls “realist truth” (Putnam 1994 [1989], note 5 p. 353) or truth “from a ‘God’s eye view’” (assuming, as realism traditionally does, that the notion of a God’s eye view makes sense)” can be admitted as a theoretical constraint (Putnam 1999, 16). This means that each sentence of the formalized language can be assumed as truth-valued independently of the possibility of fixing these truth-values through operational and theoretical constraints we can stipulate as effective (or even ideal) inquirers.

The criticism of the received view of interpretation Putnam provides with his model-theoretic argument operates beyond this point; and in this resides part of its considerable strength<sup>7</sup>. The argument runs independently of issues concerning the epistemic or non-epistemic nature of truth. We don’t need to know what the theoretical and operational constraints fixing the truth-values are (or would be in the ideal limit of the inquiry). It is not even required to believe that “it is operational and theoretical constraints that determine the class of ‘true’ sentences”; this will not impact the model-theoretic argumentation (Putnam 1983a, ix-x). In fact, it is possible to simply assume that truth-values of sentences of the discourse to be interpreted are somehow determined in our actual world. What the model-theoretic argument precisely demonstrates is that fixing the truth-values of the sentences of a formalized discourse (whatever can be the manner this is achieved) does not determine the extension or the reference of its terms. Even more radically, Putnam grants that truth-values of sentences might be settled in any possible world (Putnam 1981, 33, 1994 [1989], 356). The model-theoretic argument still operates starting from this premise, showing that such an extended truth-valuation is not sufficient to fix the reference of terms.

Let’s review how the argumentation runs. Putnam’s model-theoretic argument takes its origin in investigations pertaining to the philosophy of mathematics and concerning the interpretation of set theory. The question at stake was to determine whether fixing the totality of

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<sup>7</sup> This aspect is also important to understand that the model-theoretic argument is not intimately connected with the internalist framework in which it is formulated. As the whole criticism of the traditional conception of meaning it is a part of, it applies as well in the early period still admitting metaphysical realism as in the internalist and commonsense realist phases.



truths expressible through axiomatic set theory might establish the reference of its terms. An answer is provided by a result of formal logic called the “Skolem theorem” or the “Löwenheim-Skolem theorem.” Abstractly put, the “Löwenheim-Skolem theorem asserts that if a set of first-order sentences has a model, that is, an interpretation in which all the sentences in the set come out true, then it has a countably infinite model” (Zeglen 2002, 91). Applied in more common terms to the issue of set theory interpretation, this theorem demonstrates that “the totality of truths about mathematical “objects” expressible in the language of mathematics cannot fix which objects we are referring to even up to isomorphism” (Putnam 1999, 16). The axiomatic set theory by itself cannot provide a unique intended interpretation of its terms. Fixing the truth-values of its sentences would still allow unintended admissible interpretations (Putnam 1983b, 3-4). Provided that mathematical truth does not consist in confrontation with observational findings, establishing the truth-values of the sentences of a mathematical theory is only a matter of theoretical constraints. In the case of languages integrating observational terms, nothing prevents the involvement of operational constraints fixing the values of observational magnitudes and the truth-values of observational sentences. Thereby, the relevance of the Skolem argument can be extended beyond the domain of mathematical theories:

And the Skolem argument can be extended (...) to show that the *total use of the language* (operational plus theoretical constraints) does not ‘fix’ a unique ‘intended interpretation’ any more than axiomatic set theory by itself does. (Putnam 1983b, 4)

I argued that by the use of the same tool Skolem used to prove the theorem that is now called the Skolem Löwenheim Theorem (or, alternatively, by the use of other theorems from the same branch of logic, the branch called “model theory”), one could prove similar results about any language, including everyday language or the language we use in empirical science. (Putnam 1999, 16)

Some authors have questioned the validity of this extension, arguing that the Skolem Löwenheim theorem only applies to consistent theories formulated in first-order extensional languages while second-order logic might be required when it comes to scientific and ordinary languages (Hacking 1983, 104-105). Putnam concedes this last point but claims that the criticism is misled. His model-theoretic argument is not an application of the Skolem Löwenheim theorem outside of his restricted scope. Rather, Putnam mobilizes “a technique – permutation of individuals – which does apply to second-order Logic, modal logic, tensed logic, etc.!” to prove results similar to those of the Skolem Löwenheim theorem (Putnam 1994 [1989], 356 note 11, see also: Putnam 1981, chapter 2 and appendix). Additionally, although Quine already extended the use of the Skolem argument to establish the indeterminacy of reference (Quine 1968), Putnam generalizes the scope of the discussion in admitting truth-valuation in every possible worlds (see the appendix in: Putnam 1981). According to these extended results, while operational and theoretical constraints might permit fixing the truth values of any sentences of a whole language (every day or scientific languages included) – or while, in a realist perspective, we can simply admit that these truth-values are determined – this would not allow singling out a unique correct interpretation of the concerned language. There would always be “infinitely many different interpretations of the predicates of a language which assign the ‘correct’ truth-values to the sentences in all possible worlds, no matter how these ‘correct’ truth-values are singled out” (Putnam 1981, 35). A “huge multiplicity of unintended interpretations, including quite bizarre ones” would still be admissible (Putnam 1999, 16).

Putnam illustrates this point through his famous discussion of the sentence S ‘A cat is on a mat’ (Putnam 1981, 32-38), in which the verb ‘is’ is tenseless, meaning as well was, is or will be. The intended interpretation S is obviously that ‘cat’ refers to cats and ‘mat’ to mats. Under such a

standard interpretation, S is true in every possible worlds in which at least a cat is (was or will be) on a mat. Putnam shows that we can easily build an unintended (and bizarre) interpretation of S that preserves truth-valuation in any possible world. For instance, one can partition the sets of possible worlds in three sub-sets. Let A be the set of worlds in which “some cat is on some mat, and some cherry is on some tree”, B the set of worlds in which “some cat is on some mat, and no cherry is on any tree”, and C the set of remaining worlds. It is then possible to define an unintended interpretation expressed by extension-functions for ‘cat’ and ‘mat’ ranging over the possible worlds so partitioned. The extension of ‘cat’ is formed by cherries in worlds belonging to the subsets A and C, and by cats in those belonging to B. The extension of ‘mat’ is formed by trees in A, by mats in B, and (arbitrarily) by quarks in C. The intended and unintended interpretations leads to the exact same truth-valuation in any possible world while attributing different extensions to the terms ‘cat’ and ‘mat’. Moreover, under the non-standard interpretation ‘cat’ refers to cherries and ‘mat’ to trees in our actual world, clearly illustrating its unintended (though admissible) character. Fixing the truth-values of S in any possible world does not suffice to rule out such unintended interpretations.

To complement his argumentation, Putnam discusses different rejoinders. The first of them is based on evolution and survival. The claim is that our survival cannot be explained without assuming that evolution provided us with the ability to settle true beliefs about the external world and to adequately refer to the objects it contains and to their properties. According to Putnam the argument fails. The model-theoretic problem reappears. We can always build many different interpretations of the “directive beliefs” that are crucial for our survival in which that both the truth-conditions of these beliefs and our subjective experiences are left unchanged (Putnam 1981, 39-40):

Nature gets us to process words and thought signs in such a way that sufficiently many of our directive beliefs will be true, and so that sufficiently many of our actions will contribute to our ‘inclusive genetic fitness’; but this leaves reference largely indeterminate. (Ibid p. 41)

The second rejoinder Putnam discusses consists in an attempt at defining the relation of reference as a physical relation. In the framework of such a semantic physicalism, one might try to elucidate reference in stating a condition like “x refers to y if and only if x bears R to y” which can be true and empirically verifiable. But here again, the model-theoretic argument applies. The truth of “x bears R to y” leaves its reference indeterminate. This will at best define one determination of the relation of reference per admissible interpretation (Putnam 1981, 45, 1994 [1989], 359-360). A prominent instantiation of semantic physicalism is constituted by approaches that try reducing reference to causal relations<sup>8</sup>. But this move cannot escape the Skolem problem:

If ‘refers’ can be defined in terms of some causal predicates or predicates in the metalanguage of our theory, then, since each model of the object language extends in an obvious way to a corresponding model of the metalanguage, it will turn out that, *in each model M*, *reference<sub>M</sub>* is definable in terms of *causes<sub>M</sub>*; but unless the word ‘causes’ (or whatever the causal predicate or predicates may be) is already glued to one definite relation with metaphysical glue, this does not fix a determinate extension for ‘refers’ at all. (Putnam 1983b, 18)

To summarize, arguments from modern logic and model theory seem confirming Putnam’s conclusion that the traditional view about meaning is not acceptable – or, alternatively put, that

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<sup>8</sup> This type of reductive account is to be distinguished from causal theories of reference claiming that causal relations are crucial components of reference. As exposed in section 2.4, Putnam mobilizes such non reductive causal theory of reference.

semantic externalism is required. The reference of our terms cannot be singled out relying only on our mental or psychological states through the application of some constraints on the class of admissible interpretations of our language (operational and theoretical constraints or more directly constraints assuming, in a realist perspective, the existence of truth-values of whole discourses): “no matter what operational and theoretical constraints our practice may impose on our use of a language, there are always *infinitely many different reference relations* (...) which satisfy all the constraints” (Putnam 1983a, ix). One might nonetheless argue that, in relying only on our psychological states, we could at least correctly establish referents of terms pointing entities we observe. This in turn may permit determining or securing reference of terms pointing non-observable entities. Even if one concedes the first part of this claim, many different relations of reference could still be admissible that attribute the correct truth-values to sentences, correctly single out referents of observational terms, but diverge about reference of non-observational terms.

In fact, there are always many different reference relations that make [a theory] *I* true, if *I* is a consistent theory which postulates the existence of more than one object. Moreover, if *I* contains non-observational terms (no matter how the line between the observational and the non-observational may be drawn), then there are reference relations that assign the correct extensions to the observation terms and widely incorrect extensions to the non-observational terms and *still* make *I* come out true, as long as *I* does not actually imply a false observation sentence. As I put it in “Models and Reality,” one can always find a reference relation that satisfies our observational constraints and also satisfies such theoretical constraints as simplicity, elegance, subjective plausibility, and so on, under which such a theory *I* comes out true. (Putnam 1994 [1989], 353)

This would amount admitting a quite odd reference relation that permits leaving untouched the truth-values of a discourse even under a change in the extension of most of its terms (Putnam 1983b, 15-16, 1994 [1989], 356). This last point allows me opening the discussion of another type of answer one might try to oppose to Putnam’s conclusion in favor of semantic externalism. In fact, logical positivists such as Carnap or Reinchenbach proposed a view about meaning that might be consistent with the restricted possibility of fixing the extension of observational terms only while letting the reference of other terms indeterminate.

### **2.3. Putnam’s criticism of logical positivist views about meaning and reference**

To complete the analysis of the soundness of Putnam’s criticism against the traditional conception of meaning, it worths investigating the validity of logical positivist views about meaning and reference. These views might allow accommodating the conclusions of the model-theoretic argument with the idea that meaning and reference can be fixed based on mental or psychological states only. Put in a nutshell, a verificationist approach of meaning might defuse Putnam’s criticism in dissolving the problem posed by the indeterminacy of the reference of non-observational terms.

Let’s discuss this in more details. As we just saw, Putnam arrives at the conclusion that even if reference of observational terms and truth-values of all sentences are taken to be fixed by constraints on admissible interpretations, all the other objects in the universe can be permuted. Among other issues, this functioning of the reference relation raises the problem of metaphysical skepticism:

Metaphysical skepticism arises whenever it seems that two or more ways are possible in which the world could be constituted and *not even all possible evidence* would be sufficient to determine in which of these ways the world actually is constituted. (Glymour 1992, 106)

Logical positivists such as Carnap projected to answer metaphysical skepticism in reconstructing the various notions mobilized in scientific investigation through the tools of modern logic (Glymour 1992, 114). They committed to a widely received view in the philosophy of science (at least since the 1970s) stating that scientific meaning and understanding take their foundation into observation sentences (McGuire 1992, 140-141). Logical positivists diluted the issue of metaphysical skepticism in restricting the range of meaningful sentences to those complying with the verifiability principle: a claim is meaningful if and only if it can be verified (Glymour 1992, 115). Initially, the idea was to secure the meaningfulness of scientific theories in requiring for all their terms to be associated with an operational procedure. This requirement rapidly proved too demanding. For instance, in kinetic gas theory, we have no operational procedure that could be associated with the term ‘velocity of individual gas particles’. We can at best measure magnitudes that are only remotely connected such as mean kinetic energy (Cartwright 2005, 192-193). This led to the admission of the famous dichotomies between observational and theoretical terms and between observational and theoretical sentences. The formal language of a theory is thereby divided into a part embedding claims about observation and a more theoretical part. These two parts are distinguished mainly through differences in vocabulary. Observational sentences are composed by observational terms denoting immediate experience while theoretical sentences are expressed by symbols that do not refer to observable things, properties or events (Glymour 1992, 114 and 118). Only observational terms are directly interpreted. The meaning of the whole formal language is secured through the requirement of reducibility of theoretical terms to observational ones through formal and logical definitions (Putnam 2002c, 23). According to Carnap’s conception, the meaning of theoretical terms is specified by stipulated rules or conventions, called ‘meaning postulates’. These rules are thought to be analytic. They indicate “how we will use the theoretical terms” and “what observable circumstance would count as determining instances” of them (Glymour 1992, 118). In this logical positivist framework, a scientific theory may be conceived of as an initially uninterpreted axiomatic system “which gains ‘empirical meaning’ as a result of a specification of meaning *for the observation terms alone*.” It can be viewed as a “partially interpreted calculi” in which the theoretical terms are only “partially interpreted” or “partially understood” (Putnam 1975b [1962], 215-216).

To summarize, the logical positivist account of the meaning of scientific theories is based on a weakened form of the verifiability principle that requires from meaningful sentences to be either verifiable or “composed of predicates for which meaning postulates exist” (Glymour 1992, 118). This allows framing what can be called the standard or received conception of the structure of scientific theories:

Its elements are the assumption that scientific language can be formalized, a division between observation terms and theoretical terms, a set of meaning postulates or stipulations relating the two sorts of terms, and an analysis of confirmation in terms of relations among sentences in the same vocabulary. The standard conception is the closest modern philosophy of science ever came to a logical successor to the Kantian picture. The problems of metaphysical skepticism are solved in the standard conception by noting that the terms in metaphysical disputes lack adequate meaning postulates to permit the confirmation of disputed metaphysical claims. A picture of how scientific knowledge is possible emerges: Meaning postulates constrain scientific language, and observations generate observational reports that confirm or disconfirm scientific hypothesis. (Glymour 1992, 118-119)

As indicated by this quotation, the standard conception of the structure of scientific theories inspired from logical positivism dilutes the problem of metaphysical skepticism. The way this is reached also seems opening a road for avoiding the more general conclusion of the model-theoretic argument in favor of semantic externalism. According to Carnap's weak form of the verifiability principle, only observational terms require a unique interpretation. Reichenbach's conception of meaning is even more straightforward: two claims sharing exactly the same pieces of evidence for or against them have the same meaning, they are synonymous (Glymour 1992, 117). The problem posed by the model-theoretic argument is thus overcome, not by finding a way of determining the reference of theoretical terms, but in claiming that they have no meaning beyond their connection with observational terms. There are no meaningful questions to be asked about the correct or intended interpretation of non-observational terms. Because no operational procedure – no verification – can be associated with the different competing interpretation of theoretical terms, the indeterminacy of reference concerning them can be admitted. Therefore, if interpreting a discourse requires nothing more than fixing the extension of observational terms (which denote the deliverance of immediate experiences), nothing prevents the settling of a semantic conception that complies with the traditional view about meaning. Grasping the meaning and reference could be seen as “an individual psychological act,” as “just a matter of being in a certain psychological state” (Putnam 1996 [1975], 5-6). This would offer a way out semantic externalism.

However, many criticisms have been developed against this standard conception of the structure of scientific theories (see for instance: Kuhn 1996 [1962], Quine 1976 [1951], Glymour 1992, Nola and Sankey 2000b, Castle and Jones-Imhotep 2007). Putnam himself questions in many occasion the soundness of this view (Cartwright 2005, 193). For instance, he argues that expressions such as ‘things too small to be seen with the naked eye’ were meaningful before the invention of the microscope. Their meaning did not change at this occasion. It seems therefore incorrect to restrict meaningfulness to the domain of verifiable statements (Putnam 1999, 56). Putnam also wonders about the tenability of the two dichotomies between observational and theoretical terms on one side and between observational and theoretical statements on the other side. Putnam points out that the very notion of ‘observational term’ is loosely defined in Carnap's writings. Observational terms seem to be predicates designating things, events, properties of things (or events) and relation between things (or events) that are directly observable and for which extremely simple test procedures exist (hearing, listening, touching ...). But according to Putnam, Carnap overlooks the fact that such observational terms can always apply to unobservable things. In turn, this fact blurs the dichotomy between observational and theoretical terms. If an observational term has to, by principle, refer only to observable entities, then no term can count as observational (Putnam 1975b [1962], 217-218). This problem cannot be avoided in claiming that we start from a stage deprived from any possibility to refer to unobservable things (before admitting the logical positivist scheme). A sentence such as ‘things too little to see’ clearly refers to unobservable entities without mobilizing any theoretical terms. Conversely, calling theoretical a term that designates an unobservable entity is also problematic. Should terms referring to emotions be considered as theoretical because they do not refer to public observable things? Etymologically speaking a theoretical term should be a term belonging to a scientific theory. But then, a term like ‘satellite’ should count as theoretical although what it refers too can be observable (Putnam 1975b [1962], 219). More broadly, the introduction of theoretical terms seems to require the admission of broad spectrum terms and imprecise notions from common language as primitive. Such an admission hardly complies with the observation-theoretical terms dichotomy. According to Putnam own words:

If we take as primitives not only the ‘observation terms’ and the ‘logical terms’, but also the ‘broad-spectrum’ terms referred to before (‘thing’, ‘physical magnitude’, etc.), and, perhaps, certain imprecise but useful notions from common language – for example, ‘harder to accelerate’, ‘determines’ – then we can introduce theoretical terms without difficulty. (...) And once again, if someone says: ‘I want you to introduce the theoretical terms using *only* Carnap’s *observation terms*’, we have to say, apart from special cases (like that of the ‘classical’ notion of an elementary particle), that this seems impossible. But why should it be possible? And what philosophic moral should we draw from the impossibility? – Perhaps only this: that we are able to have as rich a theoretical vocabulary as we do have because, thank goodness, we were never in the position of having *only* Carnap’s observation vocabulary at our disposal. (Putnam 1975b [1962], 227)

Over and above the issues undermining the dichotomy between observational and theoretical terms, distinguishing between observational and theoretical statements is also problematic. Such a distinction appear crucial, notably in the perspective of theory confirmation (observation reports then qualifies a statement that won’t be questioned in the context of an ongoing process of confirmation). However, it cannot be established under the form of a radical dichotomy based on the (observational or theoretical) vocabulary a (respectively observational or theoretical) statement is expressed with. The sentence: ‘we observed the creation of two electron-positron pairs’ exemplifies the fact that observation reports can include theoretical terms (Putnam 1975b [1962], 219). Finally, Putnam notices that the view of the structure of scientific theories based on the two dichotomies between observational-theoretical terms and statements cannot always accommodate what our actual history of science teaches us about how scientific theories should be like. Certain theories such as Darwin’s theory of evolution (at least in its initial formulation) refer only to observable entities (Putnam 1975b [1962], 217).

Another type of criticism Putnam addresses to the logical positivist conception approach targets the meaningfulness of the notion of ‘partial interpretation’. He doubts that this notion can be provided with a clarified sense according to which the talk about non-observable terms could be more than “a mere ‘façon de parler’” (Putnam 2002c, 23-24). His initial discussion of this issue, in *What theories are not* (Putnam 1975b [1962]), was meant to be a defense of scientific realism (Baghramian 2013, 6). It precisely attempted at defusing the idea that the indeterminacy of the reference for theoretical terms might become admissible when mobilizing the notion of partial interpretation. Putnam sees only three possible understanding one could try to give to this notion (Putnam 1975b [1962], 221). One of them may “say that to partially interpret a formal *language* is to *interpret part* of the language.” But this move seems useless in that it renders theoretical terms merely meaningless. They would have to be considered as mere instruments, which does not appear credible to Putnam’s mind (Putnam 1975b [1962], 224)<sup>9</sup>. In another understanding Putnam reviews, “to ‘partially interpret’ a theory is to specify a nonempty class of intended models.” This sense fails serving the purpose of logical positivists because theoretical terms are necessary to specify such a class. Moreover, under this reading, a theory having false observational consequences would have to be rejected as meaningless provided it possesses no interpretation. It would surely be more adequate to be in position of judging such a theory as false rather than as senseless (Putnam 1975b [1962], 222-223). The last discussed definition of ‘partial interpretation’ equates ‘partially interpret’ with “specify a verification-refutation procedure.” But this move is as problematic as the two formers. Putnam gives the example of dispositional terms like ‘soluble’ (simplifying the discussion in assuming that immersion in water is the only known test for

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<sup>9</sup> Putnam’s rejection of instrumentalism about theoretical terms can be linked with his ‘no miracle argument’ (see for instance: Putnam 1975a [1962], 72-73, 1978, 18-22).

solubility). Putnam wonders whether it is admissible to say that ‘something is soluble’ has a totally undefined truth-value when this something is not immersed in water. Even worse, noticing that all sugar cubes dissolve and inferring from this that all sugar is soluble even when cubes are not immersed in water could not be described as a discovery. It should be considered as a modification of the verification procedure associated with ‘sugar is soluble’ and therefore as a meaning change. This radically conflicts with the results of linguistic theory. It seems far more adequate to claim that only the understanding of the method of verification (and not the meaning of the term itself) has been modified by the discovery (ibid). Understanding partial interpretation as specification of verification procedures also leads to unacceptable conclusions with respect to theoretical terms. For instance, while the statement ‘there are helium atoms in the sun’ would be meaningful and true, the sentence ‘there are helium atoms in a not-too-tiny region inside the sun’ would be meaningless and would receive a totally undefined truth-value in virtue of the absence of any possible procedure of verification (Putnam 1975b [1962], 224). It thus seems that no clarified definition can be provided to the notion of partial interpretation:

To sum up: we have seen that of the three notions of ‘partial interpretation’ discussed, each is either unsuitable for Carnap’s purposes (starting with observation terms), or incompatible with a rather minimal scientific realism; and, in addition, the [third] notion depends upon gross and misleading changes in our use of language. Thus in *none* of these senses is ‘a partially interpreted calculus in which only the observation terms are directly interpreted’ an acceptable model for a scientific theory. (Putnam 1975b [1962], 224)

These two first criticisms targeting observational-theoretical dichotomies and the notion of partial interpretation comes from Putnam early writings, such as his article *What theories are not* first published in 1962. It might be worthy to mention a more recent concern with respect to the tenability and the legitimacy of the verifiability principle itself.

In *Reason, Truth and History* (Putnam 1981, 105-113), Putnam argues that the verifiability principle is self-refuting. The statement expressing this principle (‘a claim is meaningful if and only if it can be verified’) can be considered neither as analytic nor as empirically testable. Therefore, the verifiability principle is itself cognitively meaningless. In such a perspective, the principle constitutes a kind of blind spot of logical positivist theory of meaning and should not be straightforwardly admitted. At minimum, reasons ought to be provided that support its legitimacy. One attempt at meeting this challenge consists in claiming that the verifiability principle capture or explicate the pre-analytical notion of meaningfulness. However, as we saw in the previous paragraph, the strong form of the verifiability principle (equating the meaning with the method of verification) does not match the pre-existing understandings of the notions of ‘meaning’ and ‘meaning change’ like those admitted in linguistic. Even under his weak form (equating ‘being meaningful’ with ‘being testable’), the verifiability has to be seen as a redefinition of meaningfulness. In itself, this redefinition could be admitted. But it should then be harmless to the extent that ‘meaningless’ would only correspond to ‘not empirically testable’. But logical positivists intend more than this. In their attempted answer to the issue of metaphysical skepticism, the claim that metaphysical statements are meaningless signifies that they are deprived of any cognitive content, that they cannot be debated, discussed or legitimized. What logical positivists are proposing in arguing that the verifiability principle captures or explicates a pre-existing notion of meaningfulness thus appears as a self-conflicting move. Not only are they redefining the notion in a way that does not seem compatible with linguistic, but they additionally retain “the pejorative connotations of being ‘meaningless’ in the customary (linguistic) sense, i.e. being literally without

sense” (Putnam 1975 [1965], 122-123). Another solution proposed to defend the admissibility of the verifiability principle comes from Reichenbach. In his view, the principle is an adequate definition of meaningfulness because it captures all differences in the usages of terms (in meaning) that are relevant to behavior (Putnam 1981, 112). Discussing the objection that non-empirical terms such as divinity might imply difference in behaviors, Reichenbach proposed to translate a sentence like “cats are divine animals” into “cats inspire feelings of awe in cat-worshippers.” But, as noticed by Putnam, it is clear that some implications in terms of behavior of the first sentence about cat’s divinity are not reflected into its translation. In particular, a cat-worshipper would not adopt the same behavior when considering the two sentences (*ibid*). Carnap also provided some rationales in favor of the verifiability principle. According to him, the principle has to be considered as a rational reconstruction. Such reconstruction cannot be more than a mere proposal whose acceptance answers only to the logical and empirical consequences of its admission (instrumental assessment of the adoption of the proposal). In this perspective, there can be several divergent rational reconstructions of a given issue and one should be tolerant with respect to each of them. This principle of tolerance, Carnap claimed, also apply to the verifiability principle, grounding its tenability. Putnam believes that this move is circular (*ibid*). The principle of tolerance already involves the principle of verifiability in stating that anything going beyond the instrumental assessment of rational reconstructions is cognitively meaningless. The principle of tolerance can be of no help with respect to the legitimation of the verifiability principle.

The different criticisms recollected here allow questioning the viability of the logical positivist conception of meaning and reference. Returning to the concern expressed at the beginning of this section, such an approach does not seem to provide practicable way out of Putnam’s criticism of the traditional view about meaning that evidences the necessity for semantic externalism. The logical positivist conception of meaning and reference fails to render palatable the indeterminacy of reference (even when restricted to theoretical terms only) deriving, through the model-theoretic argument, from the claim that meaning and reference have somehow to be exclusively a matter of psychological or mental states. In the following, Putnam’s arguments criticizing the traditional view about meaning will therefore be considered as conclusive. Accordingly, the alternative account of meaning and reference Putnam proposes during his early period to comply with semantic externalism can now be investigated in more details.

## **2.4. Putnam’s early account of meaning and reference**

Up to this point, I exposed Putnam’s various criticisms establishing the failure of the traditional conception of meaning that is shared by most of realists and idealists philosophers (Putnam 1983a, vii). According to him, this view is misled to the extent it claims at the same time that grasping the meaning of a term is only a matter of being in a certain (individual) psychological or mental state, and that meaning so understood (in the Fregean sense of the cluster of concepts associated with the term – meaning as intension) is enough to determine what the term refers to. Briefly summarized:

If we limit psychology, for the moment, to ‘solipsistic’ description, description of what happens in the individual considered in isolation from his environment, then no psychological facts in this narrow sense, no facts about introspectible mental phenomena (or even unconscious mental phenomena) and no facts about brain processing can fix any correspondence between a word or ‘representation’ and anything external to the mind or brain. (Putnam 1983a, ix)



Contrastively, Putnam argues that semantic externalism should be admitted. Accordingly, meaning, referring and more broadly knowing or believing cannot be conceived as pure internal states depending only upon speakers' body and brain but also have to be accounted for in relying on features of their environment. In general, meanings of terms include their extensions (referents of the external world). And terms' intensions cannot fix these extensions alone. External factors are involved. The endorsement of semantic externalism is not a feature specific to Putnam's early period characterized by the (implicit) admission of metaphysical realism. It is confirmed in the later periods of internal realism and commonsense realism (see for instance: Putnam 1981, chapter 2, 1999, 103-106). By contrast, the explicit account of meaning and reference Putnam proposes in compliance with semantic externalism will undergo various modification along the evolution of Putnam's thinking, in particular concerning the delineation of what 'external world' might mean, that is, concerning the topic of realism (transition from metaphysical realism to internal realism and from internal realism to commonsense realism). Despite these modifications, Putnam's early approach of meaning and reference grounded in metaphysical realism should not be overlooked. First, its study permits properly understanding Putnam's later developments (which I discuss in next sections 3 and 4). In addition, many features of this approach survive the transitions to internal realism and to commonsense realism. Finally, some of these persistent aspects also correspond to points of connections one can draw between Putnam's and Kuhn's works. These constitute sufficient reasons to have a closer look at this early semantic conception.

As we saw in section 2.1, Putnam's rejection of the traditional view of meaning is primarily based on the issue of the reference of natural kind terms such as 'water'. His early account of meaning and reference thus attempts at understanding what entitles us to refer to natural kinds, to fix extensions of natural kind terms. According to Putnam, there is an indexical component in the determination of the extension of such terms (Putnam 1996 [1975], 28). The actual nature of the particular things referred to is involved. In using a kind term, we intend to refer to entities that share a similar nature with other things we previously referred to through this term (independently of the correct, approximate or possibly misled descriptions we are able to establish about these entities).

Our theory can be summarized as saying that words like 'water' have an unnoticed indexical component: 'water' is stuff that bears a certain similarity relation to the water *around here*. Water at another time or in another place or even in another possible world has to bear the relation same<sub>i</sub> to *our* 'water' *in order to be water*. (Putnam 1996 [1975], 19)

Such a process of extension fixing through relations of similarity between the things referred to themselves (by opposition to mobilizing only descriptions) can be adequately accounted for in terms of 'rigid designation' (Putnam 1996 [1975], 16-17). Following Kripke, Putnam distinguishes two modes of use of a term: the "rigid" and the "nonrigid" uses (Putnam 1990a, 58-59)<sup>10</sup>. When employing an expression such as "the president" while Nixon was president of the United States, a rigid use could be: "The president would never have become president if his mother had not

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<sup>10</sup> An important point has to be made here. Mobilizing *Is Water Necessarily H<sub>2</sub>O?* (Putnam 1990a) for the present exposition of Putnam's early account of meaning and reference is not perfectly legitimate to the extent this article belongs to the internalist period in which the rejection of metaphysical realism deeply impacts the consequences of rigid designation. In particular, with the transition to internal realism, the scope of rigid designation is restricted to physically, instead of metaphysically, possible worlds. Moreover, the notion of physical possibility is reconsidered. It becomes "*internal* to physical theory itself" (p. 71). Put in a nutshell, early essentialism is abandoned. This being said, the basic exposition of the notion of rigid designation in this more recent article is not impacted by these differences and seems to me clearer than the one provided in *The meaning of 'meaning'* that mobilizes explicitly the semantic of possible world. I therefore take the liberty to use quotations from this article when this generates no ambiguity and permits clarifying the discussion.

encouraged him to aim high.” “The president’ rigidly refers to Nixon. Contrastively, “The president might have been Hubert Humphrey” constitutes a nonrigid use of the same expression. In this case, the person denoted by ‘the president’ can vary. One can use the notion of sortal identity to frame the situation. In the rigid use, the entity of the hypothetical situation “is person-identical with the actual president at the time of the speech-act.” In the nonrigid use, “the person denoted must satisfy the descriptive condition *in* the hypothetical situation (whether he satisfies the descriptive condition in the actual world or not)” (ibid). The distinction between the rigid and nonrigid uses of a term is illuminative to understand Putnam’s view about the reference of natural kind terms. Expressed through the lens of rigid designation, one can say that natural kind terms such as ‘water’ refer according to rigid uses that rely on ‘substance-identity’. A natural kind term (or substance term) is used to designate the entities that are substance-identical with things of our actual world previously denoted when employing the term in the past, even if nothing is known about the deep structure of this substance or about the laws it obeys. Using a natural kind term in a nonrigid way is abnormal. What is referred to through such a term is not whatever satisfies a given description in different hypothetical situations (independently of the fact it satisfies it in our actual world). According to Kripke and Putnam, a natural kind term is meant to refer to a set of entities sharing a certain nature – a certain essence – even in cases in which this nature is approximately known or even unknown. The referent is thus not determined directly by a description we could provide but rather in virtue of its being of a similar nature with respect to other earlier bearers of the same term. Under the form exposed here, it is clear that Putnam’s and Kripke’s approach of reference mobilizes essentialism. Broadly speaking, an attribute of a thing is essential when it is necessarily possessed by this thing (Cartwright 1968, 615). Differently put, an essential property is “a property which something has in every possible world” (Putnam 1981, 208). In the case of Putnam and Kripke, essentialism is crucial to consider real entities or kinds as substances that have characteristic essences (for instance physical or chemical structures) independently of the knowledge speakers might possess or not about them (Bertolet 2008). This essentialism is central for the discussion of the twin earth water example. Although descriptions associated with the term ‘water’ (in the context of pre-Daltonian chemistry) might be identical on earth and twin earth, referents are different. Using ‘water’, someone on earth ultimately refers to anything that shares the same chemical structure as entities previously designated by that term, namely any (liquid) substance possessing the chemical composition H<sub>2</sub>O (neglecting impurities). The same process of reference applies on twin earth with respect to any substance with the chemical structure XYZ. In the same vein, this essentialist approach allows securing the reference of natural kind terms across scientific discoveries. In fact, with the invention of modern chemistry, nothing changes concerning what ‘water’ refers to on both planets.

As stipulated by semantic externalism, meaning and reference cannot be properly accounted for in terms of knowledge that would be analytically associated with our terms. Deep structures or essences of entities are crucial for the determination of terms’ meaning. They constitute the primary external factors involved in the fixing of terms’ extension. However, claiming that such external factors are at play is not yet elucidating the way they are mobilized in practice. One can still wonder what connects them with terms and language-users. Putnam confesses to be in debt to Kripke for suggesting that language-users and external referents might be linked through a certain type of causal relationship (Putnam 1975 [1973], 198):

Linguistic competence and understanding are not just *knowledge*. To have linguistic competence in connection with a term it is not sufficient, in general, to have the full battery of usual linguistic knowledge and skills; one must, in addition, be in the right sort of relationship to certain distinguished situations

(normally, though not necessarily, situations in which the *referent* of the term is present). It is for this reason that this sort of theory is called a ‘causal theory’ of meaning. (Putnam 1975 [1973], 199)

Putnam thus endorses a ‘causal’ theory of meaning or reference. A crucial point needs to be clarified here. The mobilizing of the notion of causal links in Putnam’s and Kripke’s approaches might seem in contradiction with Putnam criticisms – based on the model-theoretic argument and exposed in the preceding sections – of the positions conceiving the relation of reference as a causal relation (see for instance: Putnam 1983b, 17-18, 1994 [1989], 358-360). However, Putnam’s causal theory of reference is not meant to define reference as a causal relationship, but rather “to say something about how reference is fixed” (Putnam 1983b, 17). In other context, Putnam also talks about “historical” relations (Putnam 1983b, 17). The causal relation Putnam is relying on is not a causal link between the speaker using a term and its bearer. It is a relation between a speaker intending to refer in employing a given term and a situation in which a contingent and contextual connection has already been established between the term and its bearer. The existence of this type of initial situation, called “introducing event,” “naming ceremony” or “baptismal event” (Putnam 1975 [1973], 200, 1983b, 17, Shapere 1989, 425), is required for a given term to properly refer. A naming ceremony is a way of pointing out “a standard,” “the stuff *in the actual world*” such that for any entity to be a member of the extension of a term it has to bear a certain relation of sameness with this standard (Putnam 1996 [1975], 17).

Based on Putnam’s own illustration in which he imagines himself standing next to Benjamin Franklin performing his famous experiment about electricity (Putnam 1975 [1973], 200), it is possible to give some precisions about how such grounding situations can look like. Franklin might simply utter, while observing the kite and the lightning, ‘here is a lightning bolt’. This would amount to forge a very basic connection between the term ‘lightning bolt’ and what it refers to through “an ostensive definition” (Putnam 1996 [1975], 15). But Franklin could also indicate that ‘lightning bolt’ is an electrical phenomenon generated by flowing electrical charges. Doing this, Franklin would introduce not only a name but also a definite description in connection with a phenomenon of the actual world<sup>11</sup>. But the description itself is not necessary for the introduction of the name. This dispensability of an associated description also implies that the process of reference is secured even when a term is introduced accompanied by an approximate or a completely incorrect description of the referent (Putnam 1975 [1973], 202). One can notice that this solves the problem of the reference of (theoretical) terms designating unobservable entities<sup>12</sup>. In facts, terms can be introduced as causally involved in a phenomenon observed during an introducing event. For instance, Franklin could introduce the term ‘electricity’ in uttering ‘electricity is responsible for this phenomenon’ in front of a lightning bolt (Putnam 1975 [1973], 200-201). Through this event, the reference of ‘electricity’ is rigidly grounded. Its extension embeds any phenomena similar to the one responsible for the particular lightning bolt observed during the introducing event (namely, any flow of electrical charges). So described, the introducing event for ‘electricity’ is extremely close to an ostensive definition. To be sure, a conceptual description is required. The referent of ‘electricity’ is described as causally responsible for something ostensively pointed. But again, a (correct) conceptual description of electricity is not required to introduce ‘electricity’. Franklin

<sup>11</sup> The situation could even be more complex. Franklin could teach someone his description of electricity as involved in lightning bolt (for instance in describing his experiment during a dinner). The other person would then mobilize her own remembrances of clouds and lightning bolts to fix the reference of ‘electricity’. A connection between the term and a phenomenon of the actual world would still be present. Moreover, such a connection is in any case already present through Franklin’s own acquisition of the relevant terms.

<sup>12</sup> The qualification of theoretical is not the primarily important aspect discussed here. Rather, reference of terms pointing unobservable entities is at stake. Whether or not terms belong to a theory is secondary and leaves the process of reference fixing untouched. Theories can be seen as providing highly refined and detailed descriptions of concerned terms’ referents.

could have provided, in addition, a more or less adequate description of electricity mentioning the fact that it corresponds to a flow of charges and is also responsible for other observable phenomena. Thus, terms designating unobservable entities can be introduced through the same process as other terms. The fact that, in this case, descriptions are required to picture intended referents as responsible for observed phenomena does not change the story<sup>13</sup>. Descriptions are merely tools for picking out intended referents. As it is the case for other terms, terms designating unobservable entities can rigidly refer to the extent they are employed in connection with introducing events during which paradigmatic examples of referents have been singled out.

In sum, Putnam's causal approach pictures reference as a "contextual, contingent, conventional connection" between a name and its bearer (Putnam 1981, 3). This connection is not a causal one. It is established at the occasion of introducing events during which actual entities and their deep structures or essences are singled out. Then, causal-historical relationships between language-users employing terms and corresponding introducing events support the process of reference. It enables speakers to use terms rigidly referring to whatever is similar to (whatever possesses the same essence as) referents picked out during introducing events. This causal view of reference applies, in the first place, to the reference of proper names, physical magnitude terms or natural kind terms (Putnam 1975 [1973])<sup>14</sup>. Causal-historical relationships can stand between a language-user and her own direct experiences of the introducing events of the terms she employs. But they can also be socially mediated, under the form of chains of transmissions between different speakers (Putnam 1975 [1973], 202, 1996 [1975], 29). A term, associated with determined referents, can be "introduced into someone's vocabulary (...) whether by an introducing event, or by his learning the word from someone who learned it via an introducing event, or by his learning the word from someone linked by a chain of such transmissions to an introducing event" (Putnam 1975 [1973], 202). The direct experience of introducing events in presence of referents is not required. The minimal requirement for employing a term to rigidly designate is to be "causally linked to other individuals who were in a position to pick out the bearer of the name" thus generating or reproducing an introducing event (Putnam 1975 [1973], 203). Therefore, the division of linguistic labor does not prevent the grounding of rigidly designating terms. Causal-historical relationships with introducing events can be socially mediated.

This account of the way causal-historical relationships between language-users and introducing events fix terms' referents gives a concrete body to semantic externalism. But it does not imply that terms' intensions should be rejected as useless or redundant. Putnam does not claim that meaning is determined only by the nature of what is referred to. This would not be consistent with the well-known examples – such as 'the first heavenly body visible in the morning' and 'the first heavenly body visible in the evening' (both denoting Venus) – showing that different expressions can have different meanings and the same extension. The insight brought to the fore by semantic externalism and by the causal theory of reference is rather that the notion of meaning should be understood as including several components, one of them being terms' referents. Terms' intensions formed by conjunctions of predicates are another component of terms' meaning. As already mentioned, such an integration of terms' extensions in their meaning permits overcoming

<sup>13</sup> For a detailed account of the role of descriptions in reference-fixing, see Sankey (1994).

<sup>14</sup> Putnam claimed the same type of indexicality and rigid designation also occurs in the case of artifact terms such as 'pencil' (Putnam 1996 [1975], 26-27). This is more controversial. According to Schwartz (1996), while Putnam might be correct when it comes to natural kind terms, the traditional approach seems correct about nominal kind terms such as 'pet'. "Something is a pet not because of its nature but because of its relationship to other things, its function or role, and so on. "Pet" is not the name of a natural kind, rather pets form a synthetic class" (p. 87).

the problems raised by the traditional conception. Summarizing through Putnam's own words (one can replace 'elm' by 'water'):

For this reason, it seems to me preferable to take a different route and identify "meaning" with an ordered pair (or possibly an ordered *n*-tuple) of entities, *one of which is the extension*. (The other components of the, so to speak, "meaning vector" will be specified later). Doing this makes it trivially true that *meaning determines extension* (i.e., difference in extension is *ipso facto* difference in meaning), but totally abandon the idea that if there is a difference in the meaning my *Doppelgänger* and I assign to a word, then there *must* be some difference in our concepts (or in our psychological state). Following this route, we can say that my *Doppelgänger* and I *mean something different* when we say "elm," but this will not be an assertion about our psychological states. All this means is that the tokens of the word he utters have a different extension than the tokens of the word I utter; but this difference in extension is not a reflection of any difference in our individual linguistic competence considered in isolation. (Putnam 1996 [1975], 29)

This leads to the idea that a "normal form" for the description of the meaning of a term consists in "a finite sequence" or "a meaning vector" (Putnam 1996 [1975], 29 and 48-49). This finite sequence can be divided in two main parts. It is first constituted by what could be named a 'conceptual' or 'intensional' part that reflects information recollected in speakers psychological or mental states. This conceptual part is completed by the external one constituted by the term's extension (Putnam 1996 [1975], Bertolet 2008, Putnam 1975 [1973]). The conceptual part can embed a "syntactic marker" providing information about the type of word employed (noun, mass noun, adjective, etc.). It can also integrate a conceptual description reflecting what language-users know or believe about the corresponding referents. This description may in particular include a "semantic marker" characterizing the type of entities referred to (animal, period of time, natural kind, liquid, etc.). Usually, the conceptual description is complemented by the more or less valid descriptions language-users possess of the referents. They can consist in (true) theoretical identifications possibly involving scientific laws (Putnam 1990a, 59). This is the case when 'water' is associated with its chemical composition and with the corresponding behavior ruled by the laws of chemistry. Such conceptual components provide criteria permitting the correct use of the term. For instance, they enable language-users to correctly picking out referents. If true theoretical identifications are available, they can constitute "necessary and sufficient conditions for membership in the extension, ways of recognizing if something is in the extension" (Putnam 1996 [1975], 13). It is worth-repeating that these theoretical identifications as well as any other conceptual description do not determine terms' extensions. It is crucial to avoid confusing elements that enable language-users to assess whether or not given entities belong to particular terms' extensions and factors that fix or determine these extensions. Moreover, associations between terms and such intensional components of their meaning vector cannot be seen as analytic. It cannot render terms synonymous with descriptions (possibly based on scientific laws). The evolution of our knowledge with the discovery of the chemical composition of water illustrates very well this point. Let's assume that, in pre-Daltonian era, the conceptual part of 'water' included 'the stuff having such and such observational and superficial characteristics'. Claiming that 'water' was *synonymous* with 'the stuff having such and such observational and superficial characteristics' would then amount understanding the discovery of the chemical composition of water as a re-stipulation of the meaning of 'water'. This impossibility of analytic connections between terms and conceptual descriptions does not imply that there cannot be necessary identification. It is a strength of Putnam's and Kripke's account of reference in terms of rigid designation to permit the *a posteriori* and empirical discovery of epistemically contingent though (metaphysically) necessary statements (Putnam 1996 [1975], 18).

It is nevertheless important to notice that such *a posteriori* discovered necessary statements seem to be neither systematically present nor systematically required in the conceptual parts of terms' meaning vector. Putnam illustrates this point in drawing on the use we make of the terms 'elm' and 'beech'. These terms respectively refer to the set of elms and the set of beeches. However, it is reasonable to assume that many speakers (as it is my case) do not really know the difference between both trees. Such speakers may still be competent users of such terms – they can possess the “linguistic competence” (at least under the form of knowing that elms and beeches are two different types of trees) – without possessing individually the relevant botanical knowledge to the extent the whole linguistic community they belong to integrates botanical experts (Putnam 1996, xvi). The division of linguistic labor is not only mobilized in reference fixing, but also with respect to the knowledge a competent speaker needs possessing:

My suggestion was that knowing the meaning of the word “gold” or of the word “elm” is not a matter of *knowing that* at all, but a matter of *knowing how*; and what you have to *know how* is to play your part in an intricate system of social cooperation. Language, I said, is not a tool like a hammer, that anyone can use by him – or herself. It is a tool like a large ship, which it takes many people working together to operate. I can refer to gold, talk about gold, purchase gold, etc., perfectly well without being able reliably to distinguish gold from non-gold because there are others in the community – experts – upon whom I can rely. In short, there is a *linguistic division of labor*. (Putnam 1996, xvi)

In virtue of the division of linguistic labor, most of language-users in a given linguistic community need not mastering meaning vectors that integrate the best available scientific descriptions. Instead, conceptual parts of terms' meaning vectors mobilized in ordinary language can host “stereotypes” (Putnam 1996 [1975], 30-33). Stereotypes are “conventional ideas, which may be widely inaccurate, of what some object or substance looks like or acts like or is” (Pessin and Goldberg 1996a, xiii). They may express “oversimplified theory” based “low-level generalizations about observable characteristics” of pointed referents (Putnam 1975 [1970], 148, 1990a, 59). In the case of (natural) kind terms, associated stereotypes describe what it is to be “a normal member” of a kind. For instance, the stereotype associated with the word ‘lemon’ (semantically marked as a natural kind term) includes characteristics like yellow peel, tart taste, etc. Stereotypical properties corresponding with ‘water’ may be colorless, transparent, thirsty quenching ... Stereotypes constitute useful information for correct use of terms but can be quite approximate. Our stereotype of ‘fish’ is likely to include “the property ‘breathing through gills’” even though the sentence “‘All fish breath through gills’ is not true” (Putnam 1975 [1973], 196). In particular, stereotypes can enable ordinary language-users picking out correctly normal members of terms' extensions without providing necessary and sufficient criteria for extension membership. The stereotype associated with ‘tiger’ might contain specifications like being striped and four-legged (properties possessed by the normal members of the extension of ‘tiger’). However, a tiger with a missing leg would still be a member of the extension of ‘tiger’ (Putnam 1975 [1970], 140). Thanks to the division of linguistic labor, mastering only imprecise stereotypes may be sufficient for counting as a competent speaker to the extent that more refined knowledge is possessed by a subset of the members of the whole linguistic community. This knowledge is therefore present in the linguistic community “considered as a collective body” in which “the “labor” of knowing and employing these various parts of the “meaning” of [a term]” is divided (Putnam 1996 [1975], 13). Contrastively to this expert knowledge, stereotypes convey some “core facts” reflecting the minimal linguistic knowledge and competence required to be admitted as a competent member of a linguistic community (Putnam 1975 [1970], 148):

What I contend is that speakers are *required* to know something about (stereotypical) tigers in order to count as having acquired the word “tiger”; something about elm trees (or anyway, about the stereotype thereof) to count as having acquired the word “elm”; etc.

The idea should not seem too surprising. After all, we do not permit people to drive on the highways without first passing some tests to determine that they have a *minimum* level of competence; and we do not dine with people who have not learned to use a knife and fork. The linguistic community too has its minimum standards, with respect both to syntax and to “semantics.” (Putnam 1996 [1975], 31)

For instance, in the framework of the linguistic community of actual English speakers, the conceptual part associated with ‘water’ need not including our best theory of chemistry. In such a community, common features of water like being transparent, colorless and thirsty-quenching constitute a sufficient stereotype. Nobody would be judged as a competent speaker about ‘water’ without knowing these common facts. By contrast, the mastery of chemistry would be required to be recognized as a competent language-user of many scientific communities.

Arrived at this step, Putnam’s early account of meaning and reference can be summarized. **First**, meanings of our terms cannot be understood as sets of analytically associated concepts (terms’ intensions) that would determine referents (terms’ extensions). For Putnam, meanings cannot be reduced to knowledge that could be recollected in language-users mental or psychological states. Referents themselves constitute an indispensable part of words’ meanings. They complement the more traditionally admitted intensions constituted by sets of concepts associated with terms. Putnam describes terms’ meanings as vectors possessing two main components. On the one hand, it includes a conceptual part composed by information about terms themselves (syntactic markers) and more or less adequate descriptions of referents (with notably semantic markers). On the other hand, terms’ meaning vectors integrate an external part constituted by terms’ referents or extensions. **Second**, this external part is not determined by the conceptual part. While the criteria provided by the conceptual part can be involved to recognize something belongs to the extension of a given term, they do not fix terms’ reference by themselves. Terms’ extensions are fixed at the occasion of introducing events during which contingent connections are established between terms and the conceptual and external components of their meaning vector (conceptual descriptions and actual world’s entities referred to). A speaker can then use a given term to refer to any entity sharing the same nature with the paradigmatic entities singled out during the associated introducing event (this way of referring can be called ‘rigid designation’), provided he stands in an adequate historical-causal relationship with this event. He can for example remember such an introducing event he experienced directly in the past. But the relationship can also be socially mediated through teaching or deference to experts (division of linguistic labor).

In addition, a first major bridge can be settled between Kuhn’s approach of the notion of incommensurability and Putnam’s early account of meaning and reference. This first convergence concerns the semantic (or taxonomic) function of Kuhnian paradigms. In fact, paradigms embodied in disciplinary matrixes play a semantic function in providing a set of exemplars (or examples of successful semantic practices) fixing the semantic structure of concepts and terms employed in a community. According to Kuhn, the interpretation of the common conceptual ground structuring a linguistic community corresponds to a basic cognitive adhesion of all its members that cannot be explicated fully by language or rule-based formulations (Kuhn 1996 [1962] [1962], pp. 187-191, 1977, chapter 12). Moreover, examples of successful (semantic) practices involve actual world’s entities. Membership in the extension of a term is fixed through a similarity relation with actual world exemplars already singled out (Kuhn 1977, 17). In sum, Kuhnian

paradigms provide a structured and referring conceptual network the mastery of which is required to take part in the cognitive activity of a given linguistic community. Many elements of Putnam's semantic approach can be linked with this Kuhnian account. To begin with, the idea of a structured set of referring terms can be reconstructed in Putnam's framework as a set of terms and expressions coming with their meaning vectors. The connections between the different conceptual parts of these meaning vectors (different syntactic and semantic markers, stereotypes) form the intensional structure of the conceptual network. Reference relationships (extensional structure) are reflected in external parts of the terms' meaning (their extension). More importantly, the irreducible role Putnam grants to contingent introducing events in processes of meaning and reference fixing meets Kuhn's insistence about the necessary involvement of semantic exemplars in the settling of conceptual networks of (scientific) communities. In particular, both Kuhn's and Putnam's accounts of reference are based on a relation of similarity with previously singled out actual world's entities. In addition, Putnam also recognizes that a minimum level of linguistic competence (that is to say, a minimum mastery of the conceptual parts of meaning vectors and a minimal ability at correctly picking out terms' referents) is required to enter a linguistic community. To conclude the analysis of Putnam's early positions, some consequences of the necessary involvement of introducing events can be explored.

## **2.5. Context-sensitivity in Putnam's early account of meaning and reference**

Putnam's early account of meaning and reference comes with two main insights. First, descriptions and information gathered in the conceptual part of the meaning vector of a term do not determine the term's extension (external part of its meaning vector). Contrastively, the reference of a term is determined at the occasion of an introducing event that is situated in space and time. Referents are established independently of the more or less adequate information language-users may possess about them where and when the introducing events take place. The latter information can nonetheless be crucial for the ability of language-users at correctly picking out terms' referents. Second, conceptual parts including descriptions of and information about terms' referents are not analytically associated with terms. A term is not synonymous with the set of predicates hosted in the conceptual part of its meaning vector. This means that the content of conceptual parts can change. And because conceptual parts do not determine external ones, such changes can be seen as evolutions in the knowledge language-users possess about referents in a given place and at a given time. These two insights indicate that the notion of meaning has an historical and sociological dimension. Associations between terms and the components of their meaning vector are contingent and rely on historically and sociologically situated introducing events and effectively possessed knowledge. In consequence, terms may be associated with divergent meaning vectors (different conceptual as well as external parts) when deployed in different historical and sociological contexts.

### **Context-sensitive divergences between terms' meaning vectors**

Although only resulting from a thought experiment, Putnam's twin earth argument discussed above also permits highlighting an important point. Introducing events fixing meaning vectors' external parts as well as knowledge recollected in their conceptual parts are both contingent and situated. Before the discovery that water is H<sub>2</sub>O, two contexts of use of the term



‘water’ can be distinguished. On earth, ‘water’ is associated with the syntactic marker ‘natural kind term’, the semantic marker ‘liquid’ and a stereotype including features like ‘colorless’, ‘tasteless’, and ‘thirsty-quenching’. In this context, ‘water’ denotes any liquid that is  $H_2O$ . On twin earth, ‘water’ corresponds to the same syntactic and semantic markers and to the same stereotype, but the term designates any liquid with XYZ as a chemical composition. Such an example evidences the possibility of two contemporary contexts of use in which the same term is associated with two different meaning vectors. In this case, only the external or extensional level is impacted: only the referents vary between the contexts while the conceptual parts are identical. The twin earth example also permits framing divergences between meaning vectors in two contexts of use that involves both the conceptual (intensional) and external (extensional) levels. As discussed by Putnam, after the discoveries of chemical compositions of earth’s and twin earth’s waters, earthian chemists and twin earthian chemists respectively associate ‘water’ with different conceptual descriptions. Such differences in conceptual parts naturally reflect evidenced differences in the deep structures of the different corresponding referents. In the same vein, speakers on earth (competent speakers such as botanists) associate the terms ‘elm’ and ‘beech’ with their respective meaning vectors, for instance: (‘natural kind term’, ‘tree’, ‘stereotype of an elm’, actual elms) and (‘natural kind term’, ‘tree’, ‘stereotype of a beech’, actual beeches). Putnam argues that nothing prevents imagining that, on twin earth, the connection between these terms and the meaning vectors is inverted (Putnam 1996 [1975], 226-227). In these illustrations, whole meaning vectors (both conceptual and external components) are modified across distinct contexts of use.

In more realist situations, that is to say when considering actual linguistic communities on earth without mobilizing science-fiction twins, it is likely that speakers sharing some terms are all connected with same introducing events (or similar ones) fixing unique external parts for each term. This is in particular the case within single linguistic communities. Nevertheless, the fact that external parts of terms’ meaning vectors are fixed through shared sets of introducing events does not forbid the occurrence of divergences between conceptual parts. First, divergences can occur across history. Conceptual parts of some terms’ meaning vectors obviously evolve when language-users learn more about referents. For instance, a scientific discovery can lead to the modification of the conceptual description associated to a term. This happens to the conceptual part of ‘water’ with the discovery that water is  $H_2O$  (at least, the conceptual description admitted in the community of chemists is modified). In such cases, the same term is associated with two different meaning vectors in two contexts of use separated across history. The external part of these meaning vectors remains fixed in connection with shared introducing events while conceptual parts are different. Although the terms’ extension is left untouched, this type of evolution can improve language-users’ ability at singling out correctly intended referents. It can even lead to reconsider what counts as a paradigmatic example of members of the extension of a given term. Putnam indicates that language-users might have been misled in what it takes to be a normal member of a natural kind. The acquisition of complementary knowledge about intended referents may thus lead to modify the associated stereotype hosted in the conceptual part of the meaning vector of the corresponding term. To illustrate this, Putnam proposes to imagine that we falsely believed that normal lemons are yellow. In fact, we may discover that we have been acquainted only with “atypical lemons (perhaps diseased ones)” while normal lemons are blue (Putnam 1975 [1970], 142). At the occasion of such a discovery, reference of ‘lemon’ would not change. It still designates any fruit with the appropriate essence (say, the right DNA). Normal blue lemons as well as atypical yellow one still belongs to its extension. But, the discovery would lead to modify the stereotype hosted in the conceptual parts of ‘lemon’ from (‘yellow peel’, ‘tart taste’, etc.) to (‘blue peel’, ‘tart taste’, etc.).

These examples illustrate the fact that the components of meaning vectors' conceptual parts (scientific descriptions as well as stereotypes) can vary between contexts separated across history.

Second, divergences in conceptual descriptions attributed to the referents of given terms can occur, not only in a historical perspective, but also in a contemporary way. Putnam's approach permits conceiving differences in conceptual parts of terms when employed in distinct contexts of use coexisting at the same time. Broadly speaking, nothing prevents a term to be associated with different possible stereotypes about its referents. Putnam illustrates this point through an example bearing on the concept of 'electricity' (Putnam 1975 [1973], 199-200). At the time of Benjamin Franklin, only the associated semantic marker ('electricity' denotes a physical magnitude) and a small part of the stereotype ('electricity' or 'electrical charges' can flow) had to be shared among all the users of the term. To the extent that these users stood in a proper relationship with suitable introducing events, they could all correctly use 'electricity' even if no discernable shared intension was associated with it. Different stereotypes could exist concerning electricity and the way it is manifested in natural phenomena (Franklin would associate a stereotype based on sparks and lightning bolts while someone else might rely on knowledge about magnets and currents, etc.). In this example, the stereotype someone has to master to be considered as a competent user of the term 'electricity' can vary depending on the context of use while referents remain the same independently of the admitted stereotype.

The fact that the content of terms' conceptual parts required to be recognized as a competent speaker depends upon the context in which these terms are used is a rather general feature of Putnam's early account of meaning and reference. According to Putnam, any linguistic community expects a minimal level of linguistic competence from its members. And, the nature of this minimum seems to be contextual:

The nature of the required minimum of competence depends heavily upon both the culture and the topic, however. In our culture speakers are required to know what tigers look like (if they acquire the word "tiger," and this is virtually obligatory); they are not required to know the fine details (such as leaf shape) of an elm tree looks like. English speakers are *required by their linguistic community* to be able to tell tigers from leopards; they are not required to be able to tell elm trees from beech trees. (Putnam 1996 [1975], 31)

This quotation clearly states that what a linguistic community requires in terms of linguistic competence "depends heavily upon both the culture and the topic." Provided that the minimal knowledge and ability necessary to be admitted as a competent member of a given linguistic community is reflected in conceptual parts of meaning vectors, the quotation can be understood as introducing not only the idea that required stereotypes might change from culture to culture, but also the fact that, even inside a culture, subdivisions can exist regarding the topic.

This last point corresponds to Putnam claims in favor of the universality of the division of linguistic labor (Putnam 1996 [1975], 14). Not all members of a linguistic community are expected to master best available conceptual descriptions of terms' referents. They do not need possess the most efficient criteria for assessing whether a given entity belongs to the extension of a particular term. In many cases, these knowledge and abilities are required only from a subset of the whole linguistic community constituted by experts of the relevant topic. This division of linguistic labor also implies that a whole linguistic community contains subdivisions – in particular subgroups gathered by and focused on specific topics – possessing their own requirements in terms of linguistic competences reflected in conceptual parts of terms' meaning vectors. This means that the

linguistic community as a whole includes various contemporary contexts of use for the same terms in which different conceptual parts for their meaning vectors are admissible and required. For instance, in the community of English speakers not all the members are asked to possess detailed conceptual descriptions associated with ‘elm’ and ‘beech’ enabling them to distinguish the associated referents. Put differently, most speakers in this community can have only stereotypes (or even only one stereotype) for the two words. They just have to know that ‘elm’ and ‘beech’ are different terms associated with distinct referents. In this context of ordinary use, the only difference between the meaning vectors associated with ‘elm’ and ‘beech’ concerns referents (obviously complemented with the knowledge that an elm is not a beech and reciprocally). However, in a context of scientific use (say, among botanists) conceptual parts of ‘elm’ and ‘beech’ are also different. This type of differences between conceptual parts of shared terms deployed in different subsets of a whole linguistic community (distinct contemporary contexts of use) also occurs for two terms like ‘aluminum’ and ‘molybdenum’ (Putnam 1975 [1970], 150). Only a subset of the community needs to possess more refined conceptual descriptions that integrate criteria enabling a distinction between both kinds.

Moreover, the division of linguistic labor does not only permit differences in conceptual parts between laymen’s and experts’ contexts, but also between experts’ or scientific communities. For example, one can imagine that the English speakers’ community includes, among other, two subgroups coming with their respective context of use: botanists and chemists. In both groups, as well as in the whole community, all the speakers can use terms such as ‘elm’, ‘beech’, ‘water’, ‘hydrogen’ and ‘oxygen’. They can also all be provided with information such as ‘elm and beech are different kinds of trees’, ‘water is required for trees’ life’ or ‘water is composed by oxygen and hydrogen’. However, the botanists are expected to possess different conceptual descriptions for ‘elm’ and ‘beech’ (e.g. based on differences about the shape of leafs) contrarily to other members of the whole community, chemists included. Conversely, chemists are required to have different conceptual descriptions for ‘hydrogen’ and ‘oxygen’ (e.g. based on differences in subatomic composition) while the rest of the community does not. What this (oversimplified) illustration brings to the fore is that conceptual parts of meaning vectors of terms shared by a whole community of speakers can vary according to different contemporary contexts of use. These contexts of use can in particular be associated with different subgroups whose members are experts in different topics (scientific communities).

### **Convergences and divergences with respect to Kuhn’s incommensurability thesis**

In sum, Putnam’s early account of meaning and reference allows conceiving different type of semantic differences between the way terms and the components of their meaning vectors are associated in different contexts of use. Mismatches can concern different components of meaning vectors. Divergences can appear between their conceptual parts (intensional level of conceptual descriptions, syntactic-semantic markers and stereotypes) and-or between their external parts (extensional level of terms’ referents). Moreover, these semantic differences can stand historically between contexts of use separated in time or sociologically between contemporary coexisting contexts associated with subsets of whole linguistic communities. In addition, it is worth-highlighting that Putnam’s conception integrates the possibility of the stability of reference through rigid designation. Differently contextualized groups of language-users can employ common terms to rigidly refer to the same entities or kinds provided they all stand in appropriate causal-historical

relationships with corresponding introducing events. In particular, rigid designation permits reference stability under modifications of conceptual parts of terms' meaning vectors.

These summarized elements highlights convergences as well as divergences between Putnam semantic views and Kuhn's approach of the notion of incommensurability. On the one hand, Putnam's account allows conceiving semantic divergences between differently situated contexts that may be linked with phenomena of taxonomic or semantic incommensurability. As we have seen, introducing events (fixing meaning vectors' external parts) as well as admitted and required information for the correct use of terms (recollected in meaning vectors' conceptual parts) are situated and context-sensitive. Corresponding divergences they induce between meaning vectors of terms deployed in distinct contexts can be associated with taxonomical or semantic mismatches generated across communities relying of unshared semantic exemplars (communities grounded in different paradigms). On the other hand, it is important to note that taxonomic incommensurability is a more precise phenomenon than general semantic mismatches described based on Putnam account. Mere differences in meaning vectors of shared terms are not enough to generate taxonomic incommensurability. The latter occurs only when differences imply the admission of non-homologous systems of categories violating the no-overlap principle that forbids admitting the same entity in the extensions of different categories not related as genus and specie (Oberheim and Hoyningen-Huene 2013, section 2.3.1). Furthermore, consequences of taxonomic incommensurability seem far more radical in Kuhn's approach than what semantic divergences in Putnam's account may induce. For Kuhn, taxonomic incommensurability prevents comparing conceptual descriptions admitted in the different incommensurable contexts and forbids equating terms' referents (opposing to scientific realism and the associated notion of scientific progress). According to his famous world change thesis, individuals grounded in taxonomically incommensurable paradigms even live in different worlds (Kuhn 1996 [1962], chapter 10).

But at first sight, nothing forbids accounting for cases of taxonomic incommensurability in Putnam's early framework despite these differences about incommensurability's consequences<sup>15</sup>. This can be discussed more precisely in focusing on Putnam's semantic account of the scientific discovery that water is H<sub>2</sub>O. Up to now, the semantic divergence has been pictured as opposing a past ordinary stereotype associated with water (colorless, thirsty-quenching, etc.) and a more recent scientific description based on chemistry (chemical composition of water). In virtue of stable causal-historical relationships standing between speakers uttering 'water' and introducing events during which actual water is picked out, the referent of 'water' is not impacted by the discovery that water is H<sub>2</sub>O. Language-users rigidly refer to any sample of liquid possessing the same chemical composition as paradigmatic samples singled out during introducing events, independently of this discovery. Arguably, this is not yet securing reference stability across genuine scientific revolutions generating taxonomic incommensurability between refined conceptual descriptions. The stereotype and the more refined chemical descriptions of water are not taxonomically incommensurable. But the discussion can be extended. The discovery of the chemical composition of water could be portrayed as involving a past refined description in which water is a fundamental liquid element opposed to fire with the notion of liquid understood as a basic chemical (and not physical)

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<sup>15</sup> In *Dubbing and Redubbing: The vulnerability of Rigid Designation* (Kuhn 1990b), Kuhn explicitly opposes Putnam's discussion of the discovery of the chemical composition of water and provides subtle arguments to deny the idea terms and their referents can be equated across such a scientific revolution. These arguments will be studied and answered in detail in section 5 of chapter 3 after the completion of our exploration of Putnam's philosophical path and of the way it permits accounting for incommensurability in a refined framework.

category. This conceptual description that could be hosted in the conceptual part of the meaning vector of ‘water’ in communities of, say, alchemist, would then be taxonomically incommensurable with the one admitted in the meaning vector of ‘water’ of modern chemists (water is  $\text{H}_2\text{O}$ ). For instance, water cannot be categorized at the same time as a liquid (understood as a chemical category) and as a chemical substance that can be liquid, gaseous or solid (understood as physical categories) without violating the no-overlap principle. Nonetheless, stable rigid designation would still be possible across two such conceptual frameworks separated by a scientific revolution. This is the case provided language-users, before and after the discovery, stand in causal-historical relationships with same introducing events or with introducing events in which paradigmatic examples sharing the same essence (the same chemical composition in the case of water) are picked out. Accordingly, the meaning change occurring at the occasion of the scientific discovery that water is  $\text{H}_2\text{O}$  can be seen as an improvement of the conceptual description (admitted in the community of chemists) of the stable referent of ‘water’ to include the fact that the essence of this referent is the chemical composition  $\text{H}_2\text{O}$ .

This indicates that, in Putnam’s early account of meaning and reference, one can always conceive scientific discoveries as improvements of earlier descriptions of some phenomena or entities. Despite the possible occurrence of phenomena of taxonomic incommensurability, a term can be associated with its earlier or improved descriptions while still designating the same referent. This means that scientific realism and scientific progress are not irremediably threatened by taxonomic incommensurability. Through successively improved scientific descriptions, scientists can hope to ultimately capture essential attributes of real-world entities and natural kinds. In addition, this process of stabilization of reference across differently contextualized linguistic communities could also operate in a contemporary way. Language-users embedded in different contemporary contexts might associate shared terms with distinct (and possibly taxonomically incommensurable) conceptual descriptions and nonetheless refer to the same actual world’s entities or kinds. This is possible to the extent that all groups of speakers stand in adequate causal-historical relationships with introducing events mobilizing actual world’s entities sharing the same essences. The fact that speakers might know nothing about this sameness of essence does not change the picture. This allows associating these shared terms with different descriptions, or embedding them in different theoretical networks, without modifying what they refer to (even in presence of taxonomic incommensurability). Consequently, trans-contextual and “trans-theoretical” terms are admissible in Putnam’s early framework (Putnam 1975 [1973], 202).

To conclude, Putnam’s early account of meaning and reference may constitute an appealing framework for considering phenomena of taxonomic incommensurability understood as semantic mismatches between terms’ meaning vectors deployed different contexts. The causal theory of reference it embeds permits admitting a process of rigid designation that operates independently of knowledge language-users effectively possess about the referents of their terms. Accordingly, differently contextualized language-users attributing taxonomically incommensurable conceptual parts to shared terms’ meaning vectors could still designate same referents provided they all stand in proper causal-historical relationship with same introducing events or with introducing events during which entities possessing the same essences are singled out. In this perspective, phenomena of incommensurability could be confined to our knowledge of the world without impacting the world itself. Deployed across history, the stability of reference secured by Putnam’s early causal approach permits recognizing phenomena of taxonomic incommensurability without abandoning scientific realism and its picture of science as a cumulative enterprise capable of progress

(Ladyman 2012, 37). In this framework, nothing would impede the meaningfulness of claims about the superiority of a given conceptual description of some entities over another one. Consequently, nothing would forbid thinking that, with the advance of science, we are progressively getting closer to the correct description of the furniture of the world. However, this distance Putnam's early account of meaning and reference permits taking with the most radical aspects of Kuhn's incommensurability thesis highly depend on his background commitments concerning (metaphysical) realism and essentialism. The process of rigid designation is based on a notion of 'substance-identity' that is independent of knowledge effectively possessed about referred to entities. In Putnam's early account, this notion of substance-identity relies on essentialism. Real entities necessarily possess their essential properties independently of knowledge we might have about them. Real entities can therefore be substance-identical even when nothing is known about their shared nature or essence. Although semantic externalism may constitute a continuity characteristic of Putnam's philosophical framework, metaphysical realism and essentialism do not deserve the same status. As exposed in the following sections, Putnam himself, pushing semantic externalism to its ultimate consequences, rejected metaphysical realism and the associated essentialism.

### **3. Internal realism**

In this section, I discuss the second period of Putnam's thinking emblematically exposed in writings such as *Reason, Truth and History* (Putnam 1981). This period is marked by Putnam's rejection of the previously admitted metaphysical realism (together with the associated essentialism) and of the aspects of his early approach of meaning and reference that relied on the former. This leads him to what has come to be called 'internal realism'. As I shall expose, the distance Putnam secured – through his early account integrating rigid designation based on essentialism – with the most extreme consequences of Kuhn's incommensurability thesis is considerably reduced during this internal realist phase.

#### **3.1. Rejection of the God's eye point of view**

The previous section ended on the remark that it might be possible to admit Kuhn's taxonomic incommensurability in a realist perspective. This would amount to say that, while our (successive or contemporary) classifications of the objects of the world might prove incommensurable, the world in itself remains as it is, with its own entities that are independent of these classifications. It would then be possible to claim that terms belonging to incommensurable classifications are susceptible to refer to the same things and that incommensurable taxonomic systems can be conceived of as better or worse classifications of the furniture of the world. The framing of such a realist answer to the challenge raised by incommensurability rests on rigid designation and the idea that essences or essential properties do exist independently of the knowledge one can possess about them. This is part of what Putnam names the externalist perspective:

On this perspective, the world consists of some fixed totality of mind-independent objects. There is exactly one true and complete description of 'the way the world is'. Truth involves some sort of correspondence relation between words or thought-signs and external things and sets of things. I shall call this perspective the externalist perspective, because its favorite point of view is a God's Eye point of view. (Putnam 1981, 49)

This externalist perspective is at the core of the traditional form of realism Putnam calls "metaphysical realism." It relies on the God's eye point of view from which it is possible to assume that the world is composed by some sort of objects, whatever we could know, think or utter about them. Believing that the world is composed by a fixed totality of mind-independent objects amounts to defending the existence of a fixed totality of objects that can be classified and a pre-defined totality of all the properties they can possess. It corresponds claiming that "there is a totality of Forms, or Universals, or "properties," fixed once and for all." This implies that there is a "definite totality of all possible knowledge claims" built by the distribution of the properties over the objects. This set of knowledge claims is thus independent of speakers' or users' languages. The cognitive characteristics and limitations of the latter only impact what they are able to think or say but not the set of possible knowledge claims in itself (Putnam 1999, 7-8 and 21-22). This belief in a fixed totality of all the possible knowledge claims implies that there is a unique true theory of the world, namely the theory according to which the properties are correctly distributed over the objects. The true theory of the world is the one constituted by the knowledge claims corresponding to the way the world is in itself. Metaphysical realists subscribe to "the correspondence theory of truth" (Putnam 1981, 56).

According to Putnam, the externalist picture and metaphysical realism constitutes a "metaphysical fantasy" (Putnam 1999, 6). This conclusion is not reached in demonstrating that the metaphysical realist picture is wrong in the sense of not corresponding to a real matter of fact. Rather, Putnam rejects it because he does not see how it might be meaningful. Such a requirement for a cautious analysis of the way our discourses can make sense is a crucial feature of Putnam's work whatever may be the period considered. The criticism of the traditional conception of meaning and reference that led to semantic externalism perfectly meets this preoccupation (see the arguments presented in the sections 2.1, 2.2 and 2.3). But then, the picture of meaning and reference Putnam proposes to give a concrete body to semantic externalism itself deserves a cautious semantic analysis. As we just saw, certain aspects of this picture – those relying on rigid designation (in an externalist perspective) – hold only insofar as the talk about essences is meaningful independently of any features of speakers minds or psychological states – that is to say, insofar as the externalist picture is meaningful. Put in a nutshell, the core of the problem could be framed as follows: how reference to mind-independent objects of the externalist perspective (including essences or essential properties) is even possible? Putnam's criticism of the traditional view of meaning already constrains the possible answers: possessing concepts recollected in individual psychological or mental states is not enough to refer to the metaphysical objects of the externalist perspective. Semantic externalism indicates that something external to speakers' minds or brains has to be involved.

A seducing alternative might be worked out in exploring the opposite of the traditional conception: (mental) signs or representations could refer intrinsically, independently of the (psychological or mental) features of the speakers. Some primitive people believed in a "magical connection between the name and the bearer of the name" (Putnam 1981, 3). An example of such naïve magical theories of reference relies on the postulation of "noetic rays" connecting our words

or thought signs and their referents (Putnam 1981, 51). However, this can hardly be considered as a satisfying account of reference. A solution might consist in opting for a similitude theory of reference stipulating that the process of reference is secured by the fact that (mental) signs are similar to what they refer to. This conception can be traced back to Aristotle to whom images of the world that we have in our mind are phantasms that share their forms with real entities (Putnam 1981, 57-59). The similarity between phantasms in our mind and real world entities would entitle us to refer to the latter when employing the former. But this approach underwent a severe restriction in the 17<sup>th</sup> century with Locke and Descartes who claimed that similitude between mental images and real objects has to be confined to primary qualities. Secondary qualities are only dispositions to generate a certain mental image in our mind or brain (for instance, it is the atomic structure of objects that gives rise to subjective sensations of colors). Berkeley propagated this criticism of the similitude between real entities and mental events to primary qualities. He claimed that nothing can be similar to a mental event or a sensation except another mental event or another sensation. Coupled with the similitude theory of reference, this result would allow concluding that we can refer only to mental events. In turn, this conclusion may support the idea that material objects do not even exist. In Putnam's view, the correct inference is not that idealism is true, but rather that similitude theory of reference is wrong.

Letting aside the question of the possibility of similarity between mental events and real world's entities, one could concede that a picture, or the mental representation it can generate in someone's mind, can be similar with what it represents. It is still questionable whether this granted similarity can support reference to entities, as required by the externalist perspective of metaphysical realism. This perspective requires the possibility of reference to external entities independently of any features of speakers or thinkers, and in particular independently of the knowledge they might possess (or of the fact they might have never encountered certain entities). This might prove too demanding. To illustrate the problem, Putnam proposes to imagine some extraterrestrials who never experienced a tree (Putnam 1981, 3). A tree's picture could be dropped on their planet. When considered by an extraterrestrial, the picture at best refers to (or represents) something unknown, a strange object, but not a tree. The same holds for the mental representation the extraterrestrial can acquire through the picture (this representation could be exactly the same as ours). In such an example, there is no reason why the picture or the associated mental representation should refer to a tree. Additionally, a written description of a tree could be dropped on the planet, instead of a picture. In that case, it hard to see how similarity with an actual tree could explain reference. Consequently, it seems that a mere similarity between a sign and an entity cannot secure the reference of the former to the latter. Moreover, arguing that a relation of similitude underlies the process of reference is confronted with a very general problem. In fact, "the number of similarities one can find between any two objects is limited only by ingenuity and time" (and this applies to similarities between mental events as well as between real world entities or between mental events and real world entities). Trying to specify a given respect R according to which the similitude operates does not solve the problem. It would be circular to claim that R can already be referred to. Alternatively, specifying R as the respect according to which two entities (in particular a mental sign and a real world's entity) had been previously judged similar would just lead to an infinite regress, the similitude criterion between those two entities remaining indeterminate (Putnam 1981, 65-66).

Provided that a similitude theory of reference appears as nonstarter, the fact that a sign intrinsically denotes a given referent might be supported by the existence of a necessary causal link



between them. Notwithstanding Putnam's early criticism of this type of causal theory of reference, which is based on the model-theoretic argument, such an approach would have the merit of accounting for reference without relying on (psychological) features of speakers. In the example of the tree's picture dropped on an extraterrestrial planet, it could accordingly be argued that the reference of the picture (or of the mental representation it can generate) is secured because it was originally the picture of a tree and that, as such, a causal link necessarily stands between the picture and an actual tree. This causal account would also be worthwhile to explain how the description of a tree could refer to an actual tree. The actual tree can be considered as a cause of the description. Putnam answers that we can imagine exactly the same situation without these causal links. The same picture could result from randomly spilled paint's drops and the same description could be produced by monkeys randomly hitting a typewriter. Although highly improbable, these randomly produced events are nonetheless logically and physically possible (Putnam 1981, 4-5). Therefore, no necessary causal connection stands between these signs (pictures or textual descriptions) and their alleged referent. In sum, mobilizing causal links to defend the possibility that signs intrinsically refer does not seem to score better than appealing to similarity. Securing the meaningfulness of the externalist picture through intrinsic reference of (mental) signs thus looks like a dead end:

even a large and complex system of representations, both verbal and visual, still does not have an *intrinsic*, built-in, magical connection with what it represents - a connection independent of how it was caused and what the dispositions of the speaker or thinker are. And this is true whether the system of representations (words and images, in the case of the example) is physically realized - the words are written or spoken, and the pictures are physical pictures - or only realized in the mind. Thought words and mental pictures do not *intrinsically* represent what they are about. (Putnam 1981, 5)

These discussions of similarity and causality not only compromise the project of reaching a satisfying account of how signs could intrinsically refer. They additionally suggest a strong dependency of the fact that a sign refer to a given actual world's entity upon the (psychological or mental) features of speakers or thinkers. In the example of the extraterrestrial planet, the existence of similarities or causal connections between signs and actual world's entities seems not to be the primary relevant characteristic. Contrastively, the previous acquaintance of speakers or thinkers with the latter appears crucial. In fact, for extraterrestrials who never experienced a tree, even signs similar to (and-or causally connected with) an actual tree do not refer to it. But, speakers already acquainted with trees (like we are) would consider both the picture and the description as referring to actual trees. Similarity with actual trees is not an indispensable aspect. In the same vein, speakers already acquainted with trees could grant that either the picture or the description refer to actual tree as well in front of genuine objects caused by actual trees as in the presence of randomly generated artifacts. Causal link with actual trees is not an indispensable feature. What is indispensable for the picture or the description to refer to actual trees is rather previous acquaintance of speakers or thinkers with such entities<sup>16</sup>.

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<sup>16</sup> This discussion of the possibility of attributing intrinsic reference to signs highlights the complexity and subtlety of Putnam's global lines of reasoning. In particular, the criticism of the mobilization of causal links does not amount to a rejection of his previous causal account of reference. Causal-historical relationships with introducing events during which language-users effectively single-out actual world's entities are still required for terms to refer. The present insights may even be seen as refining the notion of introducing event. It indicates that entities have to be intentionally picked out. The need for a direct acquaintance with actual world's entities was already present in the early account. It is merely explicated and refined here. Moreover, the idea that causal-historical relationships with introducing events can be socially mediated is not directly questioned here. Again, it should rather be seen as refined. A person may well learn a term from someone else and use it to refer to whatever this someone else intended to refer to when acquainted with it. She might well use the term to refer to the same thing even without personal direct acquaintance. But she would do this intentionally. This would not show that the term refers intrinsically. The complexity of Putnam global thinking also appears in the use he makes here of

But then, if this is correct, how is a speaker or thinker entitled to refer to entities he has not yet been acquainted with? While reference to already met entities appears unproblematic, how can it be extended to the totality of mind-independent objects postulated in the externalist perspective of the metaphysical realism? The solution metaphysical realists rely on mobilizes self-identifying objects, that is to say “objects that intrinsically correspond to one word or thought-sign rather than another” (Putnam 1981, 51). But, as we just exposed, the idea of an automatic connection between signs and their referents cannot hold if the connection has to be independent of speakers or thinkers minds. In addition to the problem of distinguishing between the unique intended relation of similarity or causality relations (as evidenced in particular with the model-theoretic argument), similarity or causality in themselves are not determinant. The process of reference to metaphysical entities the externalist perspective relies on is chimerical:

The metaphysical realist formulation of the problem once again makes it seem as if there are to begin with all these objects in themselves, and then I get some kind of a lasso over a few of these objects (the horses with which I have a ‘real’ connection via a ‘causal chain of the appropriate kind’), and then I have the problem of getting my word (‘horse’) to cover not only the ones I have ‘lassoed’ but also the ones I can’t lasso, because they are too far away in space and time, or whatever. And the ‘solution’ to this pseudo-problem, as I consider it to be – the metaphysical realist ‘solution’ – is to say that the word *automatically* covers not just the objects I lassoed, but also the objects which are *of the same kind* – of the same kind *in themselves*. But then the world is, after all, being claimed to contain Self-Identifying Objects, for this is just what it means to say that the *world*, and not thinkers, sorts things into kinds. (...) the externalist wants to think of the world as consisting of objects that are *at one and the same time* mind-independent and Self-Identifying. This is what one cannot do. (Putnam 1981, 53-54)

Having established that no consistent account of the relation of reference required to frame the externalist picture is available, Putnam considers that the externalist picture and the associated metaphysical realism cannot be provided with a meaningful content and thereby have to be rejected. There is no God’s eye point of view independent of the specificities of thinkers (Putnam 1981, 50)<sup>17</sup>. This move also amounts to abandoning essentialism and the associated process of rigid designation (understood in the externalist perspective) embedded in Putnam’s early account of meaning and reference. The talk about essences or essential attributes existing and being what there are independently of the (mental) features of thinkers cannot be meaningful. Consequently, the notions of trans-contextual and trans-theoretical terms become problematic.

As a side but important remark, the manner Putnam rejects metaphysical realism does not rely on a proof of its falsity but rather on a semantic criticism. Some philosophers like Michael Devitt consider that this amounts pushing the semantics application domain too far. According to Devitt (Devitt 2013, 109), Putnam claims that “we should start building a metaphysics from semantics” while in his opinion metaphysics should be put first. Naturalism for instance does not have to “start from scratch with epistemic and semantic questions.” These questions cannot arise before many commonsense and scientific elements are firmly rooted. “To suppose that we can

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psychological features of language-users, picturing them as crucial for the process of reference. Again, this move does not oppose to his previous claim in favor of semantic externalism but rather reinforces and refines it. First, the criticism of the possibility of intrinsic reference radicalizes his criticism of the traditional conception of meaning. Not only sets of concepts associated with our terms or though signs do not fix reference by themselves, but neither signs alone can do the job. In addition, the involvement of psychological factors such as intentionality does not contradict semantic externalism. Language-users have to intentionally use their terms to refer to actual world’s external entities they have previously been acquainted with. Referents are still required to settle terms’ meanings.

<sup>17</sup> As Ghins (2005) argues, evidencing the problematic nature of the god’s eye point of view and of the externalist perspective may not be sufficient to integrally discard metaphysical realism. Certain versions of metaphysical realism do not require the God’s eye point of view criticized by Putnam. This remark is perfectly in line with Putnam’s later developments presented in the section of the present chapter. While Putnam integrally rejects metaphysical realism during his intermediate internal realist period, he operates a partial return to this form of realism when entering the commonsense realist period (see the whole section 4 of the present chapter).

derive the right metaphysics from epistemology or semantics is to put the cart before the horse.” Although important in itself, this rejoinder seems missing Putnam’s line of argumentation. The latter does not claim that we should *begin* with semantic questions. All our investigations indeed start with pre-existing uses of languages and habits to refer. What is required is not for metaphysics to be built from semantics. Rather, Putnam’s line of thought warns against the potential dangers of relying uncritically on our habits of reference and pre-existing uses. Instead of putting semantics first, Putnam demands that we scrutinize these pre-admitted semantic tools to check the meaningfulness of the discourses they generate. Therefore, it is incorrect to claim that Putnam subsumes metaphysics under semantics. Rather, he claims that both have to cooperate. The issue of realism itself does not escape this conclusion. Even the basic question: “Is there a mind-independent reality?” raises many semantic problems. For instance, can anti-realist thinkers provide a meaningful interpretation of mind-independence in a verificationist way? Putnam believes that the issue of realism can hardly be stated in purely non-semantic terms (Putnam 2013a).

Moreover, this concern about semantics is a persisting feature of Putnam’s intellectual path that transcends his different periods (as classified according to the positions he endorses about realism). The early criticism of the traditional view of meaning and reference is already an instance of Putnam’s preoccupation about semantic consistency. At this time, he was not yet questioning metaphysical realism. His discussion even embedded a defense of scientific realism against logical positivist views about the meaning of scientific theories. He just pointed that reference, in such a realist framework, cannot be accounted for as a purely psychological or mental phenomenon. This can be understood as a first restriction of the semantic tools available to frame a (metaphysical) realist picture of the world. But the alternative approach of meaning and reference Putnam proposed at this time is not itself free from semantic challenges because, in mobilizing essentialism, it relies on the externalist perspective. Putnam’s criticism and rejection of the externalist picture on semantic grounds can be considered as a natural generalization of his early endorsement of semantic externalism. As noticed by Searle (1996), the fact that Putnam questioned only the meaning of natural kind terms such as ‘water,’ considering other terms like ‘essences’ or ‘H<sub>2</sub>O’ unproblematic was itself puzzling (p. 94). Constantly complying with his worry about semantic consistency, Putnam thus successively rejected the traditional account of meaning and the opposite overreaction constituted by a radicalized semantic externalism stating that (psychological or mental) features of thinkers and speakers are merely irrelevant with respect to reference. This in turn let him with no other choice than the renouncement to the externalist perspective and to the associated process of rigid designation mobilizing real entities’ essences conceived of along the God’s eye point of view.

### **3.2. Internal realism and the actual person’s point of view**

The continuity in the evolution of Putnam’s thought persists with the alternative he proposes to the metaphysical realist picture. He draws directly the consequences of the criticism he addressed to the possibility to refer to actual world’s entities independently of features of speakers or thinkers (that is to say, the criticism of the possibility of reference in the externalist perspective). This leads him to so-called ‘Internal Realism’, which gives up the idea “that words stand in some sort of one-one relation to (discourse-independent) things and sets of things” (Putnam 1981, 41). Putnam claims that we have to admit an internalist perspective centered on “the various points of view of actual persons reflecting various interests and purposes that their descriptions and theories

subserve” (Putnam 1981, 50). Any investigation has to be conceived as grounded in this perspective. For instance, even issues of realism or questions about what objects the world consists of only make sense from within actual persons’ points of view, based on their pre-admitted theories or descriptions (Putnam 1981, 49)<sup>18</sup>. Rejecting the God’s eye point of view and focusing on the internalist perspective revives some aspects of Kant’s theory of knowledge. Putnam considers Kant as the first proponent of an internalist-like view. For Kant as well as for Putnam in this internalist period, “nothing at all we say about any object describes the object as it is ‘in itself’, independently of its effect on us, on beings with our rational natures and our biological constitutions” (Putnam 1981, 60-61). The process of reference itself has to be conceived of as dependent upon actual persons’ points of view:

In an internalist view also, signs do not intrinsically correspond to objects, independently of how those signs are employed and by whom. But a sign that is actually employed in a particular way by a particular community of users can correspond to particular objects within the conceptual scheme of those users. ‘Objects’ do not exist independently of conceptual schemes. We cut up the world into objects when we introduce one or another scheme of description. Since the objects and the signs are alike internal to the scheme of description, it is possible to say what matches what. (Putnam 1981, 52)

Admitting that features of the actual persons (like who they are, to which linguistic community they belong, the way they use signs or conceptual schemes) can be mobilized in accounting for reference permits integrating the notion of self-identifying objects. While this road is closed to metaphysical realists who deal with mind-independent objects, objects can “intrinsically belong under certain labels” in an internalist perspective because they depend upon conceptual systems of actual persons using these labels. According to Putnam, “those labels are the tools we used to construct a version of the world with such objects in the first place.” The objects we refer to are not mind-independent, there are “as much made as discovered, as much products of our conceptual invention as of the objective factor in experience, the factor independent of our will” (Putnam 1981, 53-54). Admitting the internalist perspective also meets the challenges raised by the model-theoretic argument. The fact that different admissible interpretations of the same theory always exist becomes a problem only insofar as the criterion singling out the correct reference relation has to be independent of the specificities of actual persons (which is required in the externalist perspective). From an internalist point of view, reference is a component of our conceptual apparatus. Elucidating it in relying on the various specificities of actual persons is unproblematic (Ben-Menahem 2005, 7).

The involvement of conceptual schemes in our experience of the world can be further elucidated. Claiming that (actual world’s) objects do not exist independently of conceptual schemes does not amount denying that there is an objective factor in our experience. Experiential inputs are what they are independently of our will. But they do not provide, in themselves, objects and properties. Experiential inputs are not yet an experience of the world. Objects and properties (the world we experience) do not pre-exist prior to the introduction of a conceptual scheme. It thus becomes meaningless to talk about objects, properties, or about our world, disconnected from conceptual schemes. Objects and properties we are acquainted with and we can name and refer to

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<sup>18</sup> Putnam insists on the fact that he does not reject scientific realism but only metaphysical realism. Scientific realism can still be admitted as “an empirical theory” explaining “the fact that scientific theories tend to ‘converge’ in the sense that earlier theories are very often limiting cases of later theories.” As such, scientific realism can be distinguished from metaphysical realism that constitutes “a model of the relation of any correct theory to all or parts of THE WORLD” (Putnam 2013f, 21). According to the internalist, scientific realism can be conceived of as internal to science and scientific activity (Putnam 2012b [2010], 96). It is not the language in itself, but “speakers [who] mirror the world – i.e. their environment – in the sense of construing a symbolic representation of their environment” (Putnam 2013f, 21).

shall not be conceived as mind-independently existing entities along the externalist perspective. Contrastively, we obtain a partitioned world composed of named objects and properties in associating experiential inputs with a given conceptual scheme (formed by interconnected conceptual parts of terms' meaning vectors). Thereby, with internal realism the mind-independence of actual world's entity is deeply reconsidered, being subjected to a kind of internalization. Actual world's entities belong to or are forged through conceptual schemes.

### **Reference in internal realism: Putnam's verificationist semantics**

To better understand this reconsideration of actual world's entities encountered from within the actual person's point of view, the idea that these entities belong to, depend on or are forged through conceptual schemes demands clarification. The relationship standing between these entities and conceptual schemes needs to be analyzed. This relationship is nothing but the relation of reference. In the internalist perspective, reference cannot be understood as connection between terms (or conceptual schemes) and pre-given or ready-made objects. Such a formulation of the issue of reference – “Here are the objects to be referred to. Here are the speakers using words. How can we describe the relation between the speakers and the objects?” – is nonsensical from an internal realist point of view (Putnam 1988, 120). Contrastively, the notions of objects, reference and meaning possess ‘open textures’ and are intimately connected. In the internalist perspective, a consistent approach of semantic processes needs accounting for these notions and their interconnections from within the actual persons' point of view.

To this aim, Putnam relies on a “non-realist” and “verificationist semantics” based on cognitive psychology (Putnam 1983b, 24, 1983c, 141-144). According to cognitive psychology (Putnam 1983c, 140-141), the mind can be conceived as a digital computer provided with “something like a formalized language and a set of rules for manipulating that formalized language (‘reasoning’ in the language, so to speak).” In particular, part of the mind activity is devoted to the construction of some representations of its environment in this formalized language. For this activity to be effective, a “systematic relation” (the relation of reference) has to stand between items of the representations and items of the environment to permit “that what is going on ‘out there’ can be read off from its representational system by the mind.” Provided with this basic picture inspired from cognitive psychology, the internalist verificationist semantics can be elucidated. In Putnam's view, the systematic relation standing between representations and the environment can be considered along a disquotational scheme: when I use correctly a sentence or a representation like ‘there is a tree in front of me’, then there is a tree in front of me. When I use correctly this sentence, the term ‘tree’ is meaningful and has in its extension the very tree in front of me. What needs to be clarified is the understanding of the notion of correct use. In this lies a crucial divergence between metaphysical realism and the externalist perspective on one side and internal realism associated with its restriction to the actual persons' point of view on the other side. For a metaphysical realist, correctly using a sentence or a representation amounts to describing the mind-independent state of affair that is to be represented. In that case, items of correctly used representations correspond to real objects and properties that are pre-given and exist independently of these representations. This option is not admissible in an internalist perspective (Putnam 1979b, 210).

Contrastively, in internal realism, the verificationist semantics is articulated around a “computable predicate” of “acceptability, or warranted assertability, or credibility” that reflects the correctness of use of sentences in mind's formalized language. Among the rules the mind possesses

for the manipulation of the formalized language, a subset is devoted to assign “degrees of confirmation” to given sentences in function of experiential inputs and relatively to other sentences (Putnam 1983c, 142). Thereby, this subset of rules – which are to be understood as reflecting the brain’s wiring (innately or after a learning process) – entitles the mind to establish the acceptability of the considered sentences. In internal realism, the computable predicate of warranted assertability captures the notion of correct use involved in the disquotational settling of a systematic relation between items of representations (or of conceptual schemes) and items of environment. In sum, verificationist semantics indicates that correctly using a statement amounts to knowing the conditions in which its assertion is acceptable. When a sentence embedding terms naming actual world’s entities is correctly used, these terms are meaningful and refer to objects or properties of the environment (Putnam 1983a, xv). For instance, a tree (or a bearer of ‘tree’) is what is in front of me when the sentence ‘there is a tree in front of me’ is warrantably asserted<sup>19</sup>. In such cases, conditions of warranted assertability take the form of tests that items of the environment have to pass or criteria they have to comply with for the sentence to be correctly employed (Putnam 1988, 25). These criteria are provided by descriptions of objects and properties recollected in conceptual schemes possessed by language users (there can be many different criteria associated with a single object or property). Consequently, objects of the environment cannot exist independently of conceptual schemes. For the sentence ‘there is a tree in front of me’ to be correctly asserted, we can easily imagine that tests or criteria may look like: ‘does the item possesses leaves, trunk and roots?’, ‘does it contains vegetal cells with flowing sap?’, etc.

Importantly, actual world’s objects (objects of the environment of actual persons) are not integrally shaped by conceptual schemes. Experiential inputs are also involved. But objects do not reduce to experiential inputs. A given pool of experiential inputs (an item of language-users environment) is not a tree independently of its connection with these various elements provided by conceptual schemes that include the concept of tree. Items of the environment become objects only in receiving a place in a semantic structure, only in becoming referents (or external parts of meaning vectors) of some terms appearing in correctly employed sentences (in compliance with tests or criteria recollected in conceptual parts of meaning vectors, that is to say, in conceptual schemes). This is why Putnam claims that actual world’s objects depend upon conceptual schemes and are self-identifying (they intrinsically correspond to their associated terms or signs). Moreover, the dependency of actual world’s objects upon conceptual schemes, advocated for in Putnam’s verificationist semantics, permits escaping the model-theoretic argument. An unintended interpretation that does not comply with criteria for correct use provided by conceptual schemes can be straightforwardly ruled out. For instance, saying that “‘cats’ refers to dogs” amounts to an incorrect use of the expression ‘refers to’ precisely because it is not the use that we forged or learned when settling linguistic practices through introducing events. Therefore, ‘cats’ does not refer to dogs. On the contrary, “‘cats’ refers to cats” is the correct use, and consequently, ‘cats’ refers to cats. This way of fixing the interpretation of our languages could not function in the metaphysical realist perspective according to which the notion of correct use for a sentence reduces to the assertion of the sentence only in case it is true (disregarding what actual speakers might know about assertability conditions). Then, merely uttering “‘cats’ refers to cats” would itself be subjected to unintended interpretations that could not be ruled out. The problem with

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<sup>19</sup> This description of the process of reference settling applies also to terms designating unobservable entities. For instance, the sentence ‘electricity is responsible for this phenomenon of lightning’ receives conditions of warranted assertability through various introducing events (some of them mobilizing something like physics). When correctly employed, ‘electricity’ is meaningful and refers to what is the cause of the lightning.

metaphysical realism is that it comes with the idea that interpretations (set of items of the actual world) exist independently of our languages waiting for a connection with them to be established. Contrastively, in the internalist perspective, interpretations “are not lost noumenal waifs looking for someone to name them; they are constructions within our theory itself, and they have names from birth” (Putnam 1983b, 24-25).

When criticizing intrinsic reference in the metaphysical realist mode, the example of a tree’s representation has been discussed. Reconsidered according to the internalist verificationist semantics, the same example illustrates why features related to actual persons like (rationally) admitted conceptual schemes at a given time and place are crucial. We saw that similarity and causal links do not provide adequate mechanisms supporting intrinsic reference of signs independently of speakers. Reference cannot be secured in virtue of an alleged intrinsic similarity between the tree’s picture and actual mind-independent trees (for instance, the picture would not refer to trees for persons knowing nothing about trees). But the conclusion is different when features of actual persons are accepted in the scene. When someone sees a picture, he can judge that it refers to actual trees because the content of the image is similar to actual trees he experienced in the past or to representations he previously associated with actual trees. In this case, the picture can be similar with actual world’s trees as forged in deploying warranted linguistic practices in compliance with experiential inputs and with the place the concept of ‘tree’ takes in the admitted conceptual scheme. The similarity relation is efficient because the picture is similar to elements previously associated to the actual person’s conceptual framework. Moreover, the respect according to which they are similar does not have to be accounted for mind-independently, in excluding features of actual persons. It becomes unproblematic to admit that the choice of a particular respect according to which signs and referents are similar is left to the judgment of actual persons. Alternatively, a drawing of a tree made by a young child might be poorly similar to its actual world’s model. For someone looking at the drawing without knowing anything about what the child intended to represent, the drawing in itself would not refer to an actual tree. Contrastively, the kid can show the drawing to his parents saying: ‘look, I drew a tree!’. For the parents, the image would then surely represent a tree because they know the intention of their child. They know the actual tree is causally linked to the drawing because their kid intentionally pictured it. But this causal link is not to be understood in the externalist perspective, as a relation standing between the picture and mind-independent trees. Instead, the causal link reflects the intention of the kid to represent an internalized object that depends upon a conceptual scheme shared by him and his parents. In turn, the parents recognize their kid’s picture as causally connected to an actual tree as forged or learned through the common conceptual scheme. The picture then designates, for them, an actual tree. Thereby, similarity or causal links can play a role in the reference process, but not in a way intrinsically and mind-independently related to the signs themselves. Rather, they are involved in actual thinkers’ or speakers’ attribution of reference to a given sign in compliance with conditions of assertability or correct use for terms and signs based on information recollected in admitted conceptual schemes. The knowledge actual persons possess about the relationships standing between signs and internalized actual world’s entities enters into the settling of these conditions of correct use. Causal links or similarities can play a role as part of this body of knowledge.

## **Continuities and ruptures with respect to Putnam's early account of meaning and reference**

Elucidating what Putnam's early approach of meaning and reference becomes in internal realism is an interesting way for further explicating the verificationist semantics. Despite Putnam's radical move constituted by the rejection of the externalist perspective, his exposition of the verificationist semantics is strikingly close to the early account (see for instance: Putnam 1988, chapter 2). This highlights again the fact that many continuities transcend the ruptures characterizing the different periods of Putnam's intellectual path. Notably, he maintains his criticism of the traditional conception of meaning. Terms and sets of associated concepts cannot be understood as synonymous. Moreover, the content of terms' conceptual parts cannot in general fix alone their external parts. Causal-historical relationships linking speakers employing a term and situations in which items of the environment are *indexically* singled out are still required for the term to refer. For instance, reference of singular terms or proper names like 'Moses' cannot be understood as determined by identifying descriptions such as "the Hebrew prophet who was known as 'Moses'." Rather, 'Moses' refers because speakers intentionally designate the actual person, "the "right" Moses," "the one at the *beginning of a history*, a history which causally underpins our present uses" of the term (Putnam 1990b, 108-109). In the same vein, reference of (natural) kind terms is still grounded based on "indexical descriptions" such as "stuff that behaves like and has the same composition as *this*" uttered by language-users in presence of particular items of the environment (Putnam 1988, 38). Another way of making the same point, is to say that speakers intend to refer to any sample similar to *actual* paradigmatic examples previously picked out: "speakers *intend* that the term 'water' shall refer to just those things that have the same lawful behavior and the same ultimate composition as various standard samples of actual water" (Putnam 1981, 46-47). In addition, the division of linguistic labor is still admitted (Putnam 1988, 22-26). Speakers can correctly employ terms to refer to entities they have not been directly acquainted with and without mastering the best available knowledge about them (without being in position of performing adequate tests for determining whether or not an item of the environment belongs to the extension of a given term). The example of 'Moses' constitutes a striking illustration of this division of linguistic labor. Most speakers that have ever employed this term have never been directly acquainted with Moses. What is required from common speakers to correctly employ genuinely referring terms is to stand in a proper causal-historical relationship with situations in which competent language-users (like scientific experts when it comes to terms like 'gold' or 'water') singled out entities of our actual world. As was the case in the early account, the causal-historical relationship enabling language-users to properly employ their terms can be socially mediated and laymen can defer to experts who master best available conceptual descriptions of referents.

In sum, much of Putnam's early causal theory of reference survives in the internalist period. Again, causality is not invoked to defined reference as (or reduce it to) causal relations. Rather, causal-historical chains are mobilized to explain how language-users can correctly employ referring terms. Although not explicitly mentioned, introducing events still play their role in reference fixing at the beginning of the causal histories that underpins the uses of our terms. They still constitute the situated loci at which terms are associated with components of their meaning vectors. At the occasion of an introducing event, a term receives an initial connection with a conceptual part that contains at least an indexical description or an ostensive definition and that is susceptible to evolve consequently to evolution in knowledge possessed by language users. The term is also indexically



associated with an entity or a paradigmatic sample of a kind. For instance, through these situated and contingent introducing events, the term, say, 'tree' is connected to the relevant parts of a conceptual scheme and refers to actual trees. An image can refer to a tree because it is similar to past experiences of actual trees or other representations of trees, all previously connected with a conceptual system through introducing events. A drawing (that is not really similar to a tree) can refer to a tree because someone's kid intended to draw an actual tree and trees are already associated with their conceptual system. In the same vein, a theoretical term like 'electricity' can be introduced in link with relevant parts of a conceptual system (which is likely to include physics) as an explanation of some observed phenomena (e.g. a lightning bolt). Terms can thus refer to non-observable entities involved in observed phenomena. As before, speakers or thinkers using a given sign to refer to an actual world's entity have thus to stand in an appropriate relationship with introducing events grounding the connections between the sign, its place in a conceptual scheme and the associated actual entities.

However, these striking proximities should not hide the radical difference standing between Putnam's early account of meaning and reference and the verificationist semantics of internal realism. This difference reflects Putnam's retreat from the externalist perspective to the actual persons' point of view and his recognizing of the irreducible involvement of specificities of these actual persons. There is first the focus Putnam puts on intentionality. Language-users have to employ intentionally their signs to refer to given entities or kinds. This is an important point but it was probably already present, though implicitly, in Putnam's early account. Rather than a radical difference, the insistence on intentionality may be considered as constituting a refinement. It may be understood as adding a point to the already claimed distance between Putnam's causal theory of reference and any reductive account of reference as a causal relation. Causal-historical chains on which reference relies have to be recognized and intentionally mobilized by language-users. Someone never acquainted with elms or beech can nonetheless use correctly the terms 'elm' and 'beech' to the extent she intentionally mobilizes her recognizing of the presence of experts in the linguistic community she belongs to. The mere existence of a causal-historical link with experts that have been acquainted with elms and beech (and with the difference between them) is not enough. The major difference between Putnam's early account of meaning and reference and the verificationist semantics of internal realism is therefore lies in another aspect of the irreducible involvement of specificities of actual persons. This aspect, that has already been mentioned but is worth-repeating, is the considerably reinforced role of conceptual schemes embedding our terms with respect to actual world's entities. In Putnam's early approach, metaphysical reality and its objects were existing without regard to our conceptual schemes. Introducing events were contingently connecting terms and the conceptual part of their meaning vector with pre-given objects or properties. The latter were then forming the referents of the terms, that is to say the external part of their meaning vector. Pre-given objects and properties were thus conceived of as existing and being what they are independently of introducing events. The latter were crucial only to hook languages on mind-independent metaphysical reality. Contrastively, in the internalist perspective, actual world's entities our languages refer to do not pre-exist or exist independently of conceptual schemes (formed by interconnected conceptual parts of meaning vectors). Introducing events becomes crucial not only to hook languages on reality but also to shape actual world's entities. In the internalist perspective, nothing can be mobilized that cannot be talked about meaningfully. The only available tool for grounding reference toward actual world's entities is the disquotational scheme that, according to Putnam's verificationist semantics, relies on warranted assertability. Only the disquotational scheme permits us to obtain actual world's entities. As

already pointed, pools of experiential inputs (item of the environment) does not yet constitute genuine actual world's entities. Rather, they are required in the process of shaping or cutting the world in different entities. It is in warrantedly employing terms in conjunction with these experiential inputs that referring terms and their referents qua actual world's entities are obtained in a single unified move. Conditions of warranted assertability consist in tests or criteria, recollected in our admitted conceptual schemes, which apply to items of the environment. In consequence, there can be no actual world's entities prior to associations between experiential inputs and conditions of warranted assertability recollected in conceptual schemes (from an internalist point of view, we have to resist the temptation of thinking objects and properties independently of this semantic device). And such associations do not metaphysically free-stand in a God's eye points of view independently of specific introducing events. Rather, they are initiated at the occasion of situated and contingent introducing events. In internal realism, introducing events do not connect conceptual schemes to ready-made entities of metaphysical reality. Instead, entities of the actual world are themselves shaped by the association introducing events operate between experiential inputs and admitted conceptual schemes. Thus, actual world's entities a sign refers to can still be considered as a part of its meaning (as forming the external or extensional part of its meaning vector), but in a less radical sense than in Putnam's early semantic account. The external part of meaning vectors is not formed by mind-independent referents anymore. On the contrary, it includes entities shaped by or belonging to conceptual schemes.

This may legitimately raise a serious worry. What happens when our conceptual schemes evolve? Does actual water changes when language-users discover that they can replace their stereotype of water (something like 'water is a colorless, transparent and thirsty-quenching liquid') by water's chemical composition ('water is  $H_2O$ '). Is it still possible to consider such changes as improvement of our knowledge about the same entity? Are we entitled to think that water is something more than, or something independent from, the descriptions of water (and of the criteria it complies with) hosted in our conceptual schemes. In Putnam's early semantic account, the externalist perspective and its associated essentialism were solving the problem. Once an actual world's entity had been associated with a term through an introducing event, the term was designating any actual world's entity sharing the same essence or deep structure (existing mind-independently) through the process of rigid designation. Accordingly, it was possible to associate 'water' with a somehow vague stereotype (like 'colorless, transparent and thirsty-quenching') while constantly conceiving the term as referring to whatever liquid with  $H_2O$  as chemical structure. However, such an externalist essentialism cannot be admitted in internal realism. But then, how the revision of conceptual schemes should be understood? Is it possible to argue that a previously admitted conceptual scheme was wrong, that it was incorrectly matching reality? Or are we condemned to admit that reality and its objects or properties change with the replacement of conceptual schemes? Surprisingly, Putnam answers these epistemological challenges in remobilizing the process of rigid designation:

I still believe that a community can stipulate that "water" is to designate *whatever has the same chemical structure* or *whatever has the same chemical behavior* as paradigms X, Y, Z, ... (or as most of them, just in case a few of them turn out to be cuckoos in the nest) *even if it doesn't know, at the time it makes this stipulation, exactly what that chemical structure, or exactly what that lawful behavior, is.* (Putnam 1990a, 70)

Here Putnam makes a subtle use of the notion of indexicality. He distinguished between *indexical descriptions*, such as "stuff that behaves like and has the same composition as this," and *non-*

*indexical descriptions*, that mobilize specific conceptual schemes to explicate behaviors or compositions (Putnam 1988, 37-38). In internal realism, indexical descriptions still constitute initial hooks enabling language-users to rigidly refer. But what they indexically single out is only items of the environment. For obtaining actual world's objects and entities, indexically designated items of the environment have to be positioned in a conceptual scheme through associated non-indexical descriptions. Therefore, indexical descriptions permit rigid designation of items of the environment. Accordingly, non-indexical descriptions can still be discovered and explicated on the stable ground provided by indexical descriptions. Indexicality and rigid designation still allows understanding evolving non-indexical descriptions as constantly bearing upon a stable something that is indexically singled out. For instance, our tests for extension's membership and thus for warranted assertability can be improved. Mistakes can be detected and addressed (Putnam 1988, 37). In the particular case of (natural) kind terms, indexical descriptions like 'X refers to any entity that has the same "lawful behavior" and the same "ultimate composition" as *these* paradigmatic examples' still ground this minimal stability of reference (Putnam 1981, 46-47, 1988, 38) – or, maybe more precisely, this minimal stability within the whole process of reference.

While indexicality and rigid designation may be admitted for proper names and singular terms mobilizing pure ostensive definition 'X refers to *this*', Putnam's involvement of notions like "lawful behavior" or "ultimate composition" when it comes to natural kind terms are more problematic. They seem invoking an essentialism Putnam rejected in abandoning metaphysical realism. At this point, the sharpest consequences of Putnam's transition from his early semantic account to his internalist approach can be brought to the fore. Ultimate compositions or lawful behavior are not metaphysical properties of mind-independent objects as would be claimed in the externalist perspective. As the objects they apply to, these properties are internal to our admitted conceptual schemes (for instance to our physical or chemical theories). To be sure, what is required is not directly knowledge of laws or ultimate composition, but rather a conceptual scheme that gives a meaning to these notions:

We didn't *know* those laws when we introduced the term "water," but we already had the *concept* of a physical law, and the concept of discovering a physical law, and that is all we needed to formulate this notion of substance-identity. (Putnam 1990a, 70)

Additional clues of this shift can be found in the distance Putnam explicitly takes, in his internalist period, with certain aspects of Kripke's approach. Putnam does not admit the idea of metaphysical possibility anymore. The semantic of possible worlds is itself internalized. We can still rely on physical possibilities that are not abstractly stipulated from outside but that are instead provided by and internal to physical theories themselves (Putnam 1988, 38 note 18, 1990a, 71). Accordingly, only a weakened form of the process of rigid designation is maintained in internal realism. It cannot be conceived as holding in virtue of what referents are in themselves along the externalist perspective. It is still possible to use our terms to rigidly designate. Terms can be stipulated as referring to any entity similar to (e.g. sharing the same deep structure with) paradigmatic examples singled out during introducing events. But this process of rigid designation cannot hold longer than the admitted conceptual schemes that give a meaning to and describe the notions of law and of ultimate composition<sup>20</sup>.

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<sup>20</sup> Removing 'lawful behavior' or 'ultimate composition' from indexical descriptions, using for instance 'X refers to any entity similar with *this*' would not solve the issue. As already discussed, the notion of similarity is empty (because containing infinite possibilities) without specifying a respect according to which entities have to be similar. Notions of lawful behavior and of ultimate composition precisely

## **Internal realism and (taxonomic) incommensurability**

Based on the verificationist semantics and on this internalized process of rigid designation, internal realism comes closer to Kuhn's claims about (taxonomic) incommensurability. In fact, one can wonder to which extent this weakened process of rigid designation can resist disturbances generated by radical scientific revolutions (Kuhn 1990b). In particular, rigid designation may collapse between linguistic communities operating with notions of law and of ultimate composition hosted in taxonomically incommensurable conceptual schemes. In such circumstances, each linguistic community may well cut (or shape) their actual world in (or according to) radically incompatible sets of categories. It could thus be defended that they experience radically different worlds as suggested by Kuhn's World-Change Thesis (Kuhn 1996 [1962], chapter 10). Despite these possible points of connection, Putnam still seems claiming a certain distance between his internal realism and such non- (or anti-) realist conclusions about reference and actual world's entities. In particular, he argues that, although we may not be able to establish connections between incommensurable conceptual schemes based on neutral objects, the meanings of terms are not so radically changing that it would become impossible to interpret some of them starting from the others. With Kuhn, Putnam now recognizes the possibility for "intertheoretic meaning change," but the latter does not imply "uninterpretability" (Putnam 1990 [1984], 126-127). In addition, Putnam also claims that the account of reference for (natural) kind terms he shares with Kripke, and that relies on indexical descriptions, allows separating "the question of how the reference of such terms is fixed from the question of their conceptual content" (Putnam 1988, 38). The fact that Putnam maintains such affirmations can be clarified in link with his views about truth in the internalist period. Without anticipating on the next sections discussing in depth this topic, few words are in order here. Among the conceptual schemes susceptible to shape our actual world, distinction have to be made. A first obvious remark is that what our actual world is (with its objects and properties) does not result from any conceptual schemes someone would feel interesting to admit. Only rationally accepted conceptual schemes enter into the semantic processes of internal realism and guides warranted assertability. This is already indicated through the treatment Putnam makes of the division of linguistic labor. What our actual world is depends upon conceptual schemes rationally admitted by experts and not on stereotypes possessed by laymen. Second, Putnam grants extreme importance to the distinction between truth and rational acceptability<sup>21</sup>. He conceive the former notion as an idealization of the latter under epistemically ideal conditions (Putnam 1981, 55). Provided that this distinction can be secured, Putnam's verificationist semantics would then become compatible with the claim that, when naming something, language-users intend to refer to the corresponding actual world's entity as described and shaped by a true conceptual scheme – instead of as what we can be effectively acquainted with based on our rationally accepted conceptual schemes. Such a true conceptual scheme is the one that "a rational being would accept on sufficient experience of the kind that it is actually possible for beings with our nature to have" (Putnam 1981, 64). Similarly, when indexically pointing something, language-users rigidly designate whatever has the same lawful behavior or the same ultimate composition as paradigmatic examples, with the intention of using these notions as they would be defined by a true conceptual scheme. This distinction between truth and rational acceptability could thus permit

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constitute such specifications.

<sup>21</sup> As exposed in the following sections, this distinction is one of the main elements separating Putnam's verificationist semantics from radical verificationism of the type endorsed by logical positivists. Other elements can be mentioned, such as the fact that, for Putnam, the means actual persons can have to verify or rationally accept something are not fixed and pre-given and, in particular, are not restricted to mathematical deduction coupled with empirical observation (Putnam 1990c, ix).

securing the stability of reference under evolutions of our rationally accepted conceptual schemes. As the following sections expose, the internalist account of truth proves untenable and brings down with it the here exposed verificationist semantics that degenerates into a pseudoexternalism facing the threat of solipsism (Putnam 2012c [2011], 81).

### **3.3. An intimate connection between truth and rational acceptability**

Rejecting the basis of the externalist perspective of metaphysical realism (the claim that the world can be conceived of as a fixed totality of mind-independent objects and their properties), Putnam also abandons the associated thesis constituted by the correspondentist view of truth. With this move, he meets the thinking of many other philosophers such as Wittgenstein, Quine, Sellars, Heidegger, Foucault or Habermas (Bernstein 2010, 109). As exposed, arguments such as the model-theoretic one demonstrate that a unique relation of reference cannot be singled out in the externalist perspective which rejects the involvement of specificities associated with speakers or thinkers. Provided that reference to mind-independent entities of the externalist perspective is not possible, the correspondentist conception of truth of metaphysical realism becomes untenable. To be sure, someone may try to resist this conclusion in arguing that, although we cannot refer consistently and univocally to entities of mind-independent reality, it could still be maintained that this reality exists and that an abstract relation of correspondence between it and conceptual schemes could still be admitted. According to Putnam this way of defining truth as correspondence with a kind of noumenal reality does not score better (Putnam 1981, 73-74). It overlooks the fact that the model-theoretic argument also applies to such a relation. It would be impossible to single out a unique relation of correspondence. And Putnam indicates that we can have many conceptual schemes that are cognitively equivalent or mathematically intertranslatable but incompatible in a metaphysical point of view (Putnam 1981, 73-74). Examples can be found in physics. Maxwell equations describing particles interacting with and through the electromagnetic field (playing the role of a causal agency) are equivalent to a theory positing only charged particles directly interacting at distance with retarded potentials. The same phenomenon, which Putnam calls “conceptual relativity” can occur when counting objects in a room. Depending on the admitted definition of object (for instance are mereological sums of objects themselves objects), many different answers are possible. Similarly, a tree can be described as identical “with the space time-region containing it” or “with the mereological sum of the time-slices of elementary particles that make it up” (Putnam 1988, 110-113). If all is required for truth is an abstract relation of correspondence between such descriptions and a noumenal world, the model-theoretic argument shows that it would always be possible to settle various relations of correspondence that would render true all these statements. Deprived from the possibility to make sense of talks about mind-independent entities of the world in itself, or, if one prefers, from the possibility to single out a unique abstract relation of correspondence with a noumenal reality, the whole metaphysical realist conception of truth claiming that there is a unique complete true theory of the world – the theory that satisfies the unique relation of correspondence with it, that is to say the theory that describes correctly the objects of the world as they are in themselves – becomes incoherent. As it is the case with semantic issues, truth also has to be conceived of starting from the internalist perspective.

## **Indispensability of standards of rational acceptability**

Putnam claims that it is possible to reject the naïve correspondentist understanding of truth proposed in the externalist perspective without necessarily abandoning any notion of truth and endorsing a form of relativism (Putnam 1981, x). Mobilizing insights from Tarski, Putnam argues that, at a purely formal and abstract level, truth can be conceived of along the disquotational scheme (already mobilized in the verificationist semantics): a statement '*P*' is true if and only if it is a fact that *P*. For example, 'snow is white' is true if and only if snow is white. But this scheme remains purely formal until the meaning of 'it is a fact that *P*' is elucidated. According to metaphysical realism, 'it is a fact that *P*' simply means that *P* corresponds to the world in itself, that it describes correctly the concerned mind-independent objects. But if metaphysical realism is meaningless, another elucidation has to be provided. Putnam's proposal follows the insights of the verificationist semantics. In the internalist perspective, "a fact is something that it is rational to believe" (Putnam 1981, 201). Therefore, 'it is a fact that *P*' means that *P* is rationally acceptable from the actual person's point of view. Actual inquirers rely on standards of rational acceptability, that is to say "standards which tell us when we should and when we should not accept statements" (ibid, p. 137). When claiming 'Snow is white is true', "we understand 'true' by being trained to assert "Snow is white" is true' when and only when we are prepared to assert 'Snow is white'" according to our standards of rational acceptability (Putnam 1983a, xiv). For the notion of truth to possess content beyond its abstract formulation in Tarskian terms, these standards of rational acceptability admitted by actual inquirers have to be made explicit:

If someone approaches us with a gleam in his eye and says, 'Don't you want to know the "Truth"?', our reaction is generally to be pretty leery of this person. And the reason that we are leery (apart from the gleam in the eye) is precisely because someone's telling us that they want us to know the truth tells us really nothing as long as we have no idea what standards of rational acceptability the person adheres to: what they consider a rational way to pursue an inquiry, what their standards of objectivity are, when they consider it rational to terminate an inquiry, what grounds they will regard as providing good reason for accepting one verdict or another on whatever sort of question they may be interested in. (Putnam 1981, 129)

Through the restriction to the internalist perspective, Putnam claims that we are left with no other choice than to mobilizing standards of rational acceptability of actual persons. And this also holds in the case of science. In itself, claiming that science aims at discovering the truth about the world is purely formal. To the extent that truth cannot be conceived along the idea of a comparison between our beliefs and a mind-independent reality, "the claim that science seeks to discover the truth can mean no more than that science seeks to construct a world picture which, in the ideal limit, satisfies certain criteria of rational acceptability" (Putnam 1981, 130). Among the standards of rational acceptability underlying scientific investigation, two important ones are coherence between theoretical beliefs and fit of these beliefs with experiential ones (Putnam 1981, 54-55)<sup>22</sup>. While correspondence with a world made of independent objects is prevented in the internalist perspective, rational acceptability remains tightly connected with "the usual sort of empirical fit" with an empirical world (Putnam 1981, 133). Actual inquirers can still pursue the settling of an adequate "symbolic representation of their environment" (Putnam 2013f, 21). As a consequence, the phenomenon of conceptual relativity introduced just above is perfectly admissible in internal

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<sup>22</sup> It may be added that "relevance" seems constituting an important factor for a statement or a conceptual scheme to be admitted as rational, in addition to standards of rational acceptability like coherence between theoretical beliefs and fit between theoretical beliefs and experiential ones (Putnam 1981, 202).

realism and opens the door to “pluralism” (Putnam 1981, 73). Several conceptual schemes embedding different ontologies but equally coherent, intertranslatable and cognitively equivalent (in the sense of generating the same consequences with respect to experiential beliefs) can all be rationally accepted together (Putnam 1981, 73, 2001a).

More generally, the abandon of the conception of truth as correspondence on a metaphysical realist mode poses a crucial question. Once the externalist perspective is rejected, the epistemological status of the standards of rational acceptability becomes crucial for the understanding of the notion of truth. In fact, standards of rational acceptability give content to the very notion of truth. Truth and standards of rational acceptability cannot be sharply disconnected. Therefore, standards of rational acceptability cannot be considered as mere tools subserving the goal of achieving metaphysical realist truth (as correspondence with mind-independent reality), which would be fixed independently of these standards. Consequently, one can legitimately wonder about the objectivity of these standards. Are they accountable for through a unique and universal set of rules and principles? Can they be isolated from specificities of actual persons and of the context they evolve in such as historically, culturally and socially situated judgments reflecting local interest and commitments? Contrastively, do they embed sensitivity to historical, cultural and social contexts in irreducibly mobilizing practices, judgments and commitments of actual persons? Are such specificities indispensable? If this is the case, how subjectivism or relativism can be avoided?

### **Rational acceptability and context-sensitivity**

The only way to avoid mobilizing situated specificities of actual persons would be to provide an algorithmic account of rationality and of rational acceptability (Putnam 2002a, 82). If what it means to be rational and rationally acceptable can be defined algorithmically through a canon (or a list) universally applicable, the contextual features of the actual persons could be expelled from the picture. Provided with such an algorithmic conception of rationality, any rational investigation could be conducted without requiring situated specificities and judgments of actual inquirers. It is often defended that the ‘scientific method’ provides a universal framework of this type, that “the method of science is a fixed and universal method employed throughout the sciences” (Sankey 2008a, 248). One of the sources of this belief about the existence of a universal method for rational or scientific investigation may be the instrumentalist approaches of rationality that reduce rational processes of knowledge production to the establishment of “facts of the form *if you perform such and such actions, then you will have such and such experiences*” (Putnam 1981, 181). Mill’s phenomenalism, which is rooted in the older empiricisms of Locke, Berkeley and Hume, is an instance of this type of account. It claimed that meaningfulness and knowledge can issue only from sensations. But, this restriction to sensations raises unpalatable issues such as the need to reduce talks about ordinary objects to statements about sensations or the irreducibly private nature of the latter (ibid). The same instrumentalist line of thought nonetheless later re-emerged with thinkers like Carnap or Popper, who departed from pure phenomenalism based on sensations only to instead rely on public observability (Putnam 1981, 181-182). Accordingly, knowledge could be grounded in publicly checkable reports, for instance about readings of scientific instruments’ pointers. Popper’s falsificationism and logical positivism count among the most famous attempt at reducing the method of rational or scientific investigation to a universal algorithm.

To begin with, logical positivist thinkers, encouraged by the success of Frege in writing an algorithm capturing first order logic, thought that inductive logic, and thereby scientific method, could be framed under the form of a similar algorithm suitable for second order logic. According to logical positivism, this algorithm takes the form of the verifiability principle (is rational only what is analytic or what can be verified) which “exhaustively describe or ‘rationally reconstruct’ not just scientific rationality, but all rationality worthy of the name” (Putnam 1981, 125). As already exposed, Putnam rejects logical positivist views on several grounds (failure of the theoretical-observational dichotomies, lack of clarity of the notion of partial interpretation, absence of meaningfulness of the verifiability principle according to its own light). And more can be said here. Not only is the verifiability principle self-refuting as a semantic principle, but it is also inconsistent as a canon exhausting rationality. In fact, the statement ‘is rational only what is analytic or what can be verified’ neither is analytic nor can be verified, and is therefore irrational (Putnam 1981, 106).

Popper’s falsificationism constitutes a second famous attempt at providing an algorithmic method for scientific investigation. Although he admitted a wider notion of rationality, Popper claimed that at least scientific method can be captured through the notion of falsification, which relies on deductive logic only (Putnam 1981, 196-197, Sankey 2008a, 253). Scientific theories have to be highly falsifiable. Theories are eliminated when empirical predictions they permit deducing are false. In this falsificationist account, scientific rationality could be framed as follows: test all the theories. Only the one that survives is rationally acceptable. However, Popper’s account suffers from several weaknesses (Putnam 1981, 196-198, 2002a, 82-83, Sankey 2008a, 252-254). For instance, if scientific rationality embeds no inductive power, it is hard to understand why science should guide our future actions. Another weak spot is the fact that we are never in position of testing all possible theories. In the same vein, several competing theories can be underdetermined by empirical evidence. It is even always possible to construct an empirically equivalent alternative to any successful theory. Moreover, Popper’s view seems too restrictive with respect to what count as a scientific theory. Non-highly falsifiable theories like Darwin’s theory of species evolution would be excluded.

According to Putnam, these failures of logical positivism and Popper’s falsificationism at providing an algorithmic account of rationality echo a deep problem impeding any attempt at establishing “an ideal theory of rationality,” that is to say “a theory which would give necessary and sufficient conditions for a belief to be rational in the relevant circumstances in any possible world” (Putnam 1981, 104). First, such an ideal theory should not only account for all the already recognized paradigmatic examples of rationality, but also provide criteria allowing anticipating cases we know nothing about yet. In Putnam’s view, finding powerful enough universal generalizations is unlikely (*ibid*). Second, Putnam defends the general idea that no list of rules and criteria or no algorithm can exhaust the ways we ought to reason or what it means to be rationally acceptable. He calls “criterial conception of rationality” any approach reducing the account of what is rationally acceptable to a public and culturally recognized (or institutionalized) list of criteria and rules (Putnam 1981, 110). The attempt of logical positivists at capturing rationality through the verifiability principle is an instance of criterial conceptions of rationality<sup>23</sup>. The criticism that this

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<sup>23</sup> Popper’s falsificationism also constitutes an instance of criterial conceptions of rationality to the extent it is considered as a suitable account of science permitting to isolate it from other human (rational) activities.



verificationist reduction of rationality is self-refuting also applies to any criterial conception of rationality:

In short, if it is true that only statements that can be criterially verified can be rationally acceptable, that statement itself cannot be criterially verified, and hence cannot be rationally acceptable. If there is such a thing as rationality at all - and we commit ourselves to believing in some notion of rationality by engaging in the activities of speaking and arguing - then it is self-refuting to argue for the position that it is identical with or properly contained in what the institutionalized norms of the culture determine to be instances of it. For no such argument can be certified to be correct, or even probably correct, by those norms alone. (Putnam 1981, 111)

Therefore, a purely algorithmic account of what is rationally acceptable is not tenable. Discussing the nature of rationality requires a wider understanding of rational justification than the one provided by criterial conceptions (Putnam 1981, 113). Rational investigation (including science) “presupposes prior notions of rationality” (Putnam 1981, 195). It reflects the fact that “there is no neutral conception of rationality to which we can appeal when the nature of rationality is itself what is at issue” (Putnam 1990 [1982], 138-139). Any rational inquiry embeds informal parts from which specificities and judgments of situated actual persons cannot be removed. There is no universal definition of what is rational free-standing independently of contexts actual persons evolve in. How a rational investigation should be conducted is not fixed in advance, independently of the historically, culturally and socially situated specificities like judgments and commitments of actual persons<sup>24</sup>.

Notably, this general criticism of algorithmic accounts of (scientific) rationality brings to the fore that some epistemic principles that cannot be reduced to pure algorithms are indispensable. While canons of rationality are surely at play, they cannot exhaust the whole picture. For instance, the fact that we are never in position of testing all possible theories does not constitute a reason for rejecting Popperian falsificationism but rather indicates that its application is possible only when complemented by other elements (Putnam 1981, 196-198). Epistemic principles such as “simplicity”, ‘coherence’, ‘plausibility in the light of what we know’ and even the intangible notion of ‘beauty’ that Dirac famously invoked” are required to decide which theories deserve effective empirical testing (Putnam 2002a, 83). The case of the acceptance of Darwin’s theory of species’ evolution is also illuminative. This theory is not accepted because it “provides novel predictions that are not falsified but rather because it constitutes a plausible explanation of an enormous amount of data, because it has been fruitful in suggesting new theories and in linking up with developments in genetics, molecular biology, etc.” (Putnam 1981, 198). Darwin’s theory is accepted through inference to the best explanation which also requires epistemic principles such as simplicity, plausibility, fruitfulness or unification power (Putnam 2002a, 82-83, 2012b [2010], 95). In the same vein, long before the availability of any determinant observational facts, the epistemic principle of simplicity led to favor Einstein’s general relativity over Whitehead theory of gravitation (Putnam 1982a, 6-7). In sum, such epistemic principles are irreducible components of the notion of rational acceptability. They are “epistemologically indispensable” (Bernstein 2005, 255). And epistemic principles of this type cannot be reduced to pure algorithms: “none of them is governed by syntactically precise rules” (Putnam 1982a, 11). Different principles may be mobilized in

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<sup>24</sup> Restricting scientific method to induction only (following a Baconian line of thought) would not permit escaping this conclusion. As evidenced by Nelson Goodman, informal judgments would still be required to determine which predicates are projectable and which are not (Putnam 1981, 139). In addition, rejecting any purely algorithmic account of scientific method is not at odd with Bayesian approaches. A prior probability metric that represents “the scientists’ antecedent beliefs about the world” and “depends on the actual changing beliefs of scientists” is still required (Putnam 1981, 190-193).

different context and conflicts between some of them can occur, imposing trades-off that cannot be decided through purely algorithmic or formal methods. Epistemic principles are not simple rules to be followed but “complex phenomena which vary from situation to situation” and whose deployment requires judgments from actual persons (Putnam 1982a, 6-7).

Moreover, epistemic principles are “action-guiding” terms (Putnam 1981, 210, 1982a, 7). They not only (complexly) describe features rationally acceptable theories or conceptual schemes possess but also reflect normative commitments about the fact that these features are desirable. They state that theories or conceptual schemes *should* possess these features. Epistemic principles are therefore irreducible to purely factual matters. Their deployment is “as historically conditioned as our conceptions of kindness, beauty, and goodness” (Putnam 1981, 136). They directly reflect evaluative judgments of historically, culturally and socially situated actual persons. This indicates that not only norms and epistemic principles, but also ethical values are involved in rational investigations. For example, judging that public discussion of the outcomes of an inquiry is more desirable than the methods of authority or of appeal to allegedly *a priori* reasons takes place in our search for better conceptions of rationality. This quest is “an intentional human activity, which like every activity that rises above habit and the mere following of inclination or obsession, is guided by our idea of the good” (Putnam 1981, 137). Ultimately, our evaluative judgments about epistemic principles, and through them our standards of rational acceptability, “derive their authority from our idea of human flourishing,” “of Eudaemonia” (Putnam 1981, 134, 1982a, 11). And this role of judgments and normative or ethical commitments of situated actual persons propagates all the way down to the rational admission of conceptual schemes that shape or forge actual world’s objects and properties. This indicates that judgments and normative or even ethical commitments of actual persons are indispensable to have an empirical or actual world:

But the empirical world, as opposed to the noumenal world, depends upon our criteria of rational acceptability (and, of course, vice versa). (...) The dependence of our methods on our picture of the world is something I have stressed in my other books; what I wish to stress here is the other side of the dependence, the dependence of the empirical world on our criteria of rational acceptability. What I am saying is that we must have criteria of rational acceptability to even have an empirical world, that these reveal part of our notion of an optimal speculative intelligence. In short, I am saying that that the ‘real world’ depends upon our values (and, again, vice versa). (Putnam 1981, 134-135)

In that, Putnam follows classical pragmatists like Peirce, James, Dewey and Mead and claims that values and normativity “are essential to the practice of science itself” and “permeate *all* of experience” (Putnam 2002c, 30). Rationality, and consequently the actual world shaped by rationally accepted conceptual schemes, cannot be accounted for independently of judgments and normative or ethical commitments of historically, culturally and socially situated actual persons.

This acknowledgement of the context-sensitivity of standards of rational acceptability can be linked with the already mentioned issues of conceptual relativity and pluralism. As exposed, the admission of conceptual relativity in internal realism already indicated that several metaphysically incompatible, though translatable and cognitively equivalent, can be rationally accepted at the same time. The discussion just above shows that different standards of rational acceptability can be admitted in different contexts. In turn, distinct conceptual schemes can be rationally accepted in different contexts, forging and describing different versions of the actual world actual persons are confronted with. The discussion of the form such a (conceptual) pluralism may take in internal realism cannot be fully developed without completing the exposition of the issue of truth and has thus to be suspended for now. Moreover, the irreducibility of contextual influence with respect to

standards of rational acceptability, as well as the possibility of divergences in conceptual schemes' acceptance it generates, raise a more pressing problem.

### **Relativism and the fact-value dichotomy**

Confronted with this impossibility to isolate rationality and standards of rational acceptability from the specificities of situated actual persons (in particular from their normative and ethical commitments), it may be tempting to conclude in favor of (cultural) relativism in picturing rationality and standards of rational acceptability as grounded in arbitrary and irrational factors (ideologies, instincts, emotions, self-interests) of (groups of) actual persons belonging to situated cultures (Putnam 1981, 156-157). According to Putnam, this conclusion cannot be admitted. For him, the fact that rational investigations cannot be reduced to algorithmic accounts does not imply that science and (rational) inquiries are irrational (or a-rational) enterprises that succeed "by pure luck" (Putnam 1981, 195). Putnam rejects Rorty's views in which no true conception of rationality can exist and debates about what is rational have no end (Putnam 1981, 216). He argues that, as was the case with the verifiability principle, (cultural) relativism that reduces rationality to "local cultural norms" driven by irrational factors is self-refuting. According to its own light, the endorsement of such a relativist claim about rationality is itself irrational (Putnam 1981, 113-126 and 160-163). In addition, the fact that some evaluative judgments of actual persons can prove arbitrary or motivated by irrational factors does not imply that all evaluative judgments are necessarily so (Putnam 1981, 168). Although not clearly explicated by Putnam himself, it may be interesting to consider (cultural) relativism as another form of criterial conception of rationality reducing it to local criteria institutionalized in particular contexts (or cultures). Similarly to the positivist conception, (cultural) relativism leaves "no room for a rational activity of philosophy" (Putnam 1981, 168) in reducing rationality to local criteria. If the positivist account of rationality (as "an ideal computer program") can be understood as "a scientific theory inspired by the exact sciences," the (cultural) relativist account (rationality as defined by "local cultural norms") can be interpreted as "a scientific theory inspired by anthropology" (Putnam 1981, 126). In both case, the attempt at arguing about the nature of rationality without admitting wider notions of rationality than "institutionalized criterial rationality" leads to self-refutation (Putnam 1981, 113).

According to Putnam, the inference from recognizing that rationality and standards of rational acceptability cannot be isolated from contextual features of actual persons such as their judgments and normative or ethical commitments to the conclusion in favor of (cultural) relativism is not necessary. The apparent strength of such an inference may rely on the admission of the fact value-dichotomy and the associated belief that only the ground of neutral facts permits the settling of rational claims. Consequently, scientific rationality (allegedly based on operationalism and empirical testing only) would exhaust rationality. From this ground, concluding that evaluative judgment cannot be rational is inescapable (Putnam 1981, 174-180). Evaluative judgments of actual persons are either absurd or reflect mere individual and subjective preferences (as accounted for in Bentham's scheme; see for instance: Putnam 1981, 151, 169-170 and 214). Consequently, recognizing that even science cannot be isolated from judgments and normative or ethical commitments of actual persons undermines scientific rationality. It leaves us with a notion of rationality that cannot hold beyond historically, culturally and socially situated irrational factors guiding such judgments and commitments. According to Putnam, we may fruitfully reverse our reasoning with respect to these issues. The indispensability of evaluative judgments from actual

persons in science may not imply that science is subjective or irrational. Instead, it could be read as the sign that the fact-value dichotomy should be rejected and that evaluative judgments and commitments are themselves capable of objectivity (Putnam 1981, 128 and 135-137, 2002b, 15, 2012b [2011], 297, Putnam 2013h, 240). The fact that scientific rationality cannot be neutrally grounded through a universal algorithm based only on logic and observational facts may not vindicate cultural relativism and the idea that science is not rational – that it scores no better than astrology or other pseudo-rational investigations and that it succeeded by pure luck. Rather, it could indicate that scientific rationality, though extremely valuable and successful, does not exhaust rationality. Scientific rationality may well be considered as better than “the way in which people traditionally proceeded to gather knowledge in the prescientific ages” without, in the same move, denying that it presupposes prior notions of rationality (Putnam 1981, 195). In this perspective, it is worth wondering whether or not the fact-value dichotomy and the idea that scientific rationality exhausts rationality should be admitted in the first place. And Putnam argues they should not.

In this regard, one of the most explicit continuities in Putnam’s philosophical trajectory is the criticism of the fact-value dichotomy (Putnam 1981, in particular chapters 6 and 9, 1982a, 1990d, 2002c, 2004, 2008c, 2012b [2011]). He notably points that the fact-value dichotomy and the claim that scientific rationality (understood in an instrumental way as focused on the establishment of means-ends connections) exhausts rationality reinforce each other, forming what he calls the “modern circle” (Putnam 1981, 173). If values and evaluative judgments are not capable of objectivity, choices of ends cannot be rationally motivated (they cannot be assessed as more or less rational). Choosing a good end does not render the choice rational. In consequence, only the establishment of means-ends connections can be rational or irrational. The (scientific) instrumental conception of rationality is the only intelligible one. In turn, this restriction of the scope of rationality vindicates the claim that values and evaluative judgments cannot be rationally investigated and thus are not capable of objectivity (closing the circle). Putnam argues that this modern circle can be escaped. In particular, he criticizes the idea that there cannot be good reasons permitting to qualify evaluative judgments as rational. He first discusses the case of evaluative judgments reflecting someone preferences about the taste of, say, ice-creams (Putnam 1981, 152-155). The claim that such evaluative judgments cannot be rational and objective but rather constitute non-cognitive expression of subjective attitudes or preferences is tenable only according to naïve psychological views assuming that experience is neutral and that liking or disliking the objective sensation it neutrally provides is a mere state of mind separable from the neutral experience. A more sophisticated approach Putnam favors is to recognize that the person experiences a value-loaded fact, something, say, pleasant (and not just a neutral and objective taste). And this value-loaded experience renders the corresponding evaluative judgment objective and rational. To be sure, such a value judgment reflects a subjective preference, but it is cognitive and capable of objectivity. The person has good reasons to prefer a given taste for ice-creams (the experience of value-loaded facts). This means that some evaluative judgments enter the domain of what can be rationally assessed in virtue of the experience of value-loaded facts.

However, such a conclusion does not imply that all evaluative judgments can be said rational when reflecting the experience of positive value-loaded facts. Notably, the latter may fail providing sufficient reasons for legitimizing evaluative judgments that bear upon deep traits of character and important moral issues we consider crucial in our moral life (Putnam 1981, 152). For instance, it would be desirable to deny that getting more satisfaction from pushpin than from

poetry renders objective and rational the judgment that pushpin is better than poetry. Even more sharply, who could accept that having a pleasant experience in murdering someone provides a good reason to claim that murder is not wrong? Evaluative judgments can be motivated by aggressive impulses or narcissistic ideas as well as by ideologies that are culturally admitted but lack of objectivity (Putnam 1981, 155-156). This may indicate that we returned to our starting point and to (cultural) relativism: evaluative judgments cannot be considered as more than reflecting mere subjective or arbitrary preferences. These preferences cannot be the ground of a legitimization of such judgments. They cannot be invoked to qualify these judgments as rational or irrational. However, behind this conclusion is hidden the assumption that preferences and interests motivating evaluative judgments cannot be rationally criticized. Preferences are conceived of either as arbitrarily fixed or as evolving according to factors that cannot be rationally assessed. And this assumption is questionable (Putnam 1981, 169-170). Having certain preferences may itself be, in certain circumstances, judged rational or irrational. Preferences admitted while failing at evaluating properly the associated consequences or at imagining the cognitive reward another choice may bring could be said irrational. Someone may, for instance, irrationally prefer pushpin over poetry because she cannot imagine the noble satisfaction the reading or practice of poetry could bring. In case she realizes her lack of imagination, she may rationally reorder her preferences. But this possibility of rational evolution of preferences constitutes only a partial answer. In fact, one might be confronted with fanatic people who would not feel an attraction for poetry or repulsion in front of murders even when they are perfectly capable of imagining the cognitive rewards or the consequences of their preferences. They could get these elements as vivid as required but the latter would appeal to no end in them (Putnam 1981, 170-171).

Arrived at this point, it may seem that the previous discussion merely put off the inevitable. It has been shown that preferences may be the object of a rational assessment. But what the last point evidences is that this assessment would still be relative to admitted ends. Nevertheless, Putnam argues that, even in the radical case of fanatic people, rational assessment can be conducted (Putnam 1981, 212-214). As a first step, one might consider whether or not the fanatic person is willing to legitimize and defend the ends she admits (or rejects). To be sure, if she refuses entering in this process of legitimization, she could surely be qualified as having an irrational attitude. While such an explicit arbitrariness may be acceptable for unimportant matters engaging only the person herself, it becomes a paradigmatic example of irrationality – and even of perverseness when responsibilities with respect to others (and their suffering) are at stake. If she enters in the process of justification, then the way she argues her set of ends is right can be rationally criticized and assessed. To make his point, Putnam discusses the case of a hypothetical fanatic Nazi who tries to justify the monstrous end of killing Jews and to legitimize evaluative judgments like ‘killing Jews is right’. On the one hand, the Nazi may recognize the same moral notions as ours. But in this case he could vindicate his ends and value judgments only in mobilizing wrong factual propositions for which he has no good arguments (he would for instance claim that democracies are ruled by a Jewish conspiracy). On the other hand, and this is a crucial point, he might merely reject our ordinary moral notions that are at the basis of our conviction that his ends are wrong. But this move would have, according to Putnam, an extremely high cost. The fanatic Nazi would then produce descriptions of “ordinary interpersonal relations, social events and political events” that we could judge irrational (Putnam 1981, 213). In sum, in rejecting our ordinary moral notions, the fanatic Nazi would be conducted to produce inadequate, unperspicuous and repulsive world-views. This would in turn permit arguing rationally that his ends are wrong.

The crucial insight this discussion brings to the fore is that the fact-value dichotomy and the modern circle based on a restricted instrumental conception of rationality are misled. Value-loaded facts can be experienced and can legitimize certain evaluative judgments (for instance about matter of taste). More importantly, deeper evaluative commitments or judgments can be rationally criticized and assessed in virtue of their entanglement with procedures for the establishment of facts. The impossibility, evidenced in the first part of this section, at isolating methods guiding rational (scientific) investigations of factual matters from specificities of actual persons like their evaluative commitments and judgments reveals itself as both the problem and the solution. Far from leading to (cultural) relativism, this entanglement opens an opportunity to rationally discuss and assess indispensable, though situated, evaluative commitments and judgments. That they are indispensable does not mean that they cannot be questioned. To be sure, we can have no rationality nor standards of rational acceptability independently of informally admitted evaluative commitments and judgments (Putnam 1981, 195). But this does not imply that any commitment is as good as any other or that any judgment is as legitimate as any other. Sets of epistemic and moral commitments can be comparatively assessed through the world-views they conduct to. The negative consequences generated by the Nazi's rejection of our ordinary moral principles can have their positive counterparts. Certain epistemic and moral principles can be rationally accepted to the extent that they guide us in our evaluative judgments and that they permit building better world-views that foster "enlarged sensibilities, enlarged repertoires of meaning and metaphor, modes of expression and self-realization, and so on" (Putnam 1981, 215). Among such principles that help us fostering human total and cognitive flourishing, one may mention intelligence, common sense, justice, open-mindedness, willingness to consider reasons and arguments, openness to criticism or impartiality (Putnam 1981, 163-167, 195). The same apply for epistemic principles directly mobilized in standards of rational acceptability.

This being said, a crucial point remains to be explicated. Claiming that general, moral or epistemic principles can be considered as rational when they enable actual persons following them to build *better* world-views and to foster human cognitive and total *flourishing* involves our situated conceptions of good and of human flourishing. Attempting at standing outside our own tradition and admitted conceptual schemes would be hopeless (Putnam 1981, 215). However, once the modern circle is escaped, our situated conceptions of good and human flourishing as well as our actually admitted standards of rational acceptability are not immutable and unquestionable accounts reflecting irrational commitments. On the contrary, world-views, standards of rational acceptability and conceptions of good or of human flourishing can be understood as forming a virtuous circle in which mutual enrichment and reinforcement occur and objectivity takes the form of a certain readiness for reconsideration and reevaluation. The elaboration of world-views is guided by our standards of rational acceptability and our ethical or moral commitments, but also leads to interrogate and modify them. According to Putnam, we "use our criteria of rational acceptability to build up a theoretical picture of the 'empirical world' and then as that picture develops we revise our very criteria of rational acceptability in the light of that picture and so on and so on forever" (Putnam 1981, 134). In the same vein, our idea of good is not itself fixed and pre-given. It is revised "again and again as our knowledge has increased and our world-view has changed" (Putnam 1981, 215). Therefore, we cannot provide an absolute conception of rationality, but we can explore this virtuous circle to improve the notions we effectively possess:

We can only hope to produce a more rational *conception* of rationality or a better *conception* of morality if we operate from *within* our tradition (with its echoes of the Greek agora, of Newton, and so on, in the case of rationality, and with its echoes of scripture, of the philosophers, of the democratic revolutions, and so on, in the case of morality); but this is not at all to say that all is entirely reasonable and well with the conceptions we now have. We are not trapped in individual solipsistic hells, but invited to engage in a truly human dialogue; one which combines collectivity with individual responsibility. (Putnam 1981, 216)

In sum, standards of rational acceptability that guide scientific and rational investigation and give content to the notion of truth irreducibly involve specific features of situated actual persons. This implies that divergences in rationally accepted conceptual schemes could occur between actual persons situated in different. In consequence, pluralism about conceptual schemes (which notably implies pluralism about experienced actual worlds) could become admissible. But this shall not be understood as a claim in favor of (cultural) relativism expelling objectivity and reality from the picture. It rather indicates that objectivity is not to be sought into neutrality with respect to and isolation from historical, cultural and social contextual specificities. Instead, objectivity is to be found in actual persons' constant search for improved standards of rational acceptability and world-views shaping the actual world they experience. It is to be pursued through actual persons engaging in the (largely informal) quest for human cognitive and total flourishing. However, for such a quest to be meaningful and to genuinely escape relativism, more needs to be said. There has to be something to target beyond our local standards and conceptions. To really oppose thinkers like Rorty, Putnam insists on the fact that we need to be in a position of conceiving an end or a limit to this quest for human flourishing. Beyond our local norms and conceptions, there has to be a "Grenzbegriff, a limit-concept of the ideal truth" and "true conceptions of rationality and of morality" (Putnam 1981, 216). Alternatively put, it is crucial to be in position of distinguishing truth from rational acceptability.

### **Rational acceptability and (methodological) incommensurability**

Before turning to the settling of this distinction, a concluding remark is worth mentioning. The whole discussion proposed in this section allows evidencing an additional convergence between Putnam's internal realism and Kuhn's incommensurability thesis. This rapprochement bears primarily on the methodological function of paradigms. According to Sankey (2000b), rejecting any algorithmic conception of theory choice "is virtually the defining thesis of the historical school" (p. 253, note 11). The claim that contextual specificities of actual persons are indispensable in rational investigation and influence the manner investigations are to be conducted matches the methodological function Kuhn attributes to paradigms or disciplinary matrixes. This methodological part of paradigms shapes the way the problems are to be framed and solved, and indicates what it means to deploy a 'good' research process or to build a 'good' scientific discourse. It integrates particular standards for problem identification, knowledge for applying rules and methods and epistemic values for assessment of the knowledge that is produced (Kuhn 1996 [1962] [1962], pp. 176-187, 1990a, Bird 2000, 68-69). Accordingly, different groups of actual persons situated in distinct contexts may endorse divergent standards of rational acceptability and consequently rationally accept different conceptual schemes. Such contextually-driven divergences can be associated with Kuhn's methodological incommensurability.

In addition, the explication of the influence of specificities of actual persons (such as their evaluative judgments and commitments) on their rationally admitted world-views reinforces the

convergence with Kuhn's World-Change thesis mentioned at the end of the previous section. The rational admission of conceptual schemes describing and thus forging objects and properties of the actual world are not independent from the specificities of historically, culturally and socially situated actual persons. These conceptual schemes can thus vary across contexts. Accordingly, actual persons evolving in different historical, cultural and social situations (such as situations separated by a scientific revolution) and relying on radically different standards of rational acceptability may admit drastically different conceptual schemes. Then, it would become possible to claim they experience different worlds.

However, as extensively discussed in previous paragraphs, this rapprochement does not extend up to relativist (or even antirealist) conclusions often extracted from Kuhn's theses. Putnam explicitly takes distance with the most extreme relativist consequences that might be inspired by Kuhn's notion of incommensurability (see for instance: Putnam 1981, 113 and 150, 1990 [1984], 122-128). Notably, Putnam insists on the affirmation that situated (though not deprived from objectivity) standards of rational acceptability give content to the notion of truth but do not exhaust it.

### **3.4. A crucial distinction: Truth as idealized rational acceptability**

As exposed in the preceding sections, Putnam argues that truth cannot be conceived as correspondence with objects and properties of metaphysical reality. Truth receives content from standards of rational acceptability that cannot be isolated from specificities of actual persons and of the context they evolve in. However, truth cannot merely be reduced to rational acceptability. Putnam recognizes himself that "truth cannot simply *be* rational acceptability for one fundamental reason; truth is supposed to be a property of a statement that cannot be lost, whereas justification [or rational acceptability] can be lost" (Putnam 1981, 55). Fallibilism with respect to rational acceptability is indispensable. Nothing ever guarantees that a rationally accepted belief will not have to be revised (Bernstein 2005, 251). The statement 'earth is flat' was rationally acceptable 3000 years ago but not true. Nowadays, the statement is not rationally acceptable and remains false. The admission of the claim that 'earth is flat' was true in the past and that it later became false would amount claiming that earth's shape changed meanwhile. This would conflict with the most basic intuitions of (scientific) realism. Therefore, truth and rational acceptability have to be distinguished. Notice that this required distinction does not imply that actual persons have to be able to recognize truth. They can have true beliefs without knowing it. The important point at stake here is not to secure the possibility of knowledge as defined by Plato's "KK-thesis" (Sankey 2000a, note 24) that stipulates that, to possess knowledge, the knower has to "know that she knows" (Glymour 1992, 108). The crucial point that needs being secured is the possibility to conceive a meaningful notion of correctness (truth) that goes beyond rational acceptability, justification, or verification. In addition, and as introduced in the previous section, the possibility for fallibilism, ensured through the settling of a meaningful distinction between truth and rational acceptability, is an important component for defusing the threat of relativism. Although situated actual persons can rationally and objectively discuss and question their standards of rational acceptability (as well as the specific elements influencing them, such as evaluative commitments and judgments) in engaging in the quest for human cognitive and total flourishing, the latter needs an end or a target to even be meaningful in the first place. Failing at meaningfully positing truth beyond local conceptions of rationality and of rational acceptability would thus amount returning to relativism.



This reveals another dimension (or another form) of relativism that not only denies that there can be objectivity in locally admitted conceptions of rationality and good, but in addition claims that there is nothing to be said about truth beyond these local conceptions. For Putnam, this dimension that treats truth in the same way as rational acceptability or justification (what is true, as what is rationally acceptable, in certain contexts may well not be so in other contexts) also leads to self-refutation. He believes that Wittgenstein's private language argument can be mobilized to support this affirmation:

The argument is that the relativist cannot, in the end, make any sense of the distinction between being right and thinking he is right; and that means that there is, in the end, no difference between asserting or thinking, on the one hand, and making noises (or producing mental images) on the other. But this means that (on this conception) I am not a thinker at all but a mere animal. To hold such a view is to commit a sort of mental suicide. (Putnam 1981, 122)

To avoid relativism, it is thus crucial to be in position of distinguishing between 'being right' and 'thinking to be right'. To provide a consistent account of truth, a distance has to be secured with respect to rational acceptability.

At this step, it may be of great help to contrast internal realism with metaphysical realism. According to the externalist perspective associated with the latter, reality is conceived as a pre-given and fixed totality of mind-independent objects and their properties. In such a philosophical configuration, truth can be conceived as a substantive property of correspondence between conceptual schemes and mind-independent entities of metaphysical reality. Thereby, truth is defined as outrunning and being independent of what actual persons can effectively verify or legitimize as rationally acceptable. In sum, metaphysical realism secures the possibility to conceive a meaningful notion of truth that goes beyond rational acceptability and actual verification. The externalist perspective permits a straightforward account of fallibilism about standards of rational acceptability. States of affair of metaphysical reality being mind-independent, the fact that we can mistake and develop approximate or wrong, though rationally acceptable, conceptual schemes is unproblematic. The latter merely fail at corresponding with these mind-independent states of affair. For a metaphysical realist, 'earth is flat' was wrong 3000 years ago as it is now, independently of what can be verified or judged rationally acceptable at different times. In the framework of metaphysical realism, truth and standards of rational acceptability are sharply disconnected. The latter can be seen as tool for achieving the former but they do not give content to it. A metaphysical realist may well agree with Putnam's claim about the indispensability of specificities of actual persons (including their evaluative commitments and judgments) for having standards of rational acceptability. But truth itself would remain uncontaminated. Furthermore, the metaphysical realist could acknowledge the value of Putnam's solution to restore or safeguard objectivity at the level of standards of rational acceptability through a virtuous circle inscribed in a quest for human flourishing. And this quest would be associated with an unproblematic end outrunning local standards and conceptions: the goal of achieving truth as correspondence.

It is worth-insisting that the possibility at sharply distinguishing truth from rational acceptability in metaphysical realism takes its ground in the conception of reality along the externalist perspective. Broadly speaking, this externalist approach warrants the idea that beyond and independently of what we might experience or represent stands a real world. Even if it is recognized that experience is contaminated by conceptualization influenced by the specificities of situated actual persons, metaphysical realism still permits maintaining that the experience of the world and the world in itself are different. In particular at the semantic level, a distance is

safeguarded, in metaphysical realism, between how we conceptualize and talk about the world and the way the world is in itself. This secured distance matches intuitive facts we have about the use of our languages. When we employ some words, we do not intend to talk only about something equivalent or indistinguishable from our conceptual schemes. We intend to talk about something *through* our conceptual schemes. This meets semantic externalism as endorsed by Putnam in *The Meaning of 'Meaning'*. Referents, understood as real world entities in the externalist perspective (along the God's eye point of view), are considered as being parts of the meaning of terms (Putnam 1983c, 149, 1996 [1975], 28-30). Entities of mind-independent reality are seen as part of what we mean when we employ terms and conceptual scheme hosting them. Accordingly, mere changes in the way we conceive real entities can at most impact our experience of them, but definitely not these entities as they are in themselves. Drastic changes in conceptual schemes can thereby straightforwardly be understood as changes of beliefs about the world. Revising conceptual schemes does not impact actual world's entities. Metaphysical realism thus grounds commonsense and scientific realism. It prevents from idealist or antirealist approaches claiming that observable commonsense objects as well as observable and unobservable scientific entities are not mind-independent, that they "are made up of mental items, ideas or sense data, and so are not external to the mind" (Devitt 2008). Moreover, in this externalist perspective it is conceivable that scientific enterprise targets the unveiling of external world's own structure. Thereby, the notion of scientific progress is made meaningful and can be understood in terms of proximity of our scientific descriptions with respect to real world's structure. To recap the most important features of metaphysical realism with respect to the present discussion, the externalist perspective permits taking as primitive the idea that there is a mind-independent (metaphysical) reality composed of pre-given objects and their properties. On this basis, Putnam's early account of semantic externalism (stating that we talk about an external *mind-independent* reality *through* our conceptual schemes) and truth as correspondence sharply disconnected from situated rational acceptability can be straightforwardly admitted. Consequently, relativism can be escaped and evolutions in rationally accepted conceptual schemes can be understood as changes in our knowledge of or beliefs about metaphysical reality.

Nevertheless, arguments exposed in section 3.1 show that, according to Putnam, the externalist perspective has to be rejected. The idea of a mind-independent reality composed of pre-given and fixed objects and their properties cannot be taken as primitive. As detailed in section 3.2, Putnam's verificationist semantics renders objects of the actual world dependent upon rationally accepted conceptual schemes. The process of reference based on self-identification of objects to conceptual schemes can raise legitimate interrogation about the fact that a genuine semantic externalism is endorsed in internal realism. It looks like conceptual schemes do determine what is referred to. Therefore, mind-independent reality and semantic externalism cannot be mobilized to ground a robust notion of truth outrunning situated rational acceptability. Although they appear crucial for understanding changes in conceptual schemes as evolutions of our beliefs about reality and for securing a distance with respect to relativism, these ideas cannot be admitted as primitive. It is precisely the major flaw (from a semantic point of view) of the externalist perspective to mobilize them primitively and uncritically. The line of reasoning seems even totally reversed in internal realism. The idea of a mind-independent reality and the possibility for semantic externalism have to be reconstructed from within the actual person's point of view. And as briefly introduced at the end of section 3.2, the securing of a robust notion of truth beyond rational acceptability is a crucial component of this reconstruction. Deprived from such a notion, Putnam's verificationist semantics comes very close to anti-realism or idealism (the real world becoming

nothing more than a (mental) construction based on our ideas or conceptual schemes) and faces “threat of a loss of the world” (Putnam 1999, 44). Abandoning any notion of truth beyond rational acceptability would amount to a kind of deflationism turning internal realism into a very problematic form of verificationism.

This aspect can be further elucidated. According to the verificationist semantic Putnam admits in internal realism, statements or sentences have to be associated with “a computable predicate which can represent acceptability, or warranted assertability, or credibility,” or degree of confirmation to be meaningful (Putnam 1983c, 142). Coupled with deflationism about truth, this verificationist semantics raises several issues. To be sure, a metaphysical realist could deploy the disquotational scheme based on correct use in terms of truth values, that is to say in terms of correspondence with metaphysical reality. Warranted assertability could therefore be considered as a tool (or as the best we can do) for achieving this mind-independently determined correct use of languages. But this road is closed to internal realists. Deprived from any other notion of correctness than rational acceptability (or verification), only what can be rationally accepted (or verified) can be considered as meaningful matter of facts. This threatens our ordinary realism about past events (Putnam 1999, 47 and 53-54). In such a verificationist cum deflationist framework, facts about the past could be legitimately considered only to the extent that *actual persons* can rationally accept (or verify) statements about them *in the present*. This leads to the seemingly odd conclusion that “there *would not have been* dinosaurs or stars if there *had not been* people (or similar thinkers)” to rationally assess (or verify) this fact or even that “there were no dinosaurs or stars before there were people to think about them” (Devitt 2013, 111). In addition, the identification of truth with rational acceptability and verificationist semantics irremediably leads to solipsism (Putnam 2012c [2011], 78-80). If the only notion of assertability available to me is the one of being rationally accepted or verified, then I can understand *only* statements that are susceptible to be rationally accepted or verified by *myself*. In particular, “my talk about other people is only intelligible to *me* as a device for making statements that are or will be verified by *my* experiences” (Putnam 2012c [2011], 79-80). And this restriction to a solipsist or “egocentric language” prevents from formulating meaningfully many usual human actions (Putnam 2012 [2007], 347-348). For instance, we could not understand the existence of thought processes leading to actions motivated by events after our death such as purchasing a life insurance policy. Based on his reading of Wittgenstein’s ‘private language argument’, Putnam even doubts that egocentric language really makes sense (Putnam 2012 [2007], 349-353).

In sum, in compliance with internal realism and its verificationist semantics, not only mind-independent reality and semantic externalism cannot be primitively mobilized to ground the notion of truth but on the contrary this very notion of truth seems required to escape the threat of the loss of the world in doing justice to the idea of the existence of a mind-independent reality<sup>25</sup>. To the extent that a robust notion of truth outrunning situated rational acceptability can be secured in internal realism, the disquotational scheme could be employed to at least meaningfully conceive a reality that would not be shaped by our rationally accepted conceptual schemes. This reality could be said mind-independent to the extent it corresponds to true conceptual schemes (with truth understood as independent of the specificities of actual persons that irreducibly impacts standards

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<sup>25</sup> As the discussion just above makes clear, the admission of such a notion of truth that outruns rational acceptability and verification is also a crucial element that permits distantiating internal realism from any radical form of verificationism such as the one endorsed by logical positivists. The elucidation of the consequences of the absence of such a notion exposed here adds to the previously exposed arguments Putnam opposes to this type of approach.

of rational acceptability). Through the same line of thought, semantic externalism could be reconstructed. If a notion of truth beyond rational acceptability is secured, the disquotational scheme can be employed to say that ultimately, language-users intend to refer to real mind-independent entities corresponding to true conceptual schemes even though they cannot do better than relying on the conceptual schemes they effectively possess. Similarly, rigid designation could be secured even for kind terms in claiming that, when saying ‘X refers to any entity possessing the same lawful behavior or the same ultimate composition as *these* paradigmatic examples of the actual world’, language-users ultimately intend to mobilize mind-independent lawful behavior or ultimate composition associated with true conceptual schemes describing them. Provided a robust notion of truth beyond rational acceptability can be established, mind-independent external entities can be meaningfully conceived and language-users can intend to talk about them *through* their rationally accepted conceptual schemes. Semantic externalism and rigid designation being so reconstructed, modifications of conceptual schemes could then be considered as evolutions of knowledge or beliefs actual persons have about mind-independent reality (and not as mere changes in the meanings of terms that shape a different reality). Last but not least, establishing the meaningfulness of a notion of truth outrunning rational acceptability is also securing the possibility for true conceptions of good and rationality beyond effectively admitted ideas about these notions. This would provide an end to, and thus render meaningful, the quest for human flourishing actual persons can engage in. As such, it would permit genuinely escaping the threat of relativism. Accordingly, a blind spot remains in internal realism at this step. To be completely consistent, it has to be shown that truth beyond rational acceptability can itself be reconstructed from within the actual person’s point of view. The entire edifice of internal realism relies on the possibility of internally opening a gap between these notions.

To open room for this necessary gap, Putnam conceives a specific class of epistemic conditions he first calls “epistemically ideal conditions.” An “informal elucidation” of the notion of truth can then be provided. Truth is to be conceived of as an idealization of rational acceptability (Putnam 1981, 55-56):

We speak as if there were such things as epistemically ideal conditions, and we call a statement ‘true’ if it would be justified under such conditions. ‘Epistemically ideal conditions’, of course, are like ‘frictionless planes’: we cannot really attain epistemically ideal conditions, or even be absolutely certain that we have come sufficiently close to them. But frictionless planes cannot really be attained either, and yet talk of frictionless planes has ‘cash value’ because we can approximate them to a very high degree of approximation. (Putnam 1981, 55)

Truth is therefore independent of any particular justification or any particular assessment of rational acceptability. It remains nonetheless tightly connected with justification or rational acceptability. Claiming that a statement is true amounts to saying that it could be justified. Putnam’s conception of truth in the framework of internal realism has sometimes been associated with Peirce’s view hooking the notion of truth to an ideal end of the inquiry or an ideal final state of achieved science. This might have been suggested by Putnam himself, for instance when he draws some connections with Hegel’s “limit-concept” of “the final self-awareness of Spirit” (Putnam 1981, 158). Nevertheless, Putnam rejects both ideas of a final science and of an infinitely prolonged scientific inquiry (Zeglen 2002, 92, Putnam 2013c, 220, 2013f, 25). To take distance with this Peircean reading, Putnam also designates the specific class of epistemic conditions under which rational acceptability meets truth by the expression “sufficiently good epistemic circumstances.” At this occasion, the Kantian roots of Putnam’s internal realism reemerge (Putnam 2012b [2010], 97

note 15). A true statement “is a statement that a rational being would accept on sufficient experience of the kind that it is actually possible for beings with our nature to have. ‘Truth’ in any other sense is inaccessible to us and inconceivable by us” (Putnam 1981, 64).

This appeal to sufficiently good epistemic conditions secures internal realism from antirealism or idealism. In fact, the notion of sufficiently good epistemic conditions is “world involving” (Putnam 1999, 18). It means that the totality of truths cannot be determined by the totality of sense data (complemented with standards of rational acceptability). Therefore, reality can be reduced neither to sensory experience nor to rational accepted conceptual schemes. The threat of a loss of the world seems to be defused to the extent that something outrunning what actual persons can rationally establish becomes conceivable. More precisely, a notion of mind-independent reality can be introduced from within the actual person’s point of view through the internal reconstruction of truth beyond rational acceptability. Actual persons can meaningfully conceive the possibility of true conceptual schemes beyond the ones they rationally accept. In turn, such true conceptual schemes give meaning to the idea of mind-independent reality. This reality that corresponds to such true conceptual schemes is mind-independent to the extent that the fact that the latter are true is not influenced by the specificities of situated actual persons. Importantly, this internal reconstruction of the idea of mind-independent reality does not amount returning to metaphysical realism. The point the internalist arrives at is not that there is a unique true conceptual scheme corresponding to metaphysical reality conceived as a pre-given set of objects and their properties. A plurality of true conceptual can exist. In this respect, the distance Putnam takes from Peirce is crucial. Sufficiently good or ideal epistemic conditions should not be understood as pointing an ideal end of the inquiry or a kind of final state of science in which a unique true conceptual scheme could be established. This would amount reinstating a trans-contextual notion of truth based on the idea of “an epistemic situation which is ideal for giving a true answer to any question whatsoever” (Künne 2002, 150-151). Along such a Peircean view, truth would have to be understood as a unique property that is reached when rationally accepting in these universal ideal epistemic conditions. But this is not what Putnam has in mind in his internalist period (Putnam 2013f, 25). Künne (2002) nicely frames the distinction in focusing on the order of the existential and universal quantifiers (pp. 151-152). Peirce’s view can be expressed as claiming that it does exist an epistemic situation that is ideal or sufficiently good for rationally accepting every statement (or every conceptual scheme) (quantifiers’ order:  $\exists\forall$ ). On the contrary, Putnam holds that for every statement (or for every conceptual scheme), it does exist an epistemic situation that is ideal or sufficiently good for rationally admitting it (quantifiers’ order:  $\forall\exists$ ). This means that truth, as reached when rational accepting under sufficiently good epistemic conditions, can take different specific contents depending on contexts. What counts as sufficiently good epistemic conditions can vary from a historically, culturally and socially situated context to another, in particular in function of the therein endorsed standards of rational acceptability. Therefore, it becomes possible to conceive that differently contextualized investigations based on different understandings of rational acceptability can all possess a notion of truth outrunning their specific standards of rational acceptability. In sum, a genuine (conceptual) pluralism could then be admitted according to which different true conceptual schemes could coexist. Again, this means that the notion of mind-independent reality that can be reconstructed in internal realism starting from the actual person’s point of view radically departs from the one at the ground of metaphysical realism.

In addition, the gap between verification or rational acceptability and truth opened through the notion of sufficiently good epistemic conditions permits avoiding the threat of solipsism the verificationist semantics is confronted with. The computable predicate of warranted assertability that has to be associated with any meaningful statement is confined neither to language-users' actual abilities of verification nor to their standards of rational acceptability. Rather, this predicate admits a limit value constituted by truth. This provides grounding for speakers' capacity to grant meaningfulness to statements that they cannot verify or rationally accept themselves. Thereby, speakers are not locked up in an egocentric language and can admit utterances of other people as meaningful. Furthermore, distinguishing between what is rationally acceptable and what is true allows understanding that we can fail and make mistakes. Fallibilism is crucial for objectivity to be conceived of as a substantive notion. It is because the world somehow resists us, resists our conceptualization, that our rational investigations can be seen as objective and susceptible of producing true outcomes. As we saw, a judgment of rational acceptability is always revisable. What is rationally acceptable is not simply defined by a set of rules or institutionalized norms, but relies in particular on paradigmatic examples of rationality that can change and be replaced by other ones. Canons of "nondeductive justification" are often reconsidered along history (Putnam 2012c [2011], 90). In sum, our procedures of verification and of assessment of rational acceptability do not exhaust the idea of correctness. Truth outruns rational acceptability. In turn, conceptual schemes' revision can be suitably accounted for. Contrarily to truth whose attribution cannot be revised, judgments of rational acceptability can evolve in time. Someone can be conducted to admit a given conceptual scheme by her current standards of rational acceptability and still later realizes that the conceptual scheme is not correct. History of science is full of illustrations of such successive admissions and rejections of given conceptual schemes. And change of conceptual schemes can occur at the intensional level of conceptual descriptions (for instance the replacement of Newton's conceptual system by the one of general relativity), but also at the extensional level. In fact, our verification or test procedures for determining the membership to the extension of a given (natural) kind term can themselves fail. We can admit new paradigmatic examples of what belongs to the extension of a term even if it does not pass our previous tests. Entities previously considered as paradigmatic examples can turn out not being so (Putnam 1981, 103). This could not be understood if rational acceptability or verification were the only available notions of correctness. In this case, only two unsatisfying options would be available. First, rational acceptability could be claimed as behaving like truth and being unalterable. But the revision of rationally accepted conceptual schemes would become problematic. Second, rational acceptability could be said revisable. But deprived from a deeper and more stable notion of correctness, these revisions could not be understood as progressions toward better states of knowledge. This would come dangerously close to relativism. Finally, making room for the idea that rationally accepted conceptual schemes are not necessarily true is crucial to confirm that the threat of a loss of the world is addressed. It allows conceiving that reality is not fully constructed according to our rationally accepted conceptual schemes. Rather, we can make sense of the idea that conceptual schemes are responsible to something else. We can conceive that, *through* our conceptual schemes, we talk about and experience something real, something resisting. This something else can be posited because a rationally acceptable conceptual scheme, in being potentially approximate, imprecise or wrong, may fail to provide all possible truths. In sum, in securing the meaningfulness of a notion of truth beyond rational acceptability with the idea of sufficiently good epistemic conditions, internal realism allows conceiving rational investigations as objective processes of knowledge production susceptible to provide true outcomes about the world. However, this

objectivity cannot be understood as an effort targeting metaphysical truth as correspondence. Rather, objectivity is considered internally. Inquirers are pushed forward from within the internalist perspective by their successive mistakes and according to the quest for human cognitive and total flourishing they engage in. These failures permits thinking an internal horizon separating what is actually defended or hold as rationally acceptable and what should really be so.

Although appealing (one might start glimpsing the possibility of combining the acknowledgement of the legitimacy of some occurrences of incommensurability with the basic intuitions of realism), this completion of internal realism through the mobilization of the notion of ideal or sufficiently good epistemic conditions is not satisfying. As discussed in next section, a deep philosophical problem remains hidden behind the tension between the semantic need to abandon the externalist perspective and the necessity to distinguish between truth and rational acceptability.

### **3.5. The collapse of the internalist account of truth: a general epistemological lock**

The results of the previous sections can be summarized. The irreducibility of the layer of context-sensitivity embedded in internal realism poses several epistemological challenges such as avoiding antirealism or idealism, escaping solipsism and the threat of the loss of a common world, and taking distance with relativism. Ultimately, these issues are faced through the distinction between truth and rational acceptability that relies on the notion of sufficiently good epistemic conditions. However, Putnam himself realizes that the way this distinction is settled raises several problems (Putnam 1999). A first weakness that can be mentioned concerns the possibility for the internalist definition of truth to meet alethic realism (Künne 2002, 155-157). Alethic realism corresponds to the claim “that truth is not epistemically constrained,” that is to say that “some true propositions which we are able to comprehend can never be contents of any justified beliefs” (Künne 2002, 144). In the internalist perspective, making room for such truths imposes admitting that certain sufficiently good epistemic situations can never be achieved (Putnam 2013f, 25). In fact, identifying truth only with rational acceptability under sufficiently good epistemic conditions that can effectively be achieved would lead to reject the existence of truths “that do not depend on whether or not human beings or other sentient beings could or could not verify them” (Putnam 2012b [2010], 100). The existence of such truths was secured in the framework of metaphysical realism and Putnam recognizes himself that rejecting it is problematic. Various elements coming from physics (entropy related destruction of information, chaotic phenomena, limitation of the speed of information’s transmission, survival of information in black holes) strongly suggest that such truths exist (Putnam 2002c, note 27 p. 124, 2013c, 221). Answering this weakness of the internalist definition of truth introduces a major problem. If truths that cannot be verified have to be integrated, the existence of sufficiently good epistemic conditions that can never be achieved has to be admitted. But such an admission amounts recognizing that the world in itself (that is to say, mind-independent reality taken as primitive instead of internally reconstructed) can determine what it means for epistemic situations to be good enough. It forces to evade the actual person’s point of view to return to the externalist perspective and its God’s eye point of view. And the criticism of the possibility of a referential access to such a world in the externalist perspective was at the origin of internal realism. It led to the rejection of metaphysical realism in the first place.

This problem of the need for a referential access to the metaphysical world in connection with the issue of alethic realism brings to the fore a general difficulty of the internalist perspective. Merely rejecting alethic realism would not suffice to settle the point. In fact, the core idea behind the identification of truth with rational acceptability or verification under sufficiently good epistemic conditions is to secure a gap between what we hold as verified or rationally acceptable and what is really the case. But for this move to be successful, we cannot be the only judges determining whether or not a given epistemic situation is good enough for the verification or rational acceptance of a particular statement. If the definition has to secure a distinction between what is verified and what is true, conceptual room needs to be opened for conceiving a difference between being in a sufficiently good epistemic situation and judging to be in such a situation (Putnam 2013f, 25). And again a referential access to the metaphysical world (taken as primitive), which cannot be accepted in the framework of internal realism, is required to make sense of this disparity (Putnam 1999, 16-17). Putnam believed that the moderate form of verificationism he endorsed in internal realism could be compatible with realism without falling into the semantic issues raised by metaphysical realism and its externalist perspective (Putnam 1979b, 221-214, 1979a, 227). But he himself later recognized that the identification of truth with rational acceptability under idealized or good enough epistemic conditions, initially mobilized precisely to moderate his verificationism, rather turned out to constitute “a metaphysical picture of a Kantian kind” that reintroduces the problem of referential access in a position “that was designed to block it” (Putnam 2012b [2010], 97 note 15, 2013f, 25). All things considered, internal realism and its verificationist semantics fail at providing a realist alternative to metaphysical realism. The failure of the notion of truth as idealized rational acceptability is also a failure at avoiding solipsism. Internal realism in itself only outcomes in “pseudoexternalism” and “pseudo-anti-individualism,” constructed “in a solipsistic world.” The idea that truth can be reached in sufficiently good epistemic conditions “must either be understood outside the framework of internal realism, or it too must be understood in a solipsistic manner” (Putnam 2012c [2011], 79-81).

This difficulty met by internal realism reflects an extremely general philosophical problem. It illustrates the challenge to settle a semantically consistent realist philosophical view that embeds conceptual room allowing a robust distinction between truth and rational acceptability. There seems to be an incompatibility “between actual veracity (real truthfulness) on the one hand and cognitive availability (evidential accessibility) on the other” (Rescher 2002, 68-69). According to Putnam, this situation triggers a kind of antinomy of reason he calls “the antinomy of realism” (Putnam 1999, 12-13). As we saw, the dogmatic positions constituted by metaphysical realism on one side, and verificationism (that cannot escape deflationism about truth and thus antirealism as well as solipsism)<sup>26</sup> on the other side are inadequate. These views are somehow symmetrical and draw their respective strength from the idea that they correspond to the only possible alternatives. Understood and structured along the approach of Dummett, the debate about truth and realism reduces to the opposition between two main camps: either truth is identified with verification – option of verificationism cum deflationism – or a mysterious something floating above our sentences and connecting them with metaphysical reality has to be admitted – option of metaphysical realism inspired by Platonism (Putnam 1999, 46-47 and 52). The claim that these two alternatives exhaust the admissible positions echoes what Bernstein (2010) calls the “Cartesian

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<sup>26</sup> As we saw, internal realism also proved to constitute a form of verificationism. It can be argued that it nonetheless proposes a less strict form of verificationism than logical empiricism in admitting the broader notion of rational acceptability that includes but does not reduce to verification. Accordingly, each time verificationism, verification and verified are employed in the rest of this section, the reader can add internal realism, rational acceptability and rationally accepted.



Anxiety”: either a secured and fixed foundation can be provided to our knowledge or we cannot avoid relativism and “escape the forces of darkness that envelop us with madness, with intellectual and moral chaos” (53-54). In addition, the conviction that the only alternative to the foundation proposed through verificationism consists in the appeal to platonistic entities in a metaphysical realist perspective can be linked to scientific imperialism. In fact, scientific imperialism might conduct imposing “the pattern of causal explanation in a natural science” to any belief laying claim to truth and objectivity (Putnam 2012b [2001], 402). To be eligible to truth and objectivity, a belief has to be either directly verified or associated with causally efficacious entities or phenomena. In this perspective, evaluative judgments (or value judgments) are objective and can receive truth values only to the extent that some metaphysical objects stand behind them and guarantee them. If a metaphysical grounding of this type is rejected, evaluative judgments possess at best illusive objectivity (non-cognitivism). The same holds at the semantic level: either translation and interpretations are secured through the appeal to metaphysically existing meanings (‘museum myth of meaning’) or translation cannot be objective and true, but only convenient or inconvenient (Quine’s strategy). The same line of thought applies to mathematics: either we reduce truth valuation to decidability or we “defend the existence of a Platonic realm of mathematical objects” (Putnam 2012b [2001], 403). In sum, when it comes to statements that cannot be directly verified, scientific imperialism leads to structure the debate about truth and objectivity along two allegedly exhaustive alternatives:

Either there are “intangible objects” corresponding to value terms, to interpretations, to mathematical statements – objects that are causally efficacious in the way in which magnetism is causally efficacious – or else value judgments, interpretations, and undecidable mathematical conjectures are (if they are taken to have a truth-value) as misguided as belief in *ghosts*. (Putnam 2012b [2001], 403)

Therefore, we are left with equally unsatisfying approaches of truth and realism. On the one hand, metaphysical realism and its associated Platonism are semantically problematic. On the other hand, verificationist conceptions (which lead to deny objectivity and truth to anything that cannot be directly verified) degenerate into antirealism and relativism. And the debate is structured in a way that is susceptible to generate endless oscillation between these two types of position. In fact, both metaphysical realists and verificationists share the conviction that it is queer that certain of our statements (such as the ones about the past) can be true. Reacting to this worry, the latter reject any notion of correctness beyond verification. But this move amounts endorsing one of the most problematic features of antirealism (namely antirealism about past events). This result legitimately troubles metaphysical realists who in turn claim that verificationist approaches say almost nothing about truth. While their criticism is relevant, the answer metaphysical realists bring to the issue is not acceptable. They claim that true sentences (no matter of what sort and under which circumstances) possess a single “substantive property that false sentences lack – namely, the property of corresponding to a reality” (Putnam 1999, 53-55). But then verificationists are at ease to question the soundness of the metaphysical belief in metaphysical entities we cannot access to and we are not even sure to be able to make sense of. The antinomy of realism thus comes with a general oscillation between excessive forms of realism and verificationism (that degenerate into antirealism, relativism and solipsism). Putnam hopes we might escape this antinomy:

But I want to urge that we attempt to understand and, to the extent that it may be humanly possible, to overcome, the pattern of “recoil” that causes philosophy to leap from frying pan to fire, from fire to a different frying pan, from different frying pan to a different fire, and so on, apparently without end. (Putnam 1999, 3)

This pattern of recoil is generated by the seductive idea that we know what the possible philosophical options are. In the present case, this assumption is instantiated under the conviction that a forced choice has to be made between admitting mysterious metaphysical entities corresponding to and securing our discourses and reducing truth to verification. The belief that these are the only possible alternatives reflects “an inability to see that giving up on the funny metaphysical somethings does not require us to give up on concepts that, whatever our philosophical convictions, we employ and must employ when we live our lives.” Putnam indicates that a great insight of pragmatism is “the insistence that what has weight in our lives should also have weight in philosophy” (Putnam 1999, 70). According to him, when philosophical issues involved many entangled notions (as it is the case about truth and realism with the concepts of reality, perception, understanding, representation, verification and truth), we should follow the pragmatist insight and accept to explore the interconnections instead of trying to reduce the scheme to a single foundational point (Putnam 1999, 70, Bernstein 2010, 55).

In exploring the circle constituted by the intertwined notions involved in the philosophical issues of realism and truth, Putnam realizes that an unquestioned assumption about the nature of our cognitive relation to the world acts as a kind of epistemological lock. This lock is at the ground of the antinomy of realism (forced choice between metaphysical realism and deflationism or verificationism) and of the failure of internal realism. This hypothesis, often called the ‘causal theory of perception’ (Putnam 1999, 10-12), is a received view since the seventeenth century. It stipulates that perceptions have to be conceived as interfaces between our minds and the external world. Accordingly, we never experience directly external objects, but only representations or little pictures caused by them in our inner theater or on our inner movie screen (Putnam 1999, 43 and 100-101, 2002e, 125). External objects cannot be directly cognitively accessed, they are only causally involved in our experiences. Modern versions of the causal theory of perception obviously take their origin in Descartes’ dualism, but also in Locke’s thinking. For Locke, the world we experience is mental and the “simple ideas in us are created by mechanical operation of corpuscles in the world outside us” (Glymour 1992, 106). The causal theory of perception can be instantiated under two main forms. Some philosophers consider that the objects of perception are immaterial or non-physical (Putnam 1999, 9 and 26, 2012b [1998], 543). It is the case of Descartes (ideas), Hume (impressions), Mach (sensations) or Russell (sense data). Sense data epistemology embeds such an immaterialist version of the causal theory of perception. In addition, materialist versions also exist in which the mind is replaced by the brain. In the line of cognitive psychology, the brain is then conceived as a computer hosting representations (which can be outcomes of some perceptual modules). Putnam labels this type of views “Cartesianism cum materialism” because it consists in “a combination of Descartes’s own conception of the mental as kind of inner theater with materialism” (Putnam 1999, 9, 22 and 101). It has been defended by, among others La Mettrie and Diderot. One of its contemporary advocates is Jaegwon Kim. As Putnam himself explains, internal realism also integrates the assumption of the causal theory of perception under the form of Cartesianism cum materialism (Putnam 1999, 14, 18-19 and 43). Almost the entire internalist period is characterized by Putnam’s endorsement of a functionalist view according to which psychological states, including impressions or sensations, are identified with functional states of the brain (Putnam 1981, see in particular pp. 79, 85, 87-88 and 101, 1983b, 2012c [2011], 77-82)<sup>27</sup>. Moreover, this interfacial approach is not restricted to accounts of perception but also haunts

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<sup>27</sup> Putnam rejected functionalism before rejecting internal realism (Putnam 1988).

modern epistemological and metaphysical understandings of conception. Imagining something or thinking about something are traditionally seen as processes of forming a representation (a little picture) of this something in the mind (or the brain) which is “causally or mysteriously” connected with the real something “out there” (Putnam 1999, 45). The extension of the interfacial approach of perception to the understanding of conception is even more straightforward in internal realism in virtue of the entanglement between real objects and conceptual schemes (Putnam 2013f, 26).

This causal theory of perception is largely responsible for the antinomy of realism. It is implicitly assumed in metaphysical realism as well as in verificationist views. Once the interfacial understanding of perception is admitted, metaphysical realists are left with the hopeless task of explaining the possibility of reference to external world entities (which conditions the meaningfulness of the notion of truth as correspondence) in terms of causal impacts of these entities upon us. Verificationists correctly believe that such an explanation would involve mysterious mental acts or powers. They therefore retreat to various forms of verificationism and antirealism denying “that the idea of objects that are not perceived or at least thought of by someone so much as makes sense” (Putnam 1999, 43-44 and 58-59). The causal theory of perception thus acts as an epistemological lock generating unpalatable philosophical questions:

On the traditional conception, what we are cognitively related to in perception is not people and furniture and landscapes but representations. These “inner representations” are supposed to be related to the people and furniture and landscapes we ordinarily claim to see and touch and hear, etc., only as inner effects to external causes; and how they manage to determinately represent anything remains mysterious in spite of hundreds of valiant attempts by both “realists” and “antirealists” to clear up the “mystery.” (Putnam 1999, 103)

Despite its pervasiveness, the causal theory of perception is far from being compellingly legitimated. Historically speaking, it became dominant after Berkeley and his criticism of the idea that (some of) our perceptions are similar to external objects. The progressive mathematization of nature initiated at the same period reinforced this move in suggesting that real entities do not fit the usual descriptions we have of them (Putnam 1999, 23). In such a context, the causal theory of perception was a way of avoiding idealism and of saving our usual perceptions and descriptions in repatriating them inside the mind. However, the most common arguments in favor of the causal theory of perception (or sense data epistemology) are based on the idea that it constitutes the best explanation of several facts about perception such as non-veridical experiences (e.g. perception of a broken stick) and perceptual relativity (dependency of aspects of things upon the conditions of perception). Putnam offers many counterarguments undermining the idea that the mobilization of inner sense data explains any fact about perception. The lack of consensus about their nature, the problem of understanding how the mind can have sense data (in immaterialist versions) or the issue of identifying phenomenal states with brain states (in materialist versions) constitute extremely problematic questions far from being solved (Putnam 1999, Szubka 2002). In addition, the admission of the causal theory of perception renders “Berkeleyan skepticism” unsolvable. Traditionally, it is admitted that we have a privileged and secured epistemic access only to our cognitive sphere. But when our cognitive sphere is restricted to mental representations at best caused by external objects that are never themselves cognitively accessed, the question to establish whether or not the formers mirror properly the latter cannot have a meaningful solution (Glymour 1992, 106-108, Putnam 1999, 169, Bacon 2012, 3). Putnam’s brain in a vat and model-theoretic arguments can be understood as exposing this skeptical issue at stake in metaphysical realism. In sum, admitting the causal theory of perception seems raising many challenges instead of solving

any philosophical issues. In particular, it generates unpalatable questions about our access to the world such as “how does language hook on to the world?” or “how does perception hook on to the world?” (Putnam 1999, 11-12 and 43). Accordingly, Putnam argues that we should seriously consider the possibility of building a realist philosophical perspective that does not rely on the causal theory of perception.

## **4. Commonsense realism**

Reacting to the semantic difficulties of metaphysical realism, Putnam tried, with internal realism, to repatriate reality into the cognitive sphere of actual persons. Leading to reinforce the role of conceptual schemes in the shaping of actual world’s entities and to question the notion of truth as correspondence, this move opened promising leads to draw reinforced connections with Kuhn’s notion of incommensurability. However, the impossibility of genuinely differentiating internal realism from verificationism, antirealism and relativism led Putnam to abandon the former in favor of commonsense realism. This transition initiates the third period of his intellectual path. As discussed in next sections, commonsense realism constitutes a promising philosophical framework in which it may be possible to maintain the strong connections with Kuhnian incommensurability without denying the central intuitions of realism.

### **4.1. Reconsidering our cognitive relation to the world**

According to the results of the discussion proposed in the previous section, internal realism proved highly interesting in permitting the recognition and the account of the irreducible role played by specificities of historically, culturally and socially situated actual persons (like their evaluative commitments and judgments) in processes of reference and of rational admission of theories or conceptual schemes. However, this raised several challenges forcing to abandon internal realism and to seek for a realist approach that allows at the same time referring consistently to reality and grounding conceptual space for a robust distinction between rational acceptability and truth. Such an approach is necessarily confronted with the antinomy of realism as long as the interfacial understanding of perception and conception is admitted. Through commonsense or naïve realism (Putnam 1999), Putnam explores the possibility of rejecting the causal theory of perception and the interfacial picture of concepts.

#### **The mind is not (only) in the head**

This reconsideration of what it is for us to perceive, conceive or think first comes with a metaphysical realignment about the notion of mind. Traditionally, the mind is considered as a thing. Contrastively, Putnam believes that it is better conceived in terms of “capabilities we have and activities we engage in” (attending, purposing, caring, remembering, etc.). Putnam thus questions the traditional view that identifies the mind, not with these activities, but with the “underlying substance that performs the activities in question” (Putnam 1999, 169-170). The assumption that the mind is a thing is largely responsible for the admission of interfacial understandings of perception and conception. In a materialist framework (and it is part of our best scientific picture that cognitive activities supervene on material processes), if the mind is a thing, it should be inside us. And if it is inside us, what could it be but properties of the brain. Thereby, one is led to believe that cognitive processes such as thought or perception are confined in the brain.

Assuming that the mind is a thing conduces to what Putnam called Cartesianism cum materialism. This view is confronted with the serious difficulty of reducing mental-psychological states that includes external elements to internal (neurological) states (Putnam 1999, 170, 2002e, 125). Instead of trying to propose a metaphysical account of what is the mind as an organism, Putnam, following in particular McDowell, argues that philosophical talk about the mind should primarily consider it as a verb and focus on the description of our human capabilities and abilities deployed when we engage in cognitive activities. Such a description cannot be properly achieved without recognizing that some of these abilities involve not only brain processes, but also interactions with the objects of the external world (Putnam 1999, 10 note 18, 44 and 169-170, Zeglen 2002, 94, Szubka 2002, 124). Once the picture of the mind as a thing is abandoned, mobilizing external world's objects in the description of our cognitive abilities is not problematic. The mind does not have to be confined inside our head. As put by McDowell, our mental lives take place "where our lives take place." Our mental states "can be no less intrinsically related to our environment than our lives are" (McDowell 1996, 309). Putnam's slogan "Meaning ain't in the head" can be widened to read "The mind ain't in the head" (De Caro and Macarthur 2012, 34).

This reexamination of the notion of mind corresponds to a shift in Putnam's previous position based on functionalism. He still "accepts the basic functionalist idea that what matters for consciousness and for mental properties generally is the right sort of *functional capacities* and not the particular matter that subserves those capacities" (Putnam 2012c [2011], 83). He endorses what can be called a "liberalized functionalism" (Putnam 2012c [2011], 73-74) that allows doing justice to the insights of materialists who insist on our embodied nature and on the fact that cognitive processes are supervenient on material processes (Putnam 1999, 148-149, 2002e, 125). However, liberal functionalism does not require an internal description of mental abilities. The mind being not confined to the brain, material processes consisting in transactions with the external world are unproblematically admitted. In addition, liberalized functionalism does not primarily conceive mental abilities as computational capacities (contrastively to the core idea of cognitive psychology and functionalism stating that the mind can be seen as a computer made of flesh and blood). The identification of mental states with logical computational states has proved being incompatible with externalist and anti-individualist semantics Putnam constantly seeks to settle (Putnam 2012c [2011], 73, 2012 [1997]). Moreover, liberalized functionalism admits irreducible intentional locutions provided they are required to account for mental abilities. In sum, liberalized functionalism is focused on the description of mental states as capabilities or ways of functioning (and exercises of these abilities). It rejects any requirement to reduce them to physical, biological or computational processes, although insights from the associated sciences are welcome (computer science provides some information about our ways of functioning, physics can elucidate some material processes involved in cognition, biology can help explaining the appearance of intentional abilities, etc.).

### **Perception as direct experience of reality**

Based on this metaphysical realignment and on its associated liberalized functionalism, Putnam proposes an original form of realism that abandons both the causal theory of perception and the interfacial view of conception. It received different names among which one can cite naïve realism, direct realism, natural realism or commonsense realism. The endorsement of this new version of realism, which will be now referred to under the term commonsense realism, marks the end of Putnam's internalist period in the middle of the 90s (Putnam 1994a, reprinted in: Putnam

1999)<sup>28</sup>. Commonsense realism is in particular inspired by William James' natural realism, which rejects the causal theory of perception. According to James, objects of successful perception are external things or aspects of external reality. Although he warns against the dichotomy internal-external (which might lead to the idea that the mind is internal), Putnam recognizes that successful perception is "a *sensing* of aspects of the reality "out there" and not a mere affectation of a person's subjectivity by those aspects" (Putnam 1999, 10-11). Other authors such as Husserl, Wittgenstein and Austin also considerably influenced Putnam's elaboration of commonsense realism (Putnam 1999, 24-25). Nevertheless, the idea of a realism admitting that we can perceive genuine aspects of external reality is not a new one. Aristotle already endorsed a form of direct realism in which the soul is in direct contact with the form of external things. These matters were the topic of continued debates during the Middle-Ages but virtually vanished after Descartes. They reappeared only in the early twentieth century under the forms advocated for by James and Austin (Putnam 1999, 101). The core and central contention of commonsense realism is the recognizing of "the needlessness and the unintelligibility of a picture that imposes an interface between ourselves and the world" (Putnam 1999, 41). Accordingly, commonsense realism does not seek to provide a metaphysical alternative to the interfacial view of perception and conception. Rather, it claims that perception does not need to be conceived as a relation between a person (or her mind) and an external object. An "adverbial" view of perception is possible, according to which experiencing is understood as being in a certain state (Putnam 2012b [1998], 547). This approach can be coupled with the metaphysical realignment of commonsense realism indicating that the mind is not in the head. We possess world-involving cognitive abilities. Perceiving is thus conceivable as being in a certain world-involving state that mobilizes real objects and their properties. Accordingly, a further specific reconstruction of the way perception hooks the world is not required.

The account of perception embedded in commonsense realism underwent several modifications between the late 90s and the present time (in particular in its positioning concerning disjunctivism or the existence of qualia). In his most recent expositions, Putnam, in cooperation with Hilla Jacobson, defends a form of transactionalism (Putnam 2012a [2011]). This position meets some elements of both disjunctivism and intentionalism. It agrees with disjunctivism about the idea that, contrarily to what is the case for hallucinations, qualities presented in veridical perception are properties of real objects. However, disjunctivism becomes problematic in claiming that veridical experiences and hallucinations have no phenomenal quality or even intentional content in common. Following liberalized functionalism, Putnam argues that both types of experiences are functionally characterized as states in which it appears to the subject that she perceives something. But hallucinations are only representations of an object as perceived. Intentionalism is therefore valid in picturing hallucinations as representations. It is nonetheless misled in extending this picture to veridical perceptions. In the intentionalist framework, veridical perception of an object and mere hallucination of this object are identical experiences. They differ only because the first is a correct representation while the other is not. According to the transactionalism of commonsense realism, veridical experiences are "*externalistically* characterized states of the organism" that involve the object perceived and not merely represent it. Hallucinations only represent an object as perceived because they are "malfunctions" or "defective states" (Putnam 2012a [2011], 638). Moreover, transactionalism departs from disjunctivism and

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<sup>28</sup> Putnam is reluctant to adopt the term 'direct' realism that he suspects being too much encompassing. 'Direct realism' may designate every theory denying that we perceive sense data even when they maintain the causal theory of perception (as it is the case with Searle's account of experience).

intentionalism in that they both admit a spectator view of perception stipulating that the description of public or objective qualities of the perceived objects exhausts the phenomenal aspect of the experience. Putnam proposes several counterexamples (normal vision versus astigmatism, differences in the macula areas of the two eyes of individuals, etc.) showing that objective as well as subjective factors are involved in perception. For transactionalism, “what we perceive depends on a *transaction* between ourselves and the environment” and “the properties we perceive depend on our nature as well as the nature of the environment” (Putnam 2012a [2011], 637). Consequently, the commonsense realist affirmation that we directly perceive properties of external things does not amount rejecting the fact that external things can have different looks depending on the situation of the perceiver and depending on her physiological conditions (Putnam 1999, 159, 2012 [2000], 588).

To understand how commonsense realism can admit the role of subjective factors in perception without returning to an interfacial approach<sup>29</sup>, it is necessary to explicate the associated account of perceptual experience Putnam draws, based in particular on James and Husserl. James criticizes the empiricist’s or Humean understanding of experience as composed by impressions and ideas that are distinct and separable. He calls this view an “intellectual fallacy” that substitutes “a sophisticated abstraction for concrete dynamic experience.” Contrastively, James “argues that we have *direct* experience of the connections, relations, and transitions within the continuous flow of experience” (Bernstein 2010, 56-57). For him, conceptions (or in Kantian terms apperceptive ideas) and sensations are fused in the actual flow of experience (Putnam 2012 [2005], 571-572). This understanding of experience is close to Dewey’s or Derrida’s approaches (Bernstein 2010, 28). Putnam believes that James’ view of experience brings curial insights. The perception of an object is not the experience of mere sense data or impressions. Perceiving an object requires having the concept of this object. Putnam calls such conceptualized perception an ‘apperception’ (Putnam 2013b, 352-354). With this use of the term ‘apperception’, Putnam departs from Kantian or Leibnizian understandings of this notion as an inner state. Accordingly, an apperception is not a perceptual belief caused by the experience but a “fully conscious perception,” that is to say, a conceptualized perception. Apperceptions constitute “bona fide experiences in their own right,” they are “primitive cognitive experiences we have” (ibid, 352 and 354). However, Putnam does not advocate in favor of a mere replacement of the notions of sensation, impressions, sense data or qualia by the one of apperception. He takes distance with radical forms of conceptualism like the one of McDowell, which claim that sensations themselves are shaped by our conceptual abilities. Putnam notices that apperceptions are usually accompanied by qualia or impressions but apperceptions can also be amodal. He gives the example of someone moving voluntarily his arm. In such a case, there is the apperception “raise one’s arm of one’s own volition” without any quale associated to voluntariness (Putnam 2013b, 353). For Putnam, the notion of sensation is not the one in need of amendment. Contrastively, he defends the idea that it is experience itself that deserves reexamination. He argues: “*there are more sorts of experiences than just “impressions.” Specifically, there are apperceptions*” (Putnam 2013b, 352). Thus, the commonsense realist account of experience is characterized by the distinction between sensations (or qualia), apperceptions and perceptual beliefs (Putnam 2012c [2011], 87, 2012 [2005], 572, 2013d, 141 note 2, 2013b, 352-353). Both qualia and apperceptions are full-fledged experiences. Only apperceptions are irreducibly conceptualized. Furthermore, transactionalism indicates that the apperception of

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<sup>29</sup> This worry leads many externalist philosophers to refuse the involvement of the states of perceivers in perception processes (Putnam 1999, 169, Travis 2013, 338).

something in the environment involves this something. Apperceiving is a cognitive ability that functions ““with long arms,” arms that reach out to the environment” (Putnam 2013b, 352). Apperceptions are thereby world-involving and constitute direct experiences of reality.

This acknowledgment of the fact that experience includes not only sensation but also (conceptualized) apperceptions allows complying with important phenomenological aspects of perception (in particular findings noticed by Husserl). Usually, we perceive outer objects as entities possessing unseen features (Putnam 2012 [2005], 572). When we see an armchair, we do not have impressions of its back. Nonetheless, we see or apperceive it “as an armchair, as a three-dimensional solid object, one with a back and sides that [we] *could see*, and with a certain softness, “comfortable looking” perhaps, as something to be sat on, and a great deal more besides.” Admitting apperceptions in the realm of experience permits understanding acts of perception as containing both “fulfilled and unfulfilled intentions.” It permits understanding how we can experience many different perspectives on (or looks of) an object without ceasing to perceive it “as an object that does not change as those perspectives change” (Putnam 1999, 158-159). In particular, the fact that an object can have many different looks depending upon subjective factors such as the situation of the perceiver or his bodily processes becomes admissible. It does not impose renouncing to the claim that we perceive a genuine object with its own properties.

Furthermore, the reconsideration of experience advocated in commonsense realism opens a first breach in the antinomy of realism. Recognizing apperceptions as genuine primitive cognitive experiences enables to fill the gap between experience and perceptual beliefs about external objects and their properties. If private sensations are the only legitimate sort of experience, only two unsatisfying options are available with regard to the legitimation of perceptual beliefs. On the one hand, one can accept only perceptual beliefs vindicated by these private sensations. But, as already mentioned in section 3.3, talks about ordinary objects cannot be reduced to reports about sensations (Putnam 1981, 181). Therefore, vindicated perceptual beliefs could not bear upon observed real objects and their properties. On the other hand, one may decide maintaining that perceptual beliefs do describe observed real objects and their properties. But it would become impossible to claim that they are legitimized by perceptual experience. Perceptual beliefs could not be connected with reality unless problematic mechanisms (such as mysterious platonistic entities connecting these beliefs with reality) are mobilized. By contrast, an alternative path is opened in commonsense realism. Apperceptions, instead of sensations can be considered as the epistemologically important features of experience involved in perceptual belief justification (Putnam 1999, 156-157). Accordingly, the legitimation of perceptual beliefs does not have to be reduced to verification processes based on raw sense data. Perceptive experiences directly hook the world. Apperceptions are world involving and thereby connect our perceptual beliefs with reality. However, a tension remains: how apperceptions can be at the same time genuine experiences of reality and conceptualized? How to evade the seemingly compelling idea that, concepts being mind-dependent, apperceptions (or perception of a conceptualized reality) cannot be the experience of the mind-independent reality? How to escape the interfacial approach and its forced choice between idealism rejecting any notion of mind-independent reality and metaphysical realism positing mind independent reality beyond subjective experience? Therefore, the replacement of the causal theory of perception by transactionalism and the associated claim that perception hooks the world need to be complemented by an explanation about how concepts and languages themselves hook the world.



## **Conception as direct contact with reality**

Following Dewey, Putnam believes that such a complement can be provided in disentangling Aristotle's idea of direct realism and its associated metaphysics (Putnam 1999, 5 and 24). Aristotle (and Aquinas after him) believed that we have a direct awareness of the properties of external things in perception (contrarily to the representationalism of Stoics and Democriteans). In Aristotle's view, the thinking part of the soul receives the form of perceived objects. The fundamental insight Putnam retains from this Aristotelian view is the rejection of the dichotomy between concepts (involved in thinking and apperceiving) and properties of real objects. A thing can be apperceived or thought about only when the mind is "formally identical with it" (Putnam 2002d, 107-108). However, Putnam rejects any reading of Aristotle that would constitute a return to the interfacial view of perception and conception. According to Putnam, what is interesting in Aristotle's direct realism is not the idea of securing our awareness of external objects' properties in saying that something (the form) is in two different places (in the mind and in the thing) at the same time (Putnam 2012 [2000], 585-586). On one hand, this picture seems unnecessary once it is admitted that the mind is not confined in the head but extends anywhere our mental life takes place. On the other hand, the notion of form as a general feature shared by the objects and the mind remains quite obscure. Saying that when I conceive or perceive a dog, my thinking takes a general feature of dogness seems unclear and reintroduce a kind of essentialism Putnam cannot admit (Putnam 2002d, 107). In that, Putnam follows pragmatist thinkers who are influenced by Darwinian approaches of living species. Evolutionary biology relies more on differences and variations than on essences for determining specieshood. And these criteria "do not yield a "clean" division of organisms into disjoint species". Essentialism and its traditional positioning of entities with "fixed and immutable essences" – which are available to Reason to explain and determine "all the "sublunary," or mundane, and contingent entities that we encounter" – has to be abandoned (Putnam 2008b, 27-28). Contrastively, the fruitful insight that can be borrowed from Aristotle is the rejection of the dichotomy between concepts and properties of real things. Concepts and properties are two sides of the same coin, two manner of talking about ways things can be (Putnam 2001b, 525). Following Travis, Putnam argues that "when I think [or apperceive] that something is that way, and when the thing is that way, the 'way' in question is one and the same" (Putnam 2002d, 106). In turn, this insight from Aristotle appropriated by Putnam explains how apperception can be at the same time conceptualized and genuine experiences of reality. Ways of being in correct conceptions and ways real entities are are one and the same.

In sum, commonsense realism claims that in apperception (during veridical experience) as well as in thinking (when judging correctly), we have a genuine cognitive contact with external things themselves and with their properties. We are not just aware of mere representations caused by these things in cooperation with our bodily processes:

When I say that on the commonsense view we are "directly" aware of the properties of external things, I do not mean, and I do not ascribe to Aristotle the view, that such perception is not *causally dependent* on bodily processes. I mean that the *upshot* of a successful perception is a cognitive contact with those properties themselves, and not merely with some effects or representations. Similarly, when I say that in the case of thought the commonsense view is that we "directly" conceive of the properties of things, I do not mean, and I do not ascribe to Aristotle the view, that it does not *involve* images or other representations. I mean that the *upshot* of successful thinking is a cognitive contact with those properties themselves, and not simply with representation among whose efficient causes are the things with those properties. (Putnam 2012 [2000], 588)

Furthermore, admitting that ways things can be are both a feature of the reality and available to the thought has the merit of rendering perfectly understandable how conception and apperception can hook the world. Therefore, no specific answer needs to be provided to the problem of metaphysical (Berkeleyan or Cartesian) skepticism about external entities (real world's objects and properties, others' minds ...) that led logical positivists to deny meaningfulness to any statement irreducible to sense data. Once interfacial understandings of perception and conception are abandoned, "the radical Berkeleyan form [of skepticism] that claims that *it is unintelligible* how perceptual experiences (which are, on the traditional conception, all "inside") can have a unique correlation with objects that are "outside" (...) cannot even arise" (Putnam 1999, 169). This sort of skepticism is grounded in the belief that items we have privileged access to in our cognitive sphere and external entities are disjoint (Bacon 2012, 3). This ground is removed when interfacial understandings of perception and conception are rejected. Concepts and properties of external things being two faces of the same notion of 'ways things can be', no mystery remains about how a thought could be intrinsically related to its object. Apperceptions based on concepts are thereby at the same time conceptualized and genuine experiences of (mind-independent) reality<sup>30</sup>.

### **Acknowledging mind-independent reality**

The elements of commonsense realism exposed up to this point – the rejection of the interfacial approach and the associated successive reconsiderations of the mind, of perception and of conception – provides a solid ground to understand actual persons as provided with direct cognitive access to mind-independent reality. Replacing this claim in the context of Putnam's philosophical trajectory concerning the topic of realism might be worth-while. As detailed in section 3.1, Putnam rejects the conception of mind-independent reality along the God's eye point of view advocated for in metaphysical realism. Coupled with the interfacial views about perception and conception, the idea of mind-independent reality becomes semantically problematic. For Putnam, mind-independent reality needs to be approached from within the actual person's point of view. Internal realism is an attempt at developing such an approach (sections 3.2 to 3.4). However, stranded in the picture of perceptions and concepts as interfaces, the internalist perspective fails at providing a notion of reality outrunning the internal world described through our rationally accepted conceptual schemes. In rejecting the interfacial picture of perception and conception, the project of defusing the threat of the loss of the world from *within* the actual person's point of view becomes practicable. As reconsidered in commonsense realism, perceptions and conceptions can be interpreted as forms of "openness to the world" (Putnam 2013f, 26-27).

Nevertheless, only *correct* conception (and *veridical* apperception it permits) constitutes genuine direct access to mind-independent reality. The claim that actual persons are in direct cognitive contact with mind-independent reality may be threatened by generalized skepticism about conception. To the extent their conceptions can be wrong, actual persons may well hallucinate instead of experiencing reality. In this regard, Putnam advocates in favor of a "second

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<sup>30</sup> As a side but important additional remark, this view about conception and apperception can also apply to evaluative and ethical matters. It is commonly held that we are provided with sense organs allowing us to detect facts (e.g. colors) but not to detect values or normative elements. According to Putnam, this can appear correct only in the framework of a naïve view of perception missing the role of conceptualization. As we just saw, perceiving facts involves many of our cognitive abilities and in particular our power to conceive ways things can be (e.g. acquiring the concept of color). To the extent that we can acquire ethical and normative concepts, we can detect or apperceive ethical and normative facts (Putnam 2002c, 102, 2002b, 19). We can conceive ways for someone to be, say, inconsiderate, friendly or elated, and we can apperceive her being that way. Putnam follows American pragmatists in their claim that perception is not innocent in the sense of being ethically and normatively neutral. As "the fantastic combinations of fact and value in a wine taster's description of a wine" can illustrate, experience "comes to us screaming with values" (Putnam 2002c, 103, 2002b, 20).

naïveté” with respect to our perceptual experience (Putnam 1999, 44). This second naïveté urges us to recognize that, in many circumstances (of ordinary life), skepticism about the fact that we genuinely reach external reality is pointless. We do not need to know, without a doubt, that we experience reality directly. Primarily, “our fundamental relation to the world (...) is not one of knowledge but one of acknowledgment” (Putnam 2012 [2006], 560-564). In many circumstances, meeting reality does not amount knowing it to the extent actual persons do not question their experiences (apperceptions) and conceptions and do not seek for objectivity and certainty. They engage in many activities involving objects of their environment and their properties without trying to prove the conceptions they have of the latter are correct:

It is true that we do not “know” that there is a world and that there are other people, on Cavell’s interpretation, but not because (this is the skeptic’s misunderstanding) we “don’t know” these things. In ordinary circumstances, circumstances in which neither doubt nor justification is called for, our relation to the familiar things in our environment, the pen in our hand or the person in pain whom we are consoling, is not one of either “knowing” or “not knowing.” Rather, Cavell suggests it is one of *acknowledging* their reality (or, sadly, failing to acknowledge it). Our task is not to acquire a “proof” that “there is an external world” or that our friend is in pain, but to *acknowledge* the world and our friend. (Putnam 2008d, 26)

Actual persons have genuine cognitive access to mind-independent reality they encounter in their ordinary life through true conceptions and veridical apperceptions. They do not, and do not need to, doubt and ascertain these conceptions and apperceptions. This relation of acknowledgment permits introducing a meaningful notion of mind-independent reality. And this acknowledged reality can be known when actual persons engage in processes of verification and justification of their conceptions.

Importantly, this reality actual persons can acknowledge and know does not have to be restricted to only apperceived entities and situations. In fact, actual persons’ ability at conceiving outruns their capabilities at apperceiving and verifying. For instance, nothing prevented them meaningfully conceiving “things too small to see with the naked eye” far before the invention of the microscope (Putnam 1999, 56). Such a sentence was meaningful before this invention (claiming the contrary would render the invention of the microscope hardly understandable). Commonsense realism does not only come with the rejection of the causal theory of perception (interfacial understanding of perception) but also with the one of the interfacial understanding of concepts. Provided they are correct, concepts such as ‘things too little to be seen’ are meaningful and allow genuine cognitive contact with aspects of reality that are not apperceived. Entities met through correct conception without apperception and things encountered in apperception belong to the same reality. No reasons remain to admit a radical (ontological) gap between what is apperceived and what is not when reality is already genuinely encountered through apperception (experience is not enclosed in a private cognitive sphere separated from external reality).

In addition, reality encountered by actual persons (acknowledging or knowing it, through apperception or only through conception) is mind-independent in a strong sense that does not rely on the prior settling of a consistent notion of truth (as was the case in internal realism). Commonsense realism abandons the verificationist content admitted in the previous internalist period. Real entities are certain ways independently of anybody apperceiving them or thinking they are this way. Things can for instance be ways nobody already conceived of (Putnam 2002d, 106, 2012b [2010], 100-101). This corresponds to a subtle point deserving further clarification. As we have seen, commonsense realism leads to recognize that conceptualization is involved in the fact that actual persons can cognitively reach reality. Reality is seen as conceptualized in to the extent

that the dichotomy between concepts and properties is rejected. But, an order of priority is to be respected. Conceptions or conceptual schemes we possess do not shape reality. Only in the case of true conception, ways things are conceived being and ways they effectively are are identical. In case of erroneous conception, it is not another reality that is encountered. Rather, we fail reaching mind-independent reality and are left with misconceptions potentially leading to hallucination instead of veridical apperception (Putnam 1999, 151-156, 2012a [2011], 638).

These results may suggest that, after a detour through internal realism, Putnam returns, at the end of the day, to metaphysical realism that is rendered consistently accessible from within the actual person's point of view. This is only partially true. In fact, the metaphysical realism that Putnam abandoned when entering the internalist period embeds two main theses. First, it claims the existence of mind-independent reality, which includes a rejection of verificationism and of "all talk of our "making" the world" (Putnam 2012b [2010], 101). Second, it argues that metaphysical reality consists in "a definite Totality of All Real Objects [a philosophically privileged sense of "object"] and a fact of the matter as to which properties of those objects are the intrinsic properties and which are, in some sense, perspectival" (Putnam 1994a [1987], 303). Putnam still opposes this second thesis of metaphysical realism that denies conceptual relativity and conceptual pluralism (Putnam 2012b [2010], 101-102, 2013f, 27-30)<sup>31</sup>. He denies "that a given thing or system of things can be described in exactly one way if the description is complete and correct, and that that way fixes exactly one "ontology" and one "ideology" in Quine's sense of those words, that is, exactly one domain of individuals and one set of predicates of those individuals" (Putnam 2012b [2010], 101).

This maintained criticism of the second thesis of metaphysical realism is deeply entrenched in the second naïveté Putnam's advocates for. Actual persons have world-involving abilities allowing them to directly reach reality. But what is reached is not something containing or composed by unnamed and unconceptualized entities waiting to receive labels through the establishment of connections with languages. When employed correctly, these abilities enable actual persons meeting reality. In particular, many of their ordinary conceptions can be taken at face value and permit them to acknowledge many real entities they encounter in ordinary life. But these real entities can be many different ways depending on specificities of actual persons and of the context they evolve in. This aspect of commonsense realism takes its roots in James' natural realism:

I am a natural realist. The world *per se* may be likened to a cast of beans on a table. By themselves they spell nothing. An onlooker may group them as he likes. He may simply count them all and map them. He may select groups and name these capriciously, or name them to suit certain extrinsic purposes of his. Whatever he does, so long as he *takes account of them*, his account is neither false nor irrelevant. If neither, why not call it true? (James, quoted in: Putnam 2008b)

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<sup>31</sup> As Putnam himself notices (Putnam 2001a), there might have been a certain dose of confusion between conceptual pluralism and conceptual relativity. Basically, conceptual relativity occurs between conceptual schemes that are cognitively equivalent or mathematically intertranslatable but incompatible in a metaphysical point of view (Putnam 1981, 73-74). Conceptual pluralism is broader and rejects the idea of "some single fundamental and universal ontology" (Putnam 2004, 49) or denying "that there is a unique and complete description of the world in some metaphysically privileged vocabulary (say, the language of the natural sciences)" (De Caro and Macarthur 2012, 15). Therefore, conceptual relativity can be seen as an instance of conceptual pluralism. In addition, different types of phenomena seem in need of distinction within conceptual relativity (Putnam 2001a). In some discussions, Putnam describes oppositions between empirically underdetermined and equally coherent physical theories as cases of conceptual relativity (see for instance: Putnam 1981, 73-74). In other places, alternative descriptions of a situation based on different notions of object (including or not mereological sums) as well as formal choices in geometry or mathematics are also interpreted as occurrences of conceptual relativity (see for instance: Putnam 1988, 111-113). In a recent writing, Putnam indicates that the admission of the former type of conceptual relativity might have been a mistake driven by his internalist conception of truth as idealized rational acceptability: Today I would say that if we ever face such a situation, then what we should say is that *we* can't tell which theory is true (if either), but *not* that both are true" (Putnam 2013c, 221).

Accordingly, ‘a way something is or can be’ is always susceptible of being further reinterpreted. For Putnam, reality is mind-independent in the sense delineated just above but cannot be understood as the second thesis of metaphysical realism indicates. A layer of mind- (or context-) dependence irreducibly remains. The notion of “ways things can be” defy the mind-independent/mind-dependent dichotomy” (Putnam 2002d, 106). This important claim can be further elucidated in considering the insights Putnam borrows from the work of Travis.

### **Context-sensitivity is not (only) in the head**

This work of Travis permits discussing the issues of context-sensitivity and mind-independence of reality in terms of interpretation and identification of properties (Putnam 2001b, 2002f). A way of being, “a way that objects might conceivably be” can be understood as a property. Saying that an entity is a certain way is the same as saying that this entity belongs to the extension of the corresponding property (or properties). In this framework, the second thesis of metaphysical realism stipulates that properties apply to objects “as they do entirely independent of how they are thought of” (words of Travis, quoted in: Putnam 2001b, 525). Contrastively, Putnam follows Travis and affirms that the extension of properties (which real entities possess given properties) is not fixed in advance. Rather, what belongs to the extension of a property hinges on “how it is *reasonable* to interpret the property.” And this reasonableness “depends on the human interests and practices that figure in the particular context of speaking” (Putnam 2001b, 525-526). For instance, determining “whether an apple that has just begun to form on the branch counts as an apple (or an apple that has been preserved in formaldehyde or ...)” (Putnam 2001b, 529) – that is to say whether being an apple is a property of such entities – involves obviously the entities themselves. But it also requires interpretation that depends on elements of the context of speaking (or of interpreting) such as “the point, or purpose, in identifying relevant ways for things to be, the functions which talking of the ways to be identified would serve, our reasons for speaking of the world as being one way rather than another” (words of Travis, quoted in: Putnam 2002f, 103). This sensitivity to context of the interpretation of properties also applies to their identification. When determining whether two ways things can be are the same, the world and the context “jointly decide where there is one way for things to be, and where there are two” (ibid). For instance, being water and being H<sub>2</sub>O are the same property in certain contexts (on certain occasions) but not in others (Putnam 2002f, 103-104). In sum, according to Travis and Putnam, properties’ extensions are not fixed in advance, contrarily to what metaphysical realism claims. The fixing of properties’ extensions, as well as the identification of properties, both require “occasion-sensitive” or “context-sensitive” interpretation (Putnam 2002f, 104-105). And this mind-, occasion- or context-dependence is not merely confined to actual persons’ cognitive spheres, but is related to ways reality and real entities are.

The only way of denying “ontological significance” to such context-sensitivity would be to succeed at making sense of the idea of a complete conception of the world that would be free of this sensitivity – a conception whose truth-condition would be context-independent. In this line of thought, a metaphysical realist could thus concede that natural language is hopelessly vague while arguing that, contrastively, our scientific theories allow conceiving ideally precise properties. Based on them, we could, if not reach, at least make sense of the idea of a complete description of “the world as it is apart from human perspectives and interests” (Putnam 2001b, 530). Quine’s idea of “first-class conceptual system” (formed by formalized science and opposed to “second-grade” systems such as natural languages) as well as William’s absolute conception of the world are two

instances of such an attempt at denying that context-sensitivity reaches all the way down (or up) to reality. Both Quine and Williams shares the premise that only the first-class conceptual system – or the absolute conception of the world – would have “ontological significance”, that “it is only our best *scientific* theory of the world that says anything we can take seriously about what there is” (Putnam 2004, 83-84). Without denying that our scientific theories say things we can take seriously about the world, Putnam rejects such exclusiveness. First, he argues that many ordinary properties (being blue, being an apple, being a chair or being the bus driver ...) do require context-sensitive interpretation (Putnam 2001b, 527-529, 2002f, 98-99). Travis point is thus extremely general. Although such ordinary properties can be correlated with allegedly fundamental properties taken as a whole (global supervenience can be conceded), they cannot be reduced to them (no local supervenience). Ordinary properties as well as many other properties that do not reduces to fundamental properties (say to properties of physics) – such as being a meaning or being a content of mental state – could not be integrated in the absolute conception of the world. If Quine or Williams were right, they should not be taken seriously as talking about the world. We should even be prepared to abandon any talk about the notion of cause which “is notoriously vague and context-sensitive”. According to Putnam, few philosophers will be attracted by the attempt at denying ontological significance to context-sensitivity through restriction to non-perspectival accounts of the world once they appreciate just how very little the supposed “complete description of the world” actually tells us about the world” (Putnam 2001b, 531-532). Second, Putnam claims that, even in the framework of scientific theories, properties that would embed no vagueness or context-sensitivity are themselves idealizations whose deployment to describe a given phenomenon is itself context-dependent (Putnam 2001b, 532-533). Scientific properties are no exception to Travis point. It holds with extreme generality. Even the verb ‘exist’ and the concept of existence require context-sensitive interpretation (Putnam 2004, 2-3 and 33-51).

Consequently, context-sensitivity of properties interpretation and identification cannot be confined in actual persons’ cognitive sphere. Rather, it is “deep” and reaches ways real entities themselves are and are not (Putnam 2001b, 526). For Travis, any attempt at returning to non-perspectival conceptions of reality amounts pursuing shadows (Putnam 2002f, 96-99). Through this renewed discussion at the heart of commonsense realism, Putnam maintains his rejection of the second thesis of metaphysical realism about the possibility of a unique and non-perspectival conception of reality (for instance based on materialism or physicalism):

The criticisms of the materialist school of “analytic metaphysics” I have been making might be restated in Aristotelian language thus: the materialists speak as if the only explanatory principles were the fields and particles of fundamental physics; what they entirely fail to see is that the world has *many, many different levels of form*, and that types of form are also explanatory principles. If you want to explain why, for example, why Kant wrote a certain passage in *The Critique of Pure Reason*, a knowledge of quantum mechanics and relativity theory won’t help you; as I put it in a paper I wrote many years ago, *most of the structure at the level of physics is irrelevant from the point of view of [a] higher-level discipline*. (Putnam 2008b, 27)

Contrastively, conceptual or pragmatic pluralism is a core feature of commonsense realism:

In place of Ontology (note the capital “O”), I shall be defending what one might call *pragmatic pluralism*, the recognition that it is no accident that in everyday language we employ many different kinds of discourses, discourses subject to different standards and possessing different sorts of applications, with different logical and grammatical features - different “language games” in Wittgenstein's sense - no accident because it is an illusion that there could be just one sort of language game which could be sufficient for the description of all of reality! (Putnam 2004, 21-22)

Context- or occasion-sensitivity of properties interpretation and identification indicates that ways a given things can be are not unique. The attribution of the property of being a certain way to an entity, as well as the identification of and the distinction between ways of being, are context-sensitive (in particular with dependence to human interests and practices). They cannot be understood as merely matching or failing matching what is really the case context-independently. Ways real things are depends on the context in which actual persons meets them. Attempts at disentangling what reality is mind-independently on the one hand and mind-dependent conceptions or representations actual persons can have of it on the other hand are hopeless.

This however does not render reality mind-dependent. Reality is mind-independent in many senses. Ways real entities are, though neither unique nor disconnected from situated points of view, do not await being conceived by someone to exist. They are not shaped by conceptions or conceptual schemes actual persons rationally accept in given times and places. On the contrary, such rationally accepted conceptual schemes can fail matching reality (as met along a given point of view) and lead to misconceptions as well as to defective apperceptions or hallucinations. Claiming that mind-independent reality can be nothing but situated does not have to be equated with rejecting the very notion of mind-independence. Again, commonsense realism allows conceiving reality and real entities as being the ways they are without anybody conceiving or apperceiving them being these particular ways. What a commonsense realist cannot make sense of is the idea of reality being the ways it is in disconnection from any situated point of view, in a non-perspectival manner. It would amount returning to the externalist perspective and its God's eye point of view that generate unpalatable semantic issues. Commonsense realism opens the possibility to recognize that reality can be nothing but certain ways along situated points of view or perspectives, without condemning in the same move to the claim that reality is mind-dependent. Doing justice to this alternative to metaphysical realism on one side and verificationism, antirealism and relativism on the other side is a striking feature of commonsense realism that suggests a way out of the antinomy of realism.

### **Context-sensitive mind-independent reality and incommensurability**

This general conclusion about commonsense realism is extremely promising in the present perspective targeting of a refined account of the notion of incommensurability. Conceptual pluralism and relativity were already advocated for during Putnam's internalist phase and we briefly mentioned the potential convergence such ideas could permit with Kuhn's World-Change thesis. But internal realism fails at departing from verificationism, relativism and antirealism (or worse, solipsism). Internal realism's failure at acknowledging reality (as well as the reality of other's minds) is tightly connected with the interfacial understandings of perception and conception. The internal realist was left with no other option than hopelessly trying to reconstruct reality (instead of acknowledging it) through the notion of truth. With the rejection of such interfacial approaches, commonsense realism avoids the pitfalls of internal realism. At the core of commonsense realism lies the importance of acknowledging reality and its many faces.

Consequently, commonsense realism may permit conceiving the coexistence of several (and potentially incommensurable) valid ways for reality to be without falling into antirealism or verificationism. In turn, Kuhn's controverted World-Change thesis could be reconsidered. As we saw, an object is apperceived with manifested and not manifested attributes (unfulfilled intentions). Following this line of thought, claiming that different worlds are experienced when incommensurable conceptual schemes are admitted could be reformulated in saying that several incompatible ways for reality to be conceived and thereby apperceived can coexist. Very promisingly, incommensurability may then be considered as more than a simple psychological or linguistic phenomenon without generating the threat of a loss of the world.

Before turning to the development of this line of thought, complementary elements of Putnam's commonsense realism needs being further elucidated. As we have seen, the adoption by Putnam of this commonsense realist framework results from his successive rejections of metaphysical realism and internal realism. These rejections answer the worry of the threat of the loss of the world driven by refined analysis of the issues of meaning, reference and truth of knowledge claims about reality. Putnam constantly insists on the need to clarify the manner reality can be experienced and talked about. For him, the threat of the loss of the world can be defused only in reconsidering the cognitive access actual persons have to reality. In the present section, it has been extensively exposed that this reconsideration requires general reexaminations of the notion of mind and of the accounts of perception and conception. Through the shifts Putnam proposes, actual persons can be pictured as being in genuine direct cognitive contact with mind-independent reality through perception and conception relying on world-involving abilities. When approached in this commonsense realist perspective, mind-independent reality proves being context-sensitive in the sense that it is nothing but specific ways along situated points of view. In turn, these new insights about the mind, about perception and conception as well as about the nature of mind-independent reality actual persons are in direct cognitive contact with can be mobilize to address the topics of meaning and reference on one side, and of truth on the other side, that are at the ground of the difficulties Putnam evidences in metaphysical realism and internal realism. To begin with, the following section focuses on the question of meaning and reference.

## **4.2. A context-sensitive account of meaning and reference**

Commonsense realism, and the associated general reexaminations of the notions of mind, perception, conception and mind-independent reality exposed in the previous section, allow a fruitful reconsideration of the issue of meaning and reference that borrows many elements from the works of Wittgenstein, but also of Charles Travis and Stanley Cavell (Putnam 1999, 82-83). As it is the case with perception, Putnam also promotes a "second naïveté" about the use and understanding of language (Putnam 1999, 14-15). From the internalist period, Putnam keeps the idea that meanings of the terms of a language have somehow to be fixed by the use of this language. It is nonsensical to admit that someone knows how to use his language and then wonder how an interpretation of this language can be singled out. As we saw, internal realism was still constrained by the locks of the causal theory of perception and of the interfacial understanding of conception. Putnam had no other option than adopting a verificationist semantics he misleadingly hoped to render compatible with realism. A large part of the problem comes from a wrong approach of what languages and their terms are. If the latter are considered as simple marks and noises or as mere interfaces between the mind and the world (to the extent reality is not merely expelled from the picture), then their meaning cannot be accounted for without further explanation. Either one tries



to argue that (thought-) signs intrinsically have the meaning they have or one defends the idea that meaning and reference have to be handled internally, based exclusively on what is cognitively available to thinkers or speakers – that is to say, on what can be recollected in their psychological states as conceived under interfacial understandings of perception and conception<sup>32</sup>. The core point of the second naïveté about language use is to insist on the idea that understanding and meaning are better considered as verbs. Prolonging the leitmotiv ‘meaning is in the use’, the new semantic slogan of commonsense realism could be “understanding is having the abilities that one exercises when and in using language” (Putnam 1999, 15). Thinking, hearing, reading or expressing a sentence is nothing else than meaning or understanding. Meaning or understanding is not something we add to languages in grasping some metaphysical entities or in learning some assertability conditions. When used correctly, signs already refer and have a meaning. Following Wittgenstein, Putnam claims:

When we know and use a language well, when it becomes the vehicle of our own thinking and not something we have to mentally translate into some more familiar language, we do not, pace Richard Rorty, experience its words and sentences as “marks and noises” into which a significance has to be read. When we hear a sentence in a language we understand, we do not associate a sense with a sign design; we perceive the sense in the sign design. Sentences that I think, and even sentences that I hear or read, simply do refer to whatever they are about - not because the “marks and noises” that I see and hear (or hear “in my head,” in the case of my own thoughts) intrinsically have the meanings they have but because the sentence in use is not just a bunch of “marks and noises” (*Philosophical Investigations* 508). (Putnam 1999, 46)

Once languages, words or thought-signs are not pictured as mere marks or noises we hear, express, think or read, the problem of meaning and reference dissolves. We see the face of meaning and reference when we (competently) employ a language (and not just express or consider marks and noises). Meaning and referring are what we do when correctly using a language. They are part of our cognitive abilities. It is a central characteristic of liberalized functionalism that these abilities do not have to be reduced to verification procedures or to be explained in terms of free-standing metaphysical entities. As it is the case about perception and conception, a primitive notion of reference (an unreduced ability to understand and refer) is admitted in Putnam’s liberalized functionalist framework (Putnam 2012c [2011], 82-85).

Moreover, in most cases our abilities at referring or meaning mesh with our other capabilities at entering in cognitive relation with the world (apperceiving, conceiving, thinking, imagining, etc.), which, according to Putnam’s transactionalism exposed in the previous section, directly involves real entities (instead of mere representations caused by them). For instance, the sentence ‘there is a coffee table in front of me’ cannot be understood without mobilizing the ability to apperceive coffee tables (Putnam 1999, 14). Talking about or seeing the face of meaning and reference when using a language is also talking about or seeing the face of perceiving, imagining, thinking, etc. (Putnam 1999, 69, 2012c [2001], 495). As already exposed, commonsense realism and liberalized functionalism see the latter abilities as world-involving and the same apply to meaning and reference. In such a framework, there is no mystery hidden in the possibility of reference to external objects. The ability of meaning and referring to external objects is intimately intertwined with the capabilities of apperceiving them and conceiving the way they are. Veridical apperception is a direct cognitive contact with genuine aspects of reality. Correct conception of a

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<sup>32</sup> For instance, the first option could take the form of an appeal to noetic rays or other mysterious entities connecting signs with what they refer to. Verificationism is an example of the second option.

way something is and this something being that way are two sides of the same coin. Thereby, correctly conceived and genuinely apperceived objects and properties can be straightforwardly referred to. This applies in particular to ordinary objects and persons we acknowledge in our lives are unproblematically referred to. Commonsense realism about them permits us to simply acknowledge they exist. Accordingly, merely saying that we perceive given objects or persons can be taken at face value as an explanation of how we can refer to them (Putnam 2008a, 111). The same 'naïve' view of reference applies to objects or persons that are not effectively present (say because they are distant or because they belong to the past). Using a sentence such as 'My brother has a concert in New York' is reaching to my brother in America as a mobilization of my ability to report where my brother is and to recount what he is doing in New York (Putnam 1999, 47). Similarly, there is no need to reduce (or explain) the use of terms such as 'Caesar' to (or by) some abilities at correctly predicting some presents facts (such as the occurrence of 'Caesar' in ancient or history books). According to commonsense realism, Caesar can be acknowledged as "a fellow passenger to the grave." Using 'Caesar' can thus be understood as referring to this genuine human being that lived in the past (Putnam 1994 [1991], 276-277). In addition, actual persons are provided with the ability at conceiving things being ways that are not directly apperceivable (Putnam 1999, 59-64). Provided these conceptions are correct, they permit a genuine contact with things being these ways. Reference in such settings is thereby not problematic. 'Things too small to be seen with the naked eye' or 'entities that cause this observed phenomenon' can be meaningful expressions referring to things too small to be seen with the naked eye or entities causally responsible for this observed phenomenon. Terms like 'small' or 'cause', which are competently employed in ordinary circumstances, can be mobilized in such expressions. Commonsense realism is not more confronted with the problem of explaining reference to objects with which we are not in genuine apperceptive contact, than with the question of metaphysical or Berkeleyan skepticism (explaining how perceptual experiences can have a unique correlation with external objects). These issues simply do not arise (Putnam 1999, 169, 2002e, 126). As it is the case about perception and conception, there is no need for a specific reconstruction of how languages hook the world. Meaning and referring are world-involving abilities. Talking about external objects or entities is intimately connected with our associated world-involving practices, starting with acknowledging and apperceiving these entities (Putnam 2012 [2004], 118)<sup>33</sup>.

After these general considerations about meaning and reference, a more detailed discussion can be provided. Context-sensitivity about ways real things are and conceptual pluralism have their counterparts at the semantic level. Putnam admits contextualism about meaning and reference (Putnam 2012c [2001], 495-498). Alternatively put, he adopts a speaking- or context-sensitive semantics according to which "the content of an utterance depends on the particular context in which it is spoken" (Putnam 1999, 87-88). Such a semantic contextualism is commonly admitted about words like indexicals, demonstratives or tense indicators. However, what Putnam has in mind is more radical and applies also to verbs, common nouns or properties. For instance, the sentence 'there is a lot of coffee in front of me' can mean that there is a cup of coffee in front of me, or that coffee has been spilled (or that there are some coffee beans, etc.) depending on the actual situation<sup>34</sup>. Terms can thus have a plurality of possible uses depending of the context of speaking.

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<sup>33</sup> Resonating with the side but important remark of previous section, this view about meaning and reference also applies to evaluative and ethical matters. To the extent that we can acquire ethical and normative concepts, we can detect or apperceive ethical and normative facts (Putnam 2002c, 102, 2002b, 19). Thereby, our abilities to mean and refer extend to ethical or evaluative sentences such as 'John is inconsiderate'.

<sup>34</sup> Semantic contextualism does not only stipulate that meaning and reference of a term can change depending on its context of use but

Furthermore, this plurality cannot be managed in advocating for the existence of “standard meaning” that would be context-independent by contrast with a plurality of “conversational implicatures” (Putnam 1999, 88). Based on the work of Travis, Putnam rejects what he calls ‘classical semantic theories’ that “aims at giving *context-independent characterizations of the truth-conditions of the context-sensitive sentences of a natural language.*” As put by Travis, this amounts seeking “shadows” (Putnam 2002f, 98-99). Moreover, context-sensitivity concerns not only terms designating ordinary objects and properties but extends to scientific discourses and to counterfactual statements (Putnam 2001b). An important point can be directly mentioned before diving into the refinements of Putnam’s and Travis’ semantic contextualism. The fact that the actual context of utterance is required to completely describe the meaning of terms and sentences complies with the core intuitions of semantic externalism constantly defended by Putnam. Conceptual knowledge that might be associated with our terms is not sufficient. Actual world’s referents of the context of speaking have to be included. Therefore, a term associated with some conceptual knowledge can mean different things depending on the actual context, which is required to establish what the term refers to.

The details of Putnam’s semantic contextualism allow delineating the notions of meaning, understanding and reference. Putnam notices that the term ‘meaning’ is ambiguous and possesses several senses, some of them varying from context to context. This is in particular the case if one labels meaning the broader notion of meaning vector that is still admitted in the commonsense realist period (Putnam 2013e, 273). Meaning conceived under the form of meaning vector includes referents that, as we just saw, are context-sensitive. Nonetheless, Putnam argues that at least one of these many senses do radically not change depending on the context of speaking. According to this sense, talking about meaning of terms or sentences corresponds talking about our world-involving competences that provide constraints upon what can be done with terms and sentences (Putnam 2012c [2001], 495). In this perspective, the meaning of a term is formed by the history of its prior uses (Putnam 1999, 124-125). This history gathers “what a competent speaker knows before encountering a particular context” (Putnam 2012c [2001], 496). This prior knowledge guides language-users in their application of terms and sentences in a particular actual context of utterance without altering their meaning. The mastery of a sufficient amount of such knowledge is required to be recognized as a competent speaker, as a member of a given linguistic community (Putnam 2002f, 106). Unless otherwise specified, this sense of meaning as history of prior uses guiding terms’ application will be employed in the following discussions of semantic topics. The broader notion of meaning vector will be used to designate meaning in its wider sense (that includes referents). Therefore, semantic contextualism does not deny that there is something that deserves being called meaning that can be somehow trans-contextual<sup>35</sup>. Nevertheless, the central claim of semantic contextualism is that meaning so conceived (as formed by the history of prior

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also that a context of use is required for a term to even be meaningful. Accordingly, our habits of reference and the pre-existing uses of terms do not guarantee the meaningfulness of a term. It is necessary to verify that a context of speaking is actually present and determine whether it authorizes a meaningful use of the terms (Putnam 2012b [2001], 384). This can be illustrated through Putnam criticism of the meaningfulness of the expression ‘soulless automata’ in the context of the debate about mental causation. According to him, such an expression could be (sadly) meaningful in the context of a nation’s propaganda aiming at enslaving a tribe or when talking metaphorically about bureaucrats in a public administration. However, its meaning is far from clear in the debate about mental causation and just mobilizing it as a philosophical possibility amounts to speaking without any context (Putnam 1999, 90-91).

<sup>35</sup> Obviously, the trans-contextual aspect of meanings is to be understood by opposition to the context-sensitivity of what is designated. However, meanings as knowledge of the history of prior are still context-dependent in the sense of being historically, culturally and socially situated (different persons in different times and places may possess different stereotypes associated with a given term, experts of a given topic may possess more refined conceptual descriptions of entities pointed by some terms than laymen). But this type of context-dependence of meanings is clearly distinct from context-sensitivity of terms referents. Language-users possessing the same meaning for a particular term (belonging to the same culture and social group) may still designate different referents in different context of speaking (as illustrated with the term ‘coffee’).

uses) cannot completely determine what is said at the occasion of an utterance or an inscription in an actual context<sup>36</sup>. In particular, meanings cannot be conceived of as rules algorithmically fixing the understanding of a sentence (and the referents of the different terms composing it) uttered in a particular context (Putnam 1999, 87-88). The later only constrain what can be said<sup>37</sup>. In the example ‘there is a lot of coffee in front of me’, ‘coffee’ can refer to different things (cups of coffee, beans of coffee, coffee spilled, etc.). The sentence can thus be understood in many different ways. Only based on meanings (formed by prior uses), a sentence can receive many different understandings and the terms composing it can designate many different referents. The actual context of utterance is required to fix understandings and referents. For sentences claiming that something is true or false (or that something is the case or not), Putnam calls these different understandings the “truth-evaluable contents” of the sentences. In this case again, semantic contextualism stipulates that “the truth-evaluable content of sentences depends both on what they mean (what a competent speaker knows before encountering a particular context) and on the particular context, and not on meaning alone” (Putnam 2012c [2001], 496).

This role that actual contexts of utterance play in complementing terms’ meanings to establish their reference, and the understanding of sentences they form, should not be understood mechanistically. The point is not to argue that the actual context in itself cooperates with meanings to determine univocally reference and understanding. Rather, semantic contextualism indicates that meanings cannot fix reference and understanding independently of speakers or thinkers living in a given context and exercising their world-involving cognitive abilities. In particular, speakers or thinkers have to judge the reasonableness (or the naturalness) of applying terms and their past uses in the particular circumstances of the actual context. Contrarily to what is defended by authors like Chomsky or Mulhall, Putnam denies that reasonableness or naturalness of words’ applications can be accounted for algorithmically (Putnam 1999, 124-125). No single set of rules can determine what is and what is not reasonable to do with our words in novel circumstances. For instance, uses of terms like ‘triangles’ ‘base angle’ ‘rectangle angle’ and ‘positive angle’ requires background knowledge that depends upon the actual context. An idea like ‘triangles whose both base angles are rectangle and the third one positive’ cannot be properly understood based on the meanings of the different terms only. It becomes meaningful only to the extent something like general relativity is part of the background knowledge available, in the context of utterance, to the persons using this term. And the fact that such a theory is part of this relevant background knowledge in 20<sup>th</sup> century physicists can be seen at best as a normatively significant regularity, but not as a rule (Putnam 2012a [2001], 409-413). Putnam also rejects the idea that the reasonableness of the use of term in a novel context is guaranteed by entities that would be present in all the reasonable instances – for instance, narrow contents, Platonic forms or Aristotelian universals (Putnam 1999, 125).

Instead of mobilizing sets of rules or mysterious semantic (metaphysical) entities, Putnam argues that judgments of reasonableness (naturalness) we make when we employ a word in a particular context is better accounted for in terms of an ability of attunement to one another we possess. This ability reflects a “shared sense of what is and what is not a natural projection [or

<sup>36</sup> Semantic contextualism thereby complies with semantic externalism: meaning (understood as what could be recollected in psychological or mental states) is not enough to determine reference.

<sup>37</sup> Putnam insists on the fact that contextualism does not render context-independent meanings merely redundant with respect to elements brought about by the context. Rejecting the idea that such meanings determine algorithmically what is said in a particular context does not amount claiming there are useless. Rather, Putnam compares them to dictionary’s entries. They constrain what can be said and their mastery is expected from any competent speaker. Meanings, like dictionary’s entries, are relevant but the application of the information they provide is context-sensitive (Putnam 2002f, 106).

application] of our previous uses of a word into a new context” and is fundamental for the very possibility and intelligibility of languages (Putnam 1999, 89, 2012a [2001], 415). Our ability to be attuned to other speakers permits us to arrive (often instantaneously) at a proper understanding of what is said in an actual context. This ability at attuning (or at judging the reasonableness of the application of our terms in a particular context) irreducibly mobilizes specificities of actual persons and of the context in which they employ their languages. First, the actual context provides background knowledge necessary for understanding. In the example discussed just before, an idea like ‘triangles whose both base angles are rectangle and the third one positive’ cannot be understood properly independently of the knowledge available to speakers in their actual context. Its understanding varies depending whether or not general relativity is admitted as a part of the background knowledge provided by the actual context of use (Putnam 2012a [2001], 409-413). And as we saw in section 3.3, the fact that general relativity is part of our background knowledge cannot be accounted for in terms of rules or algorithm following that would permit removing the influence of the specificities of historically, culturally and socially situated actual persons. Rational admission of theories itself irreducibly mobilizes evaluative judgements and commitments of actual persons (for instance about epistemic values such as simplicity, coherence and the like). Second, the role of the actual context also reflects the fact that understanding a sentence is a world-involving process. Again, understanding a sentence does not require only background knowledge present in the actual context (that can be recollected in psychological and mental states), but also (causal) interaction with real world’s objects, properties, actions and events this context includes. The world plays a substantive role in the determination of what is said through an expression or a sentence (Putnam 1999, 88-89 and 119-122, Travis 2002, 203). Understanding ‘there is a lot of coffee in front of me’ involves the actual situation in front of me with the real objects and properties that then become referents of the different terms (a bag of coffee, a cup of coffee, etc.)<sup>38</sup>. Moreover, this interaction with actual world’s entities, required in the fixing of understanding and reference, should not be seen as a causal connection standing between uttered marks and noises and real things. As we saw, employing a language is not reducible to uttering marks and noises. On the contrary, talking or thinking about real world’s entities has to be seen as a world-involving abilities irremediably entangled with our “vast and ever-expanding motley of *world-involving practices*” (Putnam 2012 [2004], 118). These practices include not only our world-involving abilities (like apperceiving or conceiving) but also what we do with these real world’s entities and the real world’s events occurring in connection. “Descriptions of language and descriptions of the world, including what speakers do in the world, are interwoven” (Putnam 2012b [2001], 384). To the extent that the determination of understanding and reference requires mobilizing the world-involving practices of actual persons situated in a particular context, it also involves directly the interests of these actual persons, the reasons why they engage in such practices.

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<sup>38</sup> In general, the precise entity referred to by a term does not need being directly present and apperceived by language-users. Here two aspects of world-involvement in the process of reference can be distinguished. First, as we just said, the ability of attunement, indispensable to complement constraints provided by meanings, is (or rather can be) world-involving. In addition to background knowledge that can be recollected in language-users psychological states only, real entities encountered (not only the one referred to) as well as activities language-users engage in are crucial. For instance, one can imagine a situation involving ‘coffee’ in which the referent (coffee bags) is not directly present. One person may be behind the steering wheel of a truck waiting to be loaded. He might say to someone else ‘could you bring the coffee please?’. No doubt both would share the attunement that ‘coffee’ refers to the bags of coffee stored in another place. Second, the world is involved because “reference to empirical particulars and properties *presupposes* information-carrying causal interaction with those particulars and properties, or at least with particulars and properties in terms of which identifying descriptions of those particulars and properties can be constructed” (Putnam 2012 [2004], 115). In cases in which such objects or particulars are directly present, apperception at the same time constitutes the causal interaction and plays a role in the attunement. In other cases involving terms like ‘Caesar’ or ‘electrons’, entities referred to are causally involved but attunements do not rely on their apperception. As a side remark, this mobilization Putnam makes of the notion of causal and information carrying connection indicates that the core of his causal theory of reference is still admitted in the commonsense realist period. This point will be further developed, notably in the following chapter.

In sum, the picture of understanding and reference fixing, which semantic contextualism provides, irreducibly relies on specificities of actual persons and of the historically, culturally and socially situated context they speak in. Actual speakers' ability of attunement to one another – or of judgement of the reasonableness of the application of given terms in particular contexts – does not rely algorithmically on the meanings of these terms (on what a competent speaker knows before this application). Actual contexts – in which language-users (1) possess particular background knowledge, (2) engage in various (world-involving) practices (according to their interests) and (3) encounter different real entities – are indispensable. Importantly, attunements are not to be seen as rules giving foundation, basis or justification to terms' uses. The fact that an attunement can stand between language-users in an original context does not algorithmically ensure that the corresponding term's use is correct or that the possibly associated conceptual descriptions available in background knowledge are true. Contrastively, attunements are to be seen as "preconditions of intelligibility" (Putnam 2012a [2001], 415). Justification for background knowledge and correctness of terms' use are to be sought elsewhere. In some cases, acknowledged situations, language-users are situated in, can be sufficient. In other cases, they may pursue truth and correctness of use guided by their (fallible) standards of rational acceptability. This shows that warranted assertability or truth are not required for the consistency of the semantic account provided in commonsense realism. At least not in the crucial way it is mobilized in internal realism.

It is important to mention that the semantic approach of commonsense realism escapes the antinomy of realism that, at this level, bears on the question 'How do languages hook the world?'. It offers an alternative to the problematic positions constituting the antinomy. This commonsense realist approach avoids the positing of mysterious mental acts or powers (leading to posit either unclarified notions such as noetic rays or to beg the question of reference in appealing to features such as similarity) standing between our languages and reality. Nonetheless, it does not retreat into verificationism (which faces the threats of solipsism and of the loss of the world). Both branches of the antinomy share the idea that meanings, understood as knowledge or criteria for terms' application that can be recollected in language-users psychological or mental states, are enough to fix what terms refer to. From his early criticism of this traditional conception of meaning, Putnam constantly seeks to elaborate a consistent semantic externalism doing justice to the fact that external factors are involved in the process of reference fixing, in addition to knowledge language-users possess. In internal realism, Putnam tries unsuccessfully to combine verificationism with such semantic externalism. This produces only a pseudoexternalism in which problematic issues hide out in a misguided account of truth. Through the identification and the rejection of the lock constituted by interfacial understandings of perception and conception, commonsense realism and its semantic approach escape the antinomy of realism (cf. discussion above in section 3.5). They permit a genuine return to semantic externalism. In compliance with the reconsideration of the notions of mind, perception, conception and mind-independent reality exposed in the previous section, semantic processes are discussed in terms of language-users' abilities to refer and mean that are intimately meshed with other world-involving capabilities they possess, such as apperceiving entities of external reality and their properties, conceiving the way they are or attuning to one another. Therefore, semantic processes need neither to be reduced to verification procedures (with the risks of heading toward solipsism through verificationist semantics and of losing the world through idealism or antirealism) nor to be explained in terms of mysterious mental powers (potentially backed by the positing of ad hoc metaphysical entities). On the contrary, a primitive notion of reference can be admitted: referring meaningfully is what language-users do when correctly using a language based on their world-involving abilities.

Furthermore, semantic externalism is reaffirmed in two main ways. First, the commonsense realist account is not radically at odd with the causal theory of reference defended by Putnam since his early period propagates to. But, again, this is to be distinguished from any definition of reference as a causal connection. In commonsense realism, (causal) interactions with referred to objects *are required for* reference fixing. And these (causal) connections need being information-carrying which is made possible through the direct cognitive contact actual persons can have with real entities (through apperception). Second, this does not constitute a complete return to Putnam's early semantic approach that is embedded in a metaphysical realist account. Semantic externalism deployed in commonsense realism does not lead to see reference fixing as a process establishing an absolute link between a term and a real entity conceived as a pre-given and fixed object possessing certain properties. As exposed in the previous section, the ways of being of mind-independent reality or of real entities are context-dependent. Interpretation and identification of properties are context-sensitive. This context-dependence has its counterpart at the semantic level. Commonsense realism includes semantic contextualism that reaffirms semantic externalism in a second way. Meanings, understood as what competent language-users *know* about the past uses of terms before employing them, are not enough to fix reference of terms. Rather, based on meanings, language-users deploy their (world-involving) ability of attunement to designate particular referents being specific ways (or to understand that they are designated by someone else) in function of the context of speaking. This context – which includes background knowledge, practices engaged in following certain interests and encountered real entities (including those explicitly referred to) – is a crucial external factor that, together with meanings, feeds language-users' ability of attunement at fixing the reference of terms and the understanding of sentences they form. In addition, this ability at attuning or at assessing the reasonableness of applying a term in a particular context has to be considered as primitive (as it is the case for other cognitive abilities like conceiving or apperceiving). This means that it should not be reduced either to algorithmic rule following or to mysterious entities present at the occasion of each correct application. This would amount seeking shadows.

Together with the solution it brings to the antinomy of realism, the account of meaning and reference in Putnam's commonsense realism permits settling a coherent description of phenomena of knowledge change, such as those occurring at the occasion of scientific discoveries. First, language-users are provided with the ability to refer to the entities of mind-independent reality. Commonsense realism rejects the verificationist semantics of internal realism that renders designated entities dependent upon (and somehow shaped by) knowledge hosted in conceptual schemes. Although commonsense realism abandons the concept-property dichotomy, it does not claim that conceptual schemes admitted by language-users shape reality. As exposed in previous section, rationally accepted conceptual schemes can be false and conduct to defective apperception or hallucination. Accordingly, discoveries bringing more or improved information about the ways some entities are can lead to modify our criteria for correct use of corresponding terms. But they do not change the entities that are talked about. Rather, actual persons obtained a better conception of the ways these entities are. Variations in actual persons' belief about the ways something can be is clearly distinguished from variations in ways this something is. Here, a crucial subtlety has to be elucidated. According to semantic contextualism, different ways of being of a given entity can be referred to in different contexts (as illustrated with the example of 'coffee'). Consequently, changes in context triggered by (scientific) discoveries may lead to refer to a new way of being of a given entity that remained unnoticed up to this point. But this would not amount shaping a new way for the entity to be. Again, claiming that real entities can be different ways along different points of

view (and that reality and real entities can be nothing but certain ways along particular perspectives) does neither imply abandoning the idea of mind-independent reality nor claiming that the conceptual schemes that are (rationally) admitted by actual persons shape reality and its entities.

Second, and in a more detailed way, semantic contextualism accounts for the impact of (scientific) discoveries on terms' use as a special case of the process of terms' application occurring when the actual contexts of speaking are radically different from those of prior uses. In such cases, Putnam talks about the projection of terms (instead of their application) in new contexts of speaking (Putnam 2012a [2001], 409-417). This process of projection is fundamental to all use of language (in particular for metaphors and jokes). The projection of terms in a new context "reveals attunements that have not previously been made manifest" (Putnam 2012a [2001], 416). Language-users' ability of attunement is enlarged when deployed in new contexts (modified background knowledge, freshly encountered real entities, engagement into new practices). According to such new possibility of attunements, new uses for terms are grounded. For instance, a term may be discovered as suitable to designate a way something is that was unnoticed up to this point. In this line of thought, discoveries and scientific revolutions inducing changes in background knowledge (like the discovery of Einstein's special and general relativity) can be seen as inducing the introduction of new attunements that add to or modify the way some terms or expressions can be employed (Putnam 2012a [2001], 415-416). Attunements possible in context prior to Einstein (or Riemann and Lobachevsky) permitted using the term 'triangle' to designate a three-sided shape whose angles' sum equates  $180^\circ$ . In ulterior contexts, new attunements are made available. 'Triangle' can also refer to a three-sided shape whose angles' sum diverges from  $180^\circ$ , depending on the context of speaking (here the actual physical situation). In turn, new attunements add to or modify what speakers know about the use of terms for further deployment in ulterior contexts. Meanings of terms are thus modified by (scientific) discoveries or revolutions. As already mentioned, attunements are not to be seen as rules giving foundation, basis or justification to terms uses. The fact that a new attunement can be unveiled in an original context does not algorithmically ensure that the new use is correct or that new conceptual descriptions modifying background knowledge are true (or closer to truth than previous ones they may oppose to). Again, truth is not a central component of commonsense realist account of meaning and reference.

Before turning to the exposition of the way truth is accounted for in commonsense realism, an additional comment is in order. Very little has been said in this exposition of semantic contextualism about normative, evaluative, moral or ethical terms. This is not a guilty omission but rather reflects the fact that the main challenge of semantics concerns explaining the relationship between languages and reality. This challenge bears only on terms referring to reality (descriptive terms). Normative, evaluative, moral or ethical terms face it only if one argues that they refer to and describe real entities (e.g. intangible objects). But it is not the case of Putnam. According to him, "enabling us to describe the world is one extremely important function of language; it is not the only function" (Putnam 2002c, 33). Our languages include many non-descriptive terms. In particular, (thin) evaluative, moral or ethical terms (like good, wrong or right) are not employed to refer to real entities or persons though they surely apply to them. We do not need explaining how they refer to real entities because they do not. But this does not imply that they have no meaning. They can be (and often are) associated with criteria and constraints for correct use. Their meaning can be treated as the one of descriptive terms. The meaning of a non-descriptive term is also constituted by what a competent language-user knows about the way to use it prior applying it in



an actual context. The case of thick terms (such as ‘inconsiderate’ or ‘elated’) may be more subtle. They embed descriptive and evaluative parts that cannot be disentangled. On the one hand, they refer to value-loaded ways of being along the same processes as those exposed for pure descriptive terms (as indicated in the beginning of this section). On the other hand, they also express an evaluative judgment (they praise or blame for instance). This evaluative part should not be understood as indicating that they describe metaphysical supernatural properties. Ways of being referred to through thick terms are value-loaded because intimately associated with value-judgements. Therefore, what may render non-descriptive terms more problematic than descriptive ones is not linked to the issue of reference. Rather, the problem lies in the question of their correct use and of the possibility for truth and objectivity of associated normative or evaluative judgments. This question is addressed in the following section.

### 4.3. Truth and commonsense realism

General and semantic aspects of commonsense realism being exposed, the approach of truth it embeds can now be discussed. The central idea of Putnam is “to do justice to our sense that knowledge claims are responsible to reality without recoiling into metaphysical fantasy” (Putnam 1999, 4). Putnam follows pragmatist authors like James and Dewey in recognizing that truth as confrontation with and correspondence to reality is important in our lives and should appear in a suitable philosophical account. As exposed in the section 4.1, Putnam does not reject anymore the meaningfulness of the notion of a mind-independent reality. Nevertheless, he still questions the second thesis of metaphysical realism stipulating that mind-independent reality is a fixed and pre-given totality of objects and properties. Therefore, it is not consistent to hold that we can conceive the totality of true knowledge claims as those correctly describing the fixed totality of ready-made objects of mind-independent reality and their properties. As Putnam indicates:

It is true that a knowledge claim is responsible to reality, and, in most cases, that means a reality independent of the speaker. But reflection on human experience suggests that neither the form of all knowledge claims nor the ways in which they are responsible to reality is fixed once and for all in advance, contrary to the assumptions of the traditional realist. (Putnam 1999, 7)

Accordingly, truth cannot be conceived as a unique and substantive property of correspondence between languages and reality. Another account has to be proposed; one doing justice to the diversity of human experiences.

This account needs in particular departing from the internal realist one that failed at distinguishing truth and rational acceptability. In commonsense realism, truth and rational acceptability are less entangled. Putnam returns to the more usual view stating that standards of rational acceptability are tools for pursuing truth. This aspect appears clearly in quotations like: “The justification of any particular set of desiderata for rational belief-fixation is normally that beliefs fixed in those ways are more likely to be true” (Putnam 2008c, 380). Nonetheless, this does not mean that the previous internalist account is integrally rejected (integral rejection of previous positions is rarely the case in Putnam’s philosophical trajectory). Evidencing precisely the divergence permits a refined understanding of the commonsense realist approach. As in internal realism, Putnam mobilizes Tarski’s disquotational scheme in commonsense realism: “to make a statement is to assert something, and to say that that something is true is to assert the same thing” (Putnam 2013f, 32). And he still holds that this provides only a general formal scheme that explains

barely anything as long as what it means to understand the statement is not elucidated (Putnam 1981, 128-129, 2012b [2001], 380). What we do when we assert something is the element in need of clarification to elucidate the face of truth. Here begins the radical divergence between internal realism and commonsense realism. In the internalist period, the understanding of a statement we assert was accounted for through verificationist semantics. Thereby, understanding a statement is following or applying criteria (of warranted assertability or rational acceptability) to verify the assertion is correct. If all we do when asserting a statement is verifying that the statement is rationally acceptable, then truth can be nothing else than compliance (in the ideal limit) with standards of rational acceptability. But this connection is unavoidable only in the impoverished picture of what means understanding or asserting a statement provided by verificationist semantics. As exposed in previous sections, commonsense realism abandons this verificationist approach of statements' understanding. In the commonsense realist framework, understanding or asserting a statement is considered along liberalized functionalism and semantic contextualism. Understanding and asserting statements involve the deployment of language-users' ability of attunement that intimately meshed with other (world-involving) cognitive abilities such as meaning, referring, apperceiving or conceiving. This ability of attunement cannot be understood as an algorithmic process of rule following that would ensure the correct use of terms and statements. Contrastively, it mobilizes terms' meanings (which may embed criteria for correct use or for rational acceptability) as well as specificities of actual contexts of speaking (background knowledge, encountered real entities, practices that are engaged in following various interests) and enables language-users to assess the reasonableness of deploying particular terms in this actual context. In consequence, what truth of a given statements comes to is to be sought in the analysis of the deployment of this ability of attunement. Provided with such an enriched approach of statements' understanding, the claim that the face of truth is to be discovered in what we do when asserting does not degenerate in confining truth to the domain of what we do to verify our assertions are correct, warranted or rationally acceptable. Moreover, this approach indicates that statement's understanding is not a uniform process applying to any statement in any circumstances. The ability of attunement is highly context-sensitive. And if what it means to understand a statement is not uniform but depends on the situated context of speaking (in particular on the specific practices and activities actual persons engage in with their languages), so can be the notion of truth the statement answers to. Following Wittgenstein, Putnam argues that what truth comes to depends on the domains of linguistic activities considered. What truth comes to has to be elucidated "by trying to understand the life we lead with our concepts in each of these distinct areas" (Putnam 2012b [2001], 403); "the truth can be told in language games that we actually play when language is working" (Putnam 2004, 22). Considered at this abstract level, the commonsense realist approach of truth may be difficult to apprehend. More can be developed when focusing on particular types of (linguistic) activities.

### **Truth for descriptive claims**

The commonsense realist approach of truth first chiefly applies to claims referring to and describing reality (descriptive claims). As exposed in previous section, language-users are provided with world-involving abilities at conceiving and apperceiving matter of facts of reality. They can thus refer to and describe genuine aspects of external mind-independent reality. In consequence, the disquotational view about truth does not degenerate into deflationism or verificationism. Mind-independent reality can be described in virtue of language-users abilities at entering in direct

cognitive contact with it. Descriptive claims can be understood as describing ways reality is conceived to be. It is thereby possible to do justice to the idea that our true statements correspond to mind-independent reality (Putnam 2002a, 84). Truth can be seen as a relation of correspondence between the formers and the latter. This point should not be denied to traditional metaphysicians and metaphysical realists. But, as already exposed, commonsense realism cannot be interpreted as a complete return to metaphysical realism. Mind-independent reality cannot be conceived as a kind of “superthing” composed by a fixed totality of objects and their properties. There is no fixed and pre-given totality of possible descriptions (that would be formed by the attribution of all the properties to all the objects). Commonsense realism thus opposes to the conception of truth as a unique substantive property of correspondence to ready-made and context-independent reality. Reality, as understood in commonsense realism, does not possess this sort of mind- or context-independence. Reality is mind-independent to the extent it is given ways independently of the fact that an actual person describes it, perceives it or conceives it being these ways. However, reality cannot be conceived in disconnection from situated perspectives or points of view. The interpretation and the identification of properties are irreducibly context-sensitive. The semantic counterpart of this approach of reality, semantic contextualism, deeply impacts the commonsense realist account of truth for descriptive claims. Understanding descriptive statements is not grasping some mysterious connections between mere strings of sounds or signs and ready-made context-independent reality. On the contrary, uttering and understanding a descriptive statement is a contextualized process mobilizing language-users world-involving abilities (attuning, conceiving, apperceiving) to refer to and describe a particular way reality is claimed to be along a situated point of view. If true, the way reality is conceived or described to be and the way it is are one and the same thing. The descriptive statement then succeeds at corresponding to reality. But no situated or contextualized description can exhaust ways reality can be – and consequently, ways reality can be correctly described being. This lack of exhaustiveness shall not be seen as a defect of the description. Reality is nothing but (infinitely) diverse ways of being along various perspectives. A way for reality to be is always capable of further reinterpretation. Semantic contextualism mirrors this feature of mind-independent reality. The ways descriptive terms or sentences can be used and understood is context-sensitive. They are in constant evolution. Uses and understandings are always susceptible of enrichment when meeting novel contexts of speaking. According to Putnam, “quantum mechanics is a wonderful example of how with the development of knowledge our idea of what counts as even a possible knowledge claim, our idea of what counts as even a possible object, and our idea of what counts as even a possible property are all subject to change” (Putnam 1999, 8). Putnam follows what he considers being “the *real* insight of James’ pragmatism, the insight that “description” is never a mere copying and that we constantly add to the ways in which language can be responsible to reality” (Putnam 1999, 8-9). Our understanding of reality evolves as our lives and languages themselves evolve. Combining the valuable insights of both metaphysical realism and James pragmatism is one of the main strengths of commonsense realism. According to this approach, truth cannot be a unique property of correspondence that instantiates when descriptive claims are true whatever might be the particularities of these claims and the related contexts of speaking. On the contrary, what truth comes to depends on the (necessarily contextualized) understanding of these claims.

In addition, the connection between truth and understanding of descriptive claims allows elucidating the relationships standing between truth and verification. Many of our descriptive claims concern observable entities such as objects, persons, events or actions of ordinary life. It is often the case that, if such claims are true, “it follows conceptually that a human being could verify

them under favorable circumstances” or under sufficiently good epistemic conditions (Putnam 2002a, 84-85). If a sentence like ‘there are chairs in this room’ is true, the verification of this fact is possible. With this idea, Putnam does not argue for a conceptual identification of sentences’ meaning to procedures of verification. He merely indicates that the ability to verify such sentences is involved in their understanding in their meaning (or rather, in the meaning of terms composing them). The fact that they could be verified is part of what a competent speaker knows before uttering them in a particular context. Someone unable to check whether there are chairs in a room could not be said to understand ‘there are chairs in this room’. In consequence, being able to understand this type of familiar sentences mobilizes or depends upon the capability of perceptually verifying them. In common sense realism, perceptual verification is intimately related to the admission of apperceptions (conceptualized perceptions) as genuine cognitive experiences. If the realm of experience is restricted to sensations or impressions, “Kantian skepticism” arises (Putnam 2002b, 88-89). It becomes problematic to understand how bare sensations can justify any belief. But the (semantic) externalism cum (liberalized) functionalism admitted in commonsense realism permits recognizing apperceptions as primitive cognitive experiences that can constitute the tribunal of our perceptual judgments (Putnam 2013b, 353-354). Moreover, with transactionalism apperceptions are considered as outcomes of world-involving abilities supporting a direct cognitive contact with genuine aspects of external reality. Thereby, perceptual verification authorizes the establishment of an objective relation of correspondence between mind-independent reality and descriptions justified through apperception (Putnam 2012b [2010], 102, 2013f, 33). In many cases, and in particular with respect to claims concerning our usual middle-sized objects like chairs and rooms, verification through apperception in favorable or sufficiently good epistemic conditions is sufficient to justify that a given claim is true. Merely saying ‘I saw it’ can be sufficient for claiming that a given statement is true. In such familiar cases, we can take seriously, that is to say at face value, “our ordinary claims to know about the existence of birds and automobiles and what Austin referred to as “middle-sized dry goods” and our ordinary explanations of how we know those things” (Putnam 2012b [2001], 382). Truth does not have to be always recognition transcendent. Sometimes, we are able to achieve truth through verification (based on apperception) under sufficiently good epistemic conditions (Putnam 2002c, 107-108).

Denying this fact about truth of descriptive statements is the central feature of metaphysical skepticism. But systematic doubt about our knowledge of the external world has only an elusive meaningfulness that is in particular supported by the admission of the causal theory of perception. In commonsense realism, interfacial approaches of perception and conception are rejected. We are not acquainted only with inner sensations but also with real objects and their properties. It might seem that Putnam merely ignores the problem of metaphysical skepticism but this is not the case. Rather, Putnam shows that metaphysical skepticism about entities encountered in our ordinary life is unintelligible in commonsense realism. No attempt at solving it is required (Putnam 2002g, 9, Putnam 2012b [2001], 381). Systematically doubting of our ability to achieve truth with respect to ordinary descriptive claims is nonsensical:

The supposition that truth, even in such a familiar case, might in principle be impossible to verify, that we might all be “brains in a vat,” or in Descartes’s version, that we might all be deceived by an evil demon, has only the appearance of sense. (Putnam 2002c, 107)

Accordingly, while a purely epistemic view of truth cannot be correct, truth does nonetheless entails verification under sufficiently good epistemic conditions (Putnam 2002c, 108). Admitting

this entailment does not amount returning to verificationism. First, perceptual beliefs based on verification are revisable. Fallibilism is maintained. Mind-independent reality can be mobilized to distinguish between *believing to be* in sufficiently good epistemic conditions and *genuinely being* in such conditions. Second, claiming that the ability of verifying familiar observation sentences is required to understand them should not be understood in a logical positivist manner (Putnam 2002a, 84-85). It does not mean that we cannot understand these claims when they are not verifiable (one can imagine claims about chairs in a rocket ship that has fallen in a black hole or claims about past situations involving chairs that we can perfectly understand). The possibility of verification is merely part of what familiar claims of this type mean. It is part of what they mean that we would have the ability to verify them were the circumstances favorable (if the rocket ship had not fallen into a black hole or if we had attended to past situations).

This line of argument highlights an important aspect of the commonsense realist account of truth for descriptive claims. While truth can sometimes be achieved through verification under sufficiently good epistemic conditions, it is very often beyond the reach of verification based on actual persons' world-involving abilities. Put in a nutshell, truth is very often recognition transcendent. Putnam gives several examples of statement we seem capable of understanding independently of our ability to verify them. 'This person is a murderer' or 'there are no intelligent extraterrestrials in the universe' are statements of this type (Putnam 1999, 58 and 64-65, 2002a, 84-85). In a verificationist framework, what statements like these mean remains mysterious. But, commonsense realism is not a form of verificationism (contrary to internal realism). The ability to verify is not always involved in the understanding of a descriptive sentence. We can conceive of ways that reality can be, independently of any possibility of verification. However, if we want to argue that sentences describing such recognition transcendent ways reality can be are susceptible to be true or false, we need to elucidate how we can "understand "recognition transcendent" uses of the word *true*" (Putnam 1999, 64). In this respect, the Tarskian view about truth becomes crucial. Taking the disquotational scheme the other way around, understanding a sentence is also understanding the claim asserting it is true. Because we can understand sentences independently of our ability to verify them, we can understand what it means for them to be true. We can conceive ways for reality to be that would render true these sentences even if we have no clue about how we could verify whether reality is these ways – or even if, by principle, we know we cannot. The idea that truth can be recognition transcendent simply reflects the fact that our capabilities to conceive possible ways of being of reality outrun our abilities to verify it is these ways. For instance, the statement 'there are no intelligent extraterrestrials in the universe' is perfectly understandable based on the framework of the contemporary scientific cosmology (Putnam 1999, 95). And the understanding of this statement is also the understanding of a way reality would be if it is true. Accordingly, the fact that a statement cannot be verified does not mean that it cannot correspond to reality. The consequence of the lack of possibility of verification is rather that "one can only say what reality corresponds to it, if it is true, by using the words themselves" (Putnam 1999, 58). Crucially, conceiving is a world-involving ability according to which ways we think reality can be and ways reality is in one and the same thing (when we conceive correctly). Thereby, commonsense realism permits the admission of an objective notion of correspondence between our true descriptions (even when they cannot be verified) and mind-independent states of affair (Putnam 1999, 102, 2013f, 33). In sum, commonsense realism succeeds where internal realism fails. As exposed in section 3.5, internal realism comes with an epistemic notion of truth that opposes to alethic realism. This internalist conception of truth was at the ground of Putnam admission of conceptual relativity with respect to cognitively equivalent theories describing (physical) reality. In

his commonsense realist period, Putnam abandons this position: “Today I would say that if we ever face such a situation, then what we should say is that *we* can’t tell which theory is true (if either), but *not* that both are true” (Putnam 2013c, 221). Truth (of descriptive claims) is recognized as a non-epistemic notion (Putnam 2012c [2011], 77). Even a theory satisfying ideal standards of rational acceptability (including fit with experiential beliefs and compliance with theoretical virtues) can be false. Truth can be recognition transcendent, even in the ideal limit.

In addition, the claim that truth can be verification transcendent does not amount to committing to the idea of truth as a unique substantive metaphysical property relying on mysterious entities or powers of the mind that connect our discourses with mind-independent reality:

If we accept it that understanding the sentence “Lizzie Borden killed her parents with an axe” is not simply a matter of being able to recognize a verification in our own experience – accept it, that is, that we are able to conceive of how things that we cannot verify were – then it will not appear as “magical” or “mysterious” that we can understand the claim that that sentence is true. What makes it true, if it is, is simply that Lizzie Borden killed her parents with an axe. The recognition transcendence of truth comes, in this case, to no more than the “recognition transcendence” of some killings. And did we ever think that all killers can be recognized as such? Or that the belief that there are certain determinate individuals who are or were killers and who cannot be detected as such by us is a belief in magical powers of the mind? (Putnam 1999, 65)

Understanding that an unverifiable conjecture can be true is made possible by our world-involving cognitive ability to conceive and refer to ways reality can be. Putnam himself recognizes that the solution commonsense realism provides to the issue of truth might be perceived as hiding the real problems in admitting unreduced notions of conception and reference. However, he argues that the feeling that a genuinely intelligible problem occurs with respect to truth and reference misleadingly relies on the implicit admission of the causal theory of perception and of the interfacial understanding of conception (Putnam 2012b [2001], 380). Through the rejection of these interfacial approaches, correct conception and veridical apperception are recognized as genuine direct cognitive contacts with reality. Under the ruling of the ability of attunement, these world-involving capabilities are mobilized for the understanding of descriptive statements in a way that depends both on statements themselves and of the context of assertion. Truth of descriptive statements is thus itself context-sensitive (in particular its recognition transcendence):

One might say that when a true statement does “correspond” to an aspect of reality, what *sort* of “correspondence” is involved depends both on the meaning of the statement and the particular extra-linguistic context. It is certainly not a matter of mere “marks and noises” standing in a *fixed* relation R to something (to a state of affairs, the world as a whole, or ...). (Putnam 2013f, 32-33)

In admitting the possibility of truth as correspondence with mind-independent reality, commonsense realism takes radical distance with verificationism. But corresponding with reality does not require re-instating decontextualized reality that would be a unique way accessible from a God’s eye point of view. Accounting for the truth of (descriptive) statements does not impose introducing a unique and substantive property of correspondence with a mysterious decontextualized reality. Corresponding is not a state possessed by statements in disconnection from situated context of utterance. Rather, statements that are responsible to reality through correspondence are the results of actual persons’ activity when they employ their languages to cognitively relate to the world. True statements are outcomes of successful instances of such an

activity. As Putnam indicate in following Wittgenstein, inflationary metaphysical attempts at positing additional material are example of “the engine idling” (Putnam 2004, 22).

### **The need for truth and objectivity without objects**

Up to now, the focus remained put on the manner truth of descriptive claims can be accounted for. However, Putnam insists on the fact that correctness, objectivity and truth should not be confined to the domain of descriptive statements. For instance, Putnam argues that evaluative judgments are susceptible of truth and objectivity. As already discussed in section 3.3, a statement such as ‘I like vanilla ice-creams’ should not be discarded as non-cognitive. It can be fully objective and true provided the person emitting it has a pleasant (value-loaded) experience when eating vanilla ice-cream (Putnam 1981, 152-155). The fact that this value-judgment is true is not guaranteed by a metaphysical supernatural general property of goodness the judgment would correspond to. Instead, truth arises from what actual persons do when they eat food and like or dislike it. They have genuine non-neutral experience leading them to objectively utter value-judgments. In the present case, truth is not radically different from truth of descriptive statements. Although value-judgments such as ‘I like vanilla ice-creams’ may not describe directly the associated value-loaded experience, their truth and objectivity could be considered along the descriptivist scheme and the associated idea of a correspondence (here with objective though value-loaded experiences). However, many other claims that may deserve truth and objectivity do not fit this descriptivist scheme. One can for instance think about mathematical and logical truths (Putnam 2004, 55-60). Some evaluative (ethical) statements like ‘murder is wrong’ seems entitled to the same cognitive status (Putnam 2002c, 32-33). The fact that such statements are susceptible to be true or false plays a crucial role in our lives and should not be overlooked in a philosophical account. As just exposed, truth of descriptive statements can be accounted for as correspondence with mind-independent reality. But this has been made possible from within actual persons’ descriptive use of their languages without mobilizing semantically problematic inflationary ontological views. An attempt at deploying a similar approach for mathematical, logical or ethical truths may not be as successful. In such domains, the belief that statements can be objective and capable of truth only if they are provided with truth-makers (only if they can correspond to certain objects) might lead to problematic conclusions (Putnam 2004, 52). If these truth-makers cannot be natural and visible objects, one is conducted to posit super-natural entities that, though unknown, invisible and inaccessible through senses, are supposed extremely important. Platonism is an instance of such inflationary ontological views (Putnam 2004, 17). Thereby, evaluative judgments and mathematical or logical statements could be said true only to the extent they would constitute *descriptions* of non-natural entities.

This general line of thought reflects the traditional tendency to equate objectivity and truth with the idea of correspondence with objects (Putnam 2002c, 33). Statements that do not bear on natural object of mind-independent reality have to relate to other types of objects if they are to be objective and susceptible of truth:

Either there are “intangible objects” corresponding to value terms, to interpretations, to mathematical statements – objects that are causally efficacious in the way in which magnetism is causally efficacious – or else value judgments, interpretations, and undecidable mathematical conjectures are (if they are taken to have a truth-value) as misguided as belief in *ghosts*. (Putnam 2012b [2001], 403)

But for Putnam, this traditional tendency and the ontologically inflationary strategy coming with it are misled. He notices that Platonism in philosophy of logic is widely rejected (Putnam 2004, 55-60). In addition, he claims that “nothing supports taking mathematical theorems as descriptions of a special realm of “abstract entities” and nothing is gained, in philosophy of mathematics or elsewhere, by so doing” (Putnam 2004, 67). Such approaches provide only “pseudo-explanation” (Putnam 2004, 60). Furthermore, it should not be inferred from this conclusion that evaluative (ethical or moral) judgments and mathematical or logical statements lack of objectivity and are not capable of truth. Contrastively, the correct conclusion that should be derived is that the traditional tendency universalizing the view of truth as correspondence with objects has to be abandoned (Putnam 2002c, 33). It is wrong to argue that “all objectively correct judgments” should be representations or descriptions (Putnam 2008c, 381). It corresponds to a misled reductionism of non-descriptive statements to the class of descriptive ones that would be considered as an “epistemologically or metaphysically more “basic” class” (Putnam 2008a, 108-109). Non-descriptive statements could be true only in corresponding to truth-makers that descriptive statements could represent. Such a reductionist tendency leads to try legitimizing the objectivity and truth of ethical or mathematical statements in providing reasons that are based on ontological explanations coming from the outside of ethics and mathematics. According to Putnam, this is misguided; such reasons are to be sought from within each particular area (Putnam 2004, 3). For instance, some logical and mathematical statements form conceptual truths, which are so because it is impossible to make (relevant) sense of the *assertion* of its negation” (Putnam 2004, 60-62). In other cases, things are more complex and what logical or mathematical truths come to has to be discovered in going through practices and demonstrations of mathematics or logics (Putnam 2004, 63-66).

The case of evaluative judgments of ethics or moral is important and can be developed more extensively. Putnam insists that truth can be pursued in ethics following standards of reasonableness and that it is necessary to do justice to this from within ethics. He thus opposes to inflationary ontological views positing a supernatural “Form of the Good” that would secure “the existence of ethical value and obligation.” The correctness of ethical judgments would then be ensured by a kind of “special intuition” grasping this supersensible entity (Putnam 2004, 17-18). As we have seen, such approaches are closer to metaphysical idling than to consistent account of truth in ethical or moral investigations. Putnam even believes that Kant can be understood as “an inflationary ontologist *contre lui*” because the account of ethics he proposes is itself based on “a theory of the powers of the mind – a theory which is supposedly *prior* to metaphysics” (Putnam 2004, 24). However, the rejection of such inflationary accounts should not lead to deny the possibility for truth and objectivity in ethics. This would amount to endorsing deflationary reductionist or eliminativist approaches. First, eliminativist approaches are hardly admissible for they claim that ethical judgments or more broadly any talk about values are “cognitively just as mistaken as talk of alchemy, or phlogiston, or witches.” “Whenever we call anything good we *make the mistake* of supposing that there is such a property at all” (Putnam 2004, 20-21). Second, reductionist accounts are less radical for they attempt at replacing ethical talks by ones allegedly more explanatory and objective. For instance, ‘goodness is nothing but pleasure’. Putnam discusses several recent reductionist deflationary approaches of ethics that all fail at genuinely defending the possibility of objectivity and truth in a reductionist way. Notably, Blackburn’s expressivism reduces value judgments to expression of attitudes (Putnam 2008c, 379-381). Although a strong form of truth is impossible for Blackburn because the correspondentist scheme cannot apply, ethical judgments can nonetheless be associated with a weak form of truth based on the way attitudes have



been endorsed. Judgments reflecting attitudes that have been admitted for good reasons could be said true in this weak sense. According to Putnam, this move is unsuccessful for it presupposes goodness or badness. As long as objectivity and truth in ethics have not been clarified, there can be no reasons why we should care about arriving at attitudes through good or bad ways. Habermas' approaches connecting truth in ethics with the consent of all scores no better (Putnam 2008c, 386). Apply directly, this principle is utopian. Softened in requiring the consent of anyone except a few (majoritarianism), the principle remains problematic. Sometimes the few are closer to truth than the majority. Scanlon's account may solve this problem in requiring only the consent of any rational or reasonable person (Putnam 2008c, 383). But for Putnam this "is required by every human activity, moral, amoral, or immoral" and does not elucidate which aims or interests should be pursued rationally. And legitimizing that good or correct goals are followed is itself a moral or ethical problem. In sum, inflationary and deflationary views Putnam rejects all share the assumption that *either* truth and objectivity can be conceived of along the descriptive scheme of correspondence with (here supernatural) objects *or* there is no genuine truth and objectivity to be sought in the concerned domain itself. In the second case, the best that can then be done is to attempt at reducing statements of the domain to other ones for which truth and objectivity could be better handled. For Putnam, this assumption leads to "a severe impoverishment of categories" (Putnam 2008c, 381) that is triggered by the traditional tendency to equate objectivity or capability to truth with description of objects. Therefore, we should consider the possibility for "objectivity without objects" (Putnam 2004, 52-70).

### **Objectivity and truth for evaluative claims**

If one accept to take distance with such a tendency, it becomes possible to seek the face of ethical truth based on an analysis of the way objectivity is pursued from within ethics. Many elements of this analysis have already been elucidated during Putnam's internalist period (as exposed in section 3.3). Some important points can nonetheless be added based on his later reflections. In particular, when recognizing that things have to be worked out from within the ethical standpoints, it can be noticed that some ethical claims can be admitted as true, or are least are admitted as true by any ethical person. For instance, the "*my* immediate recognition, when confronted with a suffering fellow human being, that I have an obligation to do something" is irreducible and not in need for further justification (Putnam 2004, 24). This holds as well for the acknowledgement that killing innocent people is wrong (Putnam 2004, 75). Skeptical disagreements about such matters cannot be answered through external argumentation (Putnam 2004, 29). The recognizing of such truths as well as the "human capacity for loyalty to something larger than the individual, something at least as large as the community" are presuppositions of ethics expected from any ethical persons (Putnam 2004, 23). This being said, ethics also embeds many questions about which consensus seems impossible to reach. One can for instance mention the case of the ethical evaluation of abortion. This fact is usually contrasted with the ability at reaching consensus in natural science to support the claim that ethics lacks of objectivity. However, Putnam argues that the persistence of controversies is not proper to ethics. It should not be understood as reflecting an allegedly lack of objectivity but is rather the sign that ethics is a special case of practical problem solving for which general consensus is rarely achieved (Putnam 2004, 30 and 75-76). This reveals an important feature of ethical investigations. They should not be seen as attempt at building universal systems to account for ethical notions. Instead, they aim at solving situated and practical problematic situations. Universal principles may guide practical problem

solving but are usually not sufficient and most of the solutions to practical problems cannot be expressed under the form of universal principles (Putnam 2004, 4).

In addition, ethical judgments operate as judgments about what is reasonable and what is not, though not in “the sense of what is required by Reason conceived of as a transcendent metaphysical faculty” (Putnam 2004, 71). Contrastively to such inflationary ontological views, ethical judgments are judgments of reasonableness with respect to situated ethical interests or concerns. But contrarily to deflationary reductionist ontological views, these concerns are not to be assessed in virtue of elements standing outside ethics. For instance, we did not rejected the superiority of warriors or aristocrats “because we have become more able to see what is reasonable in given circumstances” with fixed ethical concerns but rather because we realized that we may endorse *better* concerns than only the interests of warriors or aristocrats (Putnam 2008c, 384-385). Importantly, Putnam argues that it is hopeless to try reducing ethics to assessments of reasonableness guided by a unique concern. Instead of conceiving “ethics as a noble statue standing at the top of a single pillar,” Putnam proposes to see it as “a table with many legs”:

We all know that a table with many legs wobbles when the floor on which it stands is not even, but such a table is very bard to turn over, and that is how I see ethics: as a table with many legs, which wobbles a lot, but is very hard to turn over. (Putnam 2004, 22)

Ethics should therefore be understood as focused on “the [rational] solution of practical problems, guided by many mutually supporting but not fully reconcilable concerns” (Putnam 2004, 32) that “lead to and serve a pluralistic and compassionate vision of human well-being with such wide appeal that, in our time, even many totalitarian regimes have had to pay lip-service to them” (Putnam 2008c, 385).

In consequence, ethical judgments can be seen as instances of practical reasoning for solving practical problems that are “subject to the same standards of fallibilistic inquiry that all practical reasoning is subject to, and the notions of truth and validity are internal to practical reasoning itself” (Putnam 2004, 72). As such, ethical judgments can be objectively assessed in virtue of many valuable guiding principles. For instance, absence of manipulation and of deception or deployment of “reflective transcendence” to “criticize conventional beliefs and institutions” constitute important guiding principles guiding ethical problem solving on the path of truth (Putnam 2004, 92-93, 2008c, 380). In addition, although their accounts have been rejected as adequate definition or conception of truth, Kant’s Categorical imperative as well as Habermas’ discourse ethics and requirement for the consent of all, or similar attempts relying on majoritarianism, constitute valuable insights for practical reasoning about situated ethical problems (Putnam 2004, 10 and 25, 2008c, 385-387). These insights are reflected (with adaptation to practical reasoning) in Dewey’s principle of democracy stating that we should seek for reasoning that convince enlarged majorities and consensus. In addition, Putnam largely insists on the need to respect another principle promoted by Dewey: fallibilism (Putnam 2008c, 387). Solutions achieved through consensus of the majority or of experts are not necessarily right or reasonable. Such solutions should always be seen as proposals in demand of further discussion and testing. In following these guiding principles:

we shall be right, we will be justified, we will be reasonable more often than if we relied on any foundational philosophical theory, and certainly more often than if we relied on any dogma, or any method fixed in advance of inquiry and held immune from revision in the course of inquiry. In sum, what Winston Churchill said about democracy applies to inquiry as well: fallibilistic democratic experimentalism is the worst approach to decision-making in the public sphere that has ever been devised—*except* for those others that have been tried from time to time. (Putnam 2008c, 387)

Fallibilism is therefore crucial among the principles guiding ethics seen as a process of practical problem solving. It reminds us that there is “an all-important difference, between *thinking* that a claim concerning the resolution of a situation is a warranted claim and its actually *being* warranted” (Putnam 2004, 119). Many principles can valuably guide ethical investigations. Fallibilism, in addition, makes it clear that truth is not to be equated with the application of such guiding principles. Securing the possibility for mistakes and failures is even more important because it also indicates that progress can be made in the way we conduct our ethical investigations. This aspect was already central in the internalist account that mobilized the virtuous circle through which actual persons can progress when engaging in the overarching quest for human cognitive and total flourishing (see section 3.3). The importance of this historical dimension of the progress of ethics on the road of objectivity is not denied in the commonsense realist period. On the contrary, Putnam insists on different historically situated enlightenments during which either our guiding principles or our guiding concerns and interests have been improved (Putnam 2004, 107-108).

In sum, ethical investigations requires no (inflationary or deflationary) metaphysical stories but rather “good will, intelligence, and respect for what can be seen as grounds and difficulties from within the ethical standpoint itself” (Putnam 2002c, 94-95, 2002b, 20-22). Objectivity and truth of ethical judgements require neither reduction to descriptive statements nor generalization of the correspondence view of truth. Moreover, ethical investigations should be seen as contextualized and fallible processes of practical problem solving. Solutions are reached in deploying ethical notions such as goodness, badness or obligation under the guidance of principles and concerns whose suitability and validity shall be constantly assessed and can be improved in the course of the historically situated quest for human flourishing actual persons engage in. Through the numerous practical problems ethical investigations confront with, ethical concepts are employed in many different ways and new uses are constantly settled. In consequence, the task of ethical investigations is not to build universal systems accounting for moral or ethical concepts. Rather, ethical investigations focus on the challenge of learning always enriched meanings for these concepts (Putnam 2012 [2005], 573-578). Ethical and moral concepts can be seen as indeterminate, provided with an evolving content whose objectivity is not to be sought in correspondence or compliance with universal elements external to ethical and moral life, but instead reflects a movement of understanding “onward into increasing privacy” (quotation from Iris Murdoch in: Putnam 2012 [2005], 576); a movement wherein human beings flourish as ethical and moral persons.

An additional but all-important comment can be made. As already clarified during the internalist period, Putnam considers that the indispensability for science of epistemic principles (or standards of rational acceptability) such as simplicity, coherence or plausibility correspond to an irreducible mobilization of evaluative judgments. Claiming that a theory is rationally acceptable should not be understood as an instance of algorithmic reasoning based on the mechanical application of epistemic criteria. As ethical notions like ‘cruel’ or ‘compassionate’, ‘simple’ or

‘coherent’ are methodological features one cannot perceive or measure “without having understood and learned to imaginatively identify with a particular evaluative outlook” (Putnam 2004, 67-68). Therefore, rational admissions of scientific theories are better conceived as evaluative judgments or “methodological value judgments” (Putnam 2004, 67). Such evaluative judgments are very similar to ethical judgments discussed just above. Both are “judgments of the reasonable and the unreasonable” (Putnam 2004, 67). Rational admissions of scientific theories are judgments that some theories are reasonable or rationally acceptable in virtue of possessing some epistemic values (including the one of empirical adequacy) and with respect to the concern of achieving correct descriptions of the world (Putnam 2002c, 31-33). Similarly to what is the case for ethical judgments, the validity of such judgments about the reasonableness of scientific theories cannot be accounted for through inflationary as well as (reductionist) deflationary views. They cannot be seen as involving “Reason conceived of as a transcendent metaphysical faculty” susceptible to grasp “simple non-natural qualities” of beauty, simplicity or coherence theories may possess (Putnam 2004, 67-68). Methodological value judgments cannot be reduced to external elements free of any presuppositions about (methodological) reasonableness (the analysis exposed in section 3.3 can be reconsidered in this line of thought; an additional discussion of the case of reliabilism can be found in: Putnam 2004, 72 note 2). Objectivity and truth of methodological judgments is not in need for justification based on external (ontologically inflationary or deflationary) factors. Rather, what truth and objectivity of methodological value judgments come to is to be learned from within the stand point of actual persons conducting these judgments. In this perspective, it appears to be objective and true that complying with epistemic values such as simplicity, coherence or past-predictive success, leads to judgments of reasonableness of scientific theories that are themselves more reasonable than those that could be achieved in relying on method of authority or merely following what is agreeable to reason (Putnam 2002c, 32-33). Moreover, these judgments about reasonableness of theories being, as ethical judgments, instances of “exercises in *reasoning*” (Putnam 2004, 70), they are also guided by general though fallible principles that have been progressively established by actual persons engaged in the quest for human cognitive and total flourishing (such as reflective transcendence leading to question conventional and institutionalized opinions, democracy urging to pursue as large as possible consensus or openness to criticism).

In sum, the links between objectivity and description should be loosened for non-descriptive judgments (ethical or moral as well as methodological ones) to be recognized as potentially objective, as susceptible of being true or false. As already exposed, denying objectivity to non-descriptive domains would threaten scientific objectivity itself. The fact that objectivity and truth are not just matters of description reflects the idea that, while describing is an important function of our languages, it is not the only one:

What I am saying is that it is time we stopped equating *objectivity* with *description*. There are many sorts of statements – bona fide statements, ones amenable to such terms as “correct,” “incorrect,” “true,” “false,” “warranted,” and “unwarranted” – that are not descriptions, but that are under rational control, governed by standards appropriate to their particular functions and contexts. Enabling us to describe the world is one extremely important function of language; it is not the only function, nor is it the only function to which questions such as, “Is this way of achieving this function reasonable or unreasonable? Rational or irrational? Warranted or unwarranted?” apply. (Putnam 2002c, 33)

Although objectivity and truth on one side and description and correspondence on the other side are validly associated when it comes to descriptive claims, such an association should not be generalized. Doing full justice to the various functions of our languages requires recognizing the possibility of “objectivity without objects” (Putnam 2004, 52-70). This emancipation of truth and

objectivity from any reduction to descriptivist approaches (based on the universalization of the conception of truth as correspondence) completes the picture of truth proposed in commonsense realism. In general, the notions of truth, verification, rational acceptability or reasonableness, evaluative judgment and description are intimately connected. But these connections do not take the form of strict equivalences or biconditionals (Putnam 2002e, 126-127). Rather, true, correctly described, verified, objectively evaluated, reasonable and rationally acceptable are related by softer connections requiring exploring the web they create instead of hopelessly heading into reductionist attempts.

### **Escaping the antinomy of realism**

Furthermore, this commonsense realist account of truth permits escaping the antinomy of realism. At the level of truth, the latter corresponds to the claim that we are confronted with a forced choice between two equally unsatisfying alternatives: either we adopt verificationism and deflationism (deflationary ontological views) or we admit the existence of mysterious platonistic entities floating around our languages and connecting them to reality (inflationary ontological views). This forced choice already constitutes a challenge with respect to descriptive claims that is addressed, in commonsense realism, through the reconsideration of our cognitive relation with reality. In compliance with this reconsideration, the realm of experience is not restricted to bare sensations but also admits apperceptions that are genuine cognitive contacts with the world. Through apperceptions, connections can be established between our knowledge claims and genuine aspects of observable (external) reality. Thereby, commonsense realism avoids both the issue of reconstructing talks about the common observable world from a vocabulary bearing only on bare sensations and the problem of postulating a mysterious relation of correspondence between our languages and reality. When it comes to descriptive claims about unobserved or unobservable domains of reality, commonsense realism avoid the forced choice between, on the one hand rejecting any statement that cannot be verified as non-cognitive, and on the other hand assuming the existence of a substantive property of correspondence to a mind-independent reality conceived as a fixed and pre-given totality of objects and their properties. For commonsense realists, the ways a thinker can conceive reality to be and the ways reality is are one and the same thing (at the occasion of successful conception of course). Concerning moral, ethical and methodological matters (non-descriptive claims), commonsense realists do not have to choose between deflationary and inflationary ontological views<sup>39</sup> (Putnam 2002c, 94, 2004, 17-21, 2012b [2001], 402-403). Antinomy of realism becomes tightly connected with the descriptivist (or naturalist) account of truth when considered in the framework of non-descriptive issues:

“The fact is that naturalists regularly assume that if the normative cannot be eliminated or reduced to the nonnormative, then some “occult” realm of values must be postulated. The possibility that goes missing here, as I remarked at the outset, is that an indicative sentence can be a bona fide statement without being a “description of reality.” (Putnam 2002a, 124)

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<sup>39</sup> As delineated throughout previous paragraphs, inflationary views posit mysterious metaphysical entities to which true moral, ethical or methodological judgments are claimed corresponding. Contrastively, reductionist deflationary attempts seek for truth and objectivity of moral, ethical or methodological claims in terms of non-ethical, non-moral or non-methodological matters. (Putnam 2002c, 130-131, 2004, 17-21 and 68-70). Even more radically, eliminativist deflationary approaches merely reject moral, ethical and normative talks as non-cognitive. These approaches claim that such talks are based on the mistaken belief that there are moral, ethical or methodological properties at all (Putnam 2004, 20-21).

In opening the possibility for objectivity and truth without objects, commonsense realism escapes the forced choice of the antinomy.

Broadly speaking, commonsense realism proposes an elegant solution to the antinomy of realism in rejecting the idea that we live in our inner theater trying to build representations matching the external reality or merely retreating to verificationism or deflationism. Contrarily to the associated traditional view of the mind as a passive thing affected by external objects, commonsense realism proposes a picture of the mind as a set of abilities, many of them being world-involving. Provided with these world-involving cognitive abilities, we live in the world, in genuine cognitive contact with its objects and their properties. We experience genuine aspects of mind-independent reality. We apperceive things and matter of facts. Through this, we sometimes achieve truth and knowledge. But apperception is not our unique contact with reality. We also conceive ways reality can be beyond what we can verify through apperception. Moreover, we do not apperceive and conceive only to *describe* and to vindicate our *descriptions*. We also seek reasonable *evaluations* of numerous ethical, moral or methodological claims. Thus, we are engaged in many different cognitive activities in our lives. All can pretend to objectivity and truth once we recognize that these notions of truth and objectivity can have a plurality of faces that do not require reduction to a unique (allegedly superior) one. On the contrary, we have to pursue our quest for objectivity and truth “by trying to understand the life we lead with our concepts in each of these distinct areas” (Putnam 2012b [2001], 403). Reality is not just something we try to describe through the lens of natural sciences. It is not even just something we try to describe *tout court*. Reality is also something we ethically, morally and normatively live in. Living is not only describing but also, notably, engaging in the quest for human cognitive and total flourishing in the course of which we confront with situated ethical, moral or methodological problems. Through this quest, we develop and blossom as ethical or moral persons and as rational inquirers.

### **Truth and incommensurability**

As it was the case with the semantic discussion, the approach of truth proposed in commonsense realism opens interesting perspectives with respect to the topic of incommensurability. With internal realism, Putnam brought to the fore the idea that any rational inquiry comes with its particular context whose features influence the standards of rational acceptability shaping the way the investigation is to be conducted. This constituted a first bridge with Kuhn’s incommensurability under its methodological aspect (see section 3.3). This point is maintained in commonsense realism. Theory admission is not like deductive or algorithmic reasoning that would be absolutely compelling in a context-independent way. On the contrary, it relies on evaluative judgments of reasonableness of considered theories. However, internal realism provided an unsatisfying account of the relationships standing between truth and rational acceptability that raised, in particular, the issue of relativism. Commonsense realism solves this problem through the reconsideration it proposes of our cognitive relations to the world. It may thereby permit doing justice to the historical evolutions of our standards of reasonableness as well as to the potential diversity of conceptions of rational acceptability that may be deployed in distinct contexts of inquiry, while escaping the threat of relativism. Moreover, beyond rational acceptability, truth and objectivity can themselves take various faces depending on the contexts of investigation. For instance, when an investigation aims at describing something, we are able to understand the truth of our statements in conceiving ways for entities of reality to be that would render it true. But, as reflected in conceptual or pragmatic realism, an entity is never a unique non-

perspectival way (as it would be the case in metaphysical realism). Depending on the contexts of utterance (and thereby the contexts of inquiry), actual entities can be different ways, none of which deserving (a priori) a privileged epistemic status. In addition, ethical, moral or methodological issues can be the object of genuine, though not descriptive, rational investigations. In such cases, truth and objectivity take a totally different face than correspondence with objects.

## **5. Meeting and living in the world in the light of Putnam's philosophical insights: incommensurability may not be (only) in the head**

The present chapter aiming at the elucidation of Putnam's views about realism, reference, truth and rationality (or rational acceptability) can be concluded in insisting on some overarching continuities that appears inhabiting his philosophical trajectory. To be sure, one of the most impressive aspects of Putnam's thinking is his ability to constantly re-interrogate and adapt or even drastically modify his admitted positions. This led him to successively endorse three main positions about realism (metaphysical realism, internal realism and commonsense realism) on the background of which the cognitive relationship actual persons have with the world, as well as the notions of meaning, reference, truth and rationality, received different accounts. Although, many deep and fruitful philosophical insights can be learned from the study of Putnam's successive positions taken in isolation, an interesting lighting is brought to the fore by the consideration of the relationship standing between these different approaches. The understanding of Putnam's ideas during the commonsense realist phase, which are the primary material we intend to mobilize for building a refined account of incommensurability, is profoundly enriched when granting interest to the road conducting to it. Therefore, the exposition proposed in this chapter was not limited to the elucidation of the main elements of Putnam's distinct periods. In addition, a specific attention has been granted to the reconstruction of the transitions between these phases and to the contrasts they generate. As a result of this exploration, it becomes possible to consider Putnam's different periods of metaphysical, internal and commonsense realism as reflecting an ample philosophical gesture structured by two main driving-forces. These driving-forces can be fruitfully expressed under the form of two maxims Putnam's constantly complies with, which could be named the 'semantic maxim' and the 'pragmatist maxim'. First, the semantic maxim prescribes that the way we employ our languages and terms should be carefully analyzed and elucidated. Notably, the semantic maxim indicates that it is necessary to carefully assess to which extent terms employed in a given context really make sense *in this precise context*. It warns us against the risk of assuming that the fact that a term has been employed meaningfully in a given context warrants its meaningfulness in any other context (as discussed by Putnam with the example of 'soulless automata'; see the footnote 34 in section 4.2). Second, the pragmatist maxim reflects important insights Putnam borrows from classical pragmatists, such as Peirce, Dewey or James, when he claims that what matters in our life should also matters in philosophy (Putnam 1999, 120, 2004, 16, De Caro and Macarthur 2012, 1). Quoting Dewey, he indicates that "Philosophy will recover itself when it ceases to deal with the problems of philosophers and addresses the problems of men" (Putnam 2008b, 31). This 'pragmatist maxim' acts as a safeguard preventing philosophy against autistic withdrawal:

First, the sheer hubris of supposing that a few philosophical arguments, be they good or bad, of the kind that I have just described can really overthrow the very idea that thought has reference to objects outside of thought and language, or can overthrow the idea that we can speak of the meanings of things that are said and written, or the idea that notions of good and bad argument, that justification and reason and the like make sense – the very idea that all of this can be and has been overthrown by a handful of philosophical arguments seems to me an example of breathtaking arrogance. (Putnam 2004, 117)

As may be already clear for the reader, these two driving-forces often enter in tension. Once this tension is acknowledged, Putnam's successive endorsements of different positions may be considered as convergent oscillations aiming at enhanced compliance with the two maxims rather than as radical ruptures.

The tension between semantic and pragmatist driving-forces can first be evidenced in Putnam's reflections about reality we live in. His early criticism of the traditional conception of meaning can be seen as complying with the semantic maxim and results in the conclusion that we cannot talk about reality, real objects and real properties without being directly acquainted with them (semantic externalism). Initially, this criticism is conducted on the background of metaphysical realism conceiving our world as a fixed totality of ready-made objects and properties. But with metaphysical realism, reality is accounted for in an externalist perspective or a God's eye point of view. Prolonging his semantic criticism, Putnam realizes that semantic externalism prevents us connecting with entities of metaphysical reality considered in the God's eye point of view. The talk about mind-independent reality on an externalist mode possesses only a delusive meaningfulness and should be rejected to respect the semantic maxim. Nevertheless, the pragmatist maxim forbids merely rejecting the idea of mind-independent reality. Therefore, we need to understand our world from the actual person's point of view. This leads Putnam to internal realism, a sophisticated form of verificationism meant to provide a semantically consistent understanding of the world we live in. However, internal realism ultimately fails at combining verificationism with realism as well as with a genuine recognizing of other persons (both associated with an untenable limit or horizon at which rational acceptability was supposed to reach truth). According to the pragmatist maxim, we cannot afford losing neither the world nor the others, and internal realism should be abandoned. Arrived at this step, the tension between the semantic and pragmatist driving-forces reaches its paroxysm. It seems impossible to provide a semantically consistent account of (mind-independent) reality while the notion is pragmatically indispensable. This constitutes an instance of the antinomy of realism Putnam attributes to background hypotheses about our cognitive relation to the world: causal theory of perception and interfacial understanding of conception. Basically, these hypotheses indicate that we are never in direct contact with reality but only with impressions and thoughts in our inner cognitive sphere. Reality at best causes events (such as perceptions) in this inner theater. Under the ruling of this understanding of our cognitive relation with the world, the tension between the semantic and pragmatist maxims cannot be released. Mind-independent reality, whose existence is merely posited by metaphysical realists, and reality encountered in the actual person's point of view cannot be reconciled in a semantically consistent way. To escape this dead-end, Putnam argues in favor of a second naïveté about our cognitive relation to the world. The interfacial understanding of perception and conception is unnecessary and should therefore be abandoned. Nothing peculiar has to be explained or mobilized to secure actual persons access to reality (through apperception and conception). Mind-independent reality is directly encountered from within the actual person's point of view. Once interfacial understandings are rejected, this fact is not in need of justification. It rather requires acknowledgment. And reality does not need to be restricted only to the realm of



what is experienced by actual persons. No ontological distinction remains between reality we meet in our experience and reality beyond our experience. Mind-independent reality does not await being perceived (or conceived to exist). More simply, the same mind-independent reality is sometimes experienced, sometimes not. Importantly, this does not lead only to a reconsideration of our cognitive relation to reality. Reality itself is reconsidered (with respect to the manner it is pictured in metaphysical realism). According to commonsense realism, reality can be many different ways along situated perspective or points of views. The idea of an absolute reality being a unique way in a decontextualized or non-perspectival manner is meaningless. It would constitute a return to the interfacial hypotheses that reinstate an ontological gap between actual persons' experiences and reality. Only an always situated reality actual persons can directly meet is able to answer both semantic and pragmatist driving-forces at the same time.

Furthermore, the influence of these driving-forces can also be evidenced in the evolution of Putnam's ideas about the way languages can refer to reality. Putnam's early conclusion in favor of semantic externalism directly fits the semantic maxim and will never be repudiated. As we have seen, it may even be understood as leading to the rejection of metaphysical realism. Putnam opposes the idea that we can merely assume a semantic access to mind-independent entities of metaphysical reality. Primarily, we should not even talk about such a reality. Rather, we should analyze how we effectively use our languages and to what they refer (semantic maxim). This leads to the verificationist semantic of internal realism relying on Tarski's disquotational scheme which allows claiming, as a first step, that, when employed correctly, terms of our languages refer to objects that are self-identified to conceptual schemes hosting these terms. This is obviously not yet referring to objects of mind-independent reality. As such, the semantic account of internal realism cannot escape antirealism and solipsism. Again, truth as a limit or a horizon pointed by rational acceptability was meant to settle the issue. With a meaningful internal notion of truth, true uses of terms based on true conceptual schemes can be introduced in the picture and can secure the possibility to conceive mind-independent objects as well as genuine other persons. But the failure at providing a semantically consistent distinction between truth and rational acceptability closes this possibility and renders the semantic account of internal realism inadmissible with respect to the pragmatist maxim. Here again, the tension between semantic and pragmatist driving-forces emerges in an extremely acute way. Either we abandon the idea of clarifying how we semantically relate to reality or we abandon the claim that we genuinely talk about reality beyond our cognitive sphere (antinomy of realism at the semantic level). And again, interfacial understandings of conception and perception are responsible for this intractable choice. Once the actual person is enclosed in her cognitive sphere and is separated from reality and others by a radical ontological gap, the way former can relate to the latter is hardly explainable. In rejecting interfacial hypotheses, Putnam can propose a way out that is based on the direct cognitive contact actual persons have with entities of reality (at the occasion of veridical apperception and correct conception)<sup>40</sup>. Directly apperceiving an object is sufficient to be able to refer to it. A correct conception of an entity being a certain way does refer to this entity being this way because a correctly conceived way an entity is and the way the entity actually is are one and the same thing. However, this return to the possibility to refer to objects of mind independent reality cannot be equated with Putnam's early semantic account in which referred to objects and properties are

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<sup>40</sup> This mobilization of *veridical* apperception and *correct* conception may misleadingly suggest that, as in internal realism, Putnam grounds his semantic account in notions of truth or correctness. This is not the case because much of what happens in actual persons' ordinary life can be acknowledged. It does not need to be justified or secured through an additional idea of truth. Rather, what truth means or comes to has itself to be considered from this ground.

conceived along metaphysical realism. The commonsense realist alternative proposed by Putnam relies on transactionalism and semantic contextualism according to which actual persons are provided with world-involving abilities to mean and refer that, echoing the perspectival nature of reality, embed context sensitivity. In this framework, the meanings of our terms (what a competent language-user knows before using a language) only contribute guiding their application (or their use) in a particular context to refer to one of the many possible ways corresponding entities can be. From internal realism, Putnam retains the idea that meaning should be sought for in the use we make of languages, but he abandons the claim that correct use of language is to be explained (only) in terms of criteria and rules following<sup>41</sup>. In addition, actual speakers and their ability of attunement to one another are irreducibly required to assess the reasonableness of the various applications. Once interfacial understandings of perception and conception are rejected, the semantic and pragmatist maxims can be combined in a contextualized approach of meaning and reference, based on the actual person's point of view, and genuinely embedding semantic externalism.

The same type of incremental reasoning can be found in Putnam's approach of the notion of truth. In compliance with the semantic maxim, truth cannot be conceived as a substantive property of correspondence between languages and mind-independent reality conceived along the God's eye point of view. The notion of truth has to be construed from within the actual person's perspective. During the internal realist period, Putnam argues that truth is empty as long as standards of rational acceptability actual persons operate with are not elucidated. Standards of rational acceptability give content to truth. But they cannot be understood as algorithmic rules exhausting rationality and universally applying independently of situated contexts. Rather, they guide evaluative judgments of reasonableness about theories admissions and are ultimately connected with actual persons' conceptions of good and of human cognitive and total flourishing. In consequence, the tight connection between rational acceptability or reasonableness and truth raises the threat of relativism. Truth would be reduced to historically, culturally and socially situated judgments of reasonableness. But truth beyond situated rational acceptability is an important idea in our lives and should not be abandoned (pragmatist maxim). Therefore, truth and rational acceptability have to be distinguished. Putnam then proposes to see the former as an idealization of the latter in sufficiently good epistemic conditions. Unfortunately, the notion of sufficiently good epistemic conditions is itself semantically inconsistent and should not be admitted (semantic maxim). The tension between the semantic and pragmatist driving-forces reemerges as a result of the admission of interfacial understanding of our cognitive relation to reality. If actual persons are disconnected from reality and enclosed in their inner cognitive sphere, either a semantically consistent way of crossing the gap (to think correspondence) is hopelessly pursued or truth becomes nothing but situated judgments of rational acceptability. Again, the reconsideration of the cognitive relation actual persons have with reality permits releasing the tension. Recognizing that they possess world-involving abilities enabling them to directly meet genuine aspects of reality allows reinstating truth beyond rational acceptability. Truth can even be reintroduced as correspondence. Statements describing observable matter of facts are true when corresponding with reality apperceived by actual persons. The latter are also able to conceive ways for reality to be that would render true claims describing non-observable states of affair.

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<sup>41</sup> This tight connection between terms' meaning and their use may have been present in Putnam early period (see for instance: Putnam 1975 [1965]). However, it is not fully developed before the endorsement of the internalist verificationist semantics (Putnam 1983b, 1999, 13-14).

Importantly, the tension between the semantic and pragmatist maxims with respect to the topic of truth is defused because, instead of mobilizing the introduction of mind-independent reality along the God's eye point of view, truth is approached starting from actual persons' linguistic and cognitive activities, from the way they understand the knowledge claims they make. Arrived at this point, the semantic and pragmatist driving-forces push in the same direction: a semantically consistent account of what truth comes to is primarily to be sought for in a cautious analysis of what actual persons do when emitting knowledge claims or when investigating to solve determinate problems.

This constitutes an important and general insight for approaching the notion of truth. What truth comes to can be always contextualized without being reduced to contextualized elements. What truth comes to in a particular context is to be learned from the way language-users talk, conceive, relate to the world and assess the reasonableness of their claims. Nevertheless, truth is not equated with situated reasonableness. In any context, claims admitted as rationally acceptable through evaluative judgments of reasonableness can be false (in a sense of false that is to be learned in each context). This contextualization without reduction of the notion of truth opens crucial possibilities for considering objectivity and truth of evaluative matters (for instance, ethical, moral or methodological ones). According to the well-entrenched fact-value dichotomy, only facts could be capable of truth and objectivity. Following the pragmatist maxim, this dichotomy is highly problematic. It seems important in our life that value judgments such as 'murder is wrong' are capable of truth. For those denying this point, Putnam's investigations of truth during the internalist period brings additional elements. Although the picture these elements draw of truth is not admissible, the analysis they provide of the way truth can be effectively pursued keeps its full validity and relevance. The process of scientific theories' admission irreducibly involves situated evaluative judgments of rational acceptability. In consequence, denying objectivity to evaluative issues would amount denying objectivity to science. To be sure, truth could be conceivable as we just saw, but it could not be pursued objectively. We would have to rely on pure luck to reach truth (in science as well as in any other cognitive activity). But it seems important in our lives that science does not succeed by pure luck. Here again, traces of the tension between the pragmatist and semantic driving-forces can be evidenced. It would be semantically inconsistent to attempt at grounding truth and objectivity of evaluative judgments in mysterious supernatural entities (inflationary ontological views). But as we just saw, the pragmatist maxim forbids merely folding them down on contextualized elements or more radically rejecting them as delusive (deflationary ontological views). Again, the interfacial understanding of our cognitive relation to the world is largely responsible for this tension. It prevents taking at face value and granting importance to basic elements of our cognitive life. Once this interfacial approach is abandoned, the fact-value dichotomy and the denial of truth and objectivity to evaluative issues can be reconsidered starting from what happens within the actual person's point of view. Following this line of thought, one might realize that the dichotomy between facts and values is largely overestimated (in particular with respect to the issues of truth and objectivity). According to commonsense realism, facts cannot be understood in an externalist perspective (along the God's eye point of view). Contrastively, facts are discovered or acknowledged by actual persons when exploring and trying to understand reality around them (based on conceptions and apperceptions). They have to be understood as elements of a perspectival reality. Certain facts are directly acknowledged without requiring further justification while other states of affairs are assumed to be the case in virtue of descriptions that have been judged rationally acceptable (true descriptions if they correspond to what reality is). But then, values can be similarly approached. Values are encountered, mobilized

and explored in actual persons' moral or ethical life. Some value-judgments can be acknowledge without requiring much of additional legitimation ('murder is wrong') while other requires subtle reflections to be hold as correct. Considered in this way, few reasons remains to support the admission of the fact-value dichotomy except maybe the idea that we do not know how to make sense of the idea that value-judgments can be true or false as correspondence. But we do not need to clarify this. Truth of evaluative judgments simply does not take the same face as truth of descriptive claims. Although what truth in ethical matters comes to may not be perfectly clarified, it won't help to try to impose the descriptive pattern on it. Understanding 'murder is wrong' gives clues about what truth comes to with respect to ethical judgments. Whatever this may be, it can also apply to statements for which judgments of reasonableness are more controversial or even for value-judgments whose reasonableness cannot be assessed at all. In sum, it is misled to oppose talks about facts and talks about values in the way suggested by the fact-value dichotomy (only the former are cognitive or capable of truth and objectivity). Distinguishing them is correct. But opposing them as first-grade versus second-grade discourses is going too far. Rather, pragmatic or conceptual pluralism should be admitted. As our cognitive life possesses many different aspects (for instance, describing and morally, ethically or methodologically evaluating), different discourses, theories or conceptual schemes talking about these different aspects can coexist. They can be guided by different standards for rational acceptability judgments and pursue truth under different forms. Importantly, endorsing such a pragmatic or conceptual pluralism becomes legitimate only once it is recognized that reality, truth, objectivity and good already inhabit actual persons' cognitive lives; this recognizing is at the heart of commonsense realism's second naïveté.

To conclude the present analysis of Putnam's philosophical trajectory concerning the notions of realism, meaning, reference, rationality and truth, it may be fruitful to synthetize the promising leads this analysis permits opening with respect to the topic of incommensurability. First, several connections have been established with Kuhn's thesis demonstrating that Putnam is a relevant thinker with respect to the notion of incommensurability. Kuhn argues that paradigms play an important taxonomic or semantic function in providing examples of successful linguistic practices necessary to established shared and meaningful conceptual networks. Accordingly, inquirers relying on radically different paradigms may experience failure of communication and impossibility of translation between the languages they employ. The role Putnam grants to introducing events meets the semantic function of Kuhnian paradigms. Criticizing the traditional conception of meaning, Putnam adopts the causal theory of reference that stipulate that terms reference cannot be established in disconnection from situated introducing events during which actual referents are singled out (semantic externalism with its component of indexicality). Actual persons cannot be considered as competent users of given terms without standing in information-carrying causal-historical relationships (which can be socially mediated) with corresponding introducing events. Furthermore, these introducing events embed context-sensitivity. Thereby, associations between terms and the different components of their meaning vector (conceptual descriptions and referents) are themselves contingent and context-dependent. Terms can be associated with different conceptual descriptions and different referents depending on the context. Contexts can be successive in history or contemporary across distinct linguistic communities (in particular with the division of linguistic labor). Thereby, taxonomic incommensurability could be reconstructed in Putnam's framework as incompatibilities between distinct networks of meaning vectors deployed in different contexts. In addition, a methodological function can be attributed to Kuhnian paradigms. The latter provide examples of successful methodological practices enabling inquirers to assess the validity of theories and discourses. In consequence, inquirers grounded in

radically different paradigms may disagree in their evaluation of the validity of given theories. The way Putnam considers the process of theory admission fits well with Kuhn's approach. In Putnam's view, theory admission is not a process of algorithmic or mechanical application of epistemic criteria. Rather, inquirers rely on situated standards of rational acceptability to emit evaluative judgments about the reasonableness of the theories they assess. Moreover, standards of rational acceptability as well as the way of assessing reasonableness based on them can change from context to context (across history as well as between contemporary communities focused on different topics). The methodological aspect of Kuhn's notion of incommensurability may thus be reconstructed as mismatches between standards of rational acceptability and associated evaluative practices between inquirers situated in distinct contexts.

Based on these points of connections, the present work aims at mobilizing the analysis of the articulations, continuities and contrasts between the different periods of Putnam's intellectual path to propose a refined understanding of phenomena of incommensurability. For instance, the issue of stability of reference with respect to the occurrence of taxonomic incommensurability may be fruitfully approached. According to Putnam in his early period, the process of rigid designation permits claiming that different taxonomically incommensurable conceptual schemes can be connected with the same referents. In any context, a term always refers to any entity sharing the same essence (or deep structure) with actual world's paradigmatic examples singled out during the associated introducing event. But this view about reference stability is intimately connected with metaphysical realism and the possibility it offers to admit essentialism. As we have seen, things become more problematic when metaphysical realism is abandoned. Although Putnam attempts at maintaining the possibility of rigid designation during internal realism, the failure at distinguishing truth from rational acceptability is also a failure at grounding a genuine semantic externalism that could re-open the door to rigid designation. In the commonsense realist period, causal theory of reference and rigid designation seems resurfacing, though quite timidly. To the extent this feature can be clarified, taxonomic incommensurability and stability of reference might be combined in a semantically consistent approach of incommensurability based on Putnam commonsense realism.

Furthermore, interesting insights may also be provided to explore the question of methodological incommensurability in link with the notions of truth, objectivity and relativism. In his early period, Putnam admits metaphysical realism and its associated idea of truth as correspondence. While the possibility for different groups of inquirers to rely on distinct ways of assessing scientific discourses may be recognized, this cannot reflect more than the limited methodologies they deploy in their cognitive or epistemic sphere to seek truth as correspondence. Different sets of standards of rational acceptability can be considered as different epistemic tools sub-serving the overarching and unique goal of truth as correspondence. With the shift toward internal realism, truth cannot be conceived in this way anymore. Rather, it receives content from standards of rational acceptability. Accordingly, the coexistence of different specifications of rational acceptability could imply the coexistence of different aspects of truth. But at this step, rational acceptability and truth cannot be sufficiently distinguished leading internal realism into relativism, verificationism and antirealism. This crucial distinction is restored in commonsense realism without abandoning the idea that faces of truth are contextualized. These faces have to be learned based on the specificities of the various cognitive activities of actual persons. In this line of thought, the status of methodological incommensurability could be reconsidered. First, when disagreements occur between groups of inquirers about the specifications of rational acceptability, we could wonder whether these groups are engaged in the same cognitive activity. If the answer is

positive, then the different views on rational acceptability could be seen as sub-serving the same goal of contextualized truth. It might become meaningful to attempt at establishing the superiority of a given approach. Contrastively, if the cognitive activities are different (for instance if some inquirers try to describe something when others attempt at evaluating it), it might be the case that each group answers different faces of truth. Coexistence could then be unproblematically admitted. In sum, commonsense realism may authorize the cohabitation of several communities of inquirers endorsing different (and possibly taxonomically incommensurable) discourses or conceptual schemes guided by incompatible standards of rational acceptability without degenerating into verificationism or relativism (methodological and conceptual pluralisms).

As will be extensively detailed in the following, methodological and conceptual pluralisms may also be admitted when groups of inquirers all focus on descriptions of reality in virtue of the perspectival nature of the latter and of the associated semantic contextualism. In Putnam's early period, a plurality of descriptions of reality could not have been admitted. In internal realism, plurality of descriptions can be admitted but they cannot be understood as descriptions of mind-independent reality. Only in commonsense realism, pluralism and realism can be consistently combined. This may open the possibility to admit, in certain cases, the legitimate coexistence of different (and possibly taxonomically incommensurable) descriptive conceptual schemes about reality without automatically swinging to relativism and antirealism. In addition, Kuhn's World-Change thesis might be reinterpreted in the same line of thought. Broadly speaking, the deep insights of Putnam's philosophical trajectory about the topics of realism, reference, rationality and truth appears promising with respect to the present attempt at elaborating a refined account of the notion of incommensurability. Put in a nutshell, they could guide us toward a semantically consistent account of phenomena of incommensurability (semantic maxim) that could allow considering them as more than mere cognitive imperfections (at least in some cases). At the same time, they may permit safeguarding the notion of reality truth and objectivity and defusing the threats of relativism or antirealism (pragmatist maxim). To progress in this direction, it is first necessary to provide a general account of the notion of rational inquiry on the ground of what might be called Putnam's pragmatist of knowledge, whose core elements have been brought to the fore by the analysis of Putnam's philosophical trajectory.

## **Chapter 2: Putnam's pragmatist theory of knowledge and rational inquiry**

The preceding chapter has been dedicated to the elucidation of Putnam's core ideas about realism, reference, truth and rationality during the commonsense realist phase. We evidenced that the proper understanding of these ideas is facilitated when considering them as the tip of the iceberg constituted by Putnam's general philosophical trajectory. To this extent it was successful, this first chapter permitted bringing to the fore the spirit of Putnam's commonsense realism in respecting the letter of the associated writings. It was meant to constitute a neutral (or as neutral as possible) exposition. In particular, additional interpretation, connections or conclusions that seemed to us suggested by Putnam's discourse, but that were not explicitly expressed have been left out to avoid entanglement between Putnam's own ideas and the way they are understood and mobilized in the context of this work. Insofar as understanding is always contextualized, such disentanglement has probably been only partially achieved.

In this first chapter, some bridges with Kuhn's notion of incommensurability have been hinted at. However, to permit a fruitful reconstruction of this notion, a further step that is needed is to elaborate a general picture of rational inquiry informed by Putnam's crucial insights with respect to the relation between languages, truth and reality. Nonetheless, several elements of Putnam's thinking may be in need for further clarification and extrapolation. For instance, Putnam's affirmation about the entanglement of mind-dependence and mind-independence could be refined. In addition, one can wonder about the role that can be granted to the causal theory of reference and the associated notion of introducing event in the framework of Putnam's commonsense realism. Correlatively, it is interesting to clarify to which extent the process of rigid designation could be preserved despite the rejection of essentialism. Furthermore, relationships standing between truth, rational acceptability and objectivity may be considered in more details.

In consequence, the following sections aim at reconstructing and extrapolating Putnam's views about realism, meaning, reference, truth and rationality (or rational acceptability) under the form of a more systematic account we propose to label 'Putnam's pragmatist theory of knowledge'. Without being confined to the letter of Putnam's writings, this account is largely inspired from commonsense realism and intends to respect its spirit. Some points are extrapolated in a way we believe is coherent with Putnam's line of argument. In particular, the notion of context-sensitivity is further explored to reinforce the mind-independent nature of reality. The causal theory of reference, as well as the early notions of introducing events and rigid designation, are explicitly reintegrated in association with semantic externalism. In addition, the relations between the notions of truth and objectivity are delineated. Based on this reconstructed pragmatist theory of knowledge, a general picture of rational inquiry is then worked out.

### **1. Putnam's pragmatist theory of knowledge**

The following elaboration of Putnam's pragmatist theory of knowledge is divided in three main components that remobilize the order of exposition deployed in the section 4 of previous chapter. To begin with, next section deepens and extrapolates the insights about the manner mind-independent reality should be conceived of that are brought by Putnam's reconsideration of actual

persons' cognitive relation to this reality (detailed in section 4.1). At this occasion, the notion of way of being is further explored. In the same vein, the tension that may arise because of Putnam's acknowledgement of both mind-independent and context-sensitive aspects of reality is analyzed and defused. In a second time, the commonsense realist account of meaning and reference (exposed in section 4.2) is adapted and prolonged. In particular, Putnam's early causal theory of reference, and the process of rigid designation accompanying it, are explicitly imported and rendered consistent with the context-sensitive semantics defended in commonsense realism. Finally, Putnam's discussion of the topics of truth and objectivity in his commonsense realist period (delineated in section 4.3) are extended and further interpreted. Notably, the role Putnam grants to fallibilism with respect to the topic of objectivity is mobilized as a ground for the notion of truth in descriptive as well as in evaluative matters. Moreover, the challenges of securing a notion of truth beyond rational acceptability and of defending the possibility for a pursuit of such truth with objectivity are disentangled.

### **1.1. Mind-independent but context-sensitive reality**

As exposed in the section 3.1 of previous chapter, Putnam denies that reality can be meaningfully conceived from an externalist perspective or a God's eye point of view. But, to comply with the pragmatist maxim, the notion of mind-independent reality should not be abandoned. However, respecting the semantic leitmotiv requires doing justice to the idea of mind-independent reality from within the actual person's perspective. With respect to this aim, interfacial understandings of perception and conception constitute insurmountable obstacles. Admitting such hypotheses about perception and conception amounts expulsing, by principle, reality from the realm of actual persons' cognitive experience. Thereby, it imposes engaging in the (semantically) hopeless task of reintroducing mind-independent reality in an arena from which it has been irremediably banned. At the heart of Putnam's commonsense realism lies the rejection of such interfacial approaches of conception and perception as well as the defense of a second naïveté. Ways reality is conceived to be by actual persons and ways it is are one and the same thing when actual persons' conceptions are true. Accordingly, actual persons can have direct perceptual contact with genuine aspects (or ways of being) of reality through veridical apperceptions based on correct conceptions. This rejection of the interfacial understandings of conception and perception indicates that actual persons *can* have genuine direct experience of reality. From this ground, the call for the second naïveté can operate. The latter indicates that, in many cases of ordinary life, reality and real entities surrounding actual persons are acknowledged before (or independently of) being known. Most of the time, it is for instance meaningless to question the apperception of a table in front of me. In the same vein, there is no reason doubting that a table can be correctly conceived as something on which we can put things, eat ... Skepticism about such elements cannot be answered and does not need being answered. This is so precisely because such elements are acknowledged rather than known. In our life, we see tables and interact with them. In ordinary settings, we do not question these facts. Skeptical arguments may force us to concede that we cannot establish statements like 'there is a table in front of me' or 'tables are things we can eat on' with "deductive certainty" (Putnam 2012a [1998], 527). But in ordinary circumstances, living in the world is not about justifying or doubting that things and persons we interact with are real. In our ordinary life, "our task is not to acquire a "proof" that "there is an external world" or that our friend is in pain, but to *acknowledge* the world and our friend" (Putnam 2008d, 26). Thereby, it becomes possible to claim, not only that actual persons *can* have direct experience of genuine aspect of reality, but



more importantly that they often *do* have such experience. From a pragmatist perspective, the fact that we live with other persons in a common reality and that we directly experience some aspects of it does not need being proved with deductive certainty. Rather, it should be acknowledged (Putnam 2002g, 8-9, Putnam 2012 [2006], 560-564). Skepticism nevertheless reminds us a crucial aspect of actual persons' cognitive relation to the world. Actual persons are in no case above misconceptions and defective perceptions. Even in the case of ordinary objects, mistakes can be made. An actual person can believe she perceives a real window on a building's façade while she stands in front of a *trompe l'oeil*. She can even realize, for instance in changing her view point, she mistook. This type of experience is crucial. They give a ground, from within the actual person's perspective, to claim that reality is mind-independent. Reality resists the conceptions actual persons have of it. Actual persons' beliefs do not shape reality. Failing at conceiving correctly leads to defective perception of mind-independent reality. Although the rejection the concept-property dichotomy indicates that mind-independent reality is conceptualized, the latter is what it is independently of the conceptions we hold as correct. These conceptions can be true as well as approximate or completely false. In this sense, skepticism when channeled under the form of fallibilism permits making sense of the idea of knowledge about reality. If accepted conceptions were shaping reality, we could not experience failure in conception and perception. We could make no sense of the distinction between knowing and believing. Contrastively, once this distinction is made available from within the actual person's perspective, the enterprise of knowing becomes meaningful. The recognition of the possibility of error leads naturally to the enterprise of verifying and justifying conceptions (and associated apperceptions).

Engaging in the enterprise of knowing reality, actual persons can then realize that reality and real entities<sup>42</sup> are not a single way. As exposed in the previous chapter, the interpretation of properties (correct attribution of a property to something or correct inclusion of something into the extension of a property) as well as their identification are context-sensitive. Both depend upon actual persons' interests and practices. This context-dependence cannot be understood as occurring only in our heads, by claiming that only our judgments about extension's membership and properties identification are function of the context. When correct, concepts merge with properties. If we correctly conceive that something belongs to the extension of a property (or that two properties can be identified) in a certain context but not in others, then this is not just in our heads. Context-sensitivity goes then up to mind-independent reality itself. Obviously, it could be claimed that one or all of these contextualized judgments about interpretation and identification of properties are mistaken. And this possibility should be conceded (at least in some cases). But it does not suffice to confine context-sensitivity to actual persons' mental or cognitive sphere only and to preserve reality from it. Some examples provided by Putnam conflicts with such dodging in terms of cognitive error (Putnam 1999, 87-88, 2002f, 96-99). One can for instance consider the property of being the driver of a given bus. In many context, the person whose job is to drive the concerned bus is the extension of 'being the driver of the bus'. However, for some reasons (say the regular driver twisted his ankle), someone else (say one of the passengers) is actually driving, while the usual driver seats just aside. In such a situation, depending on the context of speaking, both could be correctly said to be the bus driver (a context in which a cop asks who was driving, in contrast with another context in which a passenger poses security problems). The already discussed example concerning the term 'coffee' illustrates the context-sensitivity of the

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<sup>42</sup> 'Entities' is here employed as a broad spectrum notion meant to cover objects, (natural) kinds, persons, structures, actions, events. In sum, it is susceptible to designate anything that can be said 'being a certain way'.

identification of properties. In some contexts, being some coffee is identified with being solid black beans while in others it can be identified with being a hot liquid in a cup (or being a black liquid spilled on the table, etc.). In such illustrations, it does not seem correct to claim that false interpretations or identifications of properties are established, or that only one of the interpretations is correct in all the cases.

Furthermore, imprisoning context-sensitivity inside actual persons' cognitive sphere would require making sense of the idea of an absolute conception of the world. An attempt at meeting this requirement could be based on scientific theories such as physics. As we have seen in the section 4.1 of previous chapter, Putnam opposes several arguments to this possibility. First, scientific properties themselves may not be free from context-sensitivity. Second, restricting reality to what could be accounted for in such an allegedly context-independent account would conduct to radically mutilate reality. Very few could be considered as real. In particular, the notion of causality should be rejected. To be sure, one could concede that scientific theories themselves are context-sensitive and or that they are not sufficient to account for all the aspects of reality while still claiming that reality is what it is context-independently beyond what actual persons can apperceive and conceive through commonsense and science. But this would reinstitute the interfacial understandings of perception and conception coupled with an introduction of the notion of mind-independent reality considered along the God's eye point of view. Instead of providing a credible alternative to the recognition of the context-sensitive nature of mind-independent reality, this strategy merely returns to metaphysical realism. It even raises conflicts with scientific realism insofar as scientific theories are recognized as context-sensitive (scientific theories could not be seen as descriptions of mind-independent reality).

In consequence, commonsense realism leads to conceive reality as mind-independent, but also as always being certain ways along situated points of view. With respect to the claim that reality is mind-independent, commonsense realism and Putnam's pragmatist theory of knowledge agree with metaphysical realism. They diverge from the latter in recognizing that mind-independent reality cannot be conceived as being an absolute way (to be approached from the God's eye perspective). Instead, it embeds context-sensitivity and can be nothing but particular ways of being along actual points of view. Discussing the notion of 'sortal identity' to reflect the fact that identifications of properties make sense only when deployed according to certain points of view or 'respects', Putnam writes illuminative words: "sortal identity is essentially *pluralistic*, and unless we postulate that the number of *sorts* can be limited in advance – which I would deny – sortal identity *subverts* the question "What is there?" by countering: "What is there in *which* respect?"" (Putnam 2012 [2004], 123 note 28). Conceptual relativity as well as conceptual or pragmatic pluralism are the epistemic counterparts of this irreducible perspectival aspect of mind-independent reality<sup>43</sup>. There is no absolute and context-independent conception of the world.

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<sup>43</sup> Although this section is focused on the discussion of the way commonsense realism permits approaching the notion of mind-independent reality, it may be fruitful to already make an important additional remark. Pragmatic pluralism does not only embed the claim that there is a legitimate and irreducible plurality of valid conceptions about what reality is and that, in consequence, reality can be apperceived being many different ways. It also reflects the fact that we do not only describe reality and acknowledge or investigate the way it is, but we also live in reality as ethical and moral persons or as persons committing about certain norms and having certain interests and preferences. There is thus room for (valid) conceptions about ethical, moral or normative matters. Consequently, aspects of reality, or ways certain real entities are, can be apperceived as being value-loaded ways. Moreover, value-loaded ways of being of real entities should not be considered as less real because value-loaded. This would amount admitting a too sharp distinction between description and evaluation, as if we could make sense of a dichotomy between reality and real entities being value neutral ways on one side, and actual persons evaluating these neutral ways of being on the other side. Thick ways of being (and associated conceptions), such as someone being inconsiderate, some experience being pleasant or some theories being simple and coherent are interesting examples showing the inadmissibility of a radical fact-value dichotomy. Describing and evaluating are activities that cannot be sharply distinguished.

Rather, reality can be correctly described as being different ways along different points of view (De Caro and Macarthur 2012, 15, Putnam 2012b [2010], 101-102, 2013f, 27).

More can be said about the notion of ways of being of entities along particular points of view. A way of being of an entity is constituted (and can be described) by properties that can be truly attributed to the entity being along a particular point of view. Therefore, a single way of being of an entity cannot be constituted by contradictory properties. For instance, coffee cannot be both solid and liquid along the same point of view. Rather, in certain of its ways of being (along certain points of view) coffee is solid (beans in a bag, powder ...) while it is liquid when considered according to other points of view (hot liquid in a cup, liquid spilled on a table ...). In addition, the properties that constitute ways of being of entities can have different statuses. Some are truly attributed to the entity only in certain circumstances (water being in a lake or in a bottle) while others are shared by large classes of ways of being of the same entity (water being colorless, water being tasteless and thirsty quenching). An interesting question is whether or not some properties can be possessed by the ways of being of an entity and only by them. It raises the issue of essentialism. As made clear previously, Putnam rejects essentialism (Putnam 2002d, 107, 2008b, 27-28, De Caro and Macarthur 2012, 12-13). Essentialism is in particular problematic with respect to kinds or species which, Putnam argues, cannot be precisely defined in virtue of so-called essential properties and may not possess sharp or clear-cut boundaries. In the present approach extrapolated from Putnam's view, traditional essentialism is also abandoned. There can be some properties that are shared by all the ways of being of an entity. But they also constitute ways of being of other entities. For instance, 'containing a large fraction of  $H_2O$ ' is a property shared by all the ways of being of water. But it cannot be understood as an essential property in the traditional sense because it is also possessed by other entities. For instance, coffee is, along certain points of view, a liquid that contains a large fraction of  $H_2O$ . 'Containing a large fraction of  $H_2O$ ' is also a property shared by human bodies in much of their ways of being (in particular when lively). Boundaries of kinds appear fuzzy and, in any case, cannot be determined by essential properties in the traditional sense. The same phenomena seems applying to particular as well. For example, a person can be said to possess a certain genetic code in all its ways of being. But, a twin may possess the same genetic code without being the same person. Essentialism, understood as claiming that what real entities are "is fixed and substantially unified" (De Caro and Macarthur 2012, 13), cannot be admitted. Nevertheless, this rejection does not imply that the idea of essential property is merely meaningless. First, certain properties remain core properties possessed by any sample of given kinds. For instance, 'containing a large fraction of  $H_2O$ ' is possessed by any sample of water. In this respect, they could be said essential. Furthermore, such properties can be associated with properties applying to specific entities and only to them. For example, the property 'being pure  $H_2O$ ' can be truly attributed only to water. It may even be seen as constituting an (or the) 'essential' way of being of water for it is a way of being only water can be<sup>44</sup>. But this 'essential' property of water is not possessed by all its ways of being. In fact, it even seems to be possessed by almost none of the ways of being of water. And claiming that water is only pure  $H_2O$  would amount defending the view that nothing we call water is effectively so. The idea of pure water would be completely redundant.

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<sup>44</sup> In the framework of Putnam's pragmatist theory of knowledge, it may even be possible to associate the same entity with different essential properties (in the present restricted sense) and with different essential ways of being according to distinct points of view (see for instance: Macbeth 1995, 269, Putnam 2002d, 107, LaPorte 2011, section 4.1). This is further discussed in the sections devoted to the reconstruction of incommensurability based on Putnam's pragmatist theory of knowledge.

Arrived at this step, an important point needs being clarified. Putnam sometimes describes the context-dependency of reality exposed above as defying “the mind-independent/mind-dependent dichotomy” (Putnam 2002d, 106). However, in most of his commonsense realist writings, he avoids the notion of mind-dependence and favors the ones of context-dependence, context-sensitivity or occasion-sensitivity (Putnam 1999, 2001b, 2002f, 2012c [2001], 2012a [1998]). Mobilizing the notion of mind-dependence is not really suitable because it suggests that commonsense realism embeds elements of antirealism or idealism. This is radically misled. In commonsense realism, reality is mind-independent. Reality is the ways it is (along various points of view) mind-independently. The ways we conceive and apperceive it being do depend on the context we evolve in (in particular on actual practices we engage in and associated interests). What reality is is context-sensitive. But this does not render reality mind-dependent. Reality is not shaped by actual persons conceiving or apperceiving. Concepts possessed by actual persons do not forge reality. The rejection of the concept-property dichotomy should not be understood in this manner. It does not indicate that concepts and properties of real entities should be identified. More precisely, it states that ways of being described by through concepts and ways real entities are can be identified. Importantly, the identification is valid only when conceptions are true. Reality is contextualized ways without awaiting for observers or conceivers who perceive it or think it being these ways. Furthermore, the various ways reality is correctly conceived and genuinely apperceived to be do not exhaust ways reality can be. We can always be amazed by the discovery of new ways reality also is. In addition, ways reality is that we can conceive and apperceive may well be limited to ways we are able to conceive based on our anthropocentric concepts associated with our specific features as human beings – biological and physiological features included (Putnam 2013c, 222). But these conceptions and apperceptions are genuine direct contact with reality when conceptions are correct. And this does not prevent reality from being other ways that we cannot think about because we do not possess the right sort of concepts and of physiological conditions.

In sum, reality and real entities are the ways they are mind-independently. These ways are also ways for us to conceive and apperceive reality and real entities being. When relying on true conceptions, it is thus legitimate to conceive and apperceive reality and real entities being different ways. In function of the context actual persons evolve in (notably in function of practices they engage in and associated interests), particular ways of being of reality and of real entities are conceived and apperceived. It is worth-insisting that this context-dependence does not degenerate into mind-dependence of reality. Claiming that the contextualized situation of actual persons leads them to conceive and apperceive reality and real entities in particular ways is not the same as claiming that these contexts shape reality and real entities. In this respect, the notion of point of view may prove illuminating. Contexts and points of view should be distinguished. When it comes to what reality is, contextualism can be understood as stipulating that reality can be nothing but particular ways along situated points of view (or perspectives). In this line of thought, the notion of situated point of view opposes to the idea of the absolute God’s eye point of view along which reality would allegedly be an absolute ‘context-independent’ way. In this sense, points of view should not be equated with, and are not influenced by, actual persons’ interests, subjective opinions or practices. They rather constitute ‘vantage points’ from which reality can be encountered (correctly conceived as well as genuinely apperceived). What is determined by the context actual persons evolve in (interests and practices) is not the point of view itself or the way reality is along this point of view, but rather the selection of a given point of view according to which reality is encountered. In sum, specificities of actual persons and of the context they evolve in contribute to a tuning to a particular point of view. Once a point of view is selected, reality and

real entities are particular mind-independent ways along this point of view. This point can be further developed in turning to the exposition of the semantic features of Putnam's pragmatist theory of knowledge.

## **1.2. Semantic aspects of Putnam's pragmatist theory of knowledge**

The previous section exposed how mind-independent reality, in which actual persons live in, can be approached according to Putnam's pragmatist theory of knowledge. Based in particular on the elucidation of the context-sensitive nature of mind-independent reality this section exposed, the insights delineated in the section 4.2 of previous chapter are mobilized to establish an account of meaning and reference integrating context-sensitivity while remobilizing and adapting Putnam's early causal theory of reference and the associated process of rigid designation. This account is first deployed, in next section, with respect to descriptive languages. However, describing reality is not the only function of languages. Notably, languages are also involved in actual persons' evaluative lives. The semantic features of ethical, moral or normative terms are then accounted for in an additional section, before turning to the discussion of the topics of truth and objectivity.

### ***1.2.1. Meaning and reference***

As a preliminary remark, languages can be seen as relying on terms more or less orderly interconnected and forming conceptual schemes (scientific languages being highly structured by comparison to ordinary ones). Therefore, to detail the semantic features deployed according to Putnam's pragmatist theory of knowledge, the notion of conceptual scheme needs being elucidated and synthetized. In this respect, the notion of meaning vector – introduced by Putnam in his early period but conserved in commonsense realism (Putnam 2013e, 273) – can be of great help. In general, a term is associated with a meaning vector that includes a conceptual (or intensional) part that can be recollected in language-users psychological or mental states, and that contains knowledge about the term (conceptual description or definition with, for instance, linguistic and semantic markers, more or less adequate stereotypes). The meaning vector of a term also embeds an external or extensional part whose members are the term's referents (actual world's entities when the term refers to mind-independent reality). The structuration of a conceptual scheme thus arises from the interconnections standing between the different terms as expressed by the conceptual part of their associated meaning vectors. In reversing the picture, terms receives conceptual parts in being hosted in conceptual schemes in connection with other terms. Terms designating entities of mind-independent reality can thereby be associated with conceptions constituting more or less adequate descriptions of their referents. Thus, conceptual schemes can be seen as providing terms they host with more or less correct conceptions of the real entities these terms refer to. When these entities are available to observation, conceptual schemes permits more or less veridical apperceptions of these real entities. Be this as it may, the important point for now is that the general aspect of the semantic structuration of languages is established: terms are associated with meaning vectors possessing intensional and extensional components. Alternatively put, terms are hosted in conceptual schemes that also possess intensional and extensional components. But the relations standing between these elements (terms, meaning vectors, conceptual schemes, intensional and extensional parts) as well as the mechanisms governing their settling are still in need of elucidation.

As Putnam's early works make clear, the traditional conception of meaning fails at providing a satisfying explanation. First, conceptual parts cannot be seen as analytically associated with terms. Putnam's discussion of the meaning of 'water' in the example of twin earth clearly illustrates this point. A posteriori discoveries in chemistry generated a change in the intensional part of the meaning vector of 'water'. The chemical composition is added to the conceptual definition. Second, conceptual parts of terms' meaning vectors alone cannot determine corresponding external parts (what the terms refer to). This is the heart of semantic externalism. If conceptual parts determine external parts of terms' meaning vectors, changes in the former would imply modification of the latter. In this line of thought, the discovery of the chemical composition of water could not be considered as an improvement of knowledge about water. It should rather be seen as a new stipulation of the referents of 'water'. The conclusion in favor of semantic externalism is reinforced through Putnam's twin earth argument. This argument is based on the analysis of what speakers on earth and twin earth mean when using 'water' before the discoveries of chemical compositions. In both cases, 'water' is associated with meaning vectors sharing the same conceptual part. However, on earth 'water' is used to refer to whatever possesses the chemical structure  $H_2O$  while it designates whatever possesses the chemical structure XYZ on twin earth<sup>45</sup>. What terms mean is not determined integrally by the conceptual parts of their meaning vector. Referents or extensional parts are irreducibly relevant and needs being integrated as full-fledged components of meaning vectors. What terms mean is indicated by their whole meaning vectors (intensional *and* extensional components).

This criticism of the traditional conception of meaning poses an important milestone: associations between terms, conceptual parts of meaning vectors and external parts of meaning vectors are neither fixed and pre-given nor the outcomes of algorithmic or mechanical processes rendering the specificities of actual persons and of contexts they evolve in (in particular the real entities they are effectively in contact with) irrelevant. A first alternative Putnam proposes to the traditional conception of the meaning of terms referring to entities of mind-independent reality is the causal theory of reference. Connections between terms and conceptual as well as external parts of their meaning vectors is initiated at the occasion of introducing events. In compliance with semantic externalism, external parts are determined by real entities actual persons single out during corresponding introducing events. In virtue of rigid designation, language-users employ terms to designate entities singled out during introducing events with which they stand in proper historical-causal relationships (or in the case of kinds, to entities sharing the same deep structure as these singled out entities). This relation of reference holds independently of conceptual parts effectively associated with terms (descriptions can be approximate or false, criteria for extensions' memberships can be imprecise). According to the causal theory of reference, specificities of actual persons cannot be expelled from the semantic picture of terms' meaning because introducing events are contingent and depends on actual entities effectively encountered by language-users. However, this causal theory of reference, as proposed by Putnam during his early period, involves metaphysical realism. Accordingly, referred to entities are conceived as being a unique absolute way. Once terms are grounded through adequate introducing events, they refer to such context-independent entities. As detailed in the previous section, mind-independent reality and its entities cannot be approached in this metaphysical realist manner. With commonsense realism, Putnam

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<sup>45</sup> This formulation respects Putnam's discourse of the early phase. As introduced in the previous section, commonsense realism leads to an alternative framing that could take the form: 'water' refers on earth (respectively, on twin earth) to entities possessing a large fraction of  $H_2O$  (respectively, a large fraction of XYZ). This new framing impacts rather deeply the issue of rigid designation, as discussed below.

makes clear that there is no absolute or God's eye point of view along which real entities could be considered being univocal ways. Contrastively, real entities are many different ways along particular points of view. Therefore, the causal theory of reference – though highly valuable in insisting on the contextualization of the association between terms and conceptual and external parts of meaning vectors (conceptual parts are not analytically associated with terms and do not fix referents) – cannot apply without modifications in the framework of Putnam's pragmatist theory of knowledge. Introducing events during which entities, entities without further specification, are singled out are not sufficient to account for the reference of (descriptive) terms. In fact, terms do not refer to entities without further specification. On the contrary, they refer to specific ways these entities are along particular points of view. The causal theory of reference cannot provide a complete picture because it does not make room for the role of tunings to particular points of view along which real entities are determined ways. In consequence, the irreducible semantic role granted, by Putnam's early causal theory of reference, to the specificities of actual persons and of the context they evolve in needs being reinforced. These contingent elements are not only crucial in reflecting the fact that effectively encountered entities irreducibly matter for terms' reference. They are also indispensable to trigger and determine tunings to particular points of view. Language-users do not employ (descriptive) terms to refer to entities without further specification. Rather, they use them to point particular ways real entities are along points of view tuned to in virtue of specificities such as situated interests and practices.

To do justice to this increased role of the specificities of actual persons and of the context they evolve in, Putnam's semantic contextualism (or context-sensitive semantics) can be integrated in Putnam's pragmatist theory of knowledge. It constitutes the epistemic counterpart of the contextualized nature of reality pointed in the previous section. The idea of contextualized tuning to particular points of view along which real entities are specific ways fits well in semantic contextualism. The latter stipulates that the (truth-evaluable) content or the understanding of a sentence depends on the context of utterance. As detailed in the section 4.2 of the preceding chapter, using a term in a particular context cannot be based on terms' meanings only (meanings understood as information gathered in meaning vectors' conceptual parts recollected in language-users mental or psychological states). In addition, it requires a judgment of reasonableness guided by actual persons' ability of attunement that relies on the features of the context in which languages are used. In the framework of semantic contextualism, terms' meanings (intensional parts of meaning vectors) cannot be seen as necessary and sufficient criteria fixing terms' referents (extensional parts of meaning vectors). Rather, they reflect the knowledge a competent language-user possess about the prior uses of terms before applying them in this particular context. This knowledge includes in particular, a syntactic marker ('water' is used as a common noun), a semantic marker ('water' is used to designate a natural kind, a liquid) and a conceptual description that can include some stereotypes ('water' is used to designate something that is colorless and thirsty-quenching, something having H<sub>2</sub>O as chemical composition, etc.). Meanings so understood do not fix what is said in a particular context. They only constrain how terms can be used when applied or projected in this context. To mean or grasp something in an actual context, language-users exercise their ability of attunement that mobilizes several elements of this context in addition to terms' meanings:

- First, terms' referents depend on real world's objects and properties language-users are in contact with in the actual context of utterance. Depending on the actual situation language-users are in, referents of terms as well as understandings or truth-evaluable contents of

sentences can be different. Notably, the real entities effectively referred to matters (when talking about such entities of course)<sup>46</sup>. For instance, in the sentence ‘there is some coffee of the table’, the term ‘coffee’ can refer to a cup of coffee, bags of coffee or coffee spilled depending on the way coffee is in the actual context of speaking. Moreover, effectively present surrounding entities may also play a role. Is there a truck for coffee-delivery ready to be loaded or cups ready for a coffee-break in the actual context someone employs the term ‘coffee’? This role of surrounding, but not directly referred to, entities becomes even more crucial when referred to entities are not directly manifest to language-users. The previous example based on ‘coffee’ could be amended adding that the table and the coffee are in another room. Actual persons cannot rely on encountered real entities to understand what is said. But surrounding entities could still guide actual persons’ ability of attunement.

- Second, background knowledge admitted in the actual context of utterance influences the understanding of what is said. For instance, the ways triangles can be talked about depends upon the admitted theory of space.
- Third, understanding what is said through a given sentence in a particular context cannot in general be disconnected from other world-involving practices related to the uses of the concerned terms. For example, the sentence ‘there is some coffee on the table’ might mean that there is some coffee cups on the table and that the hearer is invited to take one, when uttered in the context of chatting and drinking coffee with some friends. Alternatively, it can mean that some bags of coffee are waiting being load in a truck in the context of people working in a haulage company. As it is the case with surrounding entities effectively present in the context of speaking, the role of world-involving practices is crucial when reference is made to entities not directly manifest to language-users. World-involving practices language-users engage in still guide the possible attunements. Broadly speaking, this dependency to the world-involving practice language-users engage in also means that interests and goals of actual persons play an irreducible semantic role.

None of these contextual elements can be seen as necessary. The presence of some actual entities in the context of speaking, the background knowledge associated with it and the world-involving practices language-users engage in are contingent. They cannot be accounted for through rules or algorithms independently of the specificities of actual persons in this particular context. Furthermore, these contextual elements cannot be understood as mechanically complementing meanings in the process of reference. Rather, they guide actual language-users in the deployment of their ability of attunement. As a side but important remark, the fact that the process of reference irreducibly mobilizes contextual specificities such as practices and interests of actual persons does not merely amount to an unavoidable contextual pollution. Although it may occur that some contextual elements obscure what terms’ refer to, contexts are primarily indispensable for language-users to tune a particular point of view along which entities they talk about are specific ways and to share this tuning. There is no context-independent reference that could be meaningfully conceived as context-insensitive.

Through this picture of terms’ application in actual context of speaking, semantic contextualism provides the basic process from which the semantic account of Putnam’s pragmatist

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<sup>46</sup> The case of a conceptual scheme describing and referring to actual world entities is the most common. Other cases will be discussed in the following.



theory of knowledge can be established. This basic mechanism complies with semantic externalism. Meanings (as conceptual parts of meaning vectors recollected in language-users' mental or psychological states and reflecting the history of terms' prior uses) do not fix reference alone. Significantly, the way semantic externalism is integrated does justice to the contextualized nature of reality. In fact, external parts of terms' meaning vectors are not determined by pointed entities without further specification (pointed entities being absolute and context-independent ways). Rather, external parts are constituted by entities being specific ways along particular points of view language-users are tuned to in virtue of their ability of attunements guided by terms meanings and particularities of contexts. In addition, this basic mechanism of terms' application in actual contexts of speaking under the ruling of the ability of attunement constitutes a suitable ground on which Putnam's early causal theory of reference can be updated. Although some indirect allusion can be found in Putnam's commonsense realist writings (see for instance: Putnam 2012 [2004], 115), the causal theory of reference as well as the notions of introducing events, indexicality and rigid designation remain therein mostly implicit. Nevertheless, they do not stand in opposition with the basic mechanism of terms' application in actual contexts of speaking. Notably, introducing events and historical-causal relationships between them and language-users appears crucial for the process of reference and the associated ability of attunement.

This can be delineated in noticing that meanings (as hosted in conceptual parts of terms' meaning vectors) do not themselves free-stand independently of actual persons and of the use they make of their languages. Understood as what a competent speaker knows about prior uses of terms before applying them to a particular context, meanings can obviously be considered neither as analytically associated with terms nor as provided by algorithms or context-independent universal rules. To be consistent, it has to be recognized that prior uses of a term are themselves processes of terms' application that mobilize speakers' ability of attunement based on past actual contexts in compliance with previously possessed knowledge about their uses. At this step, the threat of an infinite regression from actual to prior uses of terms arises. This threat can be avoided in distinguishing between several classes of terms' application in actual contexts. Notably, there has to be initial applications. In this respect, the notion of introducing event makes its first return on stage. When a term is deployed for the first time in a particular context, the application can be seen as an introducing event that grounds an initial use. At this occasion, the term is associated with the components of its meaning vector. But contrastively to Putnam's early approach, an introducing event is here considered as a specific instance of the process of terms' application in an actual context. Therefore, during an introducing event, a term is associated for the first time with the external part of its meaning vector that is constituted by an entity being a given way along a particular point of view. This particular point of view is tuned to in virtue of language-users' ability of attunement driven by the specificities of the context of the introducing event. Thus, an initial possibility of attunement for the introduced term is revealed. The process of introduction as well as the shape taken by the associated conceptual part of the meaning vector of the term can take different aspects. An introducing event can consist in a mere ostensive definition associating an observed actual thing (being a given way along a particular point of view) and a name while letting the conceptual part of the meaning vector largely empty (few elements such as syntactic and semantic markers may suffice)<sup>47</sup>. It can also involve more or less developed (and adequate)

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<sup>47</sup> However, introducing events relying on ostensive definition are likely to result in the integration of basic descriptions or stereotypes. For instance, if I point an apple saying 'this is an apple', the term 'apple' is likely to become connected with properties like being approximately spherical, being a biological entity ... This echoes Sankey's claim that purely causal theory of reference are unsuitable.

conceptual descriptions of the ways designated entities are. Non-observable entities being certain ways along particular points of view can also be captured as explanatorily or causally involved in observed phenomena. Importantly, an introducing event being itself an application of a term in an actual context, the association it inaugurates between a term and the components of its meaning vector is neither analytically fixed or pre-given nor determined through context-independent algorithms. On the contrary, it is influenced by the specificities of this actual context (encountered real entities, background knowledge, and world-involving practices). The association can be or could have been different.

Through this first class of terms' application in an actual context under the form of initial introducing events, the crucial role Putnam's early causal theory of reference granted to indexicality is remobilized and updated. Actual world's real entities *being given ways along particular points of view* are intentionally and indexically singled out during introducing events, either directly through apperception or indirectly through their involvement in directly apperceived phenomena. Based on this first class of terms' application, a second one can be elucidated. Certain applications of terms in actual contexts of speaking can be seen as replay of prior introducing events. Language-users can intend to reproduce the prior uses of terms that have been grounded during these past events. To the extent a new context of speaking is sufficiently similar to the one of a previous introducing event (for instance, interests and practices of language users are the same), a term can be deployed in the same use as the one grounded during the initial introducing event. It can be employed to refer to the way of being of the entity that has been singled out during the introducing event. As indicated in Putnam's early causal theory of reference, language-users intentionally replaying an introducing event need to stand in a suitable historical (or causal) and information-carrying relationship with this introducing event (through their own memory or via social mediation). This historical relationship is constitutive of the meaning of the term understood as the history of its prior uses. Language-users need being aware of the way the term has been used during the introducing event (specificities of the previous context, intended referents) to redeploy it in the same manner. As discussed just above, this meaning of the term is crucial to judge the reasonableness of its deployment in the new actual context. In addition, the historical relationship with the introducing event prolongs the indexical contact through which the pointed entity (being a given way along a particular point of view) has been singled out in the first place. Terms' referents can be designated independently of the possibility of an effective direct indexical contact in the new context of speaking<sup>48</sup>. The entity being its particular way does not need being present in a new context for being referred to (for the corresponding introducing event to be replayed). These two first classes of terms' application in actual context of speaking (initial introducing events and replays of such introducing events) constitute two limiting cases but they do not exhaust the possibilities of application. They would be exhaustive only in Putnam's early causal theory of reference based on metaphysical realism in which entities are conceived as being a unique absolute way along the God's eye point of view. Once the use of a term would have been grounded to refer to a given entity, nothing else could be done than reproducing this use in other contexts.

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Instead, he argues for a causal-descriptive account of reference (Sankey 1994).

<sup>48</sup> This process of terms' application qua replay of introducing events also impacts what can be done in original introducing events. Apperceived phenomena mobilized to indirectly single out entities (along specific points of view) can thereby be mobilized only in referring to them. An entity can thus be indexically singled out as involved in such phenomena without them effectively occurring. Such an entity can be associated with a term during an introducing event just by employing other terms referring to the phenomena it is involved in. Indexicality is propagated by the historical-causal and information-carrying relationships standing between language-users and introducing events. Furthermore, this aspect is central for the issue of rigid designation discussed in next section.

But in the present framework based on commonsense realism, entities are not an absolute way that would be referred to in any context. On the contrary, they can be many ways along different points of view to which actual persons can tune when evolving in different contexts (for instance, different practices or interests). This context-sensitivity is propagated at the semantic level. Meanings (as established during past introducing events) only constrain what can be said with some terms and do not have to exhaustively account for all their possible uses. Accordingly, a term whose initial use has been grounded in a given context to refer to a particular way of being of an entity (along the point of view to which language-users were tuned in this context) can be projected in a new context to designate a different way of being of the same entity (along a different point of view tuned to in virtue of the specificities of the new context). This can occur for instance when background knowledge associated with the context changes (evolution of how ‘triangle’ can be used once general relativity is admitted) or when actual persons engage in practices following different interests and are confronted with new ways of being of previously singled out entities (for instance at the occasion of scientific discoveries). Such contextual differences are also at play in more common situations like when using metaphors or telling jokes. Through such shifts in contextual particularities, new points of view can be tuned to and new ways of being are available for attunement and reference. In consequence, contextualism inhabiting commonsense realism leads enriching the notion of introducing event to settle a third class of terms’ application. Introducing events do not only permit grounding the use of new terms to refer to particular ways of being of given entities. They also allow establishing new uses for pre-existing terms to designate different ways of being of the same entities. Deploying an original use for a term (in compliance with its meaning) in a new and sufficiently different context (compared to the one of prior introducing events) can be seen as a new introducing event. Such projection in new contexts that extends terms uses “reveals attunements that have not previously been made manifest” (Putnam 2012a [2001], 416). Here again, historical relationships with previous introducing events play a crucial role in constituting pre-existing terms’ meanings. New projections of these terms to point original ways of being of previously singled out entities rest on these meanings without which language-users ability of attunement could not operate (they could not assess the reasonableness of terms’ original projections). Nevertheless, these original projections constitute new introducing events because new ways of being of entities are indexically singled out<sup>49</sup>. Through these new introducing events, meanings of concerned terms are enriched with new information for further application. New uses are established answering new possibilities of attunement.

An important point this discussion brings to the fore is the fact that, in Putnam’s pragmatist theory of knowledge based on commonsense realism and its semantic contextualism, terms can have a plurality of legitimate uses grounded in and replaying differently contextualized introducing events. Crucially, the different uses of a term are more than a mere ‘façon de parler’ about the same real entity being an absolute and context-independent way along the God’s eye point of view. Each use refers to a particular way the concerned entity is along the point of view that has been tuned to during the corresponding introducing event. Each use also comes with particular conceptual

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<sup>49</sup> In the simplest case, these new indexical determinations are direct through apperceptions of the new ways of being of concerned entities. They can also be indirect when these new ways of being are only involved in apperceived phenomena. Things can even be more complex. One can for instance imagine that, consequently to a theoretical change, it becomes possible to conceive an entity (previously singled out directly or indirectly as being certain ways) being new original ways. Provided the conception is correct, a new use of the concerned term could be introduced to refer to this way of being. This seems to indicate that indexical determinations may operate independently of direct or indirect apperceptive contact. This reinforces the distinction, Putnam insists we should make, between his causal theory of reference (so characterized because of the role of historical-causal and information-carrying relationships between language-users and introducing events) and any account of reference as a causal relation.

knowledge embedding for instance conceptual descriptions of the associated way of being, criteria for singling it out, or information about the contextual particularities of the corresponding introducing event. This means that conceptual parts of meaning vectors associated with terms can contain different clusters of conceptual knowledge associated with different possible terms' uses. In consequence, conceptual schemes formed by interconnected conceptual parts of meaning vectors can include different conceptions associated with the different ways entities can be. Alternatively put, nothing forbids merging several conceptual schemes embedding these different conceptions. They can all be correct conceptions of the ways real entities are. They can all provide correct criteria for effectively picking them out in given contexts. In sum, a conceptual scheme can include several clusters of conceptual knowledge describing correctly the ways real entities are (as well as providing criteria for picking them out along the corresponding points of view or information about the context of the corresponding introducing event)<sup>50</sup>. In turn, these clusters can drive several possible uses for terms. Thereby, the notion of meaning of a term, understood as knowledge describing its prior uses, cannot in general be accounted for as propagating information associated with a unique introducing event. Prior uses of a term do not have to be replays of a single introducing event. Rather, they can be associated with a plurality of introducing events that can all be replayed depending on the features of new contexts the term is applied in. In general, terms' meanings reflecting history of their prior uses enable actual language-users to apply terms according to different uses to refer to different ways the corresponding entities can be along specific points of view. Consequently, replaying an introducing event associated with a given term in a particular context is not straightforward. Several introducing events linked with a single term being in general available to be replayed, judgment of reasonableness of the manner the term should be applied in this new context is still required. Language-users ability of attunement based on terms' meanings and specificities of the new context of speaking is still indispensable to assess the suitability of the application of a term to replay one of its possible introducing events. In this respect, similarities between contextual particularities of introducing events and the new context of application (for instance, shared interests and practices) constitute important indicators. The term 'water', which is surely associated with many different possible uses, can serve as a matter of illustration. One can imagine a first context of projection in which some people are eating. One of them might say: 'give me some water please'. In this context, an attunement would stand between these people about the fact that 'water' in that case refers to, say, water being liquid in the bottle on the table. Alternatively, another context of application may gather some persons around a lake. Then, in the sentence one of them might utter 'let's jump in the water', 'water' would refer to water being the liquid in the lake.

The integration of this semantic context-sensitivity in Putnam's pragmatist theory of knowledge is highly valuable to account for the subtlety of actual languages' use. It opposes to any attempt at establishing a context-independent correct use of terms according to which there would be unique referents designated independently of the features of the context (as proposed for example by Grice with the notion of standard meaning contrasted with mere conversational or contextual implicatures). Imposing that terms refer to unique ways of being of corresponding entities provides an extremely mutilated account of the way actual persons use their language in particular contexts. For instance, the illustration proposed in the preceding paragraph can be

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<sup>50</sup> This gathering is unproblematic as long clusters are compatible (for instance, the admission of incompatible conceptual descriptions of a unique way an entity is along a single point of view would lead to bold contradiction) and taxonomically commensurable. This remark is central for the discussion of incommensurability proposed in the following chapter.

extended in considering people eating close to a lake. Assuming that what is referred to using 'water' is whatever possess  $H_2O$  as chemical composition independently of the particularities of the contexts of speaking might lead to funny jokes (like filling a glass with water of the lake or miming jumping in the bottle on the table). But, taken seriously, it would lead to incorrect uses and understandings of 'water'. Water can be several ways. It can be in a lake to be jumped in or in a bottle to be drunk. It can also be an essential way (pure  $H_2O$ ). Depending on the context, language-users can employ 'water' to refer to these different ways for water to be. In addition, the semantic context-sensitivity integrated in Putnam's pragmatist theory of knowledge is also highly valuable for understanding the manner discoveries and knowledge improvements impact terms of languages. The admission of the possibility for a plurality of uses for (descriptive) terms permits distinguishing between, on the one hand, knowledge improvements that provide a better account of an already identified way a given entity is, and, on the other hand, discoveries that evidence new ways something is (ways that were unnoticed up to this moment). In the first case, knowledge improvements lead to refine or correct information hosted in conceptual parts of terms' meaning vectors. They can for instance take the form of the discovery of an unnoticed property characterizing an already identified way of being of a given entity. This discovered property could, for instance, count as an important criterion for the identification of the entity being this way. In the second case, discoveries reflect new tunings to points of view entities are freshly evidenced ways. They conduct adding new clusters of conceptual knowledge that reflect new possible uses for concerned terms. Therefore, discoveries in this second case generate new introducing events grounding new possibility of attunements for further application of terms. The discovery of the chemical composition of water can be considered as a fruitful example. In evidencing that any sample of water is composed by a large fraction of  $H_2O$ , this discovery leads to the improvement of the knowledge associated with many pre-existing uses of the term 'water'. All these uses remain legitimate and are not replaced or discarded. 'Water' can still be employ to refer to water in a bottle when eating, or to water in a lake, etc. Each conceptual cluster is nevertheless enriched or corrected. Previous conceptual descriptions, such as 'water is a colorless, tasteless and thirsty-quenching liquid one can found in bottles on tables', are complemented with knowledge about chemical composition. Furthermore, the discovery also permits evidencing unnoticed ways of being of water (gaseous or solid water as well as water under its essential form). Accordingly, it generates introducing events that grounds new possible uses for 'water'. The term can thereafter refer to solids containing a large fraction of  $H_2O$ . It can also be employed to point gazes mainly composed of  $H_2O$ <sup>51</sup>. An 'essential' use could also be considered as grounded by the discovery. The use of 'water' as referring to the way water is along its essential (and maybe idealized) point of view: pure  $H_2O$ .

In sum, insights from Putnam's early causal theory of reference can be fruitfully remobilized in link with the semantic contextualism of his commonsense realist period to elaborate the semantic layer of the synthesis we call Putnam's pragmatist theory of knowledge. Two main components are imported: introducing events and causal-historical (information-carrying) relationships between such events and language-users. They permit refining the basic semantic process of terms' application in new contexts of speaking provided by semantic contextualism. Three main types of terms' application can be distinguished: (1) initial introduction of terms to point a given way an entity is, (2) new introducing events adding uses to already grounded terms

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<sup>51</sup> One can notice that, in addition to introducing such new uses for 'water', the discovery also leads to improve conceptual knowledge associated with the possible uses of 'ice', 'snow' or 'steam'.

and enabling their deployment to refer to different ways the pointed entity is, and (3) replay of these two classes of introducing events to reproduce uses therein established. In addition, this deepening of semantic contextualism allows discerning two main types of faces knowledge improvements (triggered for instance by scientific discoveries) can take. Knowledge improvements can lead to enriched or correct conceptual clusters associated with particular uses of terms according to which they point specific ways of being of given entities. Knowledge increases can also take the form of introducing events grounding new uses for terms when unnoticed ways certain entities are along up to this point unexplored points of view are discovered. In consequence, the combination of Putnam's early causal theory of reference and late semantic contextualism provides Putnam's pragmatist theory of knowledge with an enriched grid of analysis for semantic processes<sup>52</sup>. However, the early causal theory of reference is also associated with the process of rigid designation that may require reconsideration in light of commonsense realism and semantic contextualism. The following section is devoted to this issue.

### ***1.2.2. A detour through rigid designation***

To complement the previous section accounting for meaning and reference of terms referring to ways of being of real entities (descriptive terms), some points need to be fully explicated. The exposition proposed above largely assumes that talking about entities being different ways encountered in different contexts is meaningful. This is for instance crucial for claiming that unnoticed ways of being of an already identified entity can be unveiled in new contexts. One could nonetheless wonder to which extent the fact that actual persons mobilize different clusters of conceptual knowledge (describing different ways of being), in function of the context they evolve in, does not imply that they refer to different entities. The problem is particularly acute when it comes to kinds such as water. Are we really entitled to picture language-users as referring to different ways of being of water in different contexts and based on different clusters of meaning? Or should we instead argue that they refer to different entities being a unique way in each case? In the same vein, the previous exposition indirectly argues that language-users in different contexts can nonetheless refer to same ways of being of same entities. Such a possibility of reference stability is involved when affirming that conceptual descriptions associated with a particular use of a term can be enriched or corrected in a new context characterized by the occurrence of a discovery. However, one might consider that this stability of reference is insufficiently explained. What prevents changes in knowledge possessed by actual persons in particular contexts to generate shifts in reference? These questions reflect a general concern with respect to stability of reference under conceptual variations impacting terms' meanings<sup>53</sup>. To be sure, two different aspects of reference stability are interrogated. First, across different uses of a single term, different clusters of conceptual schemes (or of conceptual parts of the term's meaning vector) are mobilized raising the problem of stable reference to the same entity being different ways along different points of view. The question also applies to introducing events grounding new

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<sup>52</sup> Distinctions proposed in this grid of analysis between classes of terms' application and between forms of knowledge increase should not be considered as radical dichotomy. As we have seen, some knowledge improvements can be both corrections (or enrichments) of pre-existing conceptual clusters associated with some terms and introduction of new uses for other terms. In addition, distinguishing in practice between the discovery of an unnoticed property of a way something is and the discovery of an unnoticed way this something is may prove extremely complicated.

<sup>53</sup> In the framework of Putnam's pragmatist theory of knowledge based on commonsense realism, the issue of reference stability is less radical than in internal realism. In the latter, referred to entities are self-identified with conceptual schemes describing them. It becomes therefore highly problematic to defend that reference can be stable under modifications of conceptual schemes because these modifications imply changes in referred to entities themselves. With commonsense realism, this threat to reference stability is defused because referred to entities are not shaped by conceptual schemes actual persons effectively possess. At most, contextually-driven divergences in conceptual schemes can correspond to shift in which mind-independent entities are referred to.

uses for the term, which mobilize new conceptual clusters, to stably refer to the same entity being a newly discovered way. Second, a conceptual cluster associated with a unique use of a term can be modified (corrected or enriched) bringing to the fore the problem of stable reference to the same way an entity is along a given point of view.

In Putnam's early semantic account, this type of issue is addressed through the process of rigid designation. It permits securing the stability of terms' reference independently of knowledge possessed about entities designated by actual persons situated in particular contexts. Determining to which extent this process can be integrated in Putnam's pragmatist theory of knowledge requires further analysis of the way rigid designation operates in Putnam's early causal theory of reference. Initially, rigid designation was employed to qualify a particular semantic relation between singular terms (like proper names) and the entity they designate. In this perspective, a term is a rigid designator when it refers to the same entity in all possible situations (or possible worlds) this entity exists, and never designates anything else (Haukioja 2006, LaPorte 2011). For instance, the name of a person is rigid because it always designates the person with the proper genetic code or the person resulting from the fecundation of the proper egg by the proper sperm (that is to say, the person with the proper essence) in all possible situations this person exists. Rigid designation is particularly useful in connection with introducing or baptismal events. Through an ostensive definition, a name can be given to an actual person or object. In its rigid use, this name then refers to the same person or object according to their essential properties. A description can also be given during an introducing event to single out an actual entity and name it. In its rigid use, the term then always refers to the same entity even in possible situations in which the entity does not satisfy the description. It refers only to this entity, according to its essential properties, and not to other entities that might satisfy the description. This permits rigidly designating many different types of entities such as observable objects or persons, but also more abstract entity through descriptions like 'the ceremonial function of that actual object' or 'the leader of that actual wolf pack' (LaPorte 2011).

However, rigid designation, framed in this way, raises severe issues when deployed about (natural) kinds. In fact, according to the usual definition, a term is a rigid designator when it refers to the same thing in all possible situations (or possible worlds) this thing exists, and never designates anything else. When applied to kinds, this definition becomes problematic (Haukioja 2006, LaPorte 2011). Seen as a rigid designator, a kind term should possess the same extension (set of entities it refers to) in any possible worlds, which is obviously not the case. As exposed in section 2.4 of the previous chapter, Putnam and Kripke adapted the notion of rigid designation as follows: an actual entity is singled out in an introducing event and associated with a term. Then, the term refers to any entity possessing the same essential properties as the actual entity singled out during the introducing event. Under this form, a rigid designator about a kind does not need possessing the same extension in any possible world. This adapted version of rigid designation is then integrated in Putnam's early causal theory of reference. Assuming that the use of a term like 'water' has been grounded during an introducing event in connection with a real entity (a real sample of water), it can be employed by any actual language-user standing in a proper historical-causal relationship with the introducing event to refer to entities similar to the one singled out in the introducing event (entities possessing the same essential properties, that is to say, entities having H<sub>2</sub>O as chemical composition). Thereby, the process of rigid designation plays an important semantic function. It enables language-users hooking their languages to stable points in reality, independently of the knowledge they possess about it in different contexts. This primarily applies

to particulars. Once an actual particular is named in an introducing event, the corresponding name can be employed to refer to the particular in virtue of its essential properties. This is possible in any context in which language-users stand in proper historical-causal relationship with the introducing event. The particular is referred to independently of the fact that it satisfies or not descriptions of it possessed by language-users in these contexts. In particular, relevant essential properties need not to be known. The same also applies to (natural) kinds. Once an entity is indexically singled out and named as an instance of a kind in a baptismal event, language-users standing in proper historical-causal relationship with this event can use the associated kind term to refer to any instances of this kind in any context. These instances are rigidly designated in virtue of possessing the same essential properties as the sample singled out during the introducing event. The kind term refers to them independently of the knowledge language-users, situated in particular contexts, possess about the kind. Essential properties of the kind can be unknown<sup>54</sup>. The indexical component of Putnam's early causal theory of reference is therefore crucial. Rigid uses for particular and kind terms can be introduced without possessing the description of the corresponding essential properties, as long as particulars and kinds are conceived as possessing such properties. This process of rigid designation embedded in Putnam's early causal theory of reference permits solving the problems associated with reference stability. Discoveries bringing to the fore additional knowledge about given entities permits improving or correcting descriptions hosted in conceptual schemes (in conceptual parts of meaning vectors they are composed with) without disrupting reference of the concerned terms. Terms rigidly refer to these entities independently of the more or less correct information recollected in their meanings.

However, this solution cannot be directly imported in Putnam's pragmatist theory of knowledge for two main reasons. First, rigid designation, as deployed in Putnam's early causal theory of reference, relies on essentialism and metaphysical realism according to which entities can be context-independently *identified* with their essential properties. In the same vein, membership to (natural) kinds is also context-insensitive. For instance, the properties 'being water' and 'being H<sub>2</sub>O' are identical independently of contexts and the property 'being water' can be attributed to any entity whose chemical composition is H<sub>2</sub>O whatever the context may be. But such essentialism and metaphysical realism conflict with commonsense realism (as recalled in the section 1.1 of the present chapter). According to the commonsense realist picture of reality, the interpretation and identification of properties are context-sensitive. The identification 'water is H<sub>2</sub>O' is true only in certain contexts leading to a tuning to a very specific point of view along which water is pure H<sub>2</sub>O (this can be seen as an essential way of being). Such identification might hold in the context of theoretical physics or chemistry, in which language-users may tune to points of view along which natural kinds are their essential ways. But, being pure H<sub>2</sub>O does not fix the extension of the kind term 'water' in any contexts. It cannot count as an essential property in the usual sense. Without abandoning the domain of natural sciences, the context of experimental physics or chemistry already provides problematic cases. Therein, samples of liquid containing a sufficient amount of

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<sup>54</sup> As will be discussed in more details in the sections devoted to rational inquiry, certain nominalist arguments may lead to claim that essential properties could never be investigated. These arguments rely on the fact that investigating the properties possessed by a kind of entities requires a principle of inclusion in this kind. The principle of inclusion for a natural kind is provided by the associated essential properties. Accordingly, natural kinds cannot be empirically investigated to discover associated essential properties because it would require knowing what these essential properties are before discovering it. Actual inquirers could at best define nominal kinds by gathering entities in virtue of already known properties they possess. As will be exposed, this problem can be circumvented (Macbeth 1995). Furthermore, these arguments do not directly negate the existence of natural kinds and essential properties and do not forbid treating some indexically singled out entities as possessing unknown essential properties that render them members of a kind. At most, it should be conceded that the decision of treating singled out entities in this manner may be erroneous in some cases. But there is no reason to claim that it is systematically mistaken.



molecules of H<sub>2</sub>O (but also impurities) can be water (water being a particular way along another point of view). Which amount of impurities could be tolerated for the samples to be water itself depends upon further refinements of the context. Water is also many other ways along other points of view, tuned to in function of contextual specificities including the ones occurring in ordinary settings. Moreover, properties such as ‘being composed by a large fraction of H<sub>2</sub>O’ cannot play the role of traditional essential properties either. ‘Being composed by a large fraction of H<sub>2</sub>O’ is a property possessed by any sample of water whatever the context may be. But, it is also possessed by other entities being certain ways along given points of view. Therefore, it cannot be considered as a suitable alternative for preserving the notion of essential property in the usual sense.

Second, the process of rigid designation, as proposed in Putnam’s early causal theory of reference, also conflicts with semantic contextualism (which constitutes the epistemic counterpart of the contextualized nature of reality just recalled). It amounts claiming that terms considered as rigid designator possess only unique and context-independent uses. They refer to whatever possesses the same essence or the same deep structure as entities singled out during introducing events independently of the specificities of associated contexts. Accordingly, although several descriptions of the referents of a term (or more broadly several conceptual clusters embedding contextualized information for situated uses) may be tolerated as approximations, they should be abandoned if corresponding essential properties are discovered (through the settling of context-independent identification between the concerned entity and its essential properties). Description and criteria for assessing extension’s memberships based on essential properties should replace previous approximate and contextualized descriptions<sup>55</sup>. In this view, ‘water’ refers to any liquid entity possessing H<sub>2</sub>O as chemical composition and ‘gold’ to any entity whose atomic number is 79. Once the essential ways of being of water or gold are established, other descriptions of water or gold should at best be kept as mere approximations. These conclusions cannot be admitted in Putnam’s pragmatist theory of knowledge. As already exposed in the previous section, semantic contextualism indicates that terms can have a plurality of legitimate uses (according to which they refer to different ways entities are along different points of view) and can be associated with several conceptual clusters (describing these ways of being and providing sets of information about each possible use). In general, these conceptual clusters can be gathered in conceptual parts of terms’ meaning vectors (and thus in conceptual schemes they form). Although certain discoveries can lead to the correction of (some of) these conceptual clusters, the latter cannot be reduced to single correct ones because real entities are not unique absolute and context-independent ways. New uses for terms can be added to point additional ways entities are along different points of view, but the possible uses of terms cannot be reduced to single context-independent ones. It is for instance obvious, that adding that the term ‘water’ can refer to water being in a lake (‘let’s jump in the water’) cannot replace previous uses referring, say, to water in a bottle (‘give me some water please’). This is no different when ‘essential’ ways of being (for instance based on chemical or physical properties) are discovered. Although new uses are established through which entities being their essential ways of being can be referred to (in connection with the introduction of new conceptual clusters based on essential properties), they do not exhaust or replace other possible uses (associated conceptual clusters cannot take the place of previously admitted ones). Discovering that the chemical composition of water is H<sub>2</sub>O, or that gold’s atomic number is 79,

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<sup>55</sup> This conclusion overlooks the possible division of linguistic labor. But, in any case, the descriptions and criteria based on essential properties would be considered as the only correct ones while the other previously admitted ones could be seen as nothing else but mere approximations.

does not permit establishing single correct and context-independent uses for the corresponding terms. At most, it provides important constraints on all possible uses (only entities containing a large fraction of H<sub>2</sub>O or of atoms with 79 as atomic numbers can be correctly referred to in employing ‘water’ or ‘gold’). But the plurality of possible uses remains. The context-sensitivity of the reasonableness of deploying given uses in actual contexts persists, and still requires language-users ability of attunement. For example, using ‘water’ to refer to any sample of pure H<sub>2</sub>O might be correct in the framework of theoretical physics or chemistry. However, this use hardly exhausts what can be said with ‘water’ in other contexts. In experimental sciences, ‘water’ is likely to be used to designate particular sample of liquid containing a sufficient amount of H<sub>2</sub>O’s molecules and traces of impurities. A fortiori, learning that the chemical composition of water is H<sub>2</sub>O does not exhaust what is said in the contexts of ordinary life. As already mobilized, one can imagine a context in which some people are eating close to a lake. One of them might say: ‘give me some water please’. Obviously, the property ‘containing a large fraction of H<sub>2</sub>O’ plays a crucial role but do not reflect the integrality of what is referred to (water in the lake or water in the bottle?). Using ‘water’ only according to this property would potentially permit joking, but would amount to an incorrect use and understanding of ‘water’ in this particular context. Therefore, rigid designation cannot be straightforwardly deployed in Putnam’s pragmatist theory of knowledge to address issues of reference stability.

Nevertheless, the definition of rigid designation can be adapted to maintain the valuable insights it brings. Haukioja (2006) proposes a notion of proto-rigidity that might prove suitable. The general idea that rigid designation reflects is that some terms are employed to designate entities beyond what language-users might know about them at a certain time (conceptual descriptions, stereotypes or criteria for correct application they might possess). According to Haukioja, the core aspect of rigid designation can be reconsidered as follows: many terms are used to designate entities that are recognized in virtue of some superficial or manifest properties they possess. The use language-users make of certain of these terms reflects that they have (at least implicitly) awareness that more can be said about the way designated entities are than the characterization based on their manifest superficial properties. Terms employed to designate entities according to some manifest properties, but with the (implicit) awareness that some non-manifest properties crucially condition their correct application, can be said proto-rigid. “An expression is proto-rigid iff (1) its normal application is based on manifest properties, and (2) it has a stable non-manifest criterion of correct application across possible worlds” that is “contingently connected with the superficial properties on the basis of which we recognise” the corresponding entities (Haukioja 2006, 161-162). The fact that non-manifest properties stand in a contingent relation with the superficial ones ensures that some a posteriori discoveries can be made about the pointed entities. On the contrary, the relation between ‘bachelor’ and ‘unmarried man’ is analytic. In consequence, ‘bachelor’ cannot be considered as proto-rigid (at least not in virtue of this property). The notion of proto-rigidity can apply to singular terms designating particulars (e.g. proper names), but also to natural kind terms, and even to non-natural predicates such as color predicates. In addition, language-users can employ “rigidified descriptions” singling out a given actual entity (Haukioja 2006, 163-164).

So conceived, the notion of proto-rigidity permits combining the main functions of rigid designation with semantic contextualism. An initial introducing event permits inaugurating a proto-rigid term that can then be used to refer to a particular way of being of the pointed entity. It is meaningful to consider that non-manifest properties possessed by the entity in all its ways of

being are indexically singled out during such an introducing event. Because they can be attributed to the entity along all possible points of view (and thus in all possible contexts), these properties could be called ‘essential’. But, in contrast with Putnam’s early approach, it is not meaningful to affirm that properties *exhaustively* characterizing what the entity is in any possible context (along all possible points of view) are singled out. Accordingly, non-manifest, fundamental or essential properties indexically singled out during the initial introducing event do not fix what the term refers. They do not imply that the term should possess a unique correct use. Rather, these properties constitute criteria for correct application of the term according to all its possible uses. Thereby, the term can receive new uses at the occasion of new introducing events to point other ways of being of the same entity (ways of being that are characterized, in particular, by the same essential properties). In virtue of indexicality, the constraints imposed by these properties on all the possible uses of the term hold independently of the knowledge language-users may effectively possess about them. Alternatively phrased, essential properties indexically singled out during introducing events act as context-independent constraints (necessary criteria) for the identification of properties: nothing can be categorized as water without having the property of containing a large amount of H<sub>2</sub>O. But essential properties do not count as sufficient conditions. In contrast with Putnam’s early approach based on metaphysical realism, the indexical component at play during introducing events does not permit singling out a set of properties the entity always possess. It does not ground the idea that a context-independent identification of the entity with the way it is (as determined by this set of ‘essential’ properties) can be done and rules out, *de jure*, any other description that contextually situated actual persons may possess. In the framework of Putnam’s pragmatist theory of knowledge there can be no context-independent identification of an entity with a way it is (as determined by certain properties, even essential ones). Such identifications make sense only given a particular point of view that can be tuned to in virtue of the particularities of the context actual persons evolve in.

Accordingly, the idea that essential properties of an entity can be indexically singled out during an introducing event is valid and important, but is associated with restricted consequences (in comparison with what is the case in Putnam’s early causal theory of reference). What is singled out is not an absolute and context independent way of being. At most, there is an indexical reaching of properties that are possessed by the entity in all its possible ways of being. First, this permits conceiving an essential point of view along which the entity can be said being an essential way (along which the entity can be identified with its essential properties). Only this entity can be this essential way. For instance, only water can be pure H<sub>2</sub>O. But water is pure H<sub>2</sub>O only along the associated essential point of view. It is many other ways along other points of view. Therefore, the uses of a given term do not reduce to the one through which the corresponding entity is referred to as being its essential way. Rather, this essential use of the term adds to the other possible uses. The associated conceptual description (if known) constitutes a new cluster to be integrated in the whole conceptual part of the meaning vector of the term. But, this ‘essential’ conceptual description does not exhaust the content of the conceptual part of the meaning vector<sup>56</sup>. Second, this indexical mechanism permits considering descriptive terms as proto-rigid designators whose uses are constrained by fundamental or essential properties possessed by all their possible referents (independently of the knowledge language-users may possess about these properties). This

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<sup>56</sup> It may also be worth-mentioning that the present discussion indicates that the admission, in Putnam’s pragmatist theory of knowledge, of the contextualized nature of reality and of the context-sensitivity of terms’ uses does not prevents recognizing the existence of essential ways of being that could possibly be empirically investigated.

supports the idea that descriptive terms stably refer to same entities, though always to particular ways they are along given points of view to which language-users tune in particular contexts of speaking. Essential properties are indexically singled out during introducing events grounding the different uses of terms. Once an initial introducing event inaugurates a term and grounds its first use, the further applications of the term in new contexts (under the form of new introducing events or of replay of anterior ones) are constrained by the initially singled out essential properties. Whatever may be the knowledge possessed by language-users situated in particular contexts, no application of the term can be correct unless it refers to something possessing the adequate essential properties. Thereby, language-users can refer to new ways of being of the same entity through new uses that are grounded in introducing events and that comply with previously indexically reached constraints. Discoveries leading to such introducing events can thus be considered as knowledge enrichments at the occasion of which additional clusters are added in conceptual part of term's meaning vector and provide (possibly approximate or false) descriptions of the discovered ways the pointed entity can be. In sum, through proto-rigid designation, ways of being referred to according to the various uses of terms can be understood as ways of being of the same entities: entities possessing certain 'essential' properties (indexically singled out during relevant introducing events) in any contexts (or even better, along any possible point of view).

As just exposed, proto-rigid designation supports stability of reference of descriptive terms to same entities being different ways along different points of view (actual persons can tune to in different contexts). In virtue of the indexical component of introducing events, this stability holds independently of the knowledge possessed by language-users evolving in particular contexts. However, a second issue remains. The possibility of stable reference of terms to same ways of being of the same entities, even when language-users are situated in different contexts, is not yet explained. As a corollary, this possibility conditions the meaningfulness of talking about replay of introducing events when new contexts of terms' application are not identical to the contexts of introducing events. For someone denying that there can be identical contexts at all (for instance in claiming that different times or places are sufficient to make contexts different), the meaningfulness of the very idea of replay of introducing event would be at stake (terms' application could be only new introducing events). With respect to this problem, indexicality and rigid designation can also be of great help, if approached the right way. As already said, Putnam's pragmatist theory of knowledge opposes the early causal theory of reference by denying that absolute and context-independent ways of being are indexically singled out during introducing events. At most, certain properties that are possessed by entities in any contexts are indexically reached. But this does not forbid indexically reaching particular ways entities are along given points of view (tuned to in function of the contextual specificities accompanying introducing events). These ways corresponds to certain sets of properties entities possess along the tuned to points of view. Crucially, entities and sets of properties can be identified, but definitely not in a context-independent way. The identifications are valid only in contexts whose features lead to tune to the adequate points of view. Entities always are these ways along these points of view. Provided such ways of being of entities are indexically singled out during introducing events, language-users situated in new contexts of speaking can apply terms according to uses that are grounded in any introducing events they stand in proper historical-causal (and information-carrying) relationship with. Terms are thus associated with several possible rigid uses according to which they refer to entities being specific ways, as singled out during relevant introducing events (independently of knowledge language-users may effectively possess about these ways of being). Thereby, rigid designation somehow becomes context-sensitive. In function of the specificities of the actual

context of speaking, language-users need to deploy their ability of attunement (based on terms' meanings and features of the actual context) to select unique uses per terms among the various possible ones (uses according to which terms can be reasonably applied in the actual context). Language-users tune to particular points of view with respect to referred to entities. They employ terms to refer to the ways entities are along these selected points of view. This process may be labeled 'contextualized rigid designation'. Through contextualized rigid designation, language-users can deploy a term in one of its possible uses to refer to what have been indexically singled out during the corresponding introducing event (a particular way of being of the pointed entity determined by a given set of properties)<sup>57</sup>.

The idea of contextualized rigid designation may be further clarified by insisting on decisive distinctions with respect to context-sensitivity. Selections of terms' uses (that is to say, tunings to points of view, along which language-users talk about entities) are context-sensitive and depend upon knowledge effectively possessed in particular contexts. Contrastively, what entities are along certain points of view is not context-sensitive. Ways entities are along given points of view is fixed by nature alone and is independent of knowledge possessed by language-users situated in differently featured contexts. This even refines the understanding of the claim that, according to Putnam's pragmatist theory of knowledge, reality is contextualized and mind-independent. It may be confusing to argue that what there is in reality is context-dependent. More clearly, one could say that there is context-sensitivity in reality because there is context-sensitivity in tunings to or selections of points of view. Reality is what it is mind-independently, but is also always along particular points of view. Therefore, tunings or selections of points of view are indispensable and context-sensitivity is irreducible. Nevertheless, the notions of context (whose features include language-users' interests and practices) and of point of view can and must be distinguished. Features of contexts contribute or lead to tunings to points of view. Consequently, nothing prevents achieving identical tunings to same points of view in different contexts. Language-users can thus deploy the same rigid use of a term even when situated in different contexts. Rigid designation is contextualized because the selection of one among the possible rigid uses (the tuning to a particular point of view to talk about an entity) is indispensable and mobilizes features of the context. But differences in contexts of speaking do not necessarily imply differences in tunings to points of view or in selections of terms' uses. Language-users situated in different contexts can (rigidly) refer to same ways of being of same entities (independently of the knowledge they possess about these ways of being in their particular contexts). In turn, this process of contextualized rigid designation permits understanding that certain discoveries can be considered as knowledge improvements, which correct previously possessed conceptions of the way an entity is along a particular point of view. During introducing events, (descriptive) terms are rigidly hooked to particular ways entities are along certain points of view. Descriptive terms (conceived as contextualized rigid designators) thus possess multiple rigid uses referring to various ways corresponding entities are along given points of view, independently of the descriptions of these ways that are possibly recollected in

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<sup>57</sup> It is worth-mentioning that the account proposed here possesses many similarities with Sankey's own discussion of stability of reference (Sankey 1994, chapters 2 and 5, 2008b, chapter 4). Sankey points several limitations of purely causal theories of reference and proposes adapting them to do justice to the crucial role played by minimal descriptions about pointed entities (for instance, further specifications of designated kinds). Sankey calls his approach 'causal descriptivism'. Although this descriptive aspect may not be fully developed, the present account does not prevent recognizing the role of minimal descriptions of referred to entities. As already mentioned, minimal conceptual content such as syntactic and semantic markers may well be mobilized during introducing events. In addition, background knowledge available in actual contexts of speaking has been recognized as crucial for attunements through which specific uses of terms are selected. Nonetheless, the present approach departs from Sankey's in allowing for plurality of uses for same terms according to which they refer to same entities being different ways along different points of view. Sankey's semantic account only allows that same terms, when used in different contexts, either refer to same entities (seemingly being unique ways) or designate different entities (instances of different kinds).

conceptual clusters of conceptual parts of associated meaning vectors. These descriptions can thus be seen as more or less correct information about indexically singled out (and rigidly referred to) ways of being of given entities. The rigid character of term's uses is not disrupted by modifications of associated conceptual clusters. It is therefore consistent to claim that some discoveries can lead to the improvement of possessed knowledge about stably referred to ways of being of given entities.

To summarize, the process of rigid designation, admitted in Putnam's early causal theory of reference on the background of essentialism and metaphysical realism, can be adapted for integration in Putnam's pragmatist theory of knowledge. The notions of proto-rigid designation and contextualized rigid designation can be delineated. They permit better understanding the context-sensitive semantic relations standing between languages and mind-independent reality. Proto-rigid designation supports the idea that terms refer to various ways of being of same entities. Contextualized rigid designation enables same ways of being of same entities to be referred to by terms deployed in different contexts. The combination of these two aspects of rigid designation provides, in addition, a refinement of the idea of knowledge increase. Correcting or improving the description of a way a given entity is constitutes a first form of knowledge growth. But, establishing alternative descriptions of other ways the same entity is along other points of view also counts as full-fledged knowledge improvement. Better describing reality is thus not just about improving or correcting descriptions of what reality is along a given point of view. It is also about enriching the diversity of descriptions by enlarging the points of view along which reality is approached. Nonetheless, these clarifications do not exhaust what needs being exposed with respect to the semantic layer of Putnam's pragmatist theory of knowledge. In fact, describing reality is only a particular function of languages. But languages possess many other functions in our lives with, notably, the role they play in evaluative matters.

### ***1.2.3. Meaning and evaluative terms***

The two previous sections detailed the semantic account Putnam's pragmatist theory of knowledge proposes concerning the way languages are employed to talk about and describe reality. However, one might wonder about the manner evaluative (normative, moral or ethical) terms such as 'good', 'wrong', 'desirable', 'reasonable' or even 'rationally acceptable' should be accounted for<sup>58</sup>. In this respect, it might be tempting to believe that descriptive semantics (as described above) exhausts meaningfulness. Such a temptation parallels and is even maybe reinforced by the admission of the fact-value dichotomy. To the extent that it is considered that only factual matters can be objective and cognitive, it seems natural to argue that, to be meaningful, terms should refer to or correspond to some matter of facts. But, in light of the analysis of Putnam's philosophical trajectory proposed in the previous chapter (notably in sections 3.3 and section 4), this temptation should be resisted. It permits only unsatisfying accounts leading to antinomical dead-ends. As we have seen, Putnam rejects the idea that evaluative terms refer or correspond to mysterious platonistic 'super-natural' entities (against inflationary ontological views). He also denies that they can be adequately reduced to non-evaluative notions, as attempted with, for instance, utilitarianism (against deflationary reductionist ontological views). Furthermore, evaluative notions are important in our lives and cannot be merely considered as non-cognitive and abandoned (against deflationary eliminativist ontological views). In addition, the misled character of the fact-value dichotomy and of the idea that descriptive semantics is sufficient to account for

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<sup>58</sup> This interrogation may also apply to logical or mathematical terms.

meaningfulness of any terms can be evidenced in considering ‘thick evaluative terms’ (Putnam 1981, 138, 1990d, 166, 2002c, 26 and 35-36, 2012b [2011], 292). In fact, terms like ‘elated’, ‘inconsiderate’, ‘brave’, ‘simple’ or ‘coherent’ constitutes counterexamples to the fact-value dichotomy and to the universalization of descriptive semantics. Although they surely refer to and describe ways persons, actions or theories can be, what they mean cannot be exhausted by this descriptive aspect. Ways of being these terms describe are also value-loaded. They are intimately meshed with evaluative judgments (Putnam 2002c, 35-36 and 61-62). As Putnam argues in different places, thick terms cannot be disentangled in a cognitive descriptive component and a non-cognitive evaluative part (Putnam 2002c, 34-38, 2012b [2011], 292-298). Thick terms thereby evidence that “*some* valuing[s] [some evaluative judgments], in fact, some ethical valuing[s], *are* descriptions” and that some descriptions are value-judgments (Putnam 2004, 74). In consequence, unless one is ready to claim that terms such as ‘simple’ or ‘brave’ are non-cognitive and meaningless, it should be recognized that facts and values do not constitute radically dichotomized categories, and that descriptive semantics does not exhaust meaningfulness.

Accordingly, although enabling actual persons to refer to and describe ways of being of real entities should be recognized as a highly valuable function of languages, it is neither the only one nor a primary one to which other functions should be reducible. In particular, evaluative functions of languages – through which actual persons judge, praise, blame and express moral, ethical or normative commitments – deserve a specific treatment, emancipated from the descriptive requirement of reference to matter of facts. Notably, thick descriptions such as ‘cruel’, ‘simple’ or ‘inconsiderate’ cannot be understood independently of “a particular evaluative outlook.” They are “made available by a moral [or evaluative] point of view” (Putnam 2004, 69 and 73). Therefore, the semantic functioning of evaluative terms needs to be understood from within the specificities of actual persons’ evaluative, moral and ethical lives. Broadly speaking, evaluative terms can be seen as always applying (but not referring) to some matter of facts, and as reflecting actual persons’ commitments (or judgments) about what should be the case beyond or independently of what is actually the case. While understanding a notion like wrongness might be problematic when taken in isolation, a sentence like ‘murder is wrong’ can be seen as expressing the claim that murder should not be the case. Evaluative terms are thus used to claim that certain ways reality is (e.g. without a murder) should remain so, that some ways reality is (e.g. with a murder) should be different (e.g. without this murder). They can also be employed to affirm that a way reality can be (e.g. without a murder) should be instead of another way reality can be (e.g. with a murder). One should not be surprised by the fact that such a preliminary account of the way evaluative terms behave mobilizes evaluative notions (for instance: ‘should or should not be’). This is not only unavoidable, but also legitimate. Once the idea that descriptive semantics exhausts meaningfulness and the fact-value dichotomy are abandoned, it can be recognized that evaluative terms does not have to be grounded in non-evaluative elements. Again, evaluative terms have to be understood from within the evaluative life, in which evaluative notions are already available. They do not have to be reconstructed from outside.

This being recalled, a more precise account of the face the meaning of evaluative terms may take can be provided. Importantly, the meaning of evaluative terms cannot be equated with general abstract conceptions that would delineate their signification independently of what they might apply to. Evaluative terms are not associated with algorithmic criteria permitting universal and context-independent judgments (Putnam 2004, 4). Remobilizing the general semantic scheme exposed with respect to descriptive terms, the meaning of evaluative terms should be understood

as formed by history of their prior uses. This history provides knowledge competent language-users (here actual persons living their evaluative lives) possess before applying evaluative terms in actual contexts of speaking. In consequence, accounting for the meaning of evaluative terms requires elucidating what it is to use such terms. As Putnam makes clear, uses of evaluative terms (evaluative judgments they express) should always be seen as embedded in the task of solving practical problems arising in situated contexts (see for instance: Putnam 2004, 28-29 and 71-72). Evaluative judgments expressed by evaluative terms are always established about specific matter of facts in situated problematic circumstances. In light of the picture of reality proposed in Putnam's pragmatist theory of knowledge, this means that evaluative terms are always deployed about, and on the background of, specific situations in which given entities (including persons, actions, events, traits of character, etc.) are particular ways along (contextually tuned to) points of view. This contextualized aspect permits insisting on the role general principles may play with respect to the meaning of evaluative terms. It is obvious that the situated judgments of actual persons can be guided by general principles (for instance Habermas' ethics of communication or Kant's categorical imperative). However, such principles cannot algorithmically determine evaluative judgments alone. In addition to the reasons already detailed by Putnam and exposed in section 4.3, a purely semantic argument can be brought to the fore. General principles guiding evaluative judgments cannot algorithmically exhaust what it means to judge or to use evaluative terms because actual persons' ability of attunement is irreducibly involved through the fact that evaluative judgments (uses of evaluative terms) cannot be disconnected from the practical problem they apply to. In compliance with the general contextualized nature of reality, there is no absolute way entities to be evaluated and surrounding problematic situation are. Any evaluative judgment implies tuning to a given sets of points of view along which entities involved in the practical problem are particular ways. In the abstract, these entities can be conceived being many different ways. Therefore, actual persons' ability of attunement is indispensable to select and share one of these possibilities, and then to deploy situated evaluative judgments through the use of evaluative terms<sup>59</sup>. Once actual persons are attuned to specific ways of being of the entity to be evaluated and of the surrounding practical situation, they can emit evaluative judgments expressing their commitments about what should be, or should not be (with all the nuances evaluative judgments can reflect, such as condemning, praising, blaming, rationally accepting, etc.).

Furthermore, this account of the use of evaluative terms indicates that an evaluative term can admit an extreme diversity of uses. Each time a new practical problem is at stake, evaluative terms receive an original use. New practical problems include problems in different settings with or without different entities to be evaluated, but also consideration of same entities and situations along new points of view. Thereby, even thick terms embed plural evaluative components because they can refer to many different ways of being along different points of view. As it is the case for descriptive terms, the meaning of evaluative terms thus embeds knowledge about plurality of uses (that can include general principles that have guided these uses in the past). Nevertheless, descriptive and evaluative terms remain radically different. As exposed in preceding sections, semantic externalism and indexicality ensures that something determinate is pointed through the uses of descriptive terms. Although referred to ways of being of real entities can be different when considered along indefinitely many points of view, each use of descriptive terms designates a determinate way something is along a particular point of view. Through the distinction between

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<sup>59</sup> This also applies to thick terms. There can be many different ways of being simple, elated or cruel along different points of view.



points of view and contexts (whose features lead to specific tuning to such points of view), the determinate and mind-independent nature of ways of being of reality is preserved. Ways of being can be (contextually) rigidly designated. This understanding cannot be mobilized to answer the question of what evaluative terms mean. These terms apply to real ways of being, but they do not refer to them. According to Putnam, evaluative terms are better understood as “indeterminate concepts” (Putnam 2012 [2005], 573-578). Putnam borrows this notion from Kant’s account of aesthetic experience. He extends it to moral and religious issues, as well as to evaluative judgments that are indispensable in science (associated with thick concepts such as ‘simple’, ‘coherent’ or ‘plausible’). In this line of thought, providing a determinate description of something that has been judged good is not the same as describing what ‘good’ means or what goodness is. Considered as indeterminate concepts, the purpose of evaluative terms is “less to *finish* a discussion or answer a determinate question than to further provoke both thought and imagination and to raise an “unbounded” number of further questions.” Their meaning can be understood as possessing an open-ended content, a “content in which imagination and understanding cooperate under the leadership of imagination” (Putnam 2012 [2005], 575)<sup>60</sup>.

This important distinction between descriptive and evaluative terms being elucidated, additional similarities and differences between both may be worth-mentioning. First, evaluative terms are also inaugurated at the occasion of introducing events, although the latter can be considered as less crucial because no indexical mechanism is at stake. Nevertheless, each deployment of an evaluative term to reflect an evaluation of a new entity, a new way of being of an entity or an entity in a new practical problem, can be seen as a new introducing event at the occasion of which a new use is grounded. Second, the idea of replay of introducing events to reproduce past uses can also be propagated to the topic of evaluative terms. Straightforwardly, the past use of an evaluative term may be reproduced when language-users recall in a discussion a past judgment as conducted in its associated contexts. More subtly, the distinction between contexts and points of view they lead to tune to permits conceiving that a practical situation in which an evaluative judgment as been established can occur again in a different context. Through contextualized rigid designation, the judged situation could be referred to as the same as the past one (same ways of being along same points of view) and the past judgment (the use as introduced in the past context) could be reproduced. Finally, one can wonder whether language-users’ ability of attunement can be involved more directly in the deployment of evaluative terms than with the indirect role it plays with respect to the designation of entities to judge and of surrounding practical problems. In this respect, the functioning of evaluative and descriptive terms diverges again. Once the specificities of the practical problem are elucidated (attunements about the ways of being of involved entities), language-users are not confronted with an extended plurality of possible uses of evaluative terms. Either a precise past judgement is reproduced because the practical problem is identical to a previous one, or a new judgment is established, grounding a new use for the associated evaluative term. In this last case, the reasonableness of the original application of the concerned evaluative term in a new context of speaking (the new practical problem) can hardly be properly described (at least not exhaustively) as a question of attunement between language-users. Rather (or in addition), it seems to involve the reasonableness of the

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<sup>60</sup> Putnam seems to consider observation concepts as indeterminate (Putnam 2012 [2005], 557). With Dewey, he argues that we constantly create new observation concepts in science as well as in ordinary life, thereby instituting new kinds of data. Although this may indicate that Putnam consider descriptive terms as also provided with indeterminate contents, it seems more suitable to understand Putnam as claiming that the concept of observation is indeterminate and that the face observations can take is neither fixed nor pre-given, but is rather constantly susceptible of enrichment.

associated evaluative judgment. This raises the question of truth and objectivity in evaluative domains that is discussed in the following sections.

### 1.3. Truth and objectivity

As discussed in detail in section 4.3 of preceding chapter, commonsense realism opposes to the idea of truth understood as a unique substantive property of correspondence standing between knowledge claims and reality composed by a fixed and pre-given totality of mind-independent objects and their properties. This approach of truth, tightly associated with metaphysical realism, raises two major issues. First, truth is conceived as a unique property relating claims and reality independently of the context of utterance. Second, truth is understood *only* along the idea of correspondence to mind-independent matter of facts. According to Putnam, this amounts to a misleading extrapolation of the descriptivist pattern advocating that only descriptions of mind-independent matter of facts are capable of truth and objectivity. By contrast, the account of truth admitted Putnam's pragmatist theory of knowledge based on commonsense realism integrates context-sensitivity and is not restricted to the descriptivist pattern. Truth is therein conceived based on the Tarskian scheme that indicates that understanding a knowledge claim is also understanding what it means for this claim to be true. Actual persons' understanding of sentences highly depends on knowledge claims and on contexts of utterance. In fact, there is no general and universal picture of what it means to understand a statement. The face of claims' understanding irreducibly depends upon the particular activities actual persons engage in when using their languages (describing reality, doing mathematics, morally evaluating some actions or events, but also rationally assessing some theories, etc.). Consequently, although Tarski's disquotational scheme counts as a general tool to approach the notion of truth, a proper analysis of the latter cannot be conducted independently of contexts in which knowledge claims are emitted or established.

Before turning to such a situated analysis, another general point can be brought to the fore. In any context, the notion of truth seems intimately connected with the possibility of mistake, that is to say, with fallibilism. In some cases, a given claim actual persons may have rationally accepted in virtue of some particular reasons can nonetheless be later reconsidered as wrong. This type of experienced failures is crucial for it indicates that there is more to say about truth than just rational acceptability. Against deflationary accounts (which include verificationist views that restrict rational acceptability to perceptual verification), truth does not reduce to rational acceptability in Putnam's pragmatist theory of knowledge. This distinction permits making an important point concerning the topics of truth and objectivity. Claiming that certain statements are capable of truth (and analyzing the face truth takes for them) should not be confused with arguing that these statements can be objectively assessed. The fact that statements are capable of truth does not guarantee that they can be the object of an objective process of rational acceptance. One can easily imagine that true statements may be admitted by pure luck or for wrong reasons. The difference between doing justice to the possibility of truth for given claims and doing justice to the possibility for an objective pursuit of truth is not always perfectly explicated in Putnam's writings. For instance, Putnam urges us to stop equating "objectivity with *description*" and with the idea of correspondence with objects, to instead recognize that there are "many sorts of statements – bona fide statements, ones amenable to such terms as "correct," "incorrect," "true," "false," "warranted," and "unwarranted" – that are not descriptions, but that are under rational control, governed by standards appropriate to their particular functions and contexts" (Putnam 2002c, 33). This

quotation may suggest an identification of the topics of truth and objectivity. However, what Putnam has in mind can also be decomposed in, on the one hand, a claim in favor of the recognition that not only descriptions are capable of truth, and, on the other hand, the consequent affirmation that rationally accepting with objectivity is not something restricted to descriptive domains. Putnam's treatment of the notion of truth in internal realism (according to which standards of rational acceptability give content to truth) could lead to believe that Putnam does not distinguish the issues of truth and of objective pursuit of truth. Nevertheless, truth is recognized as a non-epistemic notion in commonsense realism (Putnam 2012c [2011], 77, 2013c, 221). Thereby, there are clearly, on one side, statements that are true or not (whatever this may mean in precise contexts), and, on the other side, actual persons deploying (in these precise contexts) standards of rational acceptability to pursue truth with objectivity. Objectivity and truth can be considered as separate, though connected, topics. Once the notion truth is meaningfully settled in a given domain, objectivity of rational admission also becomes a meaningful issue because there is something to objectively pursue.

The discussion of the notions of truth and objectivity proposed in following sections complies with the remarks made just above. It first considers the issue of truth as occurring in the framework of two important activities in which languages are involved: describing and evaluating. Then, it focuses on the question of objectivity and objective pursuit of truth.

### ***1.3.1. Truth and descriptive claims***

As exposed in the previous paragraphs, the notion of truth cannot be elucidated beyond the abstract Tarskian scheme unless one focuses on the particular activities language-users are engaged in when emitting specific knowledge claims. A first important type of activity that can be considered is the one of talking about and describing reality. Recalling the semantic approach integrated in commonsense realism permits elucidating what it means to understand a descriptive statement. If fact, language-users are provided with world-involving abilities that enable them to directly reach reality (through perception and conception), and thus to refer to real entities. Descriptive statements can be understood as describing ways reality or real entities can be. Understanding a descriptive statement can thereby be seen as conceiving reality or real entities to be a particular way. In mobilizing Tarski's disquotational scheme, the general aspect of truth for descriptive claims can then be elucidated. Understanding that a given descriptive statement is true amounts conceiving a way reality is if the statement is true. Alternatively put, understanding that a descriptive statement is true mobilizes a relation of correspondence between the way reality is and the way it is described to be by the statement. In the particular domain of descriptive activities, the idea of truth as correspondence with reality is meaningful.

Furthermore, two broad types of descriptive statements can be distinguished. First, it can be part of the understanding of certain statements that, if they are true, they can be verified (at least, in sufficiently good epistemic conditions). In such cases, truth is not recognition transcendent. Verification reaches truth. It is for instance part of the understanding of 'there are chairs in this room' that, if true, someone being in the room can verify that there are some chairs. In such cases, the knowledge claim describes ways of being of reality that can be apperceived and consequently judged true. The relation of correspondence with reality that forms the truth of the concerned statement can be apperceptively ascertained<sup>61</sup>. This first type of descriptive statements

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<sup>61</sup> This possibility of recognizing that a descriptive claim is true relies on successful apperception through which actual persons directly

for which truth is not recognition transcendent is crucial for properly accounting for truth in descriptive domains. It permits introducing the role of fallibilism. In fact, one can imagine actual persons rationally accepting a descriptive statement whose truth is not recognition transcendent, but then realizing that it is not verified and thereby that it is false. For example, I may judge reasonable the claim that there is a chair in my office for there was one last time I left. Nothing prevents I enter in my office and realize that the chair is missing (maybe someone borrowed it). Such experiences of failure of rational acceptability are crucial for they indicate that (descriptive) truth outruns rational acceptability of descriptive statements. They confirm the idea that reality referred to and described is not shaped by rationally accepted statements (as already established through the commonsense approach of reality; see the whole section 4 of the previous chapter). Reality resists actual persons' rationally accepted conceptions when they are false. When accounting for (descriptive) truth through situated analysis of the activities language-users engage in, fallibilism permits doing justice to the idea of truth as correspondence between descriptive statements and matter of facts of *mind-independent* reality.

Second, there can be descriptive statements whose truth is recognition transcendent. In general, ways reality is if a given descriptive sentence is true can be conceived independently of actual persons' ability at verifying the claim. In many cases, actual persons' ability at conceiving ways reality can be outruns their ability at verifying it is so (remember the example of 'there are no intelligent extraterrestrials in the universe'). Therefore, it is consistent to consider statements whose understanding does not involve verification. In such recognition transcendent case, what it means for reality if a given descriptive claim is true cannot be accessed otherwise than by conceiving it and expressing it through the adequate terms. The understanding of the associated descriptive statements does not include that they could be verified. But, such an understanding is still an understanding of ways reality is, if statements are true. In commonsense realism, reality can be directly accessed through correct conception. In the case of true conceptions or descriptions, ways reality is described being and ways it effectively is are identical. Consequently, truth of descriptive statements can be conceived as a relation of correspondence with reality even when it is recognition transcendent. Moreover, there is no ontological gap between experienced reality through veridical apperception and reality only correctly conceived. The same mind-independent reality is reached in both cases. The possibility of mistake about rational acceptance can thus be propagated to statements whose truth is recognition transcendent. It is meaningful to conceive truth of descriptive statements as correspondence with mind-independent reality independently of the possibility for statements to be verified (against verificationism) or rationally accepted (against deflationism).

Nevertheless, this account of truth for descriptive claims as correspondence with mind-independent reality cannot be equated with a return to metaphysical realism and its conception of truth as a unique property of correspondence with a ready-made and fixed totality of objects and their properties. First, truth cannot be conceived as correspondence with such a pre-given metaphysical reality in the framework of Putnam's pragmatist theory of knowledge. As extensively exposed, there are no absolute, unique and context-independent ways real entities are. Reality and real entities can be nothing but many different ways along various points of view. And semantic contextualism echoes this aspect of mind-independent reality. It stipulates that the understanding

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experience genuine aspects of reality. This does not forbid that actual persons might believe they genuinely apperceive something while hallucinating. The fact that truth is sometimes not recognition transcendent does not mean that judgments about claims' verification are infallible.

of descriptive claims irreducibly mobilizes actual persons' ability of attunement to permit tunings to certain points of view along which real entities referred to are specific ways. The ability of attunement, and, consequently, the associated tunings to points of view, depend upon the specificities of actual persons and of the context they are situated. Accordingly, there can be no truth-valuation of descriptive statements independently of contexts of speaking associated with particular tunings to given points of view. As Putnam indicates, the truth-evaluable content of descriptive claims is context-sensitive, as are the processes of interpretation and identification of properties. Claiming that a given entity is water (uttering 'this is water') cannot be said true or false independently of contexts of speaking characterized by language-users interests and practices. Identifying being water and being  $H_2O$  (claiming 'water is  $H_2O$ ') may be true or false depending on the contexts. This knowledge claim can receive different understandings in function of contexts of speaking.

Second, Putnam's pragmatist theory of knowledge also opposes to the conception of truth as a unique property, even when restricted to descriptive domains. In fact, the understanding of descriptive claims, and of what it means for reality if they are true, can itself be multiform. As already recalled just above, it part of the understanding of certain knowledge claims that the fact they are true can be verified. In other cases, truth is recognition transcendent. Understanding what it means to be true for statements like 'the chair is made of wood and stands on the floor' or 'there are no intelligent extraterrestrials in the universe' is different. The former claim is true or false in virtue of correspondence with matter of facts that can be apperceived. The latter, contrastively, is true or false by correspondence with ways of being of reality that cannot be accessed otherwise than by conception. Although in both cases a relation of correspondence stands with reality, the face this relation takes is different (recognition transcendent or not). Nevertheless, one could still defend the idea that truth takes in both cases the same face of correspondence with mind-independent reality. But recognition transcendence or verifiability of descriptive claims is neither the only nor the most decisive phenomenon leading to oppose to the view of truth as a unique (or uniform) property. In addition, one can notice that from claims to claims, the various possible uses of terms they include enter differently in their understanding. Different sets of possible terms' uses can be mobilized in function of the types of claim. Thereby, what it means for descriptive claims about certain entities to be true can vary in function of the sets of uses of the associated terms that are mobilized. Different sets of ways of being of concerned entities can be mobilized in the truth as correspondence of descriptive statements. For instance, certain descriptive statements can be understood as involving only single or few possible uses of the terms they embed. The claim is then uttered with its composing terms that refer only to specific ways designated entities are along particular points of view. 'Some water is in the lake' express a claim asserted only about certain ways of being of water through certain uses of 'water'. 'Being in the lake' and 'being some water' are claimed identical only for specific ways water is along given points of view. The same holds for claims like 'water is colorless and thirsty-quenching' although larger sets of points of view may be targeted. With this type of descriptive statements, a particular form of truth as correspondence is at stake. When understanding what it means for mind-independent reality if these statements are true, only ways concerned entities are along restricted sets of points of view are at stake. Alternatively put, if true, these statements are true only in contexts leading language-users to tune to these restricted sets of points of view. But, the understanding of descriptive statements can also sometimes mobilize terms along all their possible uses. This is the case when fundamental or 'essential' properties are considered. 'Water is something containing a large fraction of  $H_2O$ ' can be understood as asserted for all the possible uses of 'water', referring to ways water is along any

possible points of view. Consequently, truth as correspondence takes, for this type of statements involving ‘essential’ properties, a different form that involves ways things are along all possible points of view. If true, these statements are true in any contexts independently of tunings to particular points of view. Finally, certain statements may also describe essential ways entities are along their particular essential points of view (for instance, ‘water is pure H<sub>2</sub>O’). What it means for reality if such claims are true concerns, on one side, only a very specific way concerned entities are along their ‘essential’ point of view. However, on the other side, ways all other entities are along all possible points of view are also mobilized. It is part of the understanding of claims describing essential ways of being of given entities that only concerned entities can be these ways, while any other entity cannot. Therefore, truth of claims about essential ways of being can be seen as a complex relation of correspondence with ways the designated entities are along their specific essential points of view, as well as with ways any other entities are along all possible points of view (ways that cannot be the same as described essential ways of being).

In sum, what truth of descriptive claims comes to cannot be accounted for in a trans-contextual manner as a unique substantive property of correspondence with mind-independent reality. A relation of correspondence is involved each time a descriptive claim is true, but it cannot in general be thought of as holding independently of contexts leading actual persons’ to tune to particular points of view. In addition, the precise form this relation of correspondence takes itself depends on the specificities of asserted descriptive claims. This conclusion can be reconsidered in the broader context of the present exposition of the notion of truth in Putnam’s pragmatist theory of knowledge. Once it is recognized that, even within descriptive domains, truth cannot be understood as a unique substantive property taking a single and context-independent form, it may appear less problematic to admit that the face of truth can radically differ when it comes to knowledge claims that are not descriptive.

### **1.3.2. Truth in evaluative domains**

Putnam makes clear that the notion of truth cannot be reduced to the one of correspondence. For instance, he indicates that some logical or mathematical statements can be (fallibly) judged as conceptually true for “it is impossible to make (relevant) sense of the *assertion* of its negation” (Putnam 2004, 60-62). In the same line of thought, Putnam’s analysis of evaluative issues shows that truth of evaluative judgments (which include ethical or moral as well as methodological judgments) can hardly be properly accounted for in a framework restricted to the descriptivist scheme of truth as correspondence with real entities (Putnam 2002c, 2004). In this respect, a large part of Putnam’s rationale relies on demonstrating that certain terms and notions – to which it seems indispensable to grant capacity of truth and objectivity (pragmatist maxim) – do not fit the correspondentist approach. This is for instance the case of thick ethical terms such as ‘elated’, ‘brave’ or ‘inconsiderate’. To the extent it is recognized that there are matter of facts about social and interpersonal relationships, the possibility of objectivity and truth for such terms seems crucial (Putnam 1981, 137-141). As already exposed, these terms do describe. And, considered along this descriptive aspect, the fact that they are true or not involves the idea correspondence. Because actual persons are able to conceive value-loaded ways things can be, they can also conceive value-loaded matter of facts that would be the case if descriptive claims including thick concepts are true. A relation of correspondence between these claims and mind-independent reality can thus be

mobilized<sup>62</sup>. However, value-loaded ways of being such a relation of correspondence mobilizes are very different from ways of being of, say, water or chairs. They are *value-loaded* ways of being that are intimately connected with actual persons' evaluative judgments and commitments. The truth of sentences embedding thick ethical terms thereby encompasses not only truth of descriptions, but also truth of evaluations or value-judgments. The same holds for epistemic or methodological principles like 'coherence', 'simplicity' or 'plausibility'. They are indispensable in the processes of rational admission of scientific theories. For Putnam, they are also thick concepts. The truth of sentences containing them therefore includes the truth of evaluative judgments affirming that discourses or theories should be certain ways to be reasonable or rationally acceptable (Putnam 1981, 135-137). More broadly, one can also mention statements embedding 'thin' ethical term, such as 'murder is wrong'. The fact that they are capable of truth and objectivity appears crucial in our lives.

Nevertheless, truth of evaluative judgments expressed through evaluative terms (like 'wrong') or through evaluative parts of thick terms (such as 'simple' or inconsiderate') cannot be approached by following the model of truth as correspondence. According to Putnam (Putnam 2004, 15-32), truth of evaluative judgments can neither be accounted for as correspondence with mysterious super-natural entities (against inflationary ontological views) nor be reduced to the truth of non-evaluative statements (against deflationary reductionist ontological views). Arrived at this step, the admission of the fact-value dichotomy may lead to argue that, all things considered, evaluative judgments are not capable of truth and objectivity. This dichotomy traces a sharp separation between descriptions of matter of facts and judgments about values or non-factual elements. Only the former are objective and capable of truth and can belong to our first-grade conceptual system. Accordingly, every claim that cannot be seen as a description of facts (as corresponding to real entities) cannot pretend to truth or falsity. They therefore have to be rejected in second-grade conceptual systems. Applied to thick terms, the fact-value dichotomy would amount *either* claiming that someone can be truly described as being, say, elated (that a theory can truly be said simple), but that the associated evaluative connotation can be isolated, and reflects only a subjective judgment, *or* affirming that claims embedding thick terms are not capable of truth and objectivity. In the same vein, explicitly evaluative claims such as 'murder is wrong' would be classified as value judgements, and discarded as non-objective. But, for Putnam, the evaluative and descriptive components of thick terms cannot be disentangled (Putnam 1981, 203-204, 2012b [2011], 298). And in virtue of the pragmatist maxim, it would be wrong to follow the fact-value dichotomy, as well as the universalization of the correspondentist scheme of truth as correspondence, to conclude that claims containing thin or thick evaluative terms are mere subjective affirmations. According to Putnam, the reasoning should operate the other way around. In fact, Putnam can be understood as offering a transcendental argument against the fact-value dichotomy and the associated belief that truth reduces to correspondence with entities of mind-independent reality. The fact that evaluative judgments are capable of truth and of objectivity can be seen as a condition of possibility for the objectivity of so-called first-grade conceptual systems like physics<sup>63</sup>, for recognizing interpersonal and social relationships as genuine matter of facts<sup>64</sup>, as

<sup>62</sup> As a side remark, the notion of mind-independence does not mean that no mind should be involved in the described matter of facts. Rather, it means that matter of facts (including potentially human beings and their mind) are what they are independently of being conceived so by actual persons.

<sup>63</sup> Any criticism addressed to the possibility of truth and objectivity for value-judgments also applies to epistemic principles. Claiming that contrarily to facts, values are not available to any human senses also impacts epistemic values (Putnam 2012b [2011], 291). Arguing that value-judgments are "ontologically queer" because, contrarily to physical facts, they "do have a built-in orientation toward action" also applies to methodological judgments about epistemic principles (Putnam 1981, 210-211). In sum, any assumption that evaluative

well as for moral or ethical life to be meaningful. In consequence, the fact-value dichotomy should be rejected and the view of truth as correspondence should not be universalized. Although not (only) describing, evaluative claims or judgments (as well as other sorts of statements like those of logics or mathematics) can be “bona fide statements “as fully governed by norms of truth and validity as any other statements”” (Putnam 2012 [2004], 112). This means that it may be required to sometimes conceive truth without truth-makers.

The previous discussion brings to the fore the fact that truth for evaluative claims or judgments should not be, from the beginning and by principle, approached through the lenses of correspondence with real entities. In turn, a proper analysis of truth in evaluative domains can be conducted from within. The general method for approaching truth, which has already been deployed to reconstruct truth as correspondence in the case of descriptive claims, can now be deployed in the framework of evaluative questions. Tarski’s disquotational scheme indicates that understanding an evaluative statement is also understanding what it means for this statement to be true. The analysis of the understanding of evaluative statements can be initiated based on Putnam’s example bearing on a person liking or disliking a given flavor for ice-creams and uttering, for instance, ‘I like vanilla’ (Putnam 1981, 152-155). At first glance, it may be argued that what the person means is to report her subjective reaction to a set of objective facts associated with an objective taste (for instance, bio-chemical interactions between food and a person’s body). So understood, the statement ‘I like vanilla’ could hardly be conceived as capable of truth and objectivity. A more sophisticated approach Putnam favors is to say that the person experiences something, say, pleasant (and not just a neutral and objective taste). Anybody having the same non-neutral experience would commit to the same value-judgment. However, this non-neutral experience cannot be seen as the truth maker of the evaluative claim. There is more in the understanding of ‘I like vanilla’ than a mere report of an experience. The statement also expresses that, for the person, this experience should be the case again in the future (or should be the case instead of another one, say, instead of the experience of eating a chocolate ice-cream). What ‘I like vanilla’ means, if true, is that certain set of things or events should be the case. In this precise case, the sentence means that eating vanilla ice-creams should be the case in the future (for the concerned person). Instead of being the truth-maker of the claim, having a pleasant experience is rather a very good reason for the person to hold ‘I like vanilla’ is true. For this type of statements, truth is everything but recognition transcendent. Non-neutral experiences render truth so much recognizable that the fact that they are not truth-makers of such evaluative statements about matter of taste (or that they do not exhaust what is said by them) risks being occulted.

To shed some light on this issue, other evaluative statements such as ‘poetry is better than pushpin’ can be considered (see Putnam’s discussion of this example in: Putnam 1981, chapters 7 and 9). It is possible that someone had, at a given time, a more pleasant experience with pushpin than with poetry and thus committed to the claim ‘pushpin is better than poetry’. But growing up, the person may learn to appreciate poetry up to the point she has a more pleasant experience with poetry than with pushpin. She could then say: ‘I was wrong, poetry is better than pushpin’. As for ‘I

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judgments cannot be objective and susceptible of truth (or worse, that they are cognitively meaningful) propagates to epistemic values and consequently to scientific theories themselves (Putnam 1981, 128, 2002b, 15, 2012b [2011], 297, Putnam 2013h, 240). Consequently, it is necessary to make room for the possibility objectivity and truth at the level of non-descriptive (evaluative) claims to be in position of defending the objectivity of scientific descriptions of matter of facts.

<sup>64</sup> Treating thick ethical concepts as deprived from truth and objectivity would amount to the rather artificial claim that no matter of facts can associated with claims such as ‘john is elated’ or ‘john is inconsiderate’. Their evaluative component cannot be discarded as subjective without impacting their entangled descriptive component.



like vanilla', 'poetry is better than pushpin' should not be understood as the mere report of experiences, which would then count as truth-makers. Its understanding includes the idea that, if true, doing poetry should be the case instead of doing pushpin. Contrastively to 'I like vanilla', this statement also embeds a pretention to generality. If it is true, doing poetry instead of doing pushpin is something that should be the case for anybody (at least for any normally constituted adult). As a direct consequence, non-neutral experiences are less efficient indicators of truth in the case of 'poetry is better than pushpin'. This illustration fruitfully repositions non-neutral experiences as (fallible) reasons for believing an evaluative claim is true. This point may become even clearer when considering the evaluative claim: 'murder is wrong'. It is extremely important in our lives for 'murder is wrong' to be objectively true, whatever might be the associated experience particular persons have in contact of murders. If someone has a pleasant experience in seeing or perpetrating a murder, we would not thereby admit that 'murder is right' is an objectively correct judgment. Rather, we would say that this person is crazy and fails living in our moral world. The fact that non-neutral experiences can in some cases be indicators of the truth of evaluative judgments is important for the question of the possibility of pursuing their truth with objectivity, which is discussed in the following section. For the present purposes, the important conclusion is that non-neutral experiences are in no case truth-makers for evaluative claims.

Furthermore, this conclusion should not be understood as arguing that non-neutral experiences are not *the adequate* truth-makers of evaluative claims. Rather, the discussion just above introduces the idea that evaluative claims cannot have truth-makers because they do not describe matter of facts that are the case if they are true. Functioning and understanding of evaluative statements (and thus of their truth, in virtue of Tarski's scheme) cannot be equated with the ones of descriptive claims. Understanding an evaluative sentence is not conceiving a way real entities can be, to which the sentence could correspond. To be sure, evaluative terms apply to ways of being of real entities when deployed in connection with descriptive terms to form evaluative statements<sup>65</sup>. But understanding these statements amounts conceiving that concerned ways of being of real entities (when considered in the framework of a problematic situation) should or should not be the case (independently of what may actually be the case). No relation of correspondence can be settled based on this type of understanding. In consequence, understanding what it means if an evaluative statement is true does not fit the correspondentist approach of truth. As made clear in the first paragraphs of this section, this does not mean evaluative statements are not capable of truth. Following Tarskian insights, what it means if a given evaluative claim is true is that the evaluated ways of being *should* or *should not* be the case, beyond (or independently of) what is actually the case. Evaluative claims function as (positive as well as negative) criticizing of what is actually the case, or as comparative assessments between what is the case and what could be the case or between several different ways reality could be (murder should not be the case, a world without hunger is better than a world with starving people, ...).

In addition, the absence of the ideas of truth-makers and of correspondence with mind-independent reality could encourage claiming that there is no truth in evaluative domains beyond situated reasons actual persons can have to admit certain evaluative statements. In the previous section, the role of fallibilism about this question of the distinction between truth and reasons to believe a claim is true has been highlighted with respect to descriptive matters. Although it may be counterintuitive to admit the same distinction in the present case of evaluations (at least it opposes

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<sup>65</sup> In the case of thick terms, ways of being are described and evaluated at the same time.

to the traditional tendency of equating truth with correspondence), fallibilism can be recognized as playing a similar function. Mistakes and progresses are also possible in evaluative domains (Putnam 2004, 110). The possibility of mistaken judgments about pushpin and poetry has already been exposed. One can also mention Putnam remarks about the renouncement to “macho” ethics and about the associated revision of evaluative beliefs concerning the superiority of virtues such as courage or manly prowess by comparison with the ability at “siding with the victims of plunder and conquest, with the poor and downtrodden” (Putnam 2004, 28-29). These experiences of the possibility for failures in rational admission of evaluative claims permit complementing the general face truth takes in evaluative issues. They indicate that there is more in truth of evaluative claims than their contextualized rational admission. Putnam concedes that it is a specific feature of evaluative claims (by comparison with descriptive claims of scientific theories) that their rational acceptance is extremely context-sensitive, which renders disagreement more common than consensus. But he argues that this is not a defect, but rather the unavoidable and legitimate corollary of the fact that evaluative debates are instances of practical reasoning focusing on particular practical problems (Putnam 2004, 30 and 75-76). In addition, he insists on the fact that this contextualized aspect of rational acceptability does not mean that truth reduces to what is rationally admitted in particular contexts. Here lies the crucial importance of fallibilism Putnam stresses by following Dewey. Whatever may be the context-sensitivity of procedures of rational acceptance of claims, “there is still a difference, an all-important difference, between *thinking* that a claim (...) is a warranted claim and its actually *being* warranted” (Putnam 2004, 119). In opening conceptual room for such distinction, fallibilism with respect to evaluative claims ensures that truth outruns rational acceptability in evaluative domains, as it does when it comes to descriptive matters.

Compared to the intuitiveness of the picture of truth as correspondence that applies to descriptive claims, one might consider that the present discussion of truth for evaluative statements remains insufficiently clarified. Nevertheless, important points have been brought to the fore. When considered from within evaluative activities, evaluative judgments can be considered as capable of truth. This conclusion does not rely on the fact that they describe some objects, entities or experiences. Rather, it is grounded in actual persons’ ability to distinguish between what is valued and what is valuable, or between what is desired and what is desirable. The fact that there can be truth about evaluation emerges from the recognizing that actual persons can criticize their valuing (established evaluative judgments, possibly through non-neutral experiences). While admitted valuing about flavors or the like can be taken at face value (associated non-neutral experiences need not being questioned), what is admitted as valuable and what is really so cannot be straightforwardly equated when it comes to deeper ethical, moral or methodological questions. In sum, descriptive and evaluative claims reflect different types of cognitive activity functioning on distinct modes. They therefore answer different faces of truth. To the extent that the truth of descriptive claims arises from the possibility of conceiving a difference between what is the case and what is (rationally) believed to be the case, the truth of evaluative claims can legitimately emerge from the possibility of thinking a distinction between what is valuable beyond what may be (rationally) valued.

Once this crucial distinction between what is true and what is believed to be true (what is rationally accepted) is secured in descriptive domains as well as in evaluative ones, one can wonder about the possibility for pursuing truth as efficiently as possible – that is to say, for admitting claims that come as close as possible to truth. This question bears upon the topic of objectivity that is explored in next section.

### ***1.3.3. Pursuing truth: the question of objectivity***

The two previous sections made clear that, in Putnam's pragmatist theory of knowledge, descriptive as well as evaluative claims (among others) are capable of truth, although the face truth takes in each domain is different. Accordingly, it is meaningful for actual persons to try approaching truth as close as possible and to criticize the way they convince themselves that a given claim deserved to be believed true. This amounts wondering: how truth (whatever the face it takes in particular domains) can be pursued in an objective way? Insights from Putnam's philosophical trajectory allow conducting a refined discussion of this issue of objectivity. To being with, a general comment can be made. On one side, the term 'objectivity' itself embeds a connection with the notion of objects. On the other side, it can be seen as contrasting, through the couple objective-subjective, the ideas of having good reasons for believing something and of merely following subjective whim. The fact that this second important contrast is so tightly associated with the notion of objects reflects the traditional admission of the fact-value dichotomy and of the universal scope of the correspondentist scheme of truth. In this traditional framework, only descriptions, which can correspond to objects and properties of mind-independent reality, are capable of objectivity. Once it is recognized, with Putnam, that the fact-value dichotomy and the universalization of the correspondentist approach of truth are misled, the important contrast forming the core of the idea of objectivity can be released from any absolute requirement of correspondence with objects. Instead of focusing on objects, the starting point for the following discussion is: claims can be said objective when there are good reasons to believe they are true.

The question of objectivity thereby demands elucidating what it means to be a good reason to believe a given claim is true. As already exposed, truth is not always recognition transcendent. It is for instance part of the understanding of certain claims that, if they are true, they can be verified. For example, if the description 'there is a chair in this room' is true, then one can perceptually verified that there is a chair in this room. This perceptual verification is a good reason to consider that 'there is a chair in this room' is true. In addition, the presence of the chair in the room is, in this descriptive case, the truth-maker of the sentence. Similarly, apperceptive experiences can, in some cases, be good reasons for believing that an evaluative commitment or judgment is true. For instance, a person having pleasant (non-neutral) experiences when eating vanilla ice-creams has very good reasons to claim 'I like vanilla ice-creams'. However, non-neutral experiences are not truth-makers of such evaluative statements (as detailed in the previous section). Be this as it may, the important point here is that, in both previous illustrations, objectivity is reached through verification based on apperceptive experience. Admittedly, in the case of the evaluative claim about ice-creams, it is only objectivity relative to someone in particular having a pleasant experience, but it is objectivity nonetheless. Anybody having the same experience would be entitled to admit the same evaluative commitment (Putnam 1981, 152). Furthermore, recognition of truth is not exclusively a matter of experience. There can be some statements whose truth is not recognition transcendent although it is not experience that provides good reasons for believing them true. Take for instance the sentence 'murder is wrong'. That it is true seems above questioning. But, while a pleasant or unpleasant experience might constitute a valid justification for statements about liking or disliking a flavor, it is hardly enough when it comes to claims like 'murder is wrong'. Having a pleasant experience in front of murders would reveal bad instincts or aggressive impulses hardly vindicating any value judgment. Instead of being an objective indication that 'murder is good' is true, the considered pleasant experience about murders could even lead to objectively hold 'this person is crazy and fails living in our moral world' as a true evaluative judgment. The same could

be told about the truth of prescriptions such as ‘I have to do something when confronted with a suffering human being’. Having a pleasant experience in front of someone suffering is not a good reason to hold that there is no obligation to do something. In these two last examples, truth of considered claims is recognizable, but not in virtue of verification based on (non-neutral) experiences. Rather, their truth is something that is acknowledged by any genuine moral person. In sum, certain statements whose truth is not recognition transcendent can be objectively admitted as true in virtue of apperceptive verification in experience or of fundamental acknowledgment<sup>66</sup>.

Nevertheless, the truth of many other statements is recognition transcendent. One can for instance mention claims such as ‘there are no intelligent extraterrestrials in the universe’, as well as ethical debates about abortion with statements such as ‘abortion is right’ or ‘abortion is wrong’ (Putnam 1999, 54-59, 2004, 75-76). The truth of such statements cannot be said straightforwardly recognizable. Reasons to objectively admit them cannot reduce to apperceptive experiences or acknowledgements. Rather, assessments of their reasonableness or their rational acceptability have to be conducted. Such assessments about the reasonableness of knowledge claims (in particular descriptive and evaluative statements) can be guided by general principles. It can also be mediated by the inclusion of concerned claims into broader discourses in which they connect with statements whose truth is not recognition transcendent. But importantly, such assessments of reasonableness or rational acceptability cannot take the form of algorithmic reasoning that would permit reaching deductive certainty. It is one of the main strengths of Putnam’s internalist period to clearly establish this point, in particular with respect to claims included in descriptive theories, such as the one provided by physics. On the contrary, assessments of the reasonableness of believing given claims (descriptive statements as well as evaluative judgments) whose truth is recognition transcendent – assessments of their rational acceptability – require judgment. More precisely, processes of assessments have to be considered as evaluative judgments of reasonableness or rational acceptability. They are evaluative judgment because they express that claims should or should not be admitted (that it is better to admit than to reject them). This conclusion should by no means be understood as implying that, thereby, the endorsement of claims whose truth is recognition transcendent is not capable of objectivity. As the previous section makes clear, evaluative judgments are capable of truth. This holds as well when they concern the value of some entities or ways of being, as when they bear upon the rational acceptability of descriptive or evaluative claims. Arguably, being capable of truth is not the same as being objective. Capacity to truth is nonetheless the condition of possibility for meaningfully talk about objectivity. Evaluative

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<sup>66</sup> It is worth-mentioning that apperceptive verifications as well as acknowledgements are fallible. This meets the topic of skepticism Putnam engages with in different writings (see for instance: Putnam 2012 [2005], 2012 [2006], 2012a [1998]). Skeptical arguments do not undermine the reasonableness of admitting beliefs such as the ones described here. At most they indicate that the statements are not established as true with deductive certainty. But deductive certainty is not the purpose of the objective admission of beliefs. Apperceiving a house is a good reason to claim ‘there is a house in front of me’, but not a deductive proof. The fact that illusion or hallucination is always possible amounts to a rather theoretical question that does not impact beliefs’ assessments, unless reasons are provided in favor of the possible occurrence of a hallucinatory phenomenon. The mere logical possibility of illusion is not enough to impede the process of objective admission of beliefs such as ‘there is a house in front of me’. When apperceiving a house, no real choice exists about admitting ‘there is a house in front of me’ as true. In the case of evaluative judgments about murders or about obligation to act when someone is suffering, as well as when it comes to thick descriptive statements such as ‘this person is suffering’, skepticism takes a dimension that goes beyond theoretical reasoning. Actual persons have to take responsibility for the way they consider such statements. Denying someone’s suffering or the fact that there is an associated obligation to act “would manifest a failure of humanity” (Putnam 2012 [2006], 562). Here more than before, skepticism cannot enter on stage merely in virtue of some logical possibilities. In sum, apperceptive experiences and acknowledgements are reasons to objectively believe in the truth of some claims. Principled skepticism does not undermine this point. Although apperceptive experiences and acknowledgements may be wrong, serious reasons should be provided for doubting. Skeptical arguments provide serious reasons to doubt deductive certainty is achieved through acknowledgements and apperceptive verification. This is crucial in reminding us to keep openness to criticism and revision. However, this does not undermine objectivity reached through verification or acknowledgement, as long as precise reasons are not invoked (such as the discovery that the house was in fact a *trompe l’oeil*).

judgments about the reasonableness of knowledge claims can be true or false. It is thus meaningful to wonder about reasons one could provide to support such judgments and render them objective.

As Putnam makes clear during his internalist period, there is no universal and overarching definition of what it means to be reasonable (see in particular: Putnam 1981). Therefore, objectivity of judgments about the rational acceptability of knowledge claims is not to be found in the settling of universal foundations or principles. The reasonableness of a claim can hardly be evaluated in disconnection from its specificities and from the problem it is involved in. There is no need to try answering questions like ‘Is this ethical claim reasonable with respect to this particular practical problem?’ and ‘Is this descriptive claim reasonable to account for this specific phenomenon?’ in relying on a single formal account of what reasonableness means<sup>67</sup>. In particular, distance needs to be taken as well from rationalism as from empiricism, when they are conceived as overarching doctrines about what rationality and rational acceptability come to (Putnam 2004, 6-7 and 98-100, 2008b, 29-30). What should be admitted as reasonable is not a priori determined by Reason grasping fixed and immutable essences or universal principles. It is neither a posteriori determined in virtue of a privileged mental contact with immutable sense data, from which any rational talk should be reconstructed. Following the pragmatist inspiration he receives from Dewey, Putnam rejects the idea, haunting both rationalism and empiricism, that knowledge could be grounded in fixed and immutable foundations<sup>68</sup>. Nevertheless, as long as fallibilism and anti-foundationalism are kept in mind, judgments about knowledge claims’ reasonableness can be informed and guided by some principles that constrain the form evaluated claims should take as well as by apperceptively verifiable sentences that connect with them<sup>69</sup>. These elements won’t provide deductive certainty, but objectively assessing the rational acceptability of knowledge claims is not about reaching deductive certainty. It is about having good reasons to judge in a certain way, reasons that can be constituted by principles and data from observation. For instance, judgments of reasonableness in physics are not guided only by empirical observations but also rely on epistemic principles such as coherence or simplicity (Putnam 1981, 199-200). In the same vein, judgments of reasonableness in ethics can be guided by principles such as Kant’s categorical imperative. Furthermore, the rejection of the fact-value dichotomy indicates that statements describing matter of facts can be connected with evaluations. Thereby, descriptive claims verifiable through apperception may well contribute to judgements of reasonableness concerning evaluative claims.

But here again, one have to resist the temptation of seeking a universal method for assessing the rational acceptability of knowledge claims based on principles and on verification through apperception. Which guiding principles should be admitted? Which observational data should be accounted for? How do principles and observations guide judgments? Under which epistemic conditions can judgments be considered as warranted or legitimate? These questions

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<sup>67</sup> It is important to precise that arguing that reasonableness of knowledge claims cannot be evaluated independently of such particularities (a value-judgment is reasonable given certain ethical concerns; a description is reasonable given particular concerns associated with the features of the practice the description is associated with) does not amount returning to an instrumentalist approach of rationality. In the present line of reasoning, what is susceptible to be judged as rational is not restricted to means-ends connections. Ethical claims in favor of particular ends can themselves be the object of assessment of rational acceptability.

<sup>68</sup> As Putnam writes: “By way of contrast, in Dewey’s view, if rationalism made the mistake of supposing that the most fundamental laws of nature, and hence the form of scientific explanations at least in physics, could be known a priori, still the empiricist belief that the most fundamental experiential objects and their properties (and hence the nature of all empirical “data”) could be known once and for all was a perfectly comparable mistake. (...) *Neither the form of possible explanations nor the form of possible data can be fixed in advance, once and for all*” (Putnam 2008b, 29-30).

<sup>69</sup> Acknowledged claims can also enter in the pool of reasons mobilized in judgments of reasonableness. Sentences such as ‘murder is wrong’ or ‘there is an obligation to act when confronted with someone suffering’ could either be connected with statements to be evaluated or act as guiding principles.

cannot be answered in disconnection from the specificities of the knowledge claims to be evaluated and of the problematic framework they pertain to. Putnam himself indicates in several places that there is no unique precise pattern of what is a good knowledge claim (or a good theory) that fits all instances of rationally acceptable body of knowledge (see for example: Putnam 1994b [1987], 478, 2004, 72 note 2). Accordingly, the assessment of the reasons guiding a particular judgment about the reasonableness of a claim has to be conducted from within the framework in which the claim is considered. This holds for ethical claims (Putnam 2002c, 94-95, 2002b, 20-22), but is also very general, as reflected by the following quotation in which Putnam discusses prescriptions about epistemic conditions:

Even if what I were offering were a definition of truth (and, for a variety of reasons, it isn't), the point that it makes about truth operates within whatever type of language we are talking about; one cannot say what are good or better or worse epistemic conditions in quantum mechanics without using the language of quantum mechanics; one cannot say what are good or better or worse epistemic situations in moral discourse without using moral language; one cannot say what are good or better or worse epistemic situations in commonsense material object discourse without using commonsense material object language. (Putnam 1990c, viii-ix)

This point may even be made clearer in pointing the fact that claiming that certain principles should guide the assessment of a particular knowledge claim is itself an evaluative judgment. To the extent that one seeks evaluating the reasonableness of a claim whose truth is recognition transcendent, questions such as ‘should this guiding principle be admitted for assessing the rational acceptability of the claim?’ cannot be settled externally in reporting that truth has been reached by this mean. Establishing the extent to which a given principle should be followed for assessing rational acceptability is something that has to be considered from within each process of knowledge production. However, the discussion of Putnam’s accounts of truth and objectivity in his internalist period and of evaluative investigations during the commonsense realist phase (sections 3.3, 3.4 and 4.3 of the preceding chapter) shows that progresses can be made with respect to the guiding principles admitted in given processes of knowledge production. The recognition of the superiority of epistemic principles such as coherence, simplicity or empirical adequacy over “The Method of Authority and The Method of What is Agreeable to Reason” constitutes an instance of such progresses with respect to investigation aiming at proper descriptions of reality (Putnam 2002c, 32). Similarly, the rejection of meritocratic views in ethics and the associated extension of ethical concerns to all human being also counts as a progress that is reflected, notably, in Kant’s Categorical Imperative. The latter is surely an important principle to judge the reasonableness of ethical claims (Putnam 2004, 25). More broadly, judgments of reasonableness about knowledge claims as well as about guiding principles are all guided by general principles about the way we ought to reason. One can for instance mention Habermas’ ethics of discourse as well as principles of reflective transcendence (urging to question pre-established beliefs) and of fallibilism and democracy (with Dewey). All the principles guiding judgments of reasonableness are criticized, learned and discovered in the course of the quest for human cognitive and total flourishing which, from time to time, outcomes in enlightenment at the occasion of which “profound revaluation[s] of our ways of thinking” occur and enrich or improved our abilities for assessing reasonableness (Putnam 2004, 107-109). In sum, in the framework of Putnam’s pragmatist theory of knowledge, pursuing truth with objectivity is not an activity we can conduct with absolute certainty. Rather, it amounts deploying always enriched and improved judgments about the reasonableness of our knowledge claims (notably descriptive and ethical ones). So approached, terms such as ‘reasonable’, ‘rational’ or ‘rationally acceptable’ may be fruitfully considered as indeterminate

concepts whose meaning is not pre-given (they are evaluative concepts, similar, in this respect, to moral or ethical ones). Therefore, Putnam's quotation of Isis Murdoch about the meaning of moral concepts applies for them as well: "We may have to learn the meaning; and since we are human historical individuals the movement of understanding is onward into increasing privacy, in the direction of the ideal limit, and not backwards towards a genesis in the ruling of an impersonal public language" (Putnam 2012 [2005], 576).

Before turning to the elaboration of a general picture of rational inquiry based on Putnam's pragmatist theory of knowledge reconstructed here, one can insist again on Putnam's claim in favor of pragmatic or conceptual pluralism (Putnam 2004, 21-22, 2012 [2004], 111-112, 2013f, 29). As synthesized and extrapolated here, Putnam's positions about realism, meaning, reference, truth and rationality or objectivity clearly indicates that we engage in many different rational activities of knowledge production in which our languages are involved (notably describing and evaluating). All these activities come with their specific functioning (with respect to semantic processes as well as at the level of truth). They all constitute domains in which we can deploy efforts to pursue truth with objectivity, efforts that cannot be genuinely successful unless a pluralistic mindset enables us to do justice to the particularities of each type of cognitive endeavor<sup>70</sup>.

## **2. Rational inquiry in light of Putnam's pragmatist theory of knowledge**

The remaining part of this second chapter will be devoted to the elaboration of a general picture of rational inquiry starting from the elements of Putnam's pragmatist theory of knowledge developed in previous sections. The line of exposition of this elaboration will be largely informed by the structuration of the whole previous section 1, in which successive focuses have been put on the reconsideration of actual persons' cognitive relation to reality (and on the associated acknowledgment of the context-sensitive aspect of mind-independent reality), on the consequences such a reconsideration implies for the topics of meaning and reference, and on the associated views that can be developed about truth and objectivity.

As a preliminary definition, a rational inquiry can be understood as an investigation process conducted by actual persons, guided by an explicit method (a set of methodological principles or rules) and aiming at solving a problematic situation through the production of an original structured discourse (or the improvement of a pre-existing one). Methodological rules or principles indicate how the investigation is to be conducted to deserve the qualification of 'rational'. Methods include for instance "techniques and procedures for carrying out experiments, interpreting data and developing and testing theories" or produced discourses (Ladyman 2002, 267, see also: Nola and Sankey 2007). These produced or improved discourses are structured in the sense of mobilizing terms whose interconnections are precisely established. This definition is meant to include scientific inquiry, without being necessarily exhausted by it. Problematic situations can be extremely diverse: what are the basic constituents of matter at the subatomic level? What type of material should be used to build a plane or a submarine? Are social inequalities wrong? How to

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<sup>70</sup> Although already quoted, this passage from Putnam deserves being recalled: "In place of Ontology (note the capital 'O'), I shall be defending what one might call *pragmatic pluralism*, the recognition that it is no accident that in everyday language we employ many different kinds of discourses, discourses subject to different standards and possessing different sorts of applications, with different logical and grammatical features – different "language games" in Wittgenstein's sense – no accident because it is an illusion that there could be just one sort of language game which could be sufficient for the description of all of reality!" (Putnam 2004, 21-22).

prove a mathematical conjecture? How to cure a given disease? How to solve an economic crisis? How to ensure international or environmental justice? And so on and so forth. As this whole section 2 will attempt to demonstrate, an extreme diversity of questions may be susceptible of rational investigations. Obviously, an exhaustive approach is hardly achievable and would in any case lead far beyond the restricted scope of the present study that, in consequence, remains focused on rational descriptions of reality as well as on rational evaluations (which can bear upon persons, actions, events, matter of facts, but also, importantly, on reasonableness or rational acceptability).

In light of the main features of Putnam's pragmatist theory of knowledge delineated in the previous sections, this preliminary picture can be reformulated and complemented. Solving a problematic situation by producing an original or improved discourse can be understood as settling of an original or improved conceptual scheme, which is composed by interconnected meaning vectors of the terms mobilized in the produced discourse. Therefore, conducting a rational inquiry requires establishing a meaningful conceptual scheme (that for instance refers to real world's objects and their properties). Accordingly, a complete section will discuss the manner semantic mechanisms, mobilized in rational inquiries to settle meaningful conceptual schemes, can be accounted for in Putnam's pragmatist theory of knowledge (section 2.2 below). This discussion will, in particular, deploy the semantic approach detailed in section 1.2 that reconciles Putnam's early causal theory of reference, and its associated process of rigid designation, with the context-sensitivity of mind-independent reality and of languages' use. In addition, solving a problematic situation by producing an original or improved conceptual scheme demands assessing the reasonableness or the rational acceptability of this conceptual scheme. In this regard, the section 2.3 will provide an account of the notion of truth as targeted in rational inquiries and will study the manner this target can be pursued with objectivity. It will mobilize the insights, established in section 1.3, about the manner context-sensitivity impacts the notion of truth, about the fact that evaluative matters are capable of truth and about the analysis of the role of evaluations in the rational admission of knowledge claims.

However, a crucial point needs to be further elucidated before developing these approaches of meaning, reference, truth and objectivity in rational inquiries. As a starting point, it is required to clarify, in light of Putnam's pragmatist theory of knowledge, what may be a legitimate goal for a rational inquiry (in the sense of the content of the conceptual scheme it seeks establishing) as well as the manner such a goal is determined. In this regard, the ideas (elaborated in section 1.1) that reality is irreducibly context-sensitive, and that it can be approached only through situated points of view (to which actual persons can tune in function of the specificities of the contexts they evolve in), are extremely significant. In addition, the claim that meaningfulness, truth and objectivity are not the prerogative of descriptive matters (established in sections 1.2.3, 1.3.2, and 1.3.3) is also important. Drawing on these elements, next section will propose that rational inquiries themselves can be nothing but contextualized processes of knowledge production answering specific problematic situations. In this line of reasoning, the indispensable role of problematic situations (and of relevance with respect to them) in rational inquiries will be highlighted.

## **2.1. Context-sensitivity of rational inquiry: the crucial role of problematic situations**

The fact that problematic situations are indispensable for rational inquiries can be first approached by considering the function they play with respect to the assessments of



reasonableness that lead inquirers to rationally accept specific conceptual schemes. As made clear, such assessments cannot take the form of algorithmic reasoning based on context-independent rules or principles. They are better conceived as judgments of reasonableness (or of rational acceptability) that are objectively established in virtue of given reasons. These reasons, which, following Putnam, may be called standards of rational acceptability, can be of different types. Successful confrontation with independent facts from inquirers' environment constitutes a first important motive to judge conceptual schemes as rationally acceptable<sup>71</sup>. Compliance with methodological rules or principles provides a second strong indication that conceptual schemes should be rationally admitted. Together, these two first types of standards reflect the truth-seeking aspect of rational acceptability. However, in addition to its role for pursuing truth, rational acceptability also embeds requirements of relevance (Putnam 1981, 201-203). Alternatively put, relevance with respect to problematic situations might also count as an important component of judgments about conceptual schemes' reasonableness.

In fact, being convinced that a conceptual scheme integrates only true claims is not sufficient to consider it as rationally acceptable. An enormous amount of claims can be held true, in virtue of belonging to a conceptual scheme satisfying the truth-seeking aspects of rational acceptability. Many ways of being for real entities can be correctly described. When evaluative matters are at stake, it might be possible to assert many different valid claims about ways reality should be. Not all of them deserve being integrated in the conceptual scheme a particular rational inquiry seeks establishing. For instance, that 'cow produce milk' is true but should not be accepted in the framework of an inquiry targeting the elucidation of sub-atomic structure of matter. Rational acceptability qua truth-seeking is not restrictive enough. In addition, "perspicuousness" of produced conceptual schemes have to be mobilized (Putnam 1981, 137). Descriptions of a given situation can be considered as correct and yet be rejected because judged irrelevant. Prolonging an example from Putnam (Putnam 1981, 201-202), in the framework of an inquiry targeting the identification of the privileged places cats like to sleep, sentences like 'the dog is on the mat', 'something is on the mat', 'the cat is on something' or 'something is on something' might all be considered as correct descriptions, but nevertheless be rejected as irrelevant. In sum, to be judged rationally acceptable, conceptual schemes need to integrate only claims that are relevant with respect to problematic situations corresponding inquiries are meant to address.

The importance this aspect of rational acceptability may take in light of Putnam's pragmatist theory of knowledge can be fruitfully highlighted by contrasting it with the possibilities of problem framing available in a metaphysical realist perspective coupled with the fact-value dichotomy and its associated modern instrumental notion of rationality. First, the fact-value dichotomy and the associated modern instrumental notion of rationality stipulate that only the establishment of means belongs to the domain of rational inquiry, while choices and assessments of ends do not (Putnam 1981, 173). Following this conception, problematic situations encountered in 'ordinary' life (such as 'which metal should be chosen for building a certain type of airplane?' or 'how to ensure a just distribution of water?') can be decomposed in two main elements. On the one hand, descriptive knowledge about the elements of mind-independent reality that are involved in problematic situations has to be provided (knowledge about metals, aerodynamics, water, pipes, etc.). The task of scientific or rational inquiries is restricted to the elaboration of this descriptive

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<sup>71</sup> Independent facts can be provided through pre-admitted claims whose truth is not recognition transcendent (acknowledged or apperceptively verified statements).

knowledge. On the other hand, this rationally established knowledge can be used to reach given ends, to solve ordinary life's problematic situations. The manner this rational knowledge is used to fulfill different contingent and situated purposes does not enter the realm of what can be rational. Using this knowledge might be considered as corresponding to 'second-grade' cognitive activities. Accordingly, the possibility for a plurality of legitimate problematic situations addressed in rational inquiries is severely restricted. Second, metaphysical realism radically reinforces this restriction. Its second thesis (which stipulates that mind-independent reality is a unique way along the absolute God's eye point of view) implies that valid descriptive knowledge about mind-independent reality should take the form of a unique true and complete first-grade conceptual scheme (a unique scientific image). If the fact-value dichotomy, the modern instrumental notion of rationality and metaphysical realism were correct, only a unique problematic situation could exist that would guide all rational investigations (it could therefore remain largely implicit): building and improving a unique first-grade conceptual system describing mind-independent reality as it is in itself<sup>72</sup>. In this framework, even if actual persons are confronted with many different problematic situations, rational inquiries ultimately answer a unique implicit goal or problematic situation: establishing the unique true and complete conceptual scheme describing correctly reality as it is in itself. Which parts of this rational knowledge are employed to contribute to a particular 'second-grade' activity is an independent question. Guided by this unique problematic situation, many claims could be automatically privileged or excluded from conceptual schemes of rational inquiries. For instance, mobilization of fundamental or 'essential' properties to describe real entities is likely to be favored. To the extent that a unique true and complete description of reality is pursued, descriptions based on these fundamental properties should replace superficial and ordinary ones. In the same vein, evaluative terms and claims should be rejected.

In this metaphysical realist cum modern instrumental approach, it is at most possible to imagine a pragmatic notion of relevance that would be epistemically thin. During the process of inquiries aiming at establishing new descriptive knowledge about reality, a pragmatic focus on certain entities and their ways of being might be accepted. Some already established aspect might be set aside (without forgetting that the ultimate goal is to provide a unified and complete conceptual scheme). For instance, it could be admissible to argue that, although potentially deserving a place in the first-grade conceptual system, a statement describing the chemical composition of milk can be temporarily excluded from the conceptual scheme of an inquiry attempting at describing sub-atomic structure of matter<sup>73</sup>. In the same vein, only relevant parts of the first-grade conceptual scheme can be employed in second-grade investigations trying to address ordinary life's problematic situations. Relevance would then be associated with a mere pragmatic focus on the specific parts of the broader first-grade conceptual scheme that is rationally accepted in an independent way. For example, when trying to ensure a just distribution of water, parts of the first-grade conceptual scheme talking about quarks need not being mobilized. To summarize, as long as metaphysical realism is admitted, all rational inquiries can be understood as ultimately answering a universal problematic situation (building and improving a unique first-

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<sup>72</sup> It might be worth-mentioning that evaluative issues could be reintroduced in the framework of metaphysical realism in claiming that values correspond to mysterious metaphysical mind-independent entities. This move would however be quite problematic. First, it would amount transforming evaluative issues in descriptive ones, instead of genuinely integrating them. Second, it could be considered as a form of 'rampant Platonism' according to which values should be seen as mind-independent metaphysical entities (Putnam 2002b, 18).

<sup>73</sup> The fact that such a statement about the chemical composition of milk could belong to the first-grade conceptual scheme is far from trivially admissible. For instance, it might be argued that to be considered as first-grade, it should be expressed or reconstructed starting from the entities and properties forming the sub-atomic structure of matter.

grade conceptual system that correctly describes mind-independent reality seen as a fixed totality of objects and their properties). In this perspective, relevance with respect to this whole problematic situation constitutes a rather trivial criterion for judging rational acceptability of conceptual schemes produced during rational inquiries. In principle, any real entity should be accounted for. Fundamental or essential descriptions of these real entities should be privileged and replace other types of approaches. Relevance with respect to problematic situation would take a stronger status when addressing ordinary life's as well as evaluative issues, but such investigations would not count as full-fledged rational inquiries. In the framework of genuine rational inquiries (those targeting the elaboration of the first-grade conceptual scheme), the role of relevance with respect to problematic situations might be neglected or at least left largely implicit.

However, the second thesis of metaphysical realism is not admitted in Putnam's pragmatist theory of knowledge based on commonsense realism. In this framework, there is no absolute way reality is along a God's eye point of view (see section 1.1). On the contrary, reality and real entities are nothing but specific ways along particular points of view. Accordingly, there are no a priori privileged types of ways reality is. The realm of rational inquiry does not have to be restricted to the description of such privileged ways of being. There is no 'metaphysically sanctified' set of entities and properties (De Caro and Macarthur 2012, 18) that would be the privileged (or even, the only legitimate) object of study of rational inquiries. In particular, even essential properties and essential ways of being may be of different types depending of considered entities and contexts. For instance, essential features of persons or living beings may involve genetic properties while microphysical phenomena and properties might be relevant for entities like 'gold', 'water', or 'heat' (Haukioja 2006, 163-165, LaPorte 2011, section 3.3). For Putnam, nature alone does not determine context-independently the type of property that should be privileged when considering essential aspects of given real entities (Putnam 1981, 103, 2002d, 107)<sup>74</sup>. In consequence, it is illusory to believe that what reality is can be established through decontextualized inquiries. There can be no unique and complete first-grade conceptual scheme that would constitute the only legitimate target of rational inquiries and whose relevant parts could count as privileged inputs in second-grade problem-solving processes. In addition, the fact-value dichotomy and the associated modern instrumental notion of rationality are not part of Putnam's pragmatist theory of knowledge (as discussed in particular in sections 1.2.3, 1.3.2, and 1.3.3). The domain of possible application of rational inquiries is not restricted to descriptive matters only. Notably, evaluations can be the object of rational investigations.

Therefore, problematic situations become absolutely indispensable when rational inquiries are considered through the lens of Putnam's pragmatist theory of knowledge. On the one hand, it is not straightforward whether given rational inquiries aim at describing some aspects of reality or at discussing them other perspectives such as evaluative ones. On the other hand, it is not meaningful to claim that rational inquiries bears upon unique and context-independent ways real entities are independently of any further specification. In sum, Putnam's pragmatist theory of knowledge forbids considering that the aspects of reality and real entities that should be studied in rational inquiries, as well as the manner they should be studied (description, evaluation ...), are fixed and pre-given independently of the contextualized specificities of particular rational inquiries, such as

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<sup>74</sup> It might even be possible to associate the same entity with different essential ways of being according to distinct respects (see for instance: Macbeth 1995, 269, Putnam 2002d, 107, LaPorte 2011, section 4.1). This will be discussed in the chapter devoted to the reconstruction of incommensurability based on the account of rational inquiry developed here and based on Putnam's pragmatist theory of knowledge.

the problematic situations they are meant to address. This can be illustrated in considering a rational inquiry confronted with a problematic situation like ‘how to ensure a just distribution of water?’<sup>75</sup>. Reality at stake in this problematic situation is not just reality as conceived in a metaphysical realist perspective, which could, for instance, be described through a scientific account of the different reserves of water. Addressing this problematic situation is not just integrating this scientific knowledge, as an objective input, into a second-grade discussion bearing on the justice of the way these resources are or should be shared. To be sure, knowledge from natural sciences, for instance based on the chemical composition of water, would certainly be recognized as extremely important (to characterize and identify potable water, water that can be used for irrigation ...). However, it could hardly be considered as sufficient. ‘How to ensure a just distribution of water?’ directly reflects genuine aspects of reality that includes obviously stocks of water and relevant chemical features, but also actual persons consuming water, actual persons dying or surviving, and actual persons with their evolving conceptions of what is valuable or not. All these aspects are equally real and mobilize, notably, several ways of being of water (qua entity having a certain chemical composition, qua something that is transported and consumed in many manners ...) as well as of human beings (qua physical bodies, qua economic actors, qua psychological entities ...). In addition, evaluations would also be crucial (for example, judgements about the justice of water providing in a given country or about how water should be shared beyond what is actually the case, etc.). Evaluative elements could not be expelled from a rational inquiry addressing such a problematic situation.

In consequence, problematic situations should be considered as primary conditions of possibility of rational inquiries<sup>76</sup>. To the extent that reality is no absolute way and that no unique and complete first-grade conceptual scheme can be pursued, aspects of reality approached and involved in rational inquiries can be nothing but real entities being given ways along specific sets of points of view actual inquirers are tuned to. A pool of real entities being particular ways along a specific set of points of view forms what may be called a ‘domain of investigation’<sup>77</sup>. Using this vocabulary, there is no pre-given and context-independent domain of investigation rational inquiries focus on. To be meaningfully considered as studying or discussing reality, each rational inquiry has to come with a tuning to a specific domain of investigation – a tuning to a particular set of points of view along which mobilized entities are determined ways. Problematic situations are indispensable for such tuning. Tuning to specific domains of investigation based on problematic situation is a complex process mobilizing several subtle features of Putnam’s pragmatist theory of knowledge that deserves refined delineation.

First, the role of problematic situations cannot be reduced to the fact that they explicitly mention given entities. Intentions of actual inquirers problematic situations reflect – the specific features of rational questions that are considered with respect to involved real entities – are also irreducibly at work. Different domains of investigations are likely to be tuned to when inquirers wants describing the deep structure of something, when they want to elucidate the causes of some

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<sup>75</sup> Regarding the stakes associated with such a problematic situation, I sincerely hope that the associated inquiry does deserve the qualification of rational or scientific.

<sup>76</sup> The irreducible role relevance with respect to problematic situations therefore plays in effective assessments of rational acceptability of conceptual schemes settled during rational inquiries will be further developed in the following.

<sup>77</sup> It might be worth-mentioning that certain restrictions apply to what can belong to a single domain of investigation. Notably, several ways of being of a single entity can be integrated in a unique domain of investigation, but only to the extent entities (or samples of kinds) are not considered as being several ways at the same time. For instance, a domain of investigation can embed some coffee in grains and also some liquid coffee in a cup. A domain of investigation could also integrate a unique sample of water as being successively in bottle and later in a glass. But, a single domain of investigation cannot include the same sample of coffee as being at the same time in grain and a liquid in a cup, or the same sample of water being at the same time in a bottle and in a glass.

phenomena, or when they wonder about properties that may be shared by some or all ways of being of a given entity. For instance, problematic situations such as ‘elucidating the chemical composition of the water flowing in this river’, ‘elucidating the chemical properties water possess in any circumstances’ or ‘elucidating the causes of the fact that water is flowing in this river’ do not lead to tunings to identical domains of investigations. In addition, depending on entities considered and on contexts of inquiry, essential properties and essential ways of being mobilized may be of different types. In the same vein, different domains of investigation may be singled out when inquirers intend to describe a situation or when they try evaluating something occurring in it. Depending on the cases, domains of investigation may reduce to entities explicitly mentioned being certain ways along particular points of view, but they can also include many other entities and points of view (some of them could even be unknown).

Second, problematic situations cannot be conceived as determining tunings to domains of investigation in disconnection with actual inquirers and the particularities of contexts they evolve in. They cannot be reduced to terms associated with their meanings (recollected in conceptual parts of meaning vectors) that would delineate the issue at stake. As such, they would be meaningless, or rather too much meaningful. In fact, Putnam’s pragmatist theory of knowledge indicates that, in general, terms are associated with many different possible uses. They are projected in actual contexts of speaking based on language-users’ ability of attunement. This mechanism of terms’ application cannot operate independently of contextual features such as background knowledge effectively present, real entities being certain ways that are actually encountered, and situated practices inquirers engage in following certain interests. This aspect of context-sensitivity propagates to processes of tunings to domains of investigation. The framing of problematic situations needs to be considered as involving such applications of terms along one or several of their possible uses, which pre-established at the occasion of past introducing events<sup>78</sup>. Real entities being certain ways along particular points of view can be mobilized in the framing of problematic situations only in virtue of inquirers ability of attunement, leading them to employ corresponding terms in adequate uses. Context-sensitive applications of descriptive terms according to specific uses are thus irreducibly at play when hooking rational inquiries to domains of investigation. Together with rational objectives they reflect (various types of descriptions, evaluations, etc., as delineated just above), problematic situations permits tuning rational inquiries to specific domains of investigation in context-sensitively singling out and referring to entities being particular ways along given sets of points of view.

Finally, the point made just above (about the necessity to consider the role of the process of terms’ application in actual contexts of speaking in the manner problematic situations determine tunings to domains of investigation) also permits bringing to the fore the fact that tunings to domains of investigation through problematic situations embed a crucial indexical component. In fact, descriptive terms mobilized in the framing of problematic situations are deployed as rigid designators by actual inquirers who replay past introducing events they stand in historical-causal relationship with, and during which entities being specific ways along particular points of view have been indexically singled out<sup>79</sup>. Here, an important reminder is in order. Rigid designation is contextualized in Putnam’s pragmatist theory of knowledge (see section 1.2.2). There is no trans-contextual rigid reference to entities being unique essential ways in all circumstances. Rather,

<sup>78</sup> New use may also be settled, as will be discussed in more details in the following.

<sup>79</sup> New uses of terms may also be inaugurated. Through original introducing events, new ways of being of entities can be indexically picked out, grounding new uses for corresponding terms.

introducing events come with context-sensitive tunings to particular points of view. They ground reference to specific ways of being of designated entities along tuned to points of view. This point being recalled, it is important to notice that, although contextualized, rigid designation of terms deployed in problematic situations permits indexical tunings to domains of investigation – that is to say, tunings that are independent of knowledge effectively possessed by actual inquirers about these domains. Domains of investigation are tuned to independently of the manner actual inquirers conceive the pools of real entities being particular ways along specific sets of points of view they investigate, describe or evaluate. Accordingly, it becomes possible to consider rational inquiries as investigation's processes that begin with more or less correct accounts of domains of investigation they are indexically tuned to. Conceptual clusters, associated with descriptive terms mobilized in the framing of problematic situations, may host false or approximate descriptions. Actual inquirers may imperfectly assess which additional entities (and sets of points of view along which they are specific ways) pertain to indexically singled out domains of investigation. In sum, problematic situations permits indexical tunings to domains of investigation on which associated rational inquiries are focused<sup>80</sup>. Accordingly, there are correct descriptions of indexically singled out domains of investigation that can be targeted by descriptive inquiries, or that provide the background on which evaluations could be conducted. Conceptual schemes effectively possessed by rational inquirers initiating given investigations can be different from these correct descriptions. In the case of evaluative inquiries, starting with incorrect descriptions of things to be evaluated and their surroundings is highly problematic and requires, when recognized, additional descriptive investigations. Contrastively, the fact that actual inquirers can initiate rational inquiries with approximate, false or incomplete descriptions of tuned to domains of investigation appears as a condition of possibility for descriptive inquiries. The latter would hardly be understandable without the admission of an indexical process of tuning to domains of investigation in virtue of problematic situations. It permits conceiving that a domain of investigation is indexically singled out without being (completely) known or described. Only then it becomes meaningful to claim that investigations can be conducted to improve knowledge and descriptions of this domain of investigation. Only then descriptive inquiries can be conceived as pursuing the settling of true conceptual schemes describing correctly what there is in these domains of investigation. Only then such inquiries can be thought of as more or less successively reaching these goals.

As a side but important remark, the indexical process of tuning to domains of investigation does not induce a return to metaphysical realist absoluteness and its associated God's eye point of view. Rather, it opens an intermediate path between the externalist perspective (or the God's eye point of view) along which things referred to are only one way, and an antirealist retreat to the internalist perspective along which things referred to are shaped by knowledge effectively possessed by actual inquirers. Put in a nutshell, the indexical component of tunings to domains of investigation complies with the first thesis of metaphysical realism (claiming mind-independence of reality and opposition to antirealism or verificationism) without admitting the second component (reducing reality to a fixed and pre-given totality of objects being unique context-independent ways). This intermediate path, opened in Putnam's pragmatist theory of knowledge, permits disconnecting possible completeness of results provided by rational inquiries from alleged

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<sup>80</sup> A subtlety that may prove crucial when discussing incommensurability can be already introduced at this step. The process of indexical tuning to domains of investigation may fail or be incomplete. Actual inquirers may overlook possible uses of the terms they employ to frame problematic situations and rely on ambiguous attunements. Accordingly, a unique framing may hide several problematic situations. Alternatively put, a unique problematic situation may be insufficiently specified and let the door opened for tunings to divergent domains of investigation.

absoluteness. Once a domain of investigation is established, truth can be pursued and completeness of descriptions can be meaningfully conceived. It is not a priori meaningless to imagine that it could be possible to settle a conceptual scheme in which descriptive terms in their different uses are associated with conceptual clusters hosting exhaustive accounts of the properties constituting the ways of being of selected entities along points of view of the tuned to domain of investigation. What cannot be meaningful is the idea of establishing descriptions that would exhaust all that can be meaningfully and rationally said about concerned entities. Putnam already highlighted this point during his internalist period in discussing completeness of physics: “Physics can be ‘complete’ – that is, complete for physical purposes. The completeness physics lacks is a completeness all particular theories, pictures, and discourses lack. For no theory or picture is complete for all purposes” (Putnam 1981, 147). In Putnam’s pragmatist theory of knowledge, the insights achieved through the shift from internal realism to commonsense realism permits further clarifying and refining this claim about physics. In general, terms such as ‘matter’ and ‘force’, or terms pointing particular objects, all possess many different uses associated with many different ways of being of referred to entities. Physics cannot attempt at exhausting what can be rationally said about all these different ways of being. Rather, it is tuned to domains of investigation focused on only certain of them, in virtue of contextual criteria supporting actual inquirers’ ability of attunement (background knowledge, real entities encountered being certain ways, practices motivated by given interests). Physics can be complete given context-sensitive tunings to specific domains of investigation. But the discourse it provides cannot be seen as an absolute conception of reality. In this respect, scientific realism can be disconnected and distinguished from metaphysical realism (Putnam 2012b [2010], 91).

Before turning to the detailed account of rational inquiry Putnam’s pragmatist theory of knowledge permits developing, this preliminary section can be concluded in insisting on the pragmatist inspiration guiding the present study. An extremely important point Putnam’s work brings to the fore is the fact that the notion rational inquiry cannot be properly accounted for in a foundationalist perspective. It cannot be grounded in a way that renders irrelevant the specific features of inquirers understood as actual persons situated in a context. This reflects a general inspiration from pragmatism that progressively infused Putnam’s thinking, in particular with the central idea that actual practices should matter in philosophical accounts of rational inquiry (Putnam 2012a [2010], 2013f). As indicated by Ruth Anna Putnam, the importance Putnam grants to the features of actual inquirers is considerably influenced by pragmatist philosophers like Dewey:

Dewey, as is well known, replaces traditional epistemology, with its search for foundations of knowledge, with what he calls a “theory of inquiry.” Inquiry begins whenever one finds oneself in a problematic situation, and one brings to that situation both “facts” and “values”. In other words, we do not begin with, nor do we seek for, a foundation; we begin where we are. We *can* only begin where we are; any other story is a philosophical fairy tale. (Putnam 2013h, 253)

Dewey rejects the so-called “spectator theory of knowledge” as well as the “quest for certainty” emphasizing “the role of *know-how*, *social practices*, and *human agency*” (Bernstein 2010, x and 9). For Dewey, an inquiry relies not on algorithms but on maxims that require “contextual interpretation” (Putnam 1994b, 172). The general lesson learned from these pragmatist elements is the fact that the different components of a rational inquiry are not freestanding independently of the specificities of actual inquirers and of the particular context of inquiry. Alternatively put, the different components of a rational inquiry cannot be accounted for in a purely algorithmic

approach, which would context-independently determine what they should be. They can be or could have been different. The involvement of practices, judgments and commitments of historically, culturally and socially situated inquirers, as well as of contextually available background knowledge and effectively encountered real entities, is irreducible. Through the careful account of the irreducible role of contextualized problematic situations in the initiation of rational investigations, a first illustration of the relevance of this pragmatist approach is provided. Deprived from situated starting points, rational inquiries are empty. What is targeted in rational inquiries is not pre-given (it is not, for instance, restricted to description). There are no context-independent ways of specifying which real entities (and which of their possible ways of being) should be considered in rational inquiries. Rather, contextualized problematic situations reflect the type of rational activity to be deployed (description, evaluation, etc.) and permits a process of tuning to domains of investigation that highly depends upon contextual particularities (type of rational activity, practices engaged in, background knowledge ...). There is no context-independent knowledge (such as the metaphysical fantasy of a unique and complete first-grade conceptual scheme constituting an absolute description of reality) that actual inquirers could rationally seek in trying to escape their contextual determinations. The notions of knowledge, and of true conceptual schemes to be reached through rational investigations, can be meaningful only when types of rational enterprise are specified, and when context-sensitive tunings to domains of investigations are effective. Once these elements are given, rational inquirers can build original or improved conceptual schemes and assess their reasonableness or rational acceptability. A refined analysis of these aspects can reinforce the relevance of the present pragmatist approach of rational inquiries. As discussed throughout the following pages, processes at stake in – as well as tools available for – conceptual schemes elaboration and assessment also irreducibly embed context-sensitive components.

## **2.2. Meaning and reference: context-sensitivity in the elaboration of conceptual schemes**

In the previous section, it has been explained that the domains of investigation under scrutiny in given rational inquiries are not straightforwardly determined. On the contrary, the specificities of rational inquiries, such as the particular problematic situations they intend to address, are indispensable. They contribute to indexical tunings of rational inquiries to the domains of investigation under study. Once this aspect is understood, it becomes possible to focus on the semantic mechanisms that can be deployed by actual inquirers to effectively elaborate conceptual schemes susceptible to answer problematic situations. Next sections are devoted to the delineation, through the lens Putnam's pragmatist theory of knowledge, of these mechanisms and of the context-sensitivity they embed. To maximize the clarity of the exposition, the discussion is divided in three main phases. First, a deepened exposition of the basic semantic mechanisms that are available to rational inquirers for conceptual schemes' elaboration is proposed. Second, the extent to which such semantic mechanisms permit admitting pluralism about the legitimate contents of elaborated conceptual schemes is explored. Finally, a systematic delineation is proposed of the different loci of context-sensitivity in the semantic layer of rational inquiries and in the accordingly elaborated conceptual schemes.



### **2.2.1. Basic semantic processes of rational inquiries**

On the ground of the account of meaning and reference of Putnam's pragmatist theory of knowledge (exposed in section 1.2), the semantic processes at stake in the elaboration of conceptual schemes of rational inquiries can be delineated. Preliminarily, it is useful to fix the ideas about the units of analysis that are constituted by descriptive and evaluative terms (in compliance with the focus of the present study on descriptive and evaluative inquiries). Descriptive terms in general possess multiple uses, according to which they refer to specific ways of being of designated entities along particular points of view (extensional or external parts of terms' meaning vectors). Uses of descriptive terms are associated with conceptual clusters that can host more or less correct descriptions of the ways of being of referred to entities as well as other information characterizing uses (intensional or conceptual parts of terms' meaning vectors). Descriptions are achieved by ascribing sets of properties to (or identifying sets of properties with) descriptive terms in function of their uses. By contrast, evaluative terms only apply to ways of being of given entities, as involved in situated practical problems. Evaluative terms then express value-judgments or evaluations of these ways of being, as involved in these practical problems. More precisely, evaluative terms are deployed in connection with descriptive terms referring to these ways of being, on the background of descriptions of the surrounding practical problems. Evaluative terms also admit multiple uses. Each application of an evaluative term to distinct ways something is, to distinct things, or in the framework of distinct practical problems, corresponds to a specific use of this term. This being recalled, processes involved in the elaboration of conceptual schemes of rational inquiries can be explored.

For the purpose of our analysis, at least four distinct types of elements can be distinguished. First, elaborating a conceptual scheme in the framework of a given inquiry necessarily mobilizes terms belonging to other previously admitted conceptual schemes. As briefly exposed, rational inquiries can be seen as investigation's processes aiming at settling original or improved conceptual schemes to address particular problematic situations. As such, a rational inquiry cannot be disconnected from the actual persons conducting it and from the context they start from. The formulation of the problematic situation itself (for instance, 'elucidating the deep structure of water' or 'characterizing stars observable in the sky') relies on terms belonging to pre-admitted conceptual schemes<sup>81</sup>. In addition to the problematic situation, the conceptual scheme settled to answer it can never be built integrally from scratch. It is also necessarily embedded in, and borrows some elements from, broader conceptual schemes that have been previously admitted. Putnam himself mentions the necessity to rely on "broad-spectrum" terms like 'thing', 'physical magnitude' and "certain imprecise but useful notions from common language" like 'harder to accelerate' or 'determine' to introduce theoretical terms in physics (Putnam 1975b [1962], 227). These descriptive terms borrowed from pre-established conceptual schemes come with particular conceptual clusters, which constrain their uses and host more or less adequate descriptions of referents (conceptual clusters recollect their meanings). For instance, the term 'star' can be seen as initially belonging to our ordinary conceptual scheme according to which a star is described as 'a shiny object in the sky'. In the same vein, the term 'water' may come with stereotypes like 'colorless,' 'tasteless' and 'thirsty-quenching'. Nevertheless, in virtue of contextualized rigid designation,

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<sup>81</sup> As indicated by Putnam, these conceptual schemes are themselves influenced by the specificities of the contexts they have been admitted in, such as the interests and ethical commitments of a particular culture (Putnam 1981, 201-202). They mobilize pre-existing terms. However, to keep the exposition as clear as possible, the discussion of the pre-admitted elements required for rational inquiry is, unless otherwise specified, restricted to the first order. That is to say that only the background elements directly involved in the various components of the considered inquiry are mentioned, without referring to the way they are themselves grounded.

descriptive terms deployed in particular uses refer to ways given entities are along specific points of view that have been indexically singled out during associated introducing events (with which inquirers stand in historical-causal relationship). When integrated in original conceptual schemes, terms borrowed to pre-established backgrounds are deployed as replays of past introducing events. Similarly, pre-existing evaluative terms can be deployed along past uses to remobilize previously settled value-judgments. Replaying past introducing events of evaluative terms is however not straightforward because it imposes remobilizing in the same move the associated past practical problem (through descriptive terms stably referring in virtue of contextualized rigid designation, as well as through associated descriptions possibly possessed by inquirers).

Second, new terms and their uses can be grounded at the occasion of original introducing events occurring in the framework of the inquiry. New conceptual clusters associated with the uses of these inaugurated terms are then integrated in the conceptual scheme under construction. Notably, the discovery of up to this point unnoticed entities (being given ways along particular points of view) can lead to the introduction of new descriptive terms and their use<sup>82</sup>. As a matter of illustration, one can consider astronomical inquiry in which the term ‘magnitude’ is introduced to characterize stars according to the spectrum of light they emit. In the same vein, an investigation concerning the deep structure of water may also be considered. In a somehow oversimplified view, such an investigation requires introducing terms like ‘hydrogen atom’ or ‘oxygen atom’ in link with conceptual knowledge about the properties such entities possess and about the physical laws they obey. Through introducing events, these entities being specific ways can be indexically attributed to external parts of the meaning vectors of concerned terms, while more or less adequate descriptions of them and information about terms’ uses are recollected in corresponding conceptual parts. In virtue of contextualized rigid designation, new terms with their uses becomes available to stably refer, independently of knowledge effectively gathered in conceptual parts of their meaning vectors, to entities being specific ways singled out during introducing events<sup>83</sup>. Terms referring to unobservable entities being given ways can be introduced by indicating how these entities are involved (e.g. causally or explanatorily) in observable phenomena (information to be then added in conceptual parts of concerned meaning vectors). Furthermore, new evaluative notions may also be introduced during a particular rational inquiry. In this case, new introducing events would ground new evaluative terms with their specific uses, which are tightly connected with entities and surrounding practical problem they serve evaluating (as contextually rigidly referred to by relevant descriptive terms, and as more or less correctly described by material recollected in associated conceptual clusters). At this occasion, inaugurated evaluative terms are associated with conceptual clusters that characterize new uses by detailing the specificities of the new evaluation and hosting descriptions of evaluated entities and of practical problems.

Arrived at this step, it is worth-mentioning that mechanisms delineated up to now do not permit accounting for what occurs during rational inquiries. As already exposed, a rational inquiry aims at settling an original or improved conceptual scheme to answer a particular problematic situation. Merely settling new terms with original conceptual clusters and mobilizing prior terms with unchanged meaning can hardly serve this purpose. Mechanisms already elucidated do not

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<sup>82</sup> Nothing forbids discovering several ways of being of same new entities and thus grounding several uses of same terms. The fact that these ways of being can be meaningfully conceived as ways of being of same entities – and consequently, the fact that the uses can be consistently considered as valid uses of same terms – is ensured in virtue of proto-rigid designation.

<sup>83</sup> This possibility for contextualized rigid designation is crucial for it permits progressive improvements of descriptions and associated information for terms’ uses as detailed below.

permit explaining the possibility for the integration of new terms and new conceptual clusters in conceptual schemes under construction in rational inquiries. Such possibility seems nonetheless indispensable<sup>84</sup>. What could be the interest of introducing new terms if they remain isolated and are not employed to reconsider the manner pre-existing terms can be used (in particular terms entering in the formulation of the problematic situation)? Some mechanisms are missing. The possibility of grounding the uses of new terms through original introducing events does not by itself explain how these new terms and their conceptual clusters can be connected to conceptual schemes whose elaboration is in progress, starting from pre-existing terms borrowed from pre-admitted conceptual schemes without modifying their meanings. The manner these connections can be pictured according to Putnam's pragmatist theory of knowledge is one of the most striking originalities proposed in this study. In fact, they can be established through two general mechanisms that are detailed below. The first, which is not specific to the present approach, consists in the correction or the improvement of pre-established elements of conceptual parts of pre-existing terms' meaning vectors (replacing all or part of pre-admitted conceptual clusters such as, for instance, pre-admitted descriptions). The second, which is far more specific and original, takes the form of the addition of new conceptual clusters to the ones already associated with pre-existing terms (grounding new uses for them).

Let's focus on the first mechanism. Discoveries occurring during a rational inquiry may lead to correct or improved conceptual parts associated with pre-existing terms and their pre-established uses. As mentioned just above, the modification can be based on the introduction of new terms in these conceptual parts. It can also take the form of corrections or improvements mobilizing only pre-existing terms and their uses. As made clear, pre-existing descriptive terms can be deployed according to one of their uses to rigidly designate entities being specific ways indexically singled out during corresponding introducing events. During such replays of introducing events, entities being these ways are stably referred to, independently of conceptual clusters effectively associated with descriptive terms. Therefore, these conceptual clusters can be modified without disrupting reference. For instance, a new description of what is referred to by a term, according to one of its possible uses, can be established in attributing to this term new or different sets of properties. The new description can then be integrated in the associated conceptual cluster, replacing the previously admitted description. In the case of terms that have been introduced based on an ostensive definition only, relevant uses can be improved in complementing the associated conceptual cluster with a newly discovered description<sup>85</sup>. In the same vein, particular uses of evaluative terms can also be corrected or improved. Notably, corrections of possessed descriptions of evaluated entities and-or of surrounding practical problems (in the way described just above concerning descriptive terms) can be propagated in conceptual clusters associated with the concerned uses of evaluative terms. Furthermore, a pre-admitted evaluation (which is nothing but a specific use of an evaluative term) can be reconsidered. To the extent such reconsideration applies to the same entities in the same practical problem (all

<sup>84</sup> This affirmation may have one exception. It seems possible to integrate new evaluative terms in conceptual schemes under construction without modifying the meanings of other pre-existing terms. Notwithstanding the fact that it may be argued that creating new evaluative terms is likely to modify the meanings of other evaluative terms the former relate to, the introduction of new evaluative terms remains an exceptional semantic event. Most of the time, evaluative inquiries seek for evaluations in terms of already recognized notions. Furthermore, the problem persists for descriptive terms, requiring more developments.

<sup>85</sup> It has to be mentioned that this process of correction of conceptual clusters associated with descriptive terms' uses can also apply to new terms introduced during a rational inquiry. Nothing prevents, for instance, noticing the presence of an unknown entity being certain ways without possessing yet adequate descriptions. A new term and its uses could nonetheless be grounded through ostensive definition and made available for subsequent improvements once (better) descriptions are achieved. To avoid weighting down an already complex exposition, this possibility is not explicated and developed in the body of the text. Furthermore, it can be accounted for as a process of correction taking place in a sub-inquiry mobilizing the new term and its use as pre-existing.

involved entities being same ways as before), the use of the evaluative terms is itself modified and the associated conceptual cluster is corrected.

Nonetheless, it is part of the originality of the present account of rational inquiry that correcting conceptual clusters associated with pre-admitted uses of terms is not the only admissible mechanism that results in the modification of pre-existing terms' meanings. In addition, new uses can be grounded for pre-existing terms through original introducing events. It is an important semantic feature of Putnam's pragmatist theory of knowledge (detailed in section 1.2.1) that meanings of terms, understood as knowledge about prior uses, do not impose redeploying these terms as they have been in the past. In general meanings only guide the process of terms' application in actual contexts of speaking. Past uses can be remobilized, but new uses can also be inaugurated in compliance with pre-existing ones. When it comes to descriptive terms, it has been exposed that, according to Putnam's pragmatist theory of knowledge, real entities are never unique absolute ways. Actual inquirers may have already identified and (more or less adequately) described a way a given entity is. But nothing prevents other ways of being of the same entity to be discovered and more or less adequately described. Such discoveries can lead to new introducing events, during which new uses are grounded for pre-existing terms which, in their pre-established uses, refer to other ways of being of same entities. As already exposed, the notion of 'essential' properties (shared by all possible ways of being of entities) and the associated process of proto-rigid designation render meaningful the ideas of several ways of being for same entities as well as of several uses for single terms pointing these different ways of being of same entities. When a new use is added to a given pre-existing term at the occasion of an original introducing event, an up to this point unnoticed way of being of the designated entity is indexically singled out (made available for further reference through contextualized rigid designation). In the same move, more or less correct information about this new use (including available descriptions of the referred to way the entity is) forms a new conceptual cluster that is added in the conceptual part of the meaning vector of the pre-existing term. In consequence, conceptual schemes initiated with pre-existing terms can be enriched with additional parts that are neither mere corrections nor mere complementation (better description of a way of being in adding an unnoticed property) of pre-existing material. Furthermore, such an introduction of new uses for pre-existing terms can also occur with respect to evaluations. As explained in section 1.2.1, each time an evaluative term is deployed in connection with new ways of being of same entities to be evaluated, with new entities being certain ways to be evaluated, and-or with new surrounding practical problem, a new introducing event takes place. The evaluative term thereby receives a new use. Accordingly, a suitable account of the way evaluative terms are mobilized in rational inquiries requires recognizing the possibility of the introduction of new uses for pre-existing terms in compliance with their meanings (knowledge about past uses). This is even more pressing than in the case of descriptive terms. Although rational inquiries about evaluative matters may from time to time directly remobilize past value-judgments conducted in given circumstances (to reconsider them), it is surely in their genes to seek evaluations of new entities in original practical problems under the guidance of past judgments – that is to say, to introduce new uses for pre-existing evaluative terms in compliance with their meanings (seen as histories of past uses).

In sum, four main semantic mechanisms are available to rational inquirers for elaborating original or improved conceptual schemes in order to address specific problematic situations: (1) the borrowing of pre-existing terms, (2) the introduction of new terms, (3) the correction or improvement of conceptual clusters associated with pre-existing terms, and (4) the introduction of

new uses for pre-existing terms. This permits settling a general picture of the manners original or improved conceptual schemes can be constructed. Borrowing terms and their pre-existing uses to pre-admitted conceptual schemes, rational inquirers can begin with a conceptual scheme expressing the problematic situation to be solved and adding some already available relevant material. Such initial conceptual scheme can then be improved and enriched in operating original attributions and identifications of properties (either through reorganization of already available terms and their uses or through introduction of new terms and their uses). In descriptive matters, original properties describing ways real entities are can be attributed to terms referring to these ways of being. In evaluations, new judgments are established in associating descriptive terms pointing entities being certain ways with evaluative terms. These improvements of initial conceptual schemes mobilizing only pre-existing terms and their uses along unmodified meanings can be achieved along two main modalities. First, uses of pre-existing terms, and conceptual clusters associated with them, can be corrected or improved in mobilizing pre-existing terms and their uses and-or newly introduced terms and their uses. As exposed above, contextual rigid designation is mobilized to replay past introducing events of descriptive terms and permit modifying information hosted in concerned conceptual clusters without disrupting reference. In the case of descriptive terms, contextualized rigid designation allows correcting descriptions of referred to ways entities are, while constantly and stably designating them. As we have seen, contextual rigid designation also permits improving or correcting descriptions of entities being particular ways and of surrounding practical problems involved in the establishment of an evaluative judgment. Untouched descriptions of these elements remobilized for reconsidering a past judgment. In both cases, conceptual clusters corresponding to concerned uses of evaluative terms are corrected or improved. To be perfectly general, one can mention that this type of corrections can also apply to thick evaluative terms. For instance, an indexically singled out way of being inconsiderate can be associated with an improved conceptual cluster hosting a corrected description of this way of being inconsiderate. The use of the thick term in its descriptive dimension is thereby corrected. But this is also a correction of the use in its evaluative dimension (what is evaluated is better described).

Second, new uses can be attributed to pre-existing terms leading to the introduction in conceptual schemes of new conceptual clusters hosting pre-existing as well as newly grounded terms and their uses. In the case of descriptive terms, proto-rigid designation permits admitting plurality of uses for unique terms referring to different ways of being of same entities. Accordingly, a new way of being of an already identified entity can be discovered. During an introducing event, a new use for the term designating this entity can be inaugurated. In this use, the term thus refers to the new way of being of the concerned entity that has been indexically singled out during the introducing event. In the same move, a new conceptual cluster, containing more or less adequate information about the new use (such as effectively possessed description of the way of being it refers to), is integrated in the conceptual part of the meaning vector of the term, and thereby in the whole conceptual scheme. As a replay of the introducing event, contextualized rigid designation permits later deployment of the term in this new use to refer to the indexically singled out way of being, independently of effectively possessed knowledge. Similarly, new uses are also attributed to pre-existing evaluative terms each time such terms are applied to new practical problems (different ways of being of same entities and-or different entities being given ways). Such new applications can be understood as new introducing events that ground original uses for evaluative terms. They generate the inclusion in conceptual schemes of new conceptual clusters embedding information about these uses (in particular descriptions of practical problems). In addition, thick evaluative

terms can also receive additional uses. For instance, a new way of being inconsiderate could be discovered. A new introducing event for this term can then occur, during which ‘inconsiderate’ is associated with the new way of being inconsiderate that is indexically singled out. A new conceptual cluster embedding a more or less adequate description of this new way of being inconsiderate is also added to the meaning vector of the term, and thus to the whole conceptual scheme. This grounds the new use of ‘inconsiderate’ in its descriptive dimension. The use is also new in the entangled evaluative dimension. A new way of being is evaluated.

To fix the ideas, a general illustration of delineated semantic mechanisms can be worked out about the term ‘water’. One can imagine a group of actual persons knowing only few things about water. They have identified only one way water is: water as they encounter it in bottles. Through contextual rigid designation, they employ ‘water’ to refer to water being this way. They possess an associated conceptual cluster in which water is described as being in bottles, being odorless and being blue (up to this point they never observed water outside of the bottles they have, which are blue). In further studying the way of being of water they recognize, they might discover that water in this way of being is also thirsty-quenching and transparent. In virtue of contextual rigid designation, the conceptual cluster associated with the use of ‘water’ they possess can be corrected without disrupting reference. On one hand, a property (being thirsty-quenching) is added, permitting to reach a more complete description. On the other hand, a pre-admitted property (being blue) is corrected and replaced (water is now described as being transparent). In addition, the group of persons may acquire some notions of chemistry and discover new entities and their ways of being such as oxygen and hydrogen atoms. Through introducing events, they could thus ground new terms with uses referring to these entities being their ways (accompanied by more or less suitable conceptual clusters). On this basis, they could establish that, in the way of being they recognize, water contains a large fraction of  $H_2O$ . Using the corresponding newly inaugurated terms, they could thereby improve the conceptual cluster associated with the use of ‘water’ they already possess. An additional property (containing a large fraction of  $H_2O$ ) would then be inserted in the already established description of water being in bottles. Furthermore, new ways water is could also be evidenced. For instance, the group of actual person may discover that the liquid filling a lake they often contemplate is also water. In virtue of proto-rigid designation, a new use for ‘water’ could be settled at the occasion of an original introducing event. This use would come with the addition of a new conceptual cluster in actual persons’ conceptual scheme hosting ‘water’. This new conceptual cluster could integrate a more or less adequate description of the discovered way of being of water. This description could mobilize pre-existing terms referring to properties such as being in a lake, being odorless or transparent, but also newly introduced terms (for instance to indicate that, in this way of being too, water contains a large fraction of  $H_2O$ ). To conclude this section, a last remark is in order. When considering linguistic communities as wholes, it may not be expected from all members to effectively possess best conceptual clusters of all the uses of the term they employ or to master all possible uses of certain terms. Division of linguistic labor remains possible, deepest refinements of terms and their uses being mastered only by experts.

### ***2.2.2. Pluralism without antirealism***

According to the semantic account exposed in the previous section, Putnam’s pragmatist theory of knowledge permits developing a general approach of rational inquiry that does justice to

the plurality of ways reality is and to the diversity of issues that can be rationally studied<sup>86</sup>. In particular, it allows combining two important semantic mechanisms. On the one hand, knowledge about mind-independent entities, recollected in the conceptual clusters of pre-existing terms, can be corrected or improved. On the other hand, terms can possess a plurality of uses according to which they refer to different ways entities they point are along different points of view. Accordingly, new uses can be introduced for pre-existing terms to reflect the fact that new ways of being of the entities they designate have been discovered. The possibility to admit this second mechanism without undermining the first one is an original feature of the general picture of rational inquiry proposed here on the ground of Putnam's pragmatist theory of knowledge. Through this second mechanism, conceptual pluralism becomes admissible. In fact, it becomes possible to conceive that different rational inquiries could legitimately add different uses to shared pre-existing terms. Alternatively put, same pre-existing terms may be integrated in differently featured conceptual schemes of different rational inquiries. Importantly, this pluralistic feature is achieved without relinquishing on the basic intuitions of realism and scientific realism. These crucial results can be highlighted and better elucidated by contrast with the manner both metaphysical realism and internal realism (understood as a sophisticated form of verificationism) allow understanding the semantic functioning of rational investigations.

To begin with, the consequences of metaphysical realism with respect to rational inquiries and associated semantic processes can be detailed. As already exposed, metaphysical realism combines the thesis that the idea of a mind-independent reality is to be admitted and the claim that such a reality is composed by a fixed and pre-given totality of objects and their properties. According to this second claim, real entities are unique ways along the absolute and context-independent God's eye point of view. One might call 'essential ways of being' these unique ways entities really are. Consequently, there can be only a unique correct description of reality, namely the (first-grade) conceptual scheme describing mind-independent objects and their properties as they are in themselves – that is to say, the conceptual schemes describing essential ways of being of real entities. In this framework, rational inquiries can only aim at the elaboration of such a conceptual scheme. They may, for instance, be restricted to scientific investigations, such as physics, that are susceptible to unveil the essential ways of being of real entities. The main strength of this metaphysical realist approach is that it naturally fits (scientific) realist intuitions. Descriptions settled through rational investigations are (more or less correct) descriptions of mind-independent reality. Based on rigid designation, actual inquirers introduce descriptive terms referring to indexically singled out entities being their essential ways, independently of effectively possessed knowledge that is recollected in the conceptual parts of relevant meaning vectors. Thereby, rational inquiries can result in improvements or corrections of such knowledge, and in particular of pre-admitted descriptions of mind-independent reality. However, these important elements come in a very restrictive manner. Entities are unique real essential ways and rigid designation is context-independent. Whatever may be the specificities of actual situations during introducing events and during terms' applications, unique absolute ways of being are singled out and referred to. Accordingly, terms designating real entities can have only unique uses. They can be legitimately associated with single conceptual clusters (those embedding descriptions belonging to the absolute conception of the world). Results of rational inquiries cannot, in a metaphysical realist

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<sup>86</sup> At this step, are considered as susceptible of rational investigations topics that can be expressed in conceptual schemes based the semantic mechanisms exposed in the previous section. Obviously, possibilities for truth and objectivity have also to be discussed. This aspect is explored below.

framework, take the form of discoveries and descriptions of new ways of being for given entities (associated with the introduction of new uses for pre-existing terms). There can be only corrections or improvements of descriptions targeting the establishment of the unique first-grade conceptual scheme describing reality as it is along the God's eye point of view.

In such a metaphysical realist perspective, it becomes difficult to resist the temptation of picturing rational inquiries as radically focusing on essential ways of being of real entities only. Provided a unique absolute conceptual scheme is targeted, no non-essential descriptions of the ways real entities are should be considered as valid accounts of reality. This might for instance lead to admit a rupture and an opposition between what Sellars calls the manifest and the scientific images (Ladyman 2012, 33-34, deVries 2015), or between Quine's first-grade and second-grade conceptual systems (Putnam 2012 [2004], 111). Only scientific investigations, seeking context-independent descriptions of essential or absolute ways real entities are, could contribute to the elaboration of the scientific image of the world. Any other discourse would be considered as second-grade (ordinary descriptions as well as results of investigations focused on non-essential ways of being). They would be "regarded as something less than bona fide discourse" (Putnam 2012 [2004], 112). Describing water as H<sub>2</sub>O would be part of the scientific image, while picturing it as colorless, tasteless and thirsty-quenching would belong to the manifest one. Only the scientific image, established through rational inquiry, could provide the unique absolute conception of the world and its objects as they are. At best, manifest image and second-grade conceptual schemes might be pragmatically accepted as useful descriptions of (or useful commonsense knowledge about) objects, as they appear to human minds in ordinary settings. In sum, rational inquiries about mind-independent reality could not produce a plurality of differently featured conceptual schemes providing different rational descriptions of same real entities. In a metaphysical realist framework, the study of essential ways of being of real entities is privileged. A unique first-grade conceptual scheme describing reality as it is along the God's eye point of view should be pursued by progressively correcting and improving effectively possessed knowledge. In this metaphysical realist framework, (scientific) realism is preserved because terms mobilized in rational inquiries refer to entities of mind-independent reality. However, conceptual pluralism is precluded.

These conclusions about rational inquiry in a metaphysical realist framework interestingly contrast with what can be said on the background of internal realism. To the extent that the internalist account of the notion of truth beyond rational acceptability is unsuccessful, internal realism opposes the two foundational thesis of metaphysical realism. First, real objects are shaped or forged through (and cannot be dissociated from) rationally acceptable conceptual schemes. Second, nothing forbids several different conceptual schemes to be rationally acceptable. Reality can possess several faces. Internal realism thereby opens the possibility of conceptual pluralism according to which entities can be correctly conceived being several different ways. In this internalist framework, rational inquiries do not pursue the elaboration of a unique and allegedly absolute conception of the world. New ways of being of already identified entities can be discovered. New uses of terms designating these entities can thus be grounded and conceptual schemes can be enriched with additional conceptual clusters (hosting, notably, descriptions of newly discovered ways of being) that coexist with pre-admitted ones. Nevertheless, internal realism indicates that real entities and their ways of being are self-identified to and cannot be dissociated from rationally accepted conceptual schemes. Consequently, the process of rigid designation is severely weakened. It holds only as long as rationally accepted conceptual schemes embedding descriptions of fundamental (or essential) properties hold. Ultimately, this means that correcting



effectively possessed descriptions of ways entities are (as recollected in conceptual clusters hosted in the meaning vectors of corresponding terms) becomes hardly distinguishable from reshaping the way these entities are. Although it allows the introduction of new uses for pre-existing terms through the acknowledgement of the fact that entities can be several different ways, internal realism nonetheless prevents to see the corrections or improvements of pre-existing conceptual clusters as modifications of knowledge possessed about stably referred to and mind-independent entities. Therefore, the picture of rational inquiry internal realism permits drawing is highly problematic for it conflicts with the basic intuitions of realism and scientific realism.

The possibility to authorize at the same time the correction of pre-existing terms rigidly referring to entities of mind-independent reality and the introduction of new uses for pre-existing terms is highly specific to the present account of rational inquiry based on Putnam's pragmatist theory of knowledge. It is tightly connected with the possibility to admit pluralism about conceptual schemes susceptible to correctly describe reality, without opening the door to antirealism. This directly echoes the issues associated with the antinomy of realism (see notably the section 3.5 of previous chapter). Deployed in the present discussion, these issues amount to the challenge of rejecting the second thesis of metaphysical realism (which opposes to conceptual pluralism) while preserving the first one (which claims the existence of mind-independent reality). As long as metaphysical realism and internal realism (seen as a sophisticated form of verificationism) are considered as exhausting the possible philosophical backgrounds, conceptual pluralism and (scientific) realism cannot be endorsed together. In terms of semantic mechanisms that are made available to rational inquirers, a forced choice has to be made. With metaphysical realism on the one hand, rational inquirers can consider corrections of conceptual parts of terms' meaning vectors as knowledge improvements about mind-independent reality. (Scientific) realism is preserved. But, they cannot introduce new uses for pre-existing terms because, referred to real entities being unique absolute ways, no plurality of terms' uses is admissible. With internal realism on the other hand, rational inquirers can validly introduce new uses for pre-existing terms. However, any change in descriptions of referred to entities, recollected in conceptual parts of terms' meaning vectors, amounts to modifications of these entities. (Scientific) realism is undermined.

As already exposed, Putnam's pragmatist theory of knowledge, and commonsense realism on which it is based, escape the forced choice that grounds the antinomy of realism (see in particular the section 4 of chapter 1 as well as the sections 1.1 and 2.1 of the present chapter). As a brief reminder, the antinomy of realism is escaped by rejecting the interfacial approaches of perception and conception. Reality is thereby recognized as being at the same time mind-independent and context-sensitive (reality and real entities are many different ways along situated points of view, to which actual persons can tune in function of the contexts they evolve in). In virtue of the rejection of the concept-property dichotomy, ways real entities are and ways they are described being are one and the same thing, when associated conceptions are true. The possibility is thus opened for a plurality of true conceptions that coexist and describe different ways reality and real entities are.

This possibility is reflected in the general picture of rational inquiry under development in the current sections. Through successful conceptions and possibly associated veridical apperceptions, actual inquirers can directly reach reality being different ways. In function of context-sensitive tunings to specific points of view, they encounter given real entities being

particular ways. Accordingly, many terms can be introduced (based on ostensive definitions or basic descriptions whose truth is not recognition transcendent) and be associated with indexically singled out entities being particular ways along context-sensitively tuned to points of view. These pre-existing terms and their uses, which are associated with more or less correct descriptions, can then be mobilize to frame problematic situations and initiate the elaboration of corresponding conceptual schemes. To this aim, both semantic mechanisms at stake here are, according to Putnam's pragmatist theory of knowledge, available to rational inquirers. The correction of pre-admitted conceptual clusters and the descriptions they host can be understood as modification of knowledge about mind-independent entities in virtue of the process of contextualized rigid designation. In addition, proto-rigid designation based on 'essential' properties<sup>87</sup> permits adding new uses to pre-established terms to refer to newly unveiled ways already identified entities are. New conceptual clusters (notably embedding more or less correct descriptions of these discovered ways of being) can be included in terms' meaning vectors and thereby in whole conceptual schemes.

In virtue this second semantic mechanism, rational inquiries receive a pluralistic dimension. Pre-existing uses of terms borrowed from pre-admitted conceptual schemes (and their associated conceptual clusters) are not corrected or replaced when deploying this second mechanism. Rather, new uses and conceptual clusters are introduced and coexist with pre-established ones. Accordingly, descriptions provided by sciences need not systematically opposing to commonsense descriptions applying to ordinary situations. This may be called "vertical pluralism" (Goodman 2013, 207). They are all susceptible of correctly accounting for what things are along different points of view. Furthermore, different rational inquiries may also focus on different types of ways of being of given entities along different points of view. The uses and conceptual clusters they elaborate are all susceptible to coexist. Such a possibility can be named "horizontal pluralism" (ibid.). Importantly, these possibilities of pluralism do not forbid that sciences can discover new elements permitting to correct ordinary descriptions (through the semantic mechanism of correction, which is also available to inquirers on the ground of contextualized rigid designation). Similarly, discoveries made in a given investigation may well inform and correct knowledge mobilized by other inquiries. In sum, the different semantic mechanisms, which rational inquirers can legitimately deploy according to Putnam's pragmatist theory of knowledge, permit accommodating the recognition of irreducible layers of context-sensitivity (tunings to points of view as well as knowledge effectively recollected in conceptual clusters are both context-sensitive) and the preservation of the basic intuitions of (commonsense) realism and scientific realism (reality encountered and studied in ordinary life as well as during rational inquiries is mind-independent). Alternatively put, the pluralisms answering these irreducible layers of context-sensitivity are integrated in a way that does not conflict with (scientific) realism.

In sum, Putnam's pragmatist theory of knowledge permits refining the semantic mechanisms available in a context-sensitive *and* realist picture of rational inquiry. On the one hand, knowledge about mind-independent entities referred to by pre-existing terms can be corrected. On the other hand, same terms can be legitimately associated with a plurality of uses, according to which they refer to the plurality of ways the entities they point can be. In addition to

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<sup>87</sup> 'Essential' properties of a given entity are constitutive of all its ways of being. They can be found in what the entity is whatever may be contextually tuned to points of view. Essential properties should nonetheless be sharply distinguished from essential ways of being. The latter are ways of being only the considered entity is. However, the entity is this essential way only along a specific point of view.

correcting pre-existing terms and introducing new ones, rational inquirers can also introduce new uses for pre-existing terms. This allows accounting for the extreme diversity of elements that can belong to conceptual schemes elaborated in rational inquiries. Rational inquirers can target the elucidation of ‘essential’ properties that are possessed by entities in all their ways of being (for instance, water always containing a large fraction of  $H_2O$ ) as well as for the description of essential ways of being (water being pure  $H_2O$ ). Such investigations of essential features are extremely important. Discovering essential properties of an entity constrains all uses of the term designating the entity. The discovery that water contains a large fraction of  $H_2O$  constrains all the other uses of ‘water’. Any bearer of the term in a correct use necessarily possesses this chemical composition. Such discoveries provide inquirers with radical criteria for determining whether a thing is a given entity. Essential properties provide necessary criteria for extension’s membership. Their discovery might lead to reconsider which actual entities belong to the extension of the associated terms. Some entities satisfying some initial descriptions might conflict with the newly discovered criteria and be rejected. Some not satisfying these initial descriptions might prove possessing the relevant essential properties and be integrated in the extension. In addition, essential ways of being deserves a specific status for they are ways only corresponding entities can be. Along the associated essential point of view, water is pure  $H_2O$ . No other entity can be pure  $H_2O$  whatever may be the point of view tuned to. Being pure  $H_2O$  is an essential way of being for water. The general picture of rational inquiry proposed here could not be satisfying without doing justice to the possibility of investigating these particular properties and ways of being<sup>88</sup>. But these essential properties and ways of being should not be considered as exhausting what there is to rationally describe. Essential ways of being do not exhaust the richness of reality and of the ways real entities are. As put by Putnam himself, “the individuation of ‘ways things can be’ is strongly context dependent. In some contexts, being water and being  $H_2O$  count as the same way of being; in others, as two different ways of being” (Putnam 2002d, 106). In most contexts, real entities are encountered and studied as being ways that are not essential. In the same vein, essential properties constitute necessary but not sufficient criteria for membership extensions. In most circumstances, there is more to be said

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<sup>88</sup> Certain nominalist arguments question the possibility to investigate essential properties and essential ways of being when entities are kinds and not just particulars (Macbeth 1995). In the nominalist line of thought, if an inquiry about a kind begins without the knowledge of its essential properties, inquirers can single out instances of this kind only by relying on what they know about it, that is to say by relying on non-essential properties. This at best allows defining a nominal kind (following what we take its instances to be), but not, the nominalist says, a natural kind or a kind settled according to what its instances are. Consequently, there cannot be inquiries establishing essential properties of (natural) kinds. To be entitled to even define and talk about such kinds, it would be necessary to know the corresponding essential properties before inquiring them. At best, inquiries can achieve conclusions about features possessed by nominal kinds. In a nominalist view, “the boundaries of a particular concept are set by how we take things to be rather than by how they are” (Macbeth 1995, 272). In a metaphysical realist framework, semantic externalism and rigid designation permits answering this nominalist argument (Macbeth 1995, 275-276). As exposed, Putnam’s pragmatist theory of knowledge permits preserving the realist features of metaphysical realism. The counterargument to nominalism deployed on the background of metaphysical realism can be extrapolated. In Putnam’s pragmatist theory of knowledge, semantic externalism is admitted. Rigid designation takes the forms of proto-rigid designation and of contextualized rigid designation. In virtue of these semantic mechanisms, essential properties and essential ways of being of (natural) kinds can be rationally investigated. At the occasion of introducing events, actual entities are singled out. Inquirers might have some reasons to believe that they are instances of a given kind. Then, nothing prevents them naming these entities as an instance of this kind. It amounts *treating* these entities as paradigmatic examples of what it is to be an instance of the kind in question. Even if it might be argued that this supposition could be wrong in some cases, it seems reasonable to admit that it can be correct in many cases, and that, in these cases, inquirers can investigate what essential ways of being are. Accordingly, the term pointing these entities is *treated* as a proto-rigid designator. This means that inquirers believe that, in any of its possible correct uses, the term is a *proto-rigid* designator referring to various ways of being of these entities that necessarily possess the same essential properties. Furthermore, the term can also be associated with a use according to which it *contextually* rigidly designates the essential way of being of the entities considered as instances of the same kind. Without having yet discovered essential properties and essential ways of being characteristic of the kind, other paradigmatic examples can be picked out according to their recognized similarities with the entities brought to the fore during the introducing event. At this step, inquirers *treat* singled out examples as paradigmatic, but do not claim that they *are* so. Then, actual inquirers can tune to different possible points of view, either to investigate what may be the shared essential properties, or to elucidate what instances of the kind are along the essential point of view (essential ways of being). Essential properties and ways of being can thus be discovered a posteriori during suitable rational inquiries. Thereby, proto-rigid designation and contextualized rigid designation permits conceiving the rational investigations of essential features as attempts at improving knowledge about real entities or instances of (natural) kinds, rather than as studies of objects that are only nominally defined according to effectively possessed knowledge.

about what an entity is than just describing its essential properties. All ways entities can possibly be are as real as essential ones. They may all be susceptible of rational investigation. They embed properties that are possessed only in large sets of ways of being (water being colorless and thirsty-quenching) or even properties that are possessed only in specific ones (water being in lakes or in bottles). All these properties may deserve rational descriptions in function of problematic situations.

To conclude, it is worth-mentioning that the discussion conducted in this section regarding the possibility to combine pluralism and (scientific) realism bore only on descriptive terms and descriptive rational investigations. However, rational activities are not exhausted by descriptive ones (as detailed in sections 1.2.3, 1.3.2 and 2.1). Evaluative terms, though not directly referring to real entities, are as admissible in conceptual schemes of rational inquiries as descriptive ones. As we have seen in the previous section, semantic mechanisms available for descriptive terms also apply to evaluative ones. Rational investigations can result in corrections of pre-existing uses of evaluative terms as well as in inaugurations of new uses for these terms. The same possibilities for pluralism are thereby admissible. Moreover, further possibilities for pluralism are also opened because same entities being same ways can nevertheless be mobilized in rational inquiries pursuing different purposes. In particular, a descriptive inquiry and an evaluative investigation could both focus on same entities being same way, but produce differently featured conceptual schemes. Generally speaking, Putnam's pragmatist theory of knowledge permits proposing a fruitful intermediate way between metaphysical realist and internal realist by relaxing the conflict between context-sensitivity and mind-independence of reality, as well as by avoiding restricting meaningfulness to reference to real entities. This alternative background may appear attractive to those reluctant to restrict the scope of rational investigation to the description of entities' essential ways of being and to discard any other discourse (evaluations, ordinary descriptions or scientific accounts of non-essential ways of being) as second-grade cognitive activities incapable of full-fledged rationality.

### ***2.2.3. Different loci of context-sensitivity in the semantic aspects of rational inquiry***

Grounded in Putnam's pragmatist theory of knowledge, the account of semantic mechanisms at play in rational inquiries proposed in previous sections permits evidencing different loci of context-sensitivity. As shown at length throughout this work, these different semantic mechanisms, as well as the features of conceptual schemes they allow elaborating, cannot be reduced to rule following in a purely algorithmic approach. They irreducibly rely on the practices, judgments and interests of actual inquirers and on other specificities of the situation the latter evolve in. These elements can vary in function of the context a given inquiry starts from. It is nonetheless important to mention that these semantic mechanisms and the features of accordingly elaborated conceptual schemes are also influenced and constrained by standards of rational acceptability that guide rational inquiries. But this fact does not permit removing context-sensitivity from the picture. In the previous section 2.1, problematic situations (with respect to which produced knowledge have to be relevant) have already been pictured as context-sensitive. A refined analysis of the context-sensitive features of rational acceptability is developed in next sections. For the present purposes, it is sufficient to keep in mind that the content of the standards of rational acceptability that are effectively deployed by rational inquirers is itself context-dependent. This, together with the elements exposed up to this point, is sufficient to highlight the different context-sensitive aspects of conceptual schemes elaborated during rational inquiries.

To begin with, the results of the previous section make clear that no context-independent prescriptions impose what should be talked about during a given rational inquiry and in which manner it should be talked about. Many different entities are susceptible to be referred to, various evaluative terms can be mobilized. Similarly, many different goals can be targeted leading to focus on and grant privilege to specific types of conceptions. Elucidation of properties shared by some or all of ways of being of selected entities can be pursued. Inquirers can also attempt describing specific ways entities are along certain points of view. They can focus on what entities essentially are. When focusing on essential features of real entities, types of properties that should be considered is neither pre-given nor fixed in advance. Moreover, rational inquiries do not need being restricted to the realm of description but can also embed evaluative elements. Various practical problems can be rationally considered in the light of different evaluative notions. This does not mean that inquirers arbitrarily decide or stipulate what the conceptual scheme they elaborate should contain. In this regard, the role of problematic situations is crucial (as detailed in section 2.1). They determine (or at least largely contribute to) *indexical* tunings of rational inquiries to specific domains of investigations (that is to say, indexical tunings to pools of real entities being particular ways along specific sets of points of view). This process of tunings has been pictured as context-sensitive. Differently contextualized rational inquiries addressing different problematic situations can legitimately bear upon different domains of investigation. Nevertheless, the domain of investigation of any specific rational inquiry is determined<sup>89</sup>. On this ground, actual inquirers can draw on the information they effectively possess to start elaborating knowledge about the domain of investigation they are indexically tuned to. Their effective recognition that specific terms and types of conceptions deserve integration in conceptual schemes under construction is guided by, at least, two factors<sup>90</sup>.

First, indications may be provided by knowledge recollected in conceptual clusters associated with pre-existing terms involved in the framing of problematic situations. These pre-admitted conceptual clusters may for instance embed information about the manner ways of being of given entities should be described, about entities responsible for given phenomena, or about types of properties relevant with respect to essential features of entities under study. Importantly, the knowledge recollected in these conceptual clusters is context-sensitive. Such conceptual clusters are inherited from pre-existing conceptual schemes available in contexts of investigations. At least two possibilities can be considered. They might be borrowed from ordinary language. It seems obvious that what ordinary language is cannot be accounted for in a purely algorithmic approach. It cannot be understood as ruled by standards of rational acceptability either (as it would be the case in the framework of a rational inquiry). Rather, conceptions embedded in ordinary language can be seen as validated through more informal assessments relying on commonsense. Accordingly, the specificities of conceptual clusters associated with terms borrowed from ordinary language can vary depending on contexts inquiries start from. In addition, pre-admitted conceptual clusters can be taken from the results of previous rational or scientific inquiries. They are then borrowed from pre-admitted corpus of rational or scientific knowledge, recollected in previously rationally accepted conceptual schemes. In that case, it is possible to claim that inherited

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<sup>89</sup> Or at least it should be. One cannot exclude the possibility for rational inquiries starting with problematic situations that are not precise enough to trigger unambiguous tunings to specific domains of investigation.

<sup>90</sup> It is worth-mentioning that what inquirers are able to recognize as deserving integration in the conceptual scheme they elaborate may not be what should really be integrated according to indexically and context-sensitively tuned to domains of investigations. The knowledge actual inquirers effectively possess about the problematic situation they try to address and the associated domain of investigation may be imperfect. For instance, they may misleadingly assume the existence of a causal relation between an entity and an observed phenomenon.

conceptual clusters outcome from the application of the standards of rational acceptability of these past inquiries (in particular, requirements of relevance with respect to a problematic situation, compliance with methodological standards and confrontation with inquirers' environment). However, this would not be sufficient to expel context-sensitivity from the picture. Generally speaking, past inquiries themselves embed context-sensitivity. On the one hand, they also need borrowing terms and their associated conceptual clusters from pre-admitted conceptual schemes available in their contexts. On the other hand, standards of rational acceptability they rely on can also vary from context to context (as already announced, this aspect is discussed in next section). Second, the decisions of actual inquirers about terms and types of conceptions deserving integration in conceptual schemes under construction can be guided by the standards of rational acceptability (in particular relevance with respect to problematic situations) that are context-sensitively associated with any ongoing inquiry. In sum, what is talked about in the framework of a particular inquiry as well as the manner it is talked about (as determined either by knowledge associated with pre-existing terms or by standards of rational acceptability) are context-sensitive.

Once actual inquirers have established what should be talked about and the way it should be talked about, they have at their disposal several semantic mechanisms to elaborate conceptual schemes. These semantic mechanisms themselves embed context-sensitivity. First, any rational inquiry needs mobilizing pre-existing terms (with their uses) referring to different ways of being of already identified entities, or reflecting pre-established evaluative commitments. These terms come with conceptual clusters that integrate knowledge about past uses and more or less adequate descriptions of referents (or of evaluated entities and associated practical problems). As discussed just above, these conceptual clusters are not settled during ongoing rational inquiries. They are inherited from conceptual schemes available in contexts of investigations. On the one hand, mobilized pre-admitted conceptual schemes may belong to ordinary language whose specificities are context-sensitive. On the other hand, pre-existing terms can be borrowed from conceptual schemes belonging to previous rational inquiries. Context-sensitivity at play in the latter (through the admission of pre-existing terms and of context-specific standards of rational acceptability) is propagated to conceptual clusters that are taken from them. Second, rational inquirers may introduce new terms and their uses to reflect discoveries of new entities with their associated ways of being, or inaugurate new evaluative notions. This would generate the integration of new conceptual clusters in conceptual schemes that are elaborated under the guidance of standards of rational acceptability deployed in corresponding inquiries. In virtue of the same reasons as the ones exposed in the preceding case, this does not allow removing context-sensitivity about the content of these newly established conceptual clusters. The latter might mobilize pre-existing terms, and their associated conceptions, which can vary from contexts to contexts. Furthermore, the standards of rational acceptability structuring particular inquiries are themselves context-sensitive. Third, processes of rational investigations can lead to corrections or improvements of conceptual clusters associated with pre-existing terms. Such modifications are obviously guided by standards of rational acceptability. But again, this does not evacuate contextual influence. Notwithstanding the fact that standards of rational acceptability can change in function of contexts, corrections and improvements also mobilize pre-existing or newly introduced terms, whose associated conceptual clusters are themselves context-sensitive (as delineated just above). Finally, new uses for pre-existing terms can be introduced to reflect discoveries of new ways of being for already identified entities or applications of already deployed evaluative notions to new practical problems. Again, such introductions amounts integrating new conceptual clusters in conceptual scheme under construction in following the constraints provided by admitted standards of rational

acceptability. At this level too, contextual influence remains irreducible. Newly worked out conceptual clusters necessarily integrates pre-existing or freshly introduced terms that embed context-sensitivity. In addition, new conceptual clusters should not conflict with pre-admitted knowledge forming corresponding terms' meanings. These pre-established meanings are nothing else but pre-admitted conceptual clusters of pre-existing terms that are themselves context-sensitive. Moreover, constraints provided by standards of rational acceptability are also context-dependent. In sum, the mechanisms available for the elaboration of conceptual schemes during rational inquiries (borrowing pre-existing terms, inaugurating new terms, correcting or improving knowledge associated with pre-existing uses of terms and integrating new uses for pre-existing terms) cannot be accounted for in a purely algorithmic way. Rather, they rely on actual inquirers' practices, judgements and interests, and on the specificities of the situation they evolve in. The content of conceptual clusters of terms hosted in, and structuring, conceptual schemes of rational inquiries is irreducibly context-sensitive.

Furthermore, a complementary dimension of contextual influence in the semantic layer of rational inquiries is worth-mentioning. In general, terms hosted in conceptual schemes of rational inquiries come with several possible uses according to which they refer (for descriptive terms), or apply (for evaluative ones), to different ways real entities are. As it has been clarified, each uses of descriptive terms amounts to replays of corresponding introducing events (actual inquirers stand in proper historical-causal relationships with). They contextually rigidly refer to the given entities being particular ways that have been indexically singled out during these introducing events. Similarly, each available uses of evaluative terms can also be seen as replays of introducing events in which they have been deployed to evaluate indexically designated things (actions, persons or events, etc.) being particular ways in specific practical problems. Each use of these two types is also associated with a conceptual cluster that can embed more or less adequate description of entities that are referred to or that are involved in evaluations. Nevertheless, in actual contexts of speaking any term is employed only according to one of its possible uses (coming with a specific referent or a specific set of entities it applies to, and with more or less adequate knowledge recollected in the associated conceptual cluster). As it has already been detailed, the selection of terms' uses in actual contexts of utterance relies on language-users ability of attunement. And this process is context-dependent. Language-users' ability of attunement involves various specificities of the situation they evolve in (background knowledge available in conceptual schemes admitted through commonsense or rationally accepted via past rational inquiries, actually encountered entities, and practices engaged in, notably in virtue of certain interests). As indicated by semantic contextualism admitted in Putnam's pragmatist theory of knowledge, these different elements conditioning selection of terms' uses can vary from context to context.

Nonetheless, context-sensitivity in the selection of terms' uses does not forbid the establishment of some rules further constraining what can be said with a term in a particular context. One can imagine that particular standards of rational acceptability admitted in given inquiries contribute reducing the number of uses of terms that are admissible in their frameworks (they might even lead to admit only one use). This would amount restricting the number of possible attunements about terms manipulated in inquiries (restricting the number of possible conceptual clusters embedded in their meaning vectors), without denying that, in broader contexts, terms might be legitimately deployed along their other possible uses. More precisely, the different elements guiding attunements might be constrained by standards of rational acceptability. What background knowledge should be taken into account, what entities should be manipulated or

involved, as well as what practices, should be deployed can all be ruled or influenced by standards of rational acceptability. Importantly, these constraints cannot be understood as removing any contextual influence because standards of rational acceptability are themselves context-sensitive. In addition, the restrictions on possible terms' uses provided by standards of rational acceptability may be insufficient to evacuate all possible uses but one. As long as it does not remain unrecognized, the persistence of a plurality of uses for terms hosted in conceptual schemes of rational inquiry does not necessarily constitute a weakness or a defect. In such cases, actual inquirers needs being aware that some terms are associated with several conceptual clusters and refer or apply to different ways same entities are. Coexistence of differently featured conceptual clusters could be understood as nothing but contradiction deprived from this awareness. On the one hand, mere awareness and mobilization of actual inquirers' ability of attunement may be sufficient for an informal management of the plurality of remaining terms' uses. On the other hand, it is fair to envisage that in the framework of rational investigations, actual inquirers may tend to avoid this type of semantic ambiguities<sup>91</sup>. A possible solution could be the introduction of new terms (new introducing events) to be sure employing a unique term per possible use. This semantic refinement is likely to be conducted under the guidance of standards of rational acceptability. It could also be achieved via mere stipulations. In both cases, context-sensitivity would remain either through standards of rational acceptability or because of arbitrary stipulations which could obviously be different from context to context. Therefore, although attunements can be constrained, the general process of selection of terms' uses that are deployed in actual situations during rational inquiries remains context-sensitive.

In sum, the content of conceptual schemes (formed by interconnected conceptual clusters associated with terms they host) as well as selection of terms' uses mobilized in given circumstance are influenced by the specificities of inquiries' contexts. An important point the present account of the semantic layer of rational inquiries permits bringing to the fore is that contextual influence cannot be reduced to mere contextual pollution. Obviously, contextual influence can be misleading. As exposed above, pre-established conceptual clusters associated with terms borrowed from contextual sources can be corrected. This reflects the fact that knowledge effectively possessed by actual persons situated in particular contexts can be false or approximate. Nevertheless, context-sensitivity can also be legitimate and echo context-dependence of what mind-independent reality is. Rational inquiries come with indexical tunings to domains of investigation that are context-sensitive. Accordingly, some of contextually-driven variations between effectively possessed knowledge, and between corresponding semantic features of rational inquiries, are irreducible and desirable. There is therefore no point in trying to remove any contextual influence from rational inquiries. Rather, it is part of the task of rational inquirers to discriminate between legitimate context-sensitivity and contextual pollution.

### **2.3. Rational acceptability: context-sensitivity and objective pursuit of truth**

The previous sections focused on the account of the semantic mechanisms that can be deployed in rational inquiries and of the features of conceptual schemes they permit elaborating. In

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<sup>91</sup> As Putnam makes clear, it is hopeless to try to exhaust any possible uses a term could possess. New ways of being of entities referred to or evaluated can always be discovered. The introduction of new uses is always possible. Nonetheless, it is meaningful to try discriminating explicitly among the already existing uses of given terms.



particular, the context-sensitivity at play in these elements has been evidenced. However, settling a semantically consistent conceptual scheme is only one aspect of what is required to conduct rational inquiries. Rational inquiries are processes aiming at addressing problematic situations in establishing original or improved conceptual schemes that come as close as possible to truth<sup>92</sup>. Putnam's pragmatist theory of knowledge constitutes a fruitful framework to account for this second dimension. By contrast with internal realism, it permits doing justice to the idea that truth is not epistemically constrained. Truth does not reduce to what (actual or idealized) inquirers rationally believe being true. By contrast with metaphysical realism, truth is not understood as a unique substantive property of correspondence with mind-independent reality conceived as being a unique way along an absolute or God's eye point of view. As already made clear, there is no absolute conception of reality or first-grade conceptual scheme to be established through rational inquiries. Rather, rational inquiries always answer specific problematic situations triggering tunings to domains of investigation to be described or to be mobilized in evaluations. But this does not mean that there is no truth to be sought or that rational inquiries cannot be conducted with objectivity. It rather signifies that what there is to be investigated and the manner it should be investigated cannot be disconnected from contexts investigations start from. According to Putnam's pragmatist theory of knowledge, there is truth in descriptive as well as in evaluative issues. And it can be pursued with objectivity. However, objectivity cannot be understood as the mere following of decontextualized algorithmic rules or criteria. Rather, pursuing truth with objectivity demands establishing, from within contexts inquiries are deployed in, evaluative judgments about the reasonableness or the rational acceptability of elaborated conceptual schemes. To accomplish this, rational inquiries rely on different standards of rational acceptability that provides reasons supporting judgments of reasonableness.

To discuss this important aspect of rational inquiries in more details, a general account of standards of rational acceptability and of the constraints they impose on elaborated conceptual schemes is developed in next section. Then, a discussion of the types of issues that can be the object of assessments of rational acceptability is proposed. Finally, context-sensitivity at play with respect to standards of rational acceptability as well as consequences it generates concerning objectivity and relativism are analyzed.

### ***2.3.1. Standards of rational acceptability***

According to Putnam's pragmatist theory of knowledge, objectively believing certain knowledge claims are true amounts settling evaluations or judgments of their reasonableness that are supported by good reasons. Paradigmatic examples of such reasons can be brought to the fore in considering claims whose truth is not recognition transcendent. Apperceptive verifications as well as acknowledgements are extremely good (and maybe trivial) reasons for judging these claims as rational acceptable<sup>93</sup>. However, the truth of many claims that are important in our lives is recognition transcendent. For instance, the truth of many claims of physics cannot be recognized through acknowledgments or apperceptive verification. Not much can be said about the truth of such claims when they are taken in isolation. It is precisely when such claims are considered that the process of rational inquiry deploys its full relevance. Instead of evaluating claims in isolation,

<sup>92</sup> In general, truth is understood as a notion of validity that outruns rational acceptability. As detailed in section 1.3, it is tightly connected with fallibilism and the idea that rationally accepted claims can nonetheless be false. The specific faces truth can take can be elucidated only from within particular cognitive activities. When it comes to descriptions, truth becomes correspondence with ways mind-independent entities are along specific points of view. But correspondence does not exhaust the possible aspects of truth.

<sup>93</sup> To be sure, apperceptive verifications and acknowledgements are fallible. But, as discussed in section 1.1, this does not generate systematic skepticism.

processes of rational investigations assess the rational acceptability of whole conceptual schemes that contain claims whose truth is recognition transcendent. This is in particular the case of claims of physics that are considered as reasonable because belonging to a rationally accepted broader conceptual scheme. And elements guiding judgments of reasonableness are not exhausted by apperceptive verification or acknowledgments. These elements can be delineated in three main types of standards of rational acceptability. To be judged as rationally acceptable, conceptual schemes of rational inquiries need to be successfully confronted with independent facts from inquirers' environment, to comply with methodological standards, and to prove relevant with respect to problematic situations.

Obviously, considering claims as belonging to rationally acceptable conceptual scheme elaborated during rational inquiries changes very little to the issue of recognition transcendence of their truth. Rational acceptability is not a mere extension of the recognition of truth through apperceptive verification or acknowledgement. Claims whose truth is recognition transcendent when taken in isolation do not change of status when inserted in conceptual schemes whose rational acceptability can be evaluated. Rational acceptability of conceptual schemes cannot reach truth in the way apperceptive verification and acknowledgement do for claims such as 'there are chairs in this room' or 'I should do something in front of this person who suffers'. Nonetheless, establishing the rational acceptability of conceptual schemes elaborated in rational inquiries suggests that embedded knowledge claims are true. It provides a strong reason to hold them true. One can for instance discuss the case of the sentence 'there are no intelligent extraterrestrials in the universe'. Taken in isolation, it is possible to conceive ways reality would be if it is true, but they cannot be apperceptively verified or acknowledged. Nothing can be said about whether the sentence is true or not. By contrast, the same claim could appear in a broader conceptual scheme. It could for instance result from a biological theory claiming that the emergence of an intelligent life form somewhere in the universe exhausts some kind of vital impulse. Assuming that such a conceptual scheme could be considered as rationally acceptable, inquirers would be provided with a reason to believe that 'there are no intelligent extraterrestrials in the universe' is true and that the way it describes reality is the case. In sum, the evaluation, under the guidance of standards of rational acceptability, of the reasonableness of whole conceptual schemes elaborated in rational inquiries offers enlarged possibilities to pursue truth, compared to apperceptive verifications or acknowledgements of claims taken in isolation.

This does not mean that apperceptive verifications and acknowledgements play no role in judgments about reasonableness of conceptual schemes during rational inquiries. In particular, apperceptive verification remains crucial for assessments of rational acceptability in permitting confrontation of conceptual schemes that are elaborated during rational inquiries to independent facts from inquirers' environment. Although the entire elements of conceptual schemes cannot in general be apperceptively verified, at least some of their claims should be successfully confronted with inquirers' environment for them to be judged as rationally acceptable<sup>94</sup>. This can take the form of adequate empirical prediction. It can also correspond to efficiency of produced discourses in solving problematic situations. Whatever may be the precise aspect of this confrontation with

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<sup>94</sup> This requirement of confrontation with independent facts from inquirers' environment can itself be considered as a methodological standard. In the framework of empirical sciences, it is sometimes called "empirical adequacy" (Fraassen 1977, Leplin 1986). Be this as it may, I nonetheless believe that this aspect of conceptual schemes' assessment deserves a separate treatment. In fact, it cannot be accounted for based on features of conceptual schemes only. It constitutes a privileged locus where rational inquiries confront with reality.

independent facts from inquirers' environment<sup>95</sup>, the important point is that a conceptual scheme has to describe certain observable ways reality can be that should be the case if the whole conceptual scheme is to be rationally accepted and considered as true. It has to include (or to permit deriving) descriptive statements that inquirers can confront with independent facts. More precisely, these descriptive statements have to be confronted with observation reports describing independent facts from inquirers' environment. But these reports cannot be absolutely neutral. Observation reports are apperceptively justified statements that describes what is the case in inquirers' environment. According to Putnam's pragmatist theory of knowledge, apperceiving facts and expressing reports about them necessarily rely on conceptual schemes (Putnam 2012b [2010], 102, 2013f, 33, 2013b, 353-354). This reflects the general issue of "theory-ladenness" of observation stating that no neutral facts are available in (scientific) investigations (Shapere 1982, Sankey 2008a, 254-255)<sup>96</sup>. Therefore, calling 'independent' the facts against which conceptual schemes of rational inquiries have to be confronted does not indicate that these facts (and the reports describing them) should be independent of any conceptual scheme. This would amount demanding "*absolute* theory-neutrality" (Sober 2008). Rather, "*relative* theory-neutrality" is required: conceptual schemes along which the facts are conceived, apperceived and reported must not result from the ongoing inquiry. They have to be admitted independently of it. Depending on the type of terms employed to formulate descriptive statements to be confronted with independent facts, these independently admitted conceptual schemes might be provided by ordinary language of a given culture (as validated via historically and culturally situated commonsense), and involve basic perceptual or observational judgments that do not ask for further justification in unproblematic circumstances<sup>97</sup>. They can also come from rationally accepted conceptual schemes of pre-established rational inquiries deploying their own assessments of rational acceptability (in particular their own methodological standards and confrontation with inquirers' environments) (Shapere 1989, 431, Putnam 2013h, 247, Putnam 2013g, 259). For example, inquiries bearing on the trajectories of physical objects in a gravitational field are likely to integrate independent facts about 'balls', 'distances' and 'time length' whose formulation relies on commonsensically accepted conceptual schemes. Contrastively, in the case of sophisticated empirical sciences, conceptual schemes permitting the framing of independent facts are often themselves outcomes of pre-admitted rational investigations. For instance, stating that a star displays a certain emission spectrum requires the mobilization of a certain amount of physical knowledge (say, about experimental designs for spectroscopy and about light dispersion according to wavelength at the occasion of an interaction with a prism or a grating). In both cases, successful confrontation of conceptual schemes produced during rational investigations with independent facts from inquirers'

<sup>95</sup> This precise aspect is, at least partially, determined by methods of inquiries. For instance in empirical sciences, methodological standards specifies how "data collection and experimental practice" should be like (e.g. how to employ a given equipment) or what type of "experimental design or test procedure" should be deployed (e.g. double blind testing) (Sankey 2008a, 248).

<sup>96</sup> As already detailed, (apperceived) facts themselves (the way the environment is) as well as any other entity are not unique ways. Depending on points of view actual inquirers are context-sensitively tuned to, facts of the environments are many different ways. They can thus be correctly conceived and apperceived as being these different ways along tuned to points of view. Again, this context-sensitivity of the ways reality is does not degenerate in mind-dependence. Reality is these ways independently of being conceived so by any actual person. An important point that might be fruitfully reminded is that, in the framework of Putnam's pragmatist theory of knowledge, successful apperception (that is to say, in particular, apperception based on correct conception) is a direct contact with genuine aspects of reality. Consequently, the conceptual load associated with apperception and observational reports should not be seen as a contamination of facts (except when the apperception is not successful because of an incorrect conception). This was not the case in internal realism as attested by Putnam's affirmations, such as "contaminated [experiential] inputs are better than none" (Putnam 1981, 54).

<sup>97</sup> In that configuration, facts established through apperceptive verification can be understood as being acknowledged. No specific procedure needs to be deployed to assess or criticize the reasonableness of associated conceptions. In the same vein, the picture could be extended to count acknowledged ethical claims such as 'murder is wrong' as elements of inquirers' environments against which conceptual schemes could be confronted. For instance, a conceptual schemes leading to the conclusion 'murder is right' could be seen as failing confronting with 'facts' from inquirers' environment and may be judged, for this reason, as not rationally acceptable.

environment provides a strong reason to judge they are reasonable, that is to say, to believe they are true. However, in many cases confrontation with independent facts is not sufficient. One can for instance mention the situations of empirical underdetermination, in which several competing conceptual schemes permits predicting the same consequences with respect to the facts of inquirers' environment (Belousek 2005, Stanford 2013).

To face this type of challenges, it can be argued "that evidence properly understood does not reduce to what empirical facts a theory entails, rather how those empirical facts follow from the theory and how the theory otherwise is are part of the evidential basis for it" (Ladyman 2012, 42). Alternatively put, the contribution to judgments about the reasonableness of conceptual schemes provided by confrontation with independent facts from inquirers' environment can be complemented by a requirement of compliance with standards embedded in the methods guiding rational inquiries. A method specifies how a rational inquiry should be conducted and provides criteria constraining what the inquiry's outcomes (the conceptual schemes in the present context) should be like. Methodological standards can be constituted by principles, rules or (epistemic) values such as simplicity, plausibility, mathematical elegance, conceptual parsimony, or broad scope. They form what can be called an "epistemic framework" (Pritchard 2009, 398) or an "epistemic system" (De Langhe 2013, 2548) that guides the elaboration and contributes to the rational assessment of conceptual schemes (McMullin 1982, 2008, Carrier 2013). Such epistemic systems play several roles at different levels of rational inquiries (Nola and Sankey 2007, in particular chapters 2 and 3). Notably, they strongly constrain what can legitimately be part of a conceptual scheme. In particular, methodological standards influence and constrain which entities are talked about and which evaluative notions are mobilized (that is to say, which pre-existing terms are borrowed and which new terms are introduced). Similarly, they orientate the way conceptual clusters of pre-existing terms are corrected or improved, as well as the manner new uses for pre-existing terms and new terms with their uses are introduced. Constraints provided by methodological standards are also involved in the selection among available terms' uses. They might conduct to encounter certain ways of being rather than other and to engage in certain practices, for instance through the constraints they impose on experimental settings. Epistemic values such as external consistency impose doing justice to certain bodies of background knowledge. Furthermore, methodological standards also influence the type and the form of knowledge claims that can be legitimately integrated in conceptual schemes<sup>98</sup>. For instance, ad hoc claims needs to be rejected if the epistemic values of simplicity and conceptual parsimony are to be satisfied. In the same vein, requiring a broad scope for the results of a rational inquiry might conduct to privilege universally quantified statements (or claims holding in as many circumstances as possible). Methodological standards can also provide prescriptions about the types of properties that should be mobilized to consider essential features of given entities (essential properties as well as essential ways of being). Constraints provided by methodological standards become absolutely crucial when several conceptual schemes are underdetermined by empirical facts. In fact, the respective "epistemic standing" of conceptual schemes (Pritchard 2009, 398) can be established according to epistemic systems or methodological standards. This evaluation of epistemic standing permits rationally accepting specific conceptual schemes through 'inference to the best explanation' (Lipton 2008, Fairweather 2012, Carrier 2013).

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<sup>98</sup> Methodological standards can also influence and guide the confrontation of the studied conceptual scheme with inquirers' environment in providing prescription for experiments or in indicating the type of independent facts that should be considered (Sankey 2008a, 248-250).

Furthermore, an important point needs being highlighted. In general, methodological standards forming epistemic systems embed an evaluative component. To be expressible and to function as constraints on conceptual schemes, they have either to include explicit thin evaluative terms or to take the form of thick evaluative terms. Then, methodological standards enable inquirers to conceive ways conceptual schemes they produce *should* be. Provided with the descriptive components of epistemic principles, inquirers can assess whether conceptual schemes complies with given methodological prescriptions. And methodological standards or epistemic principles do not only describe some features conceptual schemes *can* possess or not. In virtue of their evaluative component, they also reflect the evaluative commitment that these features *should* be possessed. Evaluative affirmations expressing these commitments ('theories should be simple', 'principle of conceptual parsimony should be respected') are considered as true. Furthermore, methodological standards conceptual schemes of rational inquiries have to comply with can have different sources. They can reflect very general principles, such as employing widely appealing basic assumptions or withstanding criticism, that are part of "the desiderata for a methodology or a system of rational procedure in any major area of human concern" (Putnam 1981, 105). In this case, methodological standards are borrowed from conceptual schemes from ordinary language acknowledged via commonsense. They might also be inherited from past inquiries that are considered as successful or result explicitly from previous inquiries about methods. New methodological standards can also be established in the framework of an ongoing inquiry<sup>99</sup>. Whatever may be the case, compliance with methodological standards complements confrontation with facts from inquirers' environment in the rational assessment of conceptual schemes produced by rational inquiries. It constitutes a second aspect of rational acceptability that also provides inquirers with a reason to judge that a given conceptual scheme is rationally acceptable and thereby to consider it as true.

Successful confrontation with independent facts and compliance with methodological standards are very important criteria for pursuing truth in rational inquiries and for assessing the rational acceptability of elaborated conceptual schemes. However, they cannot operate independently of problematic situations. The latter are framed in borrowing pre-existing terms with their uses and effectively associated conceptual clusters either from available ordinary language or from pre-established conceptual schemes of past rational inquiries. In addition, they embed evaluative commitments indicating that certain topics are problematic. These commitments are inherited from contexts of inquiries. They may have been acknowledged through commonsense. Problematic nature of certain issues may also have been evidenced by past rational inquiries. As exposed in section 2.1, problematic situations are indispensable for settling indexical tunings to domains of investigation without which truth-seeking would be meaningless. There would be nothing to be described, elucidated or evaluated. Echoing this indexical function of problematic situations as condition of possibilities of rational inquiries, knowledge effectively possessed by actual inquirers about problematic situations (recollected in conceptual clusters attached to terms entering in their framing) plays a crucial role with respect to rational acceptability of conceptual schemes. To be rationally acceptable, a conceptual scheme meant to address a particular problematic situation has to permit actual inquirers to provide solutions in rationally manipulating the relevant elements (in particular in enriching or modifying the way

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<sup>99</sup> In general, inquiry about methods can be seen as pertaining to the domain of "meta-methodology" (Sankey 2008a, 256). Accordingly, methodological standards inherited from past successful inquiries can be understood as resulting from implicit meta-methodological inquiries. In the same vein, developing methodological standards during an ongoing inquiry can be considered as a meta-methodological inquiry inside this global ongoing inquiry.

these aspects of reality can be conceived and encountered). Therefore, not everything that might be correctly conceived deserves being integrated. Rationally acceptable conceptual schemes must embed only elements (terms and uses pointing entities being certain ways, properties, evaluative notions, etc.) that are relevant with respect to associated problematic situations. Considered as a standard of rational acceptability, relevance with respect to problematic situations imposes two main types of constraints.

First, it indicates which real entities and which evaluative notions should be considered. For instance, claims about quarks would be irrelevant in the conceptual scheme of an inquiry targeting the elucidation of the correlations between cows' feeds and milk taste. Integrating such claims would be considered as irrational (even if these claims are perfectly true). Through this first type of constraint, relevance with respect to problematic situations influence the selection of pre-existing (descriptive as well as evaluative) terms that are borrowed in order to initiate the elaboration of conceptual schemes. It may also lead to reject new terms that could be introduced, but corresponds to irrelevant entities or evaluative notions. Although they are fallible and might be revised (notably, knowledge about problematic situations may be corrected), assessments of relevance with respect to problematic situations largely guide the selection of descriptive terms and evaluative notions that are considered and integrated in associated conceptual schemes.

Second, terms admitted in conceptual schemes can possess several uses. Descriptive terms may refer to different ways of being of designated entities along different points of view. Evaluative terms can be associated with different uses reflecting past evaluations of particular problematic problems as well as with newly inaugurated uses reflecting new evaluative judgments. In this respect, problematic situations may lead to discard certain uses of terms as irrelevant. As already discussed, terms' uses are selected in actual contexts of speaking through language-users ability of attunement, which mobilizes available background knowledge, actually encountered real entities, and (world-involving) practices engaged in following given interests. In the framework of rational inquiries, relevance with respect to problematic situations can influence these elements involved in attunements (as does the standard of compliance with methodological principles). For instance, the features of problematic situations constrain what is empirically investigated (thereby impacting which entities and ways of being are encountered) or what is to be admitted as a relevant body of background knowledge (which 'external' scientific theories involved in external consistency). Accordingly, only certain among all possible uses of terms are correctly admitted in the framework of a particular inquiry addressing a specific problematic situation – only certain among possible associated conceptual clusters are validly integrated in the corresponding conceptual scheme. Relevance with respect to problematic situations restricts the possibilities of attunement.

In sum, actual persons conduct rational inquiries to solve various type of problematic situation by elaborating conceptual schemes and judging their reasonableness under the guidance of standards of rational acceptability. Standards of confrontation with inquirers' environment and of compliance with methodological principles ensure that elaborated conceptual schemes are rationally acceptable and that claims they embedded can be believed true. However, rational inquiry cannot be understood as a process of truth seeking in a decontextualized way (contrarily to what metaphysical realists could argue). There can be nothing to pursue independently of contextualized problematic situations that indexically determine tunings to particular domains of investigation. The idea of building a first-grade discourse that could be true independently of particular problematic situations is illusory. Once domains of investigation are fixed, knowledge

actual inquirers possess about problematic situations permits them to assess the relevance of elaborated conceptual schemes. Relevance with respect to problematic situations thus constitutes an irreducible standard of rational acceptability, on equal foot with confrontation with independent facts and compliance with methodological standards.

### ***2.3.2. An extension the domain of application of rational acceptability***

The previous section explicated the different standards of rational acceptability that guide the elaboration and the rational admission of conceptual schemes during rational inquiries. To complement this discussion, it is important to delineate the types of claims that can legitimately belong to conceptual schemes whose rational acceptability is assessed during rational inquiries. In particular, such claims need to be capable of truth. As demonstrated in section 1.3, Putnam's pragmatist theory of knowledge sharply distinguishes truth from apperceptive verification and from rational acceptability (by contrast with verificationism or with internal realism understood as a sophisticated form of verificationism). But this does not mean that the metaphysical realist conception of truth as a unique and context-independent property of correspondence with mind-independent reality (being a unique way along the absolute or God's eye point of view) should be admitted. Putnam's pragmatist theory of knowledge provides an alternative to deflationist and metaphysical realist approaches of truth that enriches and improves the account of what may be susceptible of assessment of rational acceptability during rational inquiries.

The developments proposed in the previous section 2.1 make clear that, in function of tunings to domains of investigation indexically triggered by problematic situations, many different types of claims should be integrated in conceptual schemes of specific inquiries. Furthermore, depending on knowledge effectively possessed by rational inquirers about problematic situations (and on other standards of rational acceptability), many different types of claims are actually integrated in conceptual schemes under construction. Putnam's pragmatist theory of knowledge imposes no a priori restrictions on the type of claims that may be admissible. It recognized that truth can take different faces in function of the specificities of claims. In particular, descriptive claims can be admitted in conceptual schemes of rational inquiries. Truth takes then the general form on an objective relation of correspondence between descriptions and ways real entities are. When judging a descriptive claim reasonable or rationally acceptable, inquirers conceive a way they believe reality is. If the claim is true, reality is this way. Nonetheless, descriptive claims themselves are not of a single uniform type. Thereby, objective relation of correspondence constituting their truth cannot be seen as a unique context-independent property. Accordingly, different descriptive inquiries can involve different types of claims that mobilize distinct faces of truth as correspondence. For instance, this is likely to be the case when comparing inquiries that address problematic situations such as 'elucidating properties shared by all samples of water' or 'establishing the chemical composition of water'. In the former case, statements such as 'any sample of water contains a large fraction of  $H_2O$ ' would be admitted. In the latter case, inquirers would admit claims like 'water is  $H_2O$ '. Truth of claims about essential properties mobilizes an objective relation of correspondence with ways an entity is along any possible points of view<sup>100</sup>.

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<sup>100</sup> As already mentioned, the discussion of issues connected with incommensurability may lead to amend this affirmation. It might be possible that certain entities possess incompatible sets of ways of being associated with incommensurable essential properties. At minimum, essential properties of an entity can always be found in actual things under consideration if they are this entity (that is to say if they are genuine and valid referents of the corresponding proto-rigid designator). In consequence, truth of claims about given essential properties would only involve sets of ways of being that are compatible with and gathered by these essential properties.

Contrastively, truth of claims about the essential way of being of an entity involves only a unique way this entity is along a specific point of view. But it also negatively implicates all possible ways of being of any other entities. None of them can be identical with the essential way of being of the studied entity.

Furthermore, these claims about essential features of given entities are not the only one that can be legitimately admitted in rationally acceptable conceptual schemes. Depending on the specificities of problematic situations, claims about properties shared by restricted set of ways of being of some entities, as well as descriptions of single ways of being, can be integrated. In such cases, truth would take the form of correspondence with the particularities of specific sets of ways of being of entities or with the specificities of single ways of being. In addition, rational inquiries are not confined to purely descriptive issues in Putnam's pragmatist theory of knowledge. As discussed in section 2.2, nothing prevents integrating (thick) evaluative notions in conceptual schemes of rational inquiries. Rational inquiries can attempt addressing problematic situations such as '*should* this norm of resistance for steel in planes be applied?' or '*is abortion wrong?*'. Accordingly, evaluative claims could be integrated in rationally acceptable conceptual schemes. Such claims mobilize a totally different face of truth, which does not rely on correspondence with what is actually the case in reality. Contrastively, they are true when correctly asserting that reality should be a certain way, by contrast with what it actually is, or with another possible way it could be. The fact that there can be this type of face for truth is grounded in actual persons' ability at criticizing what is actually valued, in their ability at conceiving a gap between the valued and the valuable.

In consequence, Putnam's pragmatist theory of knowledge permits considering that it is meaningful to try pursuing the rational elaboration of conceptual schemes embedding these different types of claims. Nevertheless, the affirmation that such conceptual schemes can effectively be rationally elaborated and evaluated may be in need of more detailed defense. The discussion proposed in the previous section makes clear that Putnam's pragmatist theory of knowledge enables elaborating an account of rational inquiry that takes distance with verificationism, according to which is rational only what can be verifiable or univocally reduced to verifiable elements. Rationally acceptable conceptual schemes produced in rational inquiries need not to embed only verifiable claims or statements reducing to them. On the contrary, rational inquiry constitutes a privileged epistemic tool to assess the reasonableness of affirmations whose truth is recognition transcendent. Nonetheless, the possibility of apperceptively verifying and of acknowledging certain statements embedded in conceptual scheme of rational inquiries is crucial for evaluating their rational acceptability. Confrontation of conceptual schemes with independent facts of inquirers' environment is an extremely important aspect of rational acceptability. Therefore, there are apperceptively verified or acknowledged statements in conceptual schemes of rational inquiries. But these verified statements are not the only ones that deserve rationally consideration. On the contrary, they contribute to judgments of rational acceptability about whole conceptual schemes they belong to. In addition, complementary contributions come from compliance with methodological standards and relevance with respect to problematic situation.

Importantly, verificationism is not the only restrictive approach of what can count as rational that is rejected in Putnam's pragmatist theory of knowledge. Notably, the idea that could count as rational only what belongs to a unique first-grade conceptual scheme or a unique complete and absolute conception of reality (for instance integrating only essential features of real



entities) is also rejected. Again, the idea of such a first-grade conceptual scheme providing a context-independent description of reality is illusory. The rational acceptability of conceptual schemes elaborated during rational inquiries cannot therefore be evaluated in arguing that they belong or not to such an allegedly first-grade conceptual system. Conceptual schemes designed to solve particular problematic situations are autonomous. They do not merely reflect what reality is independently of problematic situations. In the present account of rational inquiry, relevance with respect to problematic situations plays epistemically thin functions. It is reduced neither to a mere pragmatic focus in the elaboration of the first-grade conceptual scheme, nor to a pragmatic extraction of only the relevant rational knowledge from this independently rationally accepted first-grade conceptual scheme in order to conduct second-grade investigations. On the contrary, contextualized problematic situations determine tunings to domains of investigation and are irreducibly involved in the elaboration and rational assessment of conceptual schemes.

This does not mean that it is pointless to try describing essential properties or essential ways of being of real entities (for instance, through inquiries of natural sciences like physics or chemistry). Such aims do constitute valid problematic situations. The important point is rather that they are not the only valid and legitimate ones. They form specific problematic situations coming with tunings to particular domains of investigation. When focusing on essential properties of given entities, all ways of being of these entities are considered. By contrast, the study of their essential ways of being mobilizes what they are along very specific points of view only. In consequence, targets like ‘elucidating essential ways of being of natural entities’ or ‘elucidating essential properties of natural entities’ do constitute legitimate problematic situations of rational inquiries deployed in (or constituted by) natural sciences. But the conceptual schemes that are accordingly elaborated do not form a first-grade conceptual scheme (or an approximation of it). Belonging or not to unified and widely encompassing scientific conceptual schemes (like the one of physics) is not an overarching criterion necessarily required for reasonableness. Other rational inquiries answering different problematic situations, and thereby possibly tuned to different domains of investigation, can result in conceptual schemes that are just as much rationally acceptable. One can for instance imagine inquiries targeting the elucidation of properties shared by sets of ways of being of given entities (‘is water distributed in different countries potable?’) or the description of specific ways of being (‘what are the chemical properties of water in this bottle?’). These non-essential ways of being and properties should not be seen as ‘less real’ and less susceptible of rational investigation than essential features.

In addition, it has been recalled that truth is not the prerogative of descriptive issues, but is also a meaningful notion with respect to evaluations. Arguably, this conclusion is not sufficient to ensure that there can be rational evaluative inquiries – that is to say, that conceptual schemes embedding evaluative claims can be the objects of reasonableness’ assessments. Someone could acknowledge arguments from Putnam’s pragmatist theory of knowledge in favor of the meaningfulness of truth about evaluations, while still defending the view that evaluative issues cannot be rationally investigated anyway. The discussion about their truth would become purely speculative provided actual inquirers could forge no reasons to support judgments of rational acceptability about evaluative claims or conceptual schemes embedding them. This idea that evaluative issues cannot be rationally investigated is the corner stone of the already mentioned modern instrumental notion of rationality and of the associated fact-value dichotomy. In this line of thought, rational is a predicate that concerns only the choice of means (which are established in describing ways reality is). Evaluations cannot be rationally assessed. They reflect actual persons’

preferences ordering. And preferences are individual parameters that are either fixed or that change according to factors that cannot be accounted for rationally (Putnam 1981, 168-169). On the ground of elements discussed in section 1.3.3, the approach of rational inquiry developed here based on Putnam's pragmatist theory of knowledge permits questioning this exclusion of evaluative issues from the application domain of rational inquiry.

Preliminarily, nothing prevents considering investigations about evaluative commitments, or even about goals and interests, as answering particular problematic situations that constrain elaborated conceptual schemes. Furthermore, judgments of reasonableness of evaluative claims or conceptual schemes including them may also be guided by compliance with methodological standards. As Putnam indicates, principles such as Habermas' ethics of discourse or Kant's Categorical Imperative serve as valuable guides when assessing the rational acceptability of evaluative affirmations (see for instance: Putnam 2004, 25, 2008c, 385-387). Evaluative investigations could thereby be considered as susceptible of reasonableness. However, relevance with respect to problematic situations and compliance with methodological standards constitute only two components for judging rational acceptability. Up to this point, arguing evaluative issues can be rationally investigated might still be criticized by questioning the possibility of confronting conceptual schemes designed to answer evaluative problematic situations to independent facts from inquirers' environment. The lack of factual confrontation could, at least, lead to claim evaluative inquiries deserve a reduced rational status. The modern instrumental approach of rationality could thereby be maintained by arguing that, in virtue of the fact-value dichotomy, evaluative claims cannot, by principle, be connected with factual claims. A first element that can be brought to the fore in this respect is the fact that, in the contexts of inquiries, some evaluative claims can be acknowledged. Bypassing the issue raised by the fact-value dichotomy, this may permit arguing that, somehow, claims of conceptual schemes elaborated in evaluative inquiries can be confronted with independent 'facts' from inquirers' environment. But a deeper and complementary argument can be worked out.

Actually, the fact-value dichotomy is grounded in the empiricist views of Hume and logical positivists about what deserves being considered as a matter fact (Putnam 2002c, 14-24). According to them, facts are what is accessible to human senses. These views have been widely influential, and not only for empiricist thinkers. For the latter, belong to the realm of facts only things "that could be certified by mere observation or even a mere report of a sensory experience" (Putnam 2002c, 22). More realistically oriented philosophers tend to advocate that facts are what is the case in reality independently of actual persons' sensory experience, while recognizing that sensory experience permits acquaintance with facts. In both cases, what can be certified as being the case through sensory experience can be considered as a fact. In both cases also, facts about unobserved or unobservable states of affairs can be admitted or established based on directly experienced facts. In the framework of logical positivism, statements about unobservable facts can be settled provided they are based on analytic and synthetic claims only. In the same vein, scientific disciplines mobilize different manner of reasoning permitting to establish facts beyond what is directly accessible to human senses (as accounted for by, for instance, Hempel's deductive-nomological model or Popper's falsificationism). The core idea of the fact-value dichotomy is to deny that evaluative issues can be settled by this mean. Hume posited a sharp distinction between facts and relation of ideas. Logical positivists conceived analytic and synthetic statements as two sides of a dichotomy exhausting what can be cognitively meaningful. Evaluative claims belonging to none of these categories cannot be more than subjective judgments, impossible to legitimize

through reasoned arguments (Putnam 2002c, 10-13 and 62). Without necessarily reaching the extreme conclusion of logical positivism about cognitive meaningfulness, any view admitting the fact-value dichotomy permits no porosity between what is and what is not factual. Reasoning about what is factual and arguments about what is not factual cannot interact. This corresponds to “Hume’s Law” stating that no evaluative judgments, about what *ought* to be, can be derived from judgments about facts, about what *is* (Putnam 2002c, 14-15). Such a principle closes any possibility of confronting evaluative claims with independent facts from inquirers’ environment. This way of reasoning grounds a kind of (vicious) circle (Putnam 1981, 173). The admission of the fact-value dichotomy permits claiming that evaluative issues cannot be confronted with independent facts. Consequently, such issues cannot be rationally investigated, contrarily to factual matters permitting to establish means (another way of putting the instrumental conception). This in turn leads to the idea that evaluations cannot be objective, contrarily to assessments of factual states of affair. And this idea conducts directly to the fact-value dichotomy, closing the circle. In sum, according to this self-sustained instrumental conception of rationality based on the fact-value dichotomy, only matter of facts can be rationally investigated. Because they cannot be connected with statements about matter of facts, non-descriptive issues cannot be rationally investigated.

The important point to notice is that this conclusion integrally relies on the admissibility of the fact-value dichotomy. As already mentioned, one of the major aspects of Putnam’s work concerns the rejection of the fact-value dichotomy (Putnam 1990 [1982], 2002c, 2012b [2011]). Putnam provides many arguments against it such as, in particular, the indispensability of thick evaluative concepts for the description of our social environment and our interpersonal relations, as well as their irreducible role as epistemic values for the establishment of scientific theories. Once the fact-value dichotomy is discarded, no reasons remain to refuse, by principle, that evaluative investigations could be connected with factual statements. Conceptual schemes answering to evaluative problematic situations and embedding evaluative claims can be confronted with independent facts from inquirers’ environment. The application domain of rational inquiries needs not to be restricted to descriptive issues only. An investigation about evaluative issues can be as rational as an investigation of natural sciences. Conceptual schemes permitting to discuss evaluative problematic situations (for instance, ‘is abortion wrong?’) can be rationally acceptable provided they comply with sets of methodological criteria and they are successfully confronted to independently established facts. One can for instance imagine that such conceptual schemes could result in moral or ethical prescriptions. These prescriptions could be confronted with independent (ethical or moral) facts like the independently recognized increasing or decreasing of human flourishing when applying the results of the inquiry (facts established through another moral or ethical investigation or facts merely acknowledged through commonsense).

To summarize, the present account of rational inquiry on the ground of Putnam’s pragmatist theory of knowledge takes distance with metaphysical realist approaches by extending the scope of what is susceptible of rational acceptability. In particular, it avoids the risk the latter face to confine what can count as rational to what can belong to an absolute conception of reality. On the contrary, the same rational status is a priori granted to inquiries targeting the elucidation of essential features of real entities, to those focused on other types of properties and ways things are as well as to investigations embedding evaluative components. All of them are susceptible to produce true conceptual schemes, though truth can take many different faces. All these conceptual schemes can be judged rationally acceptable provided they answer specific problematic situations, they comply with sets of methodological standards, and they are successfully confronted with

independent facts. What can be pursued in rational inquiries and how it can be pursued are neither uniform nor fixed in advance. The fact that investigations of natural sciences are extremely well adapted to investigate certain aspects of reality does not mean that the specificities of their standards of rational acceptability should be considered as overarching and universal canons of rationality (nor should be the specificities of the standards of any particular type of inquiry). Furthermore, this extension of the scope of what is susceptible of rational acceptability is ensured without opening the door to deflationism about truth. By contrast with verificationism and internal realism, truth, seen as what is pursued in rational inquiries, is not confused with rational acceptability and standards permitting to assess it. Standards of rational acceptability remain tools to seek truth.

### ***2.3.3. Context-sensitivity of rational acceptability without relativism***

The previous section demonstrated that rational inquiries can legitimately focus on many different types of topics (description of various ways real entities are, elucidation of different sorts of properties but also evaluative questions). Conceptual schemes that are designed to address these issues can take many different forms. All of them are capable of truth, although different faces of truth can be mobilized (for instance, different types of objective relation of correspondence, evaluative truth grounded in the distinction between the valued and the valuable). Thereby, it becomes meaningful to claim that all of them are susceptible of judgments of rationally acceptability. As detailed in sections 2.2.1 and 2.3.1, features of conceptual schemes designed in rational inquiries largely depend on the standards of rational acceptability they admit. In a more precise, though probably non-exhaustive, enumeration, one can mention: indexical tunings to domains of investigations (and thereby faces of truth mobilized), entities and evaluative notions to be considered, new uses for pre-admitted terms and for new terms together with their associated conceptual clusters, selection of terms' uses or of attunements (that is to say, types of ways of being of entities that should be privileged and past evaluative judgments or new evaluations to be included), corrections or improvements of pre-existing conceptual clusters, and finally types of essential properties and ways of being to be studied. All these elements and particularities shaping conceptual schemes of rational inquiries are constrained by the requirements of confrontation to independent facts from inquirers' environment, of compliance with methodological standards and of relevance with respect to problematic situations<sup>101</sup>. At the occasion of his elaboration internal realism, Putnam showed that the notion of rational acceptability cannot be accounted for through a universally valid algorithm (see in particular the section 3.3 of preceding chapter). Although internal realism has to be rejected, this conclusion remains. Rational acceptability embeds context-sensitivity. The three main components guiding judgments of rational acceptability irreducibly rely on actual practices, judgments and commitments of inquirers, and on the features of historically and socially situated contexts inquiries start from.

Notably, provided metaphysical realism and the fact-value dichotomy should not be admitted, rational inquiries cannot be understood as guided by a unique overarching problematic situation (the one aiming at building the unique and complete first-grade conceptual system that describes mind-independent reality conceived as a fixed and pre-given totality of mind-

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<sup>101</sup> Some of these features can also be shaped by pre-admitted elements borrowed from the contexts inquiries start from. In particular, the way pre-admitted entities are conceived to be and the manner pre-admitted evaluative notions are understood largely depends upon conceptual schemes they are inherited from (commonsense conceptual schemes shared by given cultures at given times or conceptual schemes resulting from previous rational inquiries following their own standards of rational acceptability).

independent objects and their properties). Rational inquiries have to answer non-trivial and contextualized problematic situations that indexically determine tunings to domains of investigation. What count as a problematic situation for a particular inquiry depends upon the specificities of actual inquirers and of the context they are situated in. Because these elements can vary from context to context, problematic situations of different inquiries can be different. Alternatively put, the problematic situation of a given inquiry could have been different were the inquiry deployed in another context. This context-sensitivity at play in problematic situations can be exposed in more details. First, recognizing or judging that a situation is problematic itself relies on actual persons' interests, goals and evaluative commitments. For instance, how to judge that the lack of understanding of the behavior of subatomic particles constitutes a problematic situation to be solved without mobilizing the fact that it could permit building better technological artifacts or that it is part of human flourishing to learn more about physical reality? Depending on actual inquirers' normative and ethical commitments, and on the specificities of the context they are situated in, judgments about the problematic nature of a given situation can vary. Second, the very possibility to frame a given problematic situation requires conceptual resources that can be provided by nothing but conceptual schemes previously admitted in virtue of actual inquirers' situation in a particular scientific, social, cultural and historical environment. For example, undertaking a research about subatomic components of matters in physics cannot be realized without mobilizing terms (with their uses) from pre-existing physics to frame questions about the divisibility of atoms. In the same vein, basic problematic situations of physics, such as unexplained trajectories of objects in the sky, have to be initially expressed through terms and their uses borrowed from available ordinary languages. While problematic situations might be re-expressed according to conceptual schemes of inquiries, this initial grounding is indispensable to even start inquiries. Thus, problematic situations, with respect to which conceptual schemes produced during rational inquiries have to be relevant, irreducibly mobilize pre-admitted conceptual schemes that can differ depending on the context of inquiry. Conceptual schemes from ordinary languages (validated via contextualized commonsense) can be different at different times in history or in different cultures. Previously rationally accepted conceptual schemes from past rational inquiries can themselves be different depending on the specific standards of rational acceptability these inquiries admitted, and on the pre-existing terms and uses they necessarily borrowed from pre-admitted conceptual schemes. Third, the choice of terms and claims to be borrowed from these pre-admitted conceptual schemes to frame problematic situations is likely to be influenced by actual inquirers' interests and ethical or normative commitments. For instance, framing the problematic situation of a medical inquiry with categories like 'human being', 'drugs', and 'disease', or just with natural kind terms like 'physiological systems' and 'molecules' reflects some evaluative commitments of actual inquirers. Therefore, the framing of problematic situations framed can be different in function of the specificities of actual inquirers. Furthermore, these borrowed terms may come with several uses among which a selection can occur in virtue of actual inquirers' ability of attunement, which is guided by contextual features such as available background knowledge, encountered entities being certain ways and practices engaged in (in function of given interests). Finally, interests or evaluative commitments can also influence judgments about the relevance of elaborated conceptual schemes with respect to problematic situations. What inquirers hold relevant with respect to problematic situations they attempt to address (and that thereby, what deserves being integrated in the elaborated conceptual schemes) is likely to be impacted by these specificities that can vary from context to context. In sum, the contribution relevance with respect to problematic situations brings to the assessment of rational acceptability of conceptual schemes

produced during rational inquiries embeds context-sensitivity. The constraints it imposes can be different from context to context, notably in function of actual inquirers' practices and evaluative commitments.

In addition to relevance with respect to problematic situations, compliance with methodological standards also embeds context-sensitivity. Putnam's discussion of the notions of rational acceptability and truth exposed in the preceding chapter makes it clear that methodological principles followed by rational investigations cannot be accounted for through a context-independent universal algorithm. In particular, (scientific) methods cannot be properly understood through logical positivist or falsificationist approaches. Deprived from any universal and overarching conception, methodological standards of rational inquiries are context-sensitive. They irreducibly mobilize actual practices, judgments and commitments of inquirers and other features of contexts the latter evolve in. Different types of contextual influence can be delineated. First, methodological standards have themselves to be framed according to pre-existing conceptual schemes. Importantly, terms and statements borrowed from them to express methodological principles do not merely neutrally describe features conceptual schemes can have. Rather, they reflect pre-admitted evaluative judgments indicating that conceptual schemes should possess these features. Even when not explicitly integrating thin evaluative notions, epistemic principles such as simplicity, coherence or plausibility have to be seen as thick terms, whose descriptive dimension is irreducibly entangled with an evaluative one. Therefore, as it is the case with problematic situations, complying with given methods requires inheriting evaluative claims that are admitted prior to the inquiry. Some of them can come from ordinary language's conceptual schemes and reflect acknowledged "desiderata for a methodology or a system of rational procedure in any major area of human concern" (Putnam 1981, 105), such as employing widely appealing basic assumptions or withstanding criticism. Depending on cultural and historical contexts, broad principles they express can vary. Other methodological standards can be inherited from methods of past successful inquiries, which themselves embed context-sensitivity. Thereby, depending on contexts rational investigations are conducted in, what is hold as a true methodological claim and the way it is expressed can be different<sup>102</sup>. Second, certain epistemic principles such as "external consistency" can be seen as "contextual" to the extent they explicitly mobilize other conceptual schemes like pre-admitted scientific theories or broader metaphysical principles (McMullin 2008). Involved conceptual schemes can be different depending on the contexts of inquiries. A third source of context-sensitivity can be added. Specification and application of epistemic systems formed by methodological standards cannot be achieved without mobilizing actual inquirers' interests, goals and evaluative commitments. In particular, epistemic values cannot be considered as rules permitting a straightforward and univocal implementation. Their interpretation and application require informal judgments from and consensus among competent inquirers situated in their specific contexts (Putnam 2002b, 15, 2002a, 83). Along the same line of thought, epistemic values such as beauty or elegance are likely to involved actual persons' tastes and aesthetical sense. Additionally, ordering epistemic systems, that is to say, assigning an order of priority to methodological principles they include, may also be influenced by goals and interests of actual

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<sup>102</sup> To be perfectly general, it should be mentioned that some methodological claims might have also been established through explicit past inquiries about methodological principles, that is to say investigations about "meta-methodology" (Nola and Sankey 2000a, 13). Similarly, methodological standards could be instituted in the course of ongoing inquiries. This can be understood as implicit meta-methodological inquiry. Admitting methods of past successful inquiries can also be understood as implicit meta-methodological inquiry. Although the fact that these investigations can be considered as rational inquiry is crucial with respect to the topic of objectivity (as discussed just below), context-sensitivity remains. Such rational investigations about methodological standards are themselves influenced by contexts they start from.

inquirers. Furthermore, additional contextual influence on methodological standards might come indirectly. It can be mediated by context-sensitive features of problematic situations. Relevance with respect to problematic situations may lead to admit only some among pre-admitted available methodological principles. In the same vein, it could impact the orderings of admitted principles. For example, in an inquiry targeting the improvement of the control of our environment through technological tools, the requirement of simplicity might be privileged over the ones of beauty or of plausibility. A different ordering might be endorsed in an investigation aiming at increasing knowledge through adequate descriptions of some phenomena. To summarize, compliance with methodological standards irreducibly embeds context-sensitivity. The contribution it makes to the rational assessments of conceptual schemes produced during rational inquiries can be different from contexts to contexts.

To be complete, it is worth-mentioning that even the third standard guiding judgments of rational acceptability, namely confrontation of elaborated conceptual schemes with independent facts from inquirers' environment, is also context-sensitive. First, there cannot be independent facts without pre-admitted conceptual schemes that are independently considered true (judged rationally acceptable). These pre-admitted conceptual schemes permit apperceptively verifying descriptive claims against which elaborated conceptual schemes are confronted (they may also provide acknowledged claims like 'murder is wrong'). These independently accepted conceptual schemes might have been admitted informally through historically, culturally and socially situated commonsense. They can also be inherited from pre-established rational inquiries answering their own standards of rational acceptability and borrowing specific terms from pre-admitted conceptual schemes. In both cases, the admission of particular conceptual schemes permitting confrontation with independent facts embeds context-sensitivity<sup>103</sup>. Additionally, conceptual schemes produced during inquiries are not confronted with all available independent facts. Judgments are required about which bodies of independent facts are relevant in a given investigation (Sankey 2008a, 250). These judgments not only involve some background knowledge of prior theories (pre-admitted conceptual schemes), but are also guided by the problematic situations and methodological standards that, as discussed just before, are themselves context-sensitive.

This exposition of the different layers of context-sensitivity at stake in the assessments of reasonableness may lead to question the pretention to objectivity of rational inquiries. Obviously, if one imposes a forced choice between possessing universal algorithms leading to absolute certainty and relativism of assessments of rational acceptability, the discussion above would indicate that objectivity cannot be achieved. However, in Putnam's pragmatist theory of knowledge, context-sensitivity should not be equated with arbitrariness and relativism. Although the present account of rational inquiry intends to do justice to the fact that standards of rational acceptability and conceptual schemes accordingly elaborated are influence by contextual sources, it does not claim that these influences are absolute and cannot be criticized. On the contrary, the general picture proposed here even permits defending the idea that the influence of contextual sources can itself be rationally inquired. More precisely, questions about the legitimacy of contextual sources can take the form of 'should this methodological principle be admitted?', 'is this problematic situation well framed?', 'is this problematic situation really problematic?', 'is this body of independent facts relevant for the present inquiry?'. These are evaluative questions. And in the picture of rational

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<sup>103</sup> In particular, the realms of what is observable and what is not can change with theoretical knowledge and technological possibilities available in the context of inquiry (Ladyman 2012, 44).

inquiry based on Putnam's pragmatist theory of knowledge under development here, evaluative topics are as susceptible of rational investigation as descriptive ones. Therefore, rational evaluative judgments about the legitimacy of standards of rational acceptability of given investigations can be settled. As any rational inquiries, rational evaluations of standards of reasonableness cannot be accounted for as context-independent algorithmic reasoning. No general rules provide universal assessment of standards of rational acceptability independently of the specificities of contexts they are deployed in. Putnam for instance indicates that meta-methodological accounts such as reliabilism (epistemic principles assessed through the probability they have to lead to the acceptance of true hypotheses) cannot properly operate in general because the legitimacy of many epistemic principles is highly "topic-specific" (Putnam 2004, 72 note 2). Rational investigation of the legitimacy of standards of rational acceptability have thus to be understood as answering contextualized problematic situations (one might say, contextualized problematic meta-situations), such as those reflected by the questions mentioned just above. The problematic nature of given problematic situations can be rationally criticized. The suitability of the framings of given problematic situations can be rationally interrogated. The legitimacy of specific methodological standards and bodies of evidence given particular problematic situations can be rationally investigated. The framings of independent facts according to pre-admitted conceptual schemes can also be questioned. All these issues constitute full-fledged problematic (meta-) situations that actual inquirers may try to address by elaborating and judging the reasonableness of dedicated conceptual schemes. These judgments of reasonableness are guided by the same type of standards of rational acceptability as those deployed in any rational inquiry. As just detailed, genuine problematic (meta-) situations have to be addressed. Elaborated Conceptual schemes elaborated in this purpose thus needs being relevant with respect to them. In addition, already recognized epistemic principles as well as general principles of reasoning, such as reflective transcendence, openness to criticism, democratic consensus or fallibilism, may serve as methodological principles guiding the evaluations (Putnam 2002c, 32-33, 2004, 67-71, 92-93 and 107-108). Similarly, conceptual schemes elaborated to assess the legitimacy of standards of rational acceptability may well be confronted with independent facts from inquirers' environment. For instance, a given methodological prescription may be confronted with independently recognized successes or failures of theories built following it. In consequence, there can be full-fledged rational inquiries about standards of rational acceptability guiding rational inquiries.

In conclusion, the account of rational inquiry developed here permits drawing a picture of reasonableness of conceptual schemes that does justice to Putnam's criticism of criterial conceptions of rationality (Putnam 1981, chapter 5). The fact that standards of rational acceptability embed context-sensitivity reflects Putnam's claim that rationality cannot be exhausted through a universal algorithm or through a set of universally valid criteria. Nevertheless, it is important to insist, with Putnam, on the fact that this conclusion should not lead to reduce rationality and rational acceptability to culturally and historically situated norms (which would amount returning to a criterial conception of a different type)<sup>104</sup>. Rather, the important point is that the notion of rationality irreducibly relies on an informal layer from which contextual elements such as practices and evaluative commitments of actual inquirers cannot be removed. In the present account of rational inquiry, standards of rational acceptability cannot be described as

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<sup>104</sup> Accordingly, the delineation of the main components guiding judgments of rational acceptability proposed throughout the present section 2.3 should not be considered as exhausting what is susceptible to guide the rational admission of conceptual schemes. While this account seems suitable for the purposes of this manuscript, further refinements and alternative approaches might also prove highly valuable.



determined by a context-independent algorithm or a universally valid set of criteria. In particular, contextualized problematic situations are indispensable for rational inquiries to be tuned to determinate domains of investigation. Practices and commitments of actual inquirers as well as other specificities of the contexts of inquiry are irreducibly and legitimately involved. This conclusion presents a high interest to the extent it permits continuing valuing the way natural sciences are conducted (in particular with focus on essential properties or ways of being and on claims as generalizable as possible) and claiming the superiority of its methods when deployed with respect to the right sorts of problematic situations, while not restricting the realm of legitimate rational inquiry to investigations following similar methods only. In particular, producing conceptual schemes whose validity display less generality does not in general mean producing a less rational discourse (in particular when inquiries are designed to address highly contextualized problematic situations). Nonetheless, the recognition that elements involved in rational acceptability can be legitimately different in function of contexts does not imply that any influence from contexts of inquiry is legitimate, or that all elements inherited from contexts are equally valuable. For instance, broad methodological principles such as employing widely appealing basic assumptions or withstanding criticism can be seen as rules that *should* be followed even if they might not be (have been) recognized as such in some cultural and historical contexts. In this respect, one can notice the importance the possibility, opened in the present account based on Putnam's pragmatist theory of knowledge, of rational inquiry about evaluative matters, without which the admission of context-sensitivity could imply more problematic consequences. Through the possibility of rationally questioning the legitimacy of contextual sources influencing context-sensitive elements in rational inquiries, objectivity is preserved. Of course, it is not objectivity as absolute certainty. But, is not such a view of objectivity illusory? Objectivity, understood as recognition of fallibilism and constant openness to rational criticism, seems to be the strongest objectivity actual inquirers can effectively achieve. And, to paraphrase Putnam, it may be objectivity enough.

### **3. Synthesis: a general picture of rational inquiry according to Putnam's pragmatist theory of knowledge**

The most important features of the detailed account of the notion of rational inquiry developed in the preceding sections starting from Putnam's pragmatist theory of knowledge can now be summarized. Rational inquiries can be generally defined as investigation processes conducted by actual persons and aiming at solving problematic situations through the elaboration of original conceptual schemes (or the improvement of pre-existing ones) under the guidance of standards of rational acceptability. As synthetically pictured in Figure 1, this general definition covers many crucial elements.

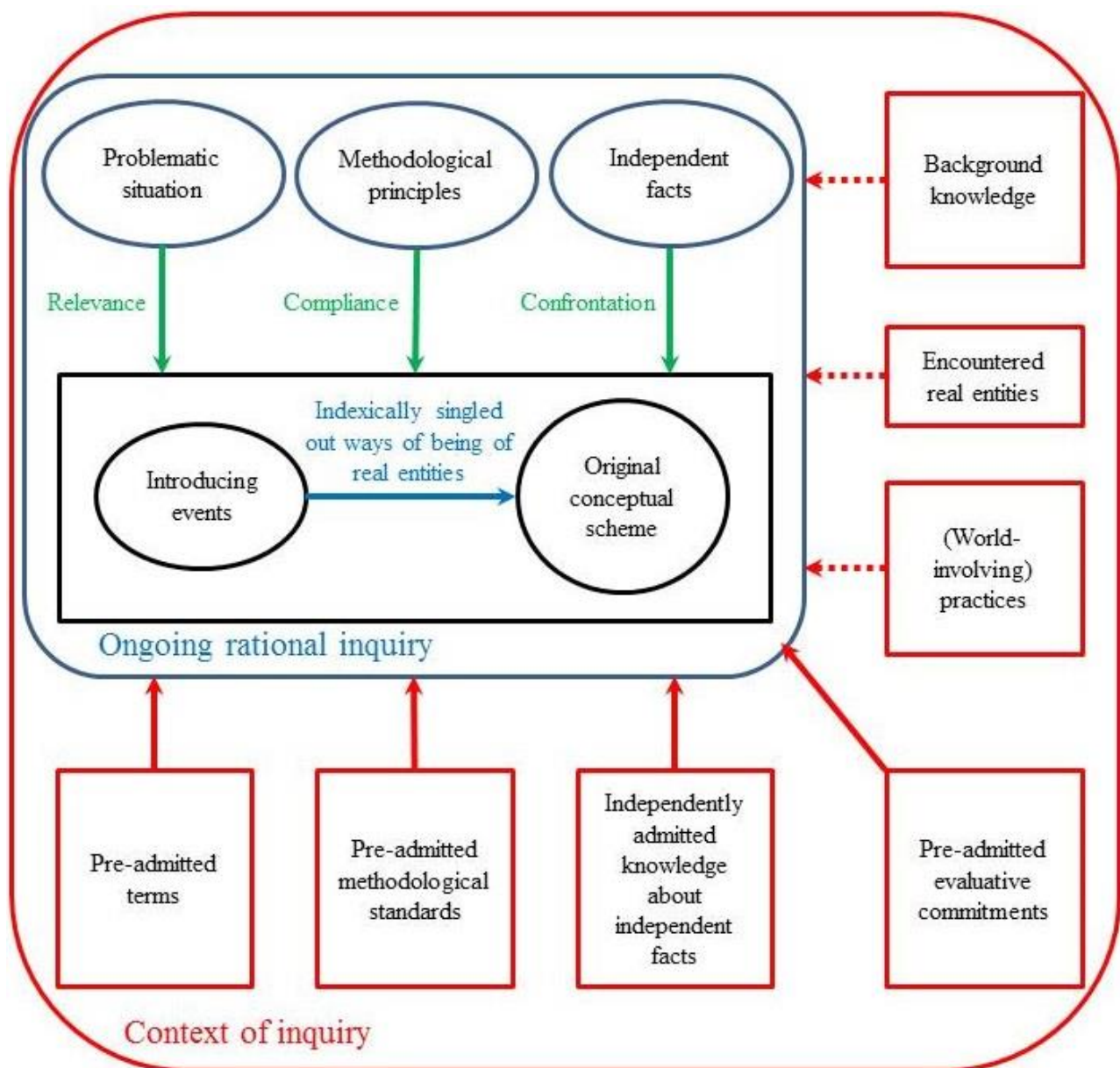


**Figure 1: General representation of the structure of a rational inquiry evidencing the indispensable role of the specificities of actual inquirers and of the context to which they belong.**

In general, conceptual schemes are constituted by interconnected conceptual parts of meaning vectors of terms they embed. More precisely, terms hosted in conceptual schemes can possess multiple uses associated with specific conceptual clusters (which include more or less adequate information about terms' uses) all recollected in the conceptual part of their meaning vectors. When employing a given term, actual inquirers select one of its possible uses in virtue of their ability of attunement. Each use is grounded at the occasion of a specific introducing event. Deploying a term according to one of its uses amounts replaying the corresponding introducing event (and requires standing in proper historical-causal relationship with it). According to a given use, a descriptive term refers, in virtue of contextualized rigid designation, to an entity being a particular way along a specific point of view, as indexically singled out during the corresponding introducing event. The associated conceptual cluster may embed more or less adequate description of the referred to way of being of this entity. According to Putnam's pragmatist theory of knowledge, rational inquiries are not restricted to descriptive matters, but can also focus on evaluative topics. Conceptual schemes can host evaluative terms. A particular use of an evaluative

term reflects a specific evaluation of an entity (action, person, event, etc.) situated in a particular practical problem. This entity and those constituting the practical problem are indexically singled out as being given ways along specific points of view during the corresponding introducing event. The associated conceptual cluster may include information about the mobilized evaluation, as well as more or less adequate descriptions of the evaluated entity and of the practical problem. In addition, conceptual schemes elaborated during rational inquiries have to fulfill requirements provided by standards of rational acceptability (relevance with respect problematic situations, compliance with methodological standards, and confrontation to independent facts from inquirers' environment) to be judged as reasonable<sup>105</sup>. Consequently, features of conceptual schemes (what terms and concepts are integrated, how they are connected, which of their possible uses are selected, etc.) are highly constrained by standards of rational acceptability admitted in the framework of rational inquiries producing them.

Following insights from thinkers like Dewey, the present account of rational inquiry based on Putnam's pragmatist theory of knowledge rejects any foundationalism attempting at expelling context-sensitivity from the picture. Specificities of conceptual schemes elaborated during rational inquiries cannot be accounted for in a purely algorithmic approach discarding the influence of the particularities of actual inquirers and of contexts they are situated in. Notably, previous sections make clear that standards of rational acceptability are context-sensitive. The different semantic processes permitting the elaboration of conceptual schemes cannot be accounted for in a context-independent way. Borrowing pre-existing terms and their uses, introducing new uses for pre-existing terms and new terms with their uses, correcting conceptual clusters associated with pre-existing terms, as well as selecting adequately terms uses are mechanisms that all irreducibly mobilize contextual particularities. Generally speaking, the features of the conceptual schemes that are judged rationally acceptable in the framework of contextualized rational inquiries are context-sensitive. A list (which does not pretend to be absolutely exhaustive) of contextual sources influencing these features can include:

- Pre-existing terms borrowed from pre-established conceptual schemes of ordinary language or of past inquiries (for instance required for the framing of problematic situations).
- Pre-admitted methodological principles (seen as pre-established evaluative claims about the way inquiries should be conducted or the form conceptual schemes should take) coming from commonsense or from implicit or explicit past meta-methodological inquiries are necessary to consistently build methods of inquiries.
- Independently admitted knowledge about independent facts is irreducibly mobilized to permit confronting produced conceptual schemes to inquirers' environment. Apperceptive verification of independent facts is achieved through conceptual schemes that are recognized as rationally acceptable independently of ongoing inquiries (provided by commonsense or by past inquiries).
- Pre-admitted evaluative judgments and commitments of actual inquirers are also indispensable. They are, for example, irreducibly involved in judgments about the

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<sup>105</sup> As a side not, this picture of rational acceptability is not meant to exhaust what can be considered as a rational investigation. While the present account seems already quite broad, evidencing other possible ways for an inquiry to be would not necessarily mean that the latter cannot be genuinely rational. It might as well indicate that the present account is not wide enough.

problematic nature of encountered situations, and in the way the problematic situations are effectively conceived.

- Pre-admitted background knowledge is required in attunement's processes, during which specific uses of terms are selected. Some background knowledge is also mobilized through certain epistemic principles, such as the epistemic value of external consistency. Background knowledge corresponds to pre-admitted conceptual schemes either validated through commonsense or judged rationally acceptable through past rational inquiries.
- Real-world objects and entities inquirers actually encounter in the framework of rational inquiries are also necessary for attunement's processes.
- Actual (world-involving) practices inquirers engaged in during ongoing inquiries are crucial for attunement's processes as well.

As a side note, the three last elements are likely to be constrained by standards of rational acceptability. Not any possible background knowledge, any possible real entities or any possible practices are effectively mobilized in the framework of an ongoing rational inquiry. This explains why they are pictured with dotted arrows in Figure 1.

Before mobilizing the account of rational inquiry developed in the present chapter to discuss the notion of incommensurability, it may be fruitful to insist again on one of its most crucial aspects. The recognition of the irreducible context-sensitivity at stake in rational inquiry does not imply renouncing to objectivity or committing to relativism. First, contextual influence should not be integrally equated with contextual pollution. Putnam's philosophical insights make clear that, contrarily to what could be conceived according to metaphysical realism, the idea of context-independent knowledge about reality is meaningless. As we have seen, contextualized standards of rational acceptability are indispensable for inquiries to be tuned to determinate domains of investigation. The consequently, the fact that differently featured conceptual schemes are elaborated by inquiries grounded in different contexts can be perfectly legitimate (conceptual or pragmatic pluralism). Second, contextual influences do not need being merely undergone. Evaluative claims about their legitimacy are capable of truth and can be objectively studied through evaluative rational inquiries. However, this possibility of 'meta-rational inquiry' should not be seen as a return to foundationalist or algorithmic approaches of rational inquiry. Conclusions of these evaluative rational inquiries about the soundness of particular context-sensitive features of 'lower-level' rational investigations and of contextual sources influencing them are fallible. They might be revised. Furthermore, these additional or 'higher-level' rational inquiries also embed context-sensitivity. Points at which formalized rational justification stops are inevitable. Rules and criteria can never integrally imprison rationality. An informal *mise-en-abîme* necessarily conceals it from integral formal reduction.

## Chapter 3: Incommensurability between rational inquiries in light of Putnam's pragmatist theory of knowledge

Provided with the results of previous chapter, contextually-driven incompatibilities between rational inquiries can now be explored to account for Kuhn's notion of incommensurability and to address the major difficulties this notion raises. As discussed in the introduction, the idea of incommensurability has been criticized as opening the door to diverse forms of relativism and antirealism, and as conflicting with scientific realism. Nevertheless, incommensurability remains a highly controverted notion whose significance and consequences have been intensively debated. Therefore, the present work does not aim at establishing precisely what Kuhn himself defended and how his theses should be positioned with respect to whole philosophical debates concerning realism or truth. The goal being more modest, the strategy can be more focused. **The present study targets the settling of a context-sensitive and realist account of phenomena of incommensurability according to the general picture of rational inquiry, developed in previous chapter by starting from Putnam's pragmatist theory of knowledge.** Nonetheless, this goal cannot be reached directly in mobilizing Putnam's explicit comments about incommensurability. He seems to understand incommensurability as implying total isolation between systems of rational acceptability and-or between semantic and linguistic networks (see for instance: Putnam 1975 [1975], 165, 1988, 13, 1992, 68, 124-127 and 143, 1995, 38 note 8, 2002c, 142). Instead, the tasks of reconstructing incommensurability based on our general picture of rational inquiry and of establishing a context-sensitive and realist account of associated phenomena can be initiated on safe ground by starting from what may be considered as Kuhn's most clear and uncontroverted theses. Kuhn's distinction between normal science and abnormal situation or crisis states (such as those occurring at the occasion of a scientific revolution) seems well clarified. As will be discussed, Kuhn was also rather clear about the associated phenomena of incommensurability susceptible to occur at taxonomic and methodological levels between rational investigations (and their outcomes) separated by a scientific revolution or between inquirers of a scientific community in a crisis state. Echoing Bird's line of investigation (Bird 2008b), these phenomena of incommensurability could be considered as providing valuable insights about the cognitive functioning of actual persons engaged in scientific or rational investigations. Reconstructing them in our general picture of rational inquiry may thus permit establishing a precise definition of incommensurability in isolation from possible consequences concerning realism or truth, which seem extremely sensitive to more general background philosophical commitments (Sankey and Hoyningen-Huene 2001, xviii, Sankey 2009, 199). Determining whether the significance of phenomena of incommensurability can extended beyond the cognitive sphere of actual persons, up to reality itself, is an issue that could then be discussed separately.

Accordingly, the next sections propose a progressive elucidation of the notion of incommensurability and of its philosophical and epistemological consequences through the lens of our general account of rational inquiry based on Putnam's pragmatist theory of knowledge. First, uncontroversial and clarified aspects of Kuhn's notion of incommensurability are briefly recalled and reconstructed as phenomena possibly occurring in cognitive functioning of rational inquirers. This permits, in a second time, systematic reframing and generalization of the aspects incommensurability might take in our general picture of rational inquiry. It is the occasion of

discussing less clarified claims from Kuhn, notably about the links between incommensurability and problem framing. Third, in addition to competing perspectives usually considered, the possibility for non-competing interpretations of incommensurability is introduced. Then, the various aspects of the notion of incommensurability being thus accounted for and generalized in our approach of rational inquiry, the more controversial philosophical and epistemological challenges it raises are discussed. The manner such challenges related to realism and truth are met in our general account based on the Putnam's pragmatist theory of knowledge is detailed. A context-sensitive and realist account of phenomena of incommensurability is thereby settled and deployed to reconcile incommensurability and scientific realism.

## **1. A reconstruction of the main aspects of Kuhn's notion of incommensurability**

Certain aspects of what Kuhn intended through his notion of incommensurability are well elucidated and mostly uncontroverted (at least as long as there are seen as a description of the cognitive functioning of actual persons engaged in scientific inquiries, that is to say, independently of associated commitments about their epistemological and philosophical consequences concerning realism and truth). One can for instance mention divergences between methodological standards or mismatches between sets of categories (Oberheim and Hoyningen-Huene 2013, section 2). As a first step on the road of a generalized account, these uncontroversial aspects can be reconstructed based on our general picture of rational inquiry.

Kuhn's approach of incommensurability is illuminated by the elucidation of his motivation to introduce the term 'paradigm'. Through his historical studies of scientific enterprises, Kuhn noticed that the process of scientific research and the membership to given research communities cannot be properly accounted for in terms of rule following only. The "specification of the content and application of scientific theories" cannot exclusively rely on shared rules, but also involve "concrete examples" or "shared examples of successful practice" (Kuhn 1977, 284 and 318-319). The term 'paradigm', in its original and core sense, designates these exemplars. In a broader sense, 'paradigm' also came to refer to "all the shared commitments of a scientific group," including for instance symbolic generalizations and models in addition to exemplars. To avoid confusions, Kuhn proposed to label 'disciplinary matrix' this whole set of shared elements (Kuhn 1977, 294 and 297). Paradigms (understood as shared examples of successful practices) are specific components of disciplinary matrixes that play two crucial functions. First, at the semantic level, paradigms fix the taxonomic or semantic structure of languages shared by communities. They constrain how concepts and terms of these languages connect together. They also impact how terms relate to the world in providing similarity relations, along which real objects are grouped in sets associated to given terms (Kuhn 1996 [1962], 200). Paradigms fulfilling this semantic function can be seen as shared examples of successful *semantic* practices. Second, at the methodological level, paradigms indicate how theories should be assessed. According to this role, paradigms can be conceived as shared examples of successful *methodological* practices. In phases of normal science, these examples of successful practices are shared by the members of given scientific communities. They permit communication with an enhanced efficiency as well as agreement about methods for theory assessment. However, normal science does not exhaust the whole picture. Sciences operating in their normal mode can enter abnormal situations or crisis states, when several anomalies resist theories accepted up to this point (Kuhn 1996 [1962], chapter 6). Crisis states are characterized by

the emergence of multiple alternatives to accepted theories. Admitted examples of successful practices (notably methodological ones) might begin diverging among different members of concerned scientific communities, generating misunderstandings and disagreements about the assessment of competing theories. In addition, crisis can outcome in scientific revolutions at the occasion of which ancient paradigms are rejected and new ones are admitted. Examples of successful practices are different in pre- and post-revolutionary scientific communities, generating failures in communication and divergences in theory assessment between their respective members (Kuhn 1996 [1962], chapter 7 and postface section 5). These failures in communication and divergences in theories' assessment reflect phenomena of incommensurability. In sum, incommensurability arises when several research communities (or several groups of inquirers within a research community) rely on different exemplars or paradigms. Following this idea, different aspects of the notion of incommensurability can be precisely delineated.

Because paradigms play different functions, incommensurability is multiform. The first main aspect incommensurability can take involves the taxonomic or semantic function of paradigms. In Kuhnian words, mismatches between taxonomies (or lexicons) associated with distinct paradigms can generate 'taxonomic incommensurability' that raises difficulties in communication, understanding and translation (Oberheim and Hoyningen-Huene 2013, sections 2.1 and 2.3.1). Taxonomic incommensurability occurs when divergent paradigms lead to incompatible or non-homologous systems of categories (for instance, systems of natural kinds). A given system of categories (a lexicon or taxonomy) is non-homologous or incommensurable with another one when it cannot be integrated in the latter without disrupting it (Kuhn 1990b, 314-315). Considered at the intensional level, taxonomic incommensurability is reflected by the fact that some terms are included in incompatible networks of inter-definitions when deployed according to incommensurable examples of successful semantic practices. This occurs for instance with 'mass', 'length', and 'time' between the frameworks of Newtonian and relativistic mechanics. It is also the case between Ptolemy's and Copernicus' celestial theories about 'planet', 'earth' and 'star'. For Ptolemy, planets orbit the earth (stars are planets). Contrastively, in Copernicus' theory planets orbit stars. The respective conceptual connections between 'planet', 'earth' and 'star' of each approach are incompatible. Therefore, some terms receive different and incompatible meanings when hosted in incommensurable theories based on incommensurable taxonomies. But taxonomic incommensurability does not reduces to incompatibilities in meanings of terms. It also impacts the extensional level. Incommensurable taxonomies lead to incompatible cross-classifications of objects. In Ptolemy's system, any star (in particular the sun) is in the extension of the term 'planet'. Contrastively, according to Copernicus' taxonomy, earth belongs to the extension of 'planet' while sun belongs to the one of 'star'. In sum, taxonomic incommensurability arises when some shared terms are embedded in theories grounded in incommensurable examples of semantic practices and thereby possess incompatible meanings and referents. As a consequence, there can be no common language in which incommensurable theories would be fully translatable (Kuhn 1990b, 299). Furthermore, taxonomically incommensurable theories cannot be consistently gathered in single linguistic fields because associated cross-classifications of objects violate what Kuhn called the "no-overlap principle". According to this principle, "no two kind terms, no two terms with the kind label, may overlap in their referents unless they are related as species to genus" (Kuhn 1990a, 4)<sup>106</sup>.

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<sup>106</sup> As a crucial anticipated comment, the violation of the no-overlap principle may not be intrinsically connected with taxonomic incommensurability. Instead, it could be considered only as a possible component of it. Such an understanding of the role of the no-

The second main aspect under which incommensurability can occur bears upon the methodological function of paradigms. It concerns the way theories or solutions proposed to solve given problems are assessed. Paradigms qua shared examples of successful methodological practices play a crucial role at this level in indicating according to which sets of methodological or epistemic principles (competing) theories should be evaluated. Accordingly, theory assessments guided by distinct paradigms can diverge. This can be called ‘epistemic incommensurability’ (Baghrarian 2008, 245) or ‘methodological incommensurability’ (Oberheim and Hoyningen-Huene 2013, section 2.3.2). Theory assessment can in particular mobilize epistemic principles (or values) such as coherence, simplicity or predictive power. Methodological incommensurability can then occur when several investigations are evaluated according to different sets of epistemic principles. Even when shared sets of epistemic value are endorsed, disagreement can exist about their relative weighting, or about the precise interpretation they deserve (Kuhn 1977, 322 and 331, Sankey 2008a, 255). The debate that stood throughout the Middle Ages between the respective proponents of Aristotle’s and Ptolemy’s celestial theories illustrates well such methodological incompatibilities. Aristotle’s approach was accepted in virtue of its explanatory power while Ptolemy’s theory was favored because of its predictive accuracy (McMullin 2008, 498). In the same vein, Kuhn discusses two principles involved in the adoption of new theories: the principle of preserving as many as possible of the “puzzle solutions” previously obtained and the principle of maximizing “the number of puzzles that can be solved” (Kuhn 1977, 290). While these two criteria can be both accepted in a shared set of epistemic principles, their application might lead to conflicts, imposing some choices of priority between them.

In sum, the core of Kuhn’s incommensurability thesis relies on the indispensability of paradigms (understood as exemplars of successful *semantic* and *methodological* practices) for understanding scientific research. The way science works cannot be exhaustively accounted for through a set of rules that might constitute the scientific method. Any deployment of taxonomic structures and systems of methodological rules irreducibly requires the ground of paradigms. Alternatively put, no algorithm or system of rules can determine the form that examples of successful practices shaping scientific research should take in various contexts. Letting aside the other elements of disciplinary matrixes, it is clear that, for Kuhn, paradigms qua exemplars can be different from a research community to another one. When different communities endorse incompatible examples of successful semantic or methodological practices, incommensurability arises and generates misunderstandings under the form of difficulties in inter-translation of respective languages or of disagreements about the assessment of (competing) theories. The general account of rational inquiry based on Putnam’s pragmatist theory of knowledge that has been developed in the preceding chapter meets Kuhn’s conclusion that a part of scientific activity escapes any reduction to universal algorithm or rule-based method. Although the focus is put on semantic and epistemological matters rather than on historical issues, similar results are established. Rational inquiries embed elements that are irreducibly context-sensitive (that is to say, elements that cannot be reduced to a universal algorithm and that can be different in different contexts of inquiry). This forbids any attempt at picturing rational inquiry independently of contextual sources such as actual inquirers’ practices and evaluative commitments or available background knowledge.

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overlap principle with respect to taxonomic incommensurability is even suggested by Kuhn himself: “The differences which produce [taxonomic incommensurability] are not any old differences, but ones that violate either the no-overlap condition, the kind-label condition, or else a restriction on hierarchical relations that I cannot spell out here” (Kuhn 1990a, 5). Similarly, the claim that referents of terms embedded in taxonomically incommensurable theories are different may not be valid in any possible circumstances.



This acknowledgement of the irreducibility of context-sensitivity constitutes an explicit point of convergence between Kuhn and Putnam that permits initiating the reconstruction of the different aspects of incommensurability recalled just above. As we saw, rational inquiries can be described as investigation processes guided by standards of rational acceptability (in particular by methodological standards) in order to solve problematic situations through the elaboration of original or improved conceptual schemes. Several loci of context-sensitivity have been identified in the previous chapter. Notably, intensional and extensional structure of produced conceptual schemes embeds context-dependency. Similarly, standards of rational acceptability (relevance with respect to problematic situation, compliance with methodological standards and confrontation with independent facts) are not pre-determined by an overarching algorithm. They are also context-sensitive. Consequently, the specificities of these different context-sensitive components cannot be accounted for independently of context contextual sources influencing them. Among the latter, one can mention: pre-existing terms or concepts admitted in the context of inquiry, pre-admitted background knowledge, pre-admitted methodological standards, independently admitted knowledge about facts of inquirers' environment, actual inquirers' pre-admitted evaluative commitments, real entities they encounter and (world-involving) practices they engage in.

Based on this context-sensitive view of rational inquiry, a robust connection with phenomena of incommensurability can be established. Contextual sources, on which actual inquirers necessarily rely and that influence context-sensitive elements of rational inquiries, can be associated with Kuhn's paradigms. Phenomena of incommensurability can therefore be reconstructed as mismatches between context-sensitive components of rational inquiries generated by divergences in contextual sources (such as those listed just above). Furthermore, the proposed delineation of the various types of contextual sources as well as of the manner they influence context-sensitive components of rational inquiries allows deepening the picture in analyzing the causes of incommensurable mismatches. Before developing this account of incommensurability, a methodological point needs being reminded. The first goal of this chapter is to account, in the framework of our general picture of rational inquiry, for phenomena of incommensurability as features of the cognitive functioning of actual inquirers. Only in a second time epistemological and philosophical issues linked to realism, reference and truth are approached. Therefore, the reconstruction of incommensurability proposed in the following mobilizes only semantic mechanisms permitting the elaboration of conceptual schemes and processes involved in their rational acceptance. Complying with this methodological remark, a first aspect of the reconstruction of Kuhn's notion of incommensurability (in its taxonomic and methodological dimensions) can be laid out.

To begin with, phenomena of taxonomic incommensurability fit well in the semantic account embedded in our general approach of rational inquiry based on Putnam's pragmatist theory of knowledge. Intensional and extensional structure of conceptual schemes can be seen as arising from the way terms are associated with their meaning vectors and the manner these meaning vectors are connected together. As detailed in section 1.2 of preceding chapter, a term is associated with a meaning vector that includes intensional or conceptual and extensional or external components<sup>107</sup>. The former contains conceptual clusters associated with the different possible uses of the term (for instance, effectively possessed descriptions of corresponding

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<sup>107</sup> In the light of Kuhn's account of taxonomic incommensurability, it is sufficient, as a first step, to focus on semantic mechanisms associated with descriptive terms.

referents as well as additional information for picking out paradigmatic examples of referents). The extensional component is formed by these referents associated with each possible use. Terms' reference or extensions (extensional components of associated meaning vectors) are determined at the occasion of introducing events (one event per term's use). Therefore, to employ correctly a given term along one of its possible uses, language-users need to master the knowledge recollected in the associated conceptual cluster and to stand in a proper historical-causal relationship with the corresponding introducing events. Crucially, the analysis proposed in the previous chapter makes clear that knowledge recollected in terms' conceptual clusters as well as introducing events actual inquirers stand in relationship with cannot be seen as determined by a context-independent algorithm. On the contrary, these elements are highly context-sensitive. Moreover, these elements constitute the building blocks of conceptual schemes. Thereby, intensional and extensional structures of the latter are also context-sensitive.

Accordingly, a parallel can be drawn with Kuhn's paradigms along their semantic or taxonomic function (examples of successful semantic practices). This parallel can be established in doing a bit of reverse (linguistic) engineering. Being established that taxonomic exemplars are at the ground of the manner terms are interconnected in conceptual schemes and that they provide paradigmatic examples of referents, they can be associated with contextual sources shaping conceptual clusters associated with terms – that is to say, with contextual elements shaping the knowledge associated with terms, which reflect conceptual connections between them and can embed criteria for correctly picking out paradigmatic referents. Conceived along this line of thought, taxonomic exemplars are not monolithic. Several context-sensitive mechanisms are involved in the settling of conceptual clusters hosted in conceptual schemes. These mechanisms are influence by different types of contextual sources. First, some pre-existing terms and their uses are necessarily borrowed from conceptual schemes of contexts actual inquirers are situated in. They come with their specific sets of conceptual clusters and referents. Moreover, which pre-existing terms and uses are mobilized depends upon standards of rational acceptability, which are themselves influenced by available background conceptual schemes (for instance providing pre-admitted methodological principles) as well as by actual inquirers' practices and evaluative commitments. Second, new terms and new uses for pre-existing terms can be settled from within rational inquiries. In this process, new conceptual clusters are integrated in conceptual schemes under the guidance of context-sensitive standards of rational acceptability in mobilizing, notably, conceptual clusters of pre-existing terms available in contexts of inquiries. Finally, conceptual clusters of pre-existing terms can be corrected or improved in compliance with standards of rational acceptability and based on conceptual clusters associated with other pre-existing terms or new terms. To be complete, the relationship between taxonomic exemplars and introducing events should be interrogated. Kuhn seems to suggest that terms' referents are determined by paradigmatic examples of successful semantic practices. At this point, our general picture of rational inquiry permits introducing a crucial refinement. In general, reference is determined at the occasion of introducing events. This allows conceiving a distinction between the examples of successful semantic practices (taxonomic paradigms) that constitute genuine original introducing events and those that replay pre-established introducing events. In consequence, it becomes possible to distinguish between the impact of taxonomic exemplars on conceptual clusters associated with given terms and on reference of these terms. In sum, the taxonomic function Kuhn attributes to paradigms is reconstructed here in a refined way. Interdefined terms forming conceptual schemes of rational inquiries are influenced and shaped by contextual sources. The later largely determine contents of conceptual clusters associated with these terms that structure

conceptual schemes at the intensional level and provides criteria for picking out paradigmatic examples of referents. Furthermore, contextual sources leads either to ground original reference relations for concerned terms through new introducing events, or to replay of pre-established introducing events, according to which terms are employed to point same referents as they do (or did) in other contexts.

Through this contextualized view, taxonomic incommensurability can be accounted for. For Kuhn, taxonomic incommensurability occurs when conceptual schemes with incompatible or non-homologous systems of categories are produced by differently contextualized rational inquiries (up to this point we mentioned in particular inquiries separated across time by a scientific revolution, or sub-groups of inquirers belonging to a science in crisis and opposing about competing theories). Reformulated in our approach, taxonomic incommensurability occurs when contextual sources available to differently situated groups of rational inquirers lead to associate same terms with differently featured conceptual clusters that generate (through the conceptual interconnections they embed) non-homologous systems of categories. Taxonomically incommensurable conceptual schemes are thereby elaborated in the framework of differently contextualized rational inquiries. Furthermore, taxonomically incommensurable conceptual clusters associated with same terms can include incompatible criteria for picking out paradigmatic examples of referents. As our refined approach permits arguing, the elaboration of taxonomically incommensurable conceptual schemes does not automatically implies the disruption of reference relations. Conceptual clusters associated with terms do not directly fix their reference. More precisely, the influence of contextual sources on conceptual contents of conceptual clusters and on reference (generating new introducing events or allowing mere replays of past ones) can be, at least in principle, disentangled. Independently of the developments proposed in the following, illustrations provided by Kuhn's can be considered in this respect. Remobilizing the example of Ptolemy's and Copernicus' celestial theories, terms like 'planet', 'star', 'earth' and 'sun' are associated with taxonomically incommensurable conceptual clusters reflecting non-homologous systems of categories. For Ptolemy, planets orbits earth and the sun belongs to the extension of 'planet', while earth do not. For Copernicus, planets orbit stars and the sun belongs to the extension of 'star', while earth is a member of the extension of 'planet'. Arguably, 'planet' does not possess the same referents in both theories. According to Ptolemy, 'planet' refers to the set of objects orbiting earth. With Copernicus, the same term designates objects orbiting stars<sup>108</sup>. This example can be contrasted with another one bearing on the term 'water' (Kuhn 1990b, 311-312). Kuhn argues that conceptual schemes hosting 'water' before and after the discovery of modern chemistry are incommensurable. For instance, states of aggregation (solid, liquid, gaseous) are considered as essential properties before this discovery, while chemical compositions play this essential role in modern chemistry. Although Kuhn defends that referents of 'water' are different in both cases, this conclusion seems far more counterintuitive and debatable than with 'planet' in the previous example<sup>109</sup>. Moreover, these questions about reference disruption impact Kuhn's claims about the violation of the no-overlap principle. If 'water' undergoes reference shifting across the discovery of modern chemistry, as Kuhn defends, then the no-overlap principle

<sup>108</sup> Such a radical variation in reference may be understood as an instance of what Putnam calls "trivial semantic conventionalism," according to which it "is a triviality that we might have meant something other than we do by the noises that we use. The noise 'pot' could have meant what is in fact meant by the word 'dog', and the word 'dog' could have meant what is in fact meant by the word 'fish'" (Putnam 1975 [1975], 164-165). Obviously, conventional uses of the term 'planet' in the discussed example are not as arbitrary as cases Putnam chooses as illustrations here. But the idea that it is a matter of convention whether one uses 'planet' to refer to objects orbiting around earth or to objects orbiting around stars remains applicable.

<sup>109</sup> This issue is extensively discussed in section 5 of the present chapter.

is not violated because it is not the same entity that is classified according to incompatible systems of categories.

As these examples emphasize, questions about variation in reference of terms hosted in taxonomically incommensurable conceptual schemes, or about violation of the no-overlap principle, appear extremely problematic. They cannot be addressed in disconnection from background philosophical commitments concerning the topics of realism, reference, truth and rationality. This outruns the restricted purpose of present section that intends to lay out an account of uncontroversial aspects of Kuhn's notion of incommensurability understood, as a first step, as possibly occurring in the cognitive functioning of actual inquirers engaged in rational investigations. Therefore, it is for now sufficient to flag up the issue and leave it temporarily open. It is sufficient to consider that divergences in contextual sources, leading to the elaboration of taxonomically incommensurable conceptual clusters and conceptual schemes, may trigger new introducing events (settling modified relations of reference) as well as allow replays of shared introducing events across concerned contexts (preserving relations of reference). Notwithstanding this issue of reference stability-disruption (and the associated question of the violation of the no-overlap principle) that may be better conceived as pertaining to the domain of the consequences of taxonomic incommensurability, the latter can be properly reconstructed in focusing on what is relevant with respect to the effective cognitive functioning of actual inquirers, and on what is explicitly common to the two illustrations mobilized just above. Taxonomic incommensurability occurs when different contextual sources are mobilized in differently situated rational inquiries and lead to the admission of incompatible conceptual clusters for certain terms that generates conceptual schemes with non-homologous systems of categories.

An additional strength of the present account is that it permits refining the sources of taxonomic incommensurability through the detailed analysis of contextual sources influencing rational inquiries it proposes. First, taxonomic incommensurability may be generated when differently contextualized groups of inquirers borrows terms from background conceptual schemes that are themselves already taxonomically incommensurable. Two conceptual schemes can thus be taxonomically incommensurable because they have been elaborated starting from pre-existing terms already associated with incompatible conceptual clusters. Second, new terms with their uses or new uses for pre-existing terms may be introduced during differently contextualized inquiries in association with incompatible conceptual clusters. In the same vein, conceptual clusters associated with pre-existing terms may be differently corrected and rendered incompatible. This is possible to the extent differently situated rational inquirers may possess diverging standards of rational acceptability in function of contextual sources available to them<sup>110</sup>. Introducing or correcting conceptual clusters associated with same terms in divergent ways can generate taxonomically incommensurable conceptual schemes embedding non-homologous systems of categories. This second source of taxonomic incommensurability is crucial to understand that inquiries situated in contexts embedding commensurable conceptual scheme (and even contexts with the same broader ordinary conceptual scheme) can nonetheless produce taxonomically incommensurable conceptual schemes<sup>111</sup>. One can also imagine these two types of sources conjointly involved in the occurrence of

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<sup>110</sup> This can take the form of methodological incommensurability. This second form of incommensurability is discussed just hereafter.

<sup>111</sup> In addition, one cannot exclude the possibility that standards of rational acceptability lead to the introduction of new uses for pre-existing terms or the correction of pre-established uses through the settling of conceptual clusters that are incompatible with those already admitted in conceptual schemes pre-existing terms are borrowed from. This might be seen as a case of taxonomic incommensurability between pre-admitted conceptual schemes and the conceptual scheme produce by an ongoing inquiry. While this might be possible in principle, it cannot extend up to the point at which the new conceptual clusters are in conflict with the entire sets of

taxonomic incommensurability between conceptual schemes of differently contextualized inquiries. In sum, the picture of rational inquiry based on Putnam's pragmatist theory of knowledge allows a suitable and refined framing of the basic mechanisms at stake with Kuhn's taxonomic incommensurability.

In addition to this account of taxonomic incompatibilities, incommensurability generated along the methodological function of paradigms can also be reconstructed in our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge. As exposed in section 2.3 of preceding chapter, compliance with methodological standards (such as epistemic principles or values) is one of the three main elements guiding the elaboration of conceptual schemes and the judgments about their rational acceptability. As it is the case with the other standards of rational acceptability, the requirement of compliance with methodological principles embeds context-sensitivity. Sets of methodological principles that are admitted in the framework of particular inquiries and constraints they impose on the elaboration and acceptance of conceptual schemes cannot be accounted for in a context-independent algorithmic approach based on rule-following only. First, methods are not built from scratch. They integrate methodological standards inherited from insights of historically and culturally situated commonsense or from past rational inquiries (explicit or implicit meta-methodological inquiries). These pre-admitted methodological standards can vary depending on the context of inquiry. Moreover, different sets of methodological principles may be admitted depending on problems to be solved (problematic situation being themselves context-sensitive). Similarly, orders of priority between methodological principles can be influenced by evaluative commitments of actual inquirers, either directly or through problematic situations. They can thus vary in function of contexts of inquiries. Finally, certain epistemic principles such as external consistency cannot be applied without mobilizing specific background knowledge that is admitted in the context of inquiry. In sum, methodological standards admitted in the method of a particular inquiry, and the way they are applied by actual inquirers, cannot be accounted for in a perspective purely based on rule following. On the contrary, they are shaped by contextual sources that can be associated with shared examples of successful methodological practices, playing the methodological function Kuhn attributes to paradigms. Because they share examples of successful methodological practices, inquirers engaged in a given rational investigation commit to a particular set of methodological principles (and to a certain way of applying them) that guides the elaboration of the corresponding conceptual scheme (settling or correcting terms' conceptual clusters) and its assessment (evaluative judgment of reasonableness). This meets Kuhn's claim about the indispensability of concrete paradigmatic examples for the process of scientific theory assessment. In our approach, assessing the rational acceptability of conceptual schemes through their compliance with methodological standards embeds context-sensitivity and cannot be accounted for independently of contextual sources, such as pre-admitted methodological discourses or actual inquirers' practices and evaluative commitments.

Accordingly, several groups of inquirers rooted in different contexts can conduct inquiries guided by different sets of methodological standards and different ways of deploying them. In such

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pre-admitted ones. Such a generalized conflict would prevent considering new conceptual clusters either as grounding new uses of pre-existing terms or as correcting pre-established uses. More broadly, extended to whole conceptual schemes, such conflict of taxonomic incommensurability would forbid any connection between conceptual schemes developed in inquiries and pre-admitted conceptual schemes of their contexts. These connections are, in our general picture of rational inquiry, indispensable and constitute conditions of possibility of the elaboration of conceptual schemes in the first place. More will be said about this issue in the following, notably when discussing the epistemological and philosophical challenges raised by incommensurability regarding the topics of truth, realism and reference.

cases, methodological incommensurability can occur when these groups of inquirers elaborate and rationally accept differently featured conceptual clusters and conceptual schemes, under the guidance of compliance with divergent sets of methodological principles (different methodological principles or methodological principles ordered in different ways). Methodological incommensurability can also occur when different background knowledge is available in different contexts, leading to different impacts of epistemic principles such as external consistency. Whatever might be the precise aspect methodological incommensurability takes, it generates in any case disagreement about the features produced conceptual schemes should possess, and about the way these conceptual schemes should be assessed. The debate between advocates of orthodox quantum mechanics and those of Bohmian mechanics can be understood along these lines. While both groups recognize the importance of minimizing the dependence of descriptions with respect to observers and of external consistency (here with respect to relativity), the former group privileges the first principle, contrarily to Bohm's followers who prefer the second one (Goldstein 1998a, b, Albert and Galchen 2009, Putnam 2012b [2010], 95). This example also illustrates the role of background knowledge. The availability of Einstein's theory of relativity in contexts of inquiries about Bohmian mechanics and orthodox quantum mechanics plays a crucial role. In sum, methodological incommensurability is suitably framed in our general picture of rational inquiry based Putnam's pragmatist theory of knowledge as divergences in judgments of rational acceptability caused by variations in methodological standards in function of contextual sources available to groups of actual inquirers.

Before concluding this section, it is interesting to return to the already briefly discussed relation between divergences in standards of rational acceptability and taxonomic incommensurability. Divergences in methodological standards constituting methodological incommensurability can be a source, or a condition of possibility, of its taxonomic alter ego. In fact, the requirement of compliance with methodological standards constrains the way conceptual schemes should be like. As such, methodological standards are not only involved in conceptual schemes assessment but also in their elaboration. Notably, they influence the way new conceptual clusters for new terms (and for new uses of pre-existing terms) are introduced. Similarly, they influence the corrections of pre-established conceptual clusters. Consequently, several inquiries guided by different methodological standards are likely to settle these elements in different ways (generating conceptual schemes with different intensional and, possibly, extensional structure). Though not necessary, such divergences might generate taxonomic incommensurability between conceptual schemes elaborated and rationally admitted in these methodologically incommensurable inquiries. This explains the already mentioned fact that divergences in standards of rational acceptability can be a source of taxonomic incommensurability. Again, it shows that even rational inquiries borrowing pre-existing terms from commensurable pre-admitted conceptual schemes (or even to the same pre-admitted conceptual schemes) can still produce taxonomically incommensurable outcomes.

In sum, the general account of rational inquiry developed in the previous chapter starting from Putnam's pragmatist theory of knowledge permits reconstructing the most uncontroversial aspects of Kuhn's notion of incommensurability. Paradigms according to their taxonomic functions (shared examples of successful semantic practices) can be associated with contextual sources leading to the settling of terms' conceptual clusters whose interconnections shape conceptual schemes. The methodological function of paradigms (shared examples of successful methodological practices) can be linked with contextual sources leading to the admission of

particular sets of methodological standards (one of the three main components guiding the elaboration of conceptual schemes and the associated judgments about their rational acceptability). This permits integrating incommensurability along its taxonomic (or semantic) and methodological aspects in our general picture of rational inquiry. On this basis, another uncontroversial aspect of Kuhn's thinking can be brought to the fore.

In its most commonly expressed form, Kuhn's notion of incommensurability is deployed in a diachronic perspective when studying bodies of past scientific beliefs (possibly through history of science), when comparing successive scientific investigations in the same historical line, for instance separated by a scientific revolution (Kuhn 1996 [1962], 148-150, 1990b, 298-299, Oberheim and Hoyningen-Huene 2013, section 2.3.1). Additionally, Kuhn also indicated that incommensurability can occur in a synchronic way between contemporary communities of researchers. This can notably be the case in the assessment of competing theories during an "abnormal situation" or a revolutionary phase (Kuhn 1977, 202-213, Bird 2000, 27 and 97-98). Members of communities relying on incommensurable paradigms experience misunderstandings about the meaning of certain terms and disagreements about methodological standards. These mismatches prevent the establishment of a compelling and shared comparison of the competing theories. The reconstruction of the different mechanisms of incommensurability in our general picture of rational inquiry can be deployed along these diachronic and synchronic perspectives. In the account developed here, the diachronic view is easily transposed. Groups of inquirers separated by a given period of time are situated in different contexts whose specific elements (conceptual schemes or methodologies from which per-existing terms or pre-admitted methodological standards are borrowed, evaluative commitments of actual inquirers, etc.) can vary and generate incommensurability at both the taxonomic and the methodological levels. Putnam himself notices that the canons of "nondeductive justification" are often reconsidered along history (Putnam 2012c [2011], 90). Incommensurability in Kuhn's synchronic perspective (when several theories are competing) can also be reframed. Incommensurability in this perspective can be conceived of as happening between groups of inquirers engaged in the same broad inquiry and embedded in the same general context. However, localized discrepancies about the intensional and extensional components of the meaning vectors of certain terms (and about the introducing events grounding them), or about the precise aspect of the set of methodological standards to be employed for rational acceptability assessment, can exist between these groups. These mismatches reflect subdivisions in the whole inquiry and its context. This whole inquiry is therefore composed by several incommensurable (sub-) inquiries relying on their specific contexts. To conclude, our general account of rational inquiry seems suitable to do justice to Kuhn's most uncontroversial claims about incommensurability. However, the fecundity of this general approach based Putnam's pragmatist theory of knowledge might extend further.

## **2. A generalized account of Kuhn's notion of incommensurability**

Up to now, the general picture of rational inquiry delineated in the previous chapter permitted a reconstruction of the most uncontroversial elements of Kuhn's incommensurability thesis (the elements Kuhn himself insisted on in many places and that are the object of a certain consensus in the literature). We can briefly summarize the argument developed up to this point. Kuhn developed his incommensurability thesis based on the idea that some elements that are

indispensable to understand scientific activities cannot be reduced to mere rule following. Paradigms as actual exemplars of successful practices cannot be removed from the picture. In addition, paradigms endorsed in successive communities of inquirers in the same historical line (for instance separated by a scientific revolution), or in distinct sub-communities during crisis or revolutionary phases can enter in conflict and generate incommensurability both at the taxonomic level and about methodological standards involved in theory assessment. The approach developed here proposes to analyze these issues based on the more fine-grained conceptual apparatus elaborated in this work. On this basis, paradigms in Kuhn's primary sense are accounted for as contextual sources influencing context-sensitive components of rational inquiries, such as structures of elaborated conceptual schemes and standards guiding judgments of rational acceptability. Different contexts of inquiry can thereby constitute the ground for divergences in the way these context-sensitive elements are and consequently induce phenomena of incommensurability. In particular, taxonomic incommensurability has been reframed as divergences in conceptual clusters associated with terms deployed in differently contextualized inquiries. These divergences shape conceptual schemes embedding non-homologous systems of categories. Contextual sources giving birth to these divergences have been delineated. Inquiries starting in different contexts can borrow pre-existing terms, coming with their specific conceptual clusters, from conceptual schemes of their respective contexts that are themselves taxonomically incommensurable. In addition, different inquiries might be conducted to introduce original conceptual clusters (for new terms or for new uses of pre-existing terms) or to correct pre-established conceptual clusters in incommensurable ways, provided they follow divergent sets of methodological standards. This is rendered possible by the fact that the admission of a given set of methodological principles in a particular rational inquiry embeds context-sensitivity. Moreover, the fact that the specificities of methodological standards followed by rational inquiries are context-sensitive permits accounting for the second main aspect of Kuhn's notion of incommensurability. Inquiries following different sets of methodological standards can themselves be seen as methodologically incommensurable. The associated groups of actual inquirers are likely to disagree about features conceptual schemes should possess – that is to say, about the way conceptual schemes should be elaborated and the manner their rational acceptability should be evaluated. Disagreements about the assessment of conceptual schemes occurring because of methodological incommensurability can be reinforced by phenomena of taxonomic incommensurability (generated because of incommensurable pre-admitted conceptual schemes or via methodological incommensurability itself).

In sum, the two main aspects of Kuhn's notion of incommensurability are suitably accounted for in our general picture of rational inquiry. Relying on this preliminary achievement, the same framework can be employed to deepen several elements, to discuss less consensual or less clarified aspects of Kuhn's thinking and to propose a generalized definition of incommensurability<sup>112</sup>. In particular, the account developed up to now focused on the requirement of compliance with methodological standards involved in judgments of rational acceptability of conceptual schemes elaborated during rational inquiries. However, compliance with methodological standards is only one element guiding evaluations of rational acceptability. It is

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<sup>112</sup> A methodological remark is in order here. Among these less consensual aspects, a famous one is the 'World-Change thesis' (Kuhn 1996 [1962], 111, Bird 2000, chapter 4, Sharrock and Read 2002, chapter 5). It stipulates that actual persons relying on taxonomically incommensurable conceptual schemes experience different worlds. In the present sections focused on an account of the phenomena of incommensurability as possible features of inquirers' cognitive functioning, this important aspect of Kuhn's work cannot be properly discussed. Such a discussion requires mobilizing background philosophical commitments about the relationships standing between experience, conceptual schemes and reality. Accordingly, the analysis of the World-Change thesis is postponed until section 4.



complemented by relevance with respect to problematic situation and confrontation with independent facts from inquirers environment. It has already been clarified that these additional components of judgments of rational acceptability are also context-sensitive. It seems therefore worthwhile to investigate the role they might play with respect to incommensurability, and notably regarding less consensual or clarified claims that Kuhn made about this notion.

### **Incommensurability involving problematic situations**

To begin with, the focus can be put on the requirement of relevance with respect to problematic situations. Disagreements about conceptual schemes assessment might occur at the level of this criterion for it also embeds context-sensitivity. As discussed in section 2.3.3 of preceding chapter, what count as a problematic situation and how relevance with respect to it should be judged cannot be accounted for in a purely algorithmic approach based on context-independent rule-following only. In the previous section, paradigms in their methodological function have been associated with contextual sources shaping methodological standards. This permitted reconstructing Kuhn's claims about the influence of paradigms upon theory admission. The same scheme seems applicable to contextual sources shaping problematic situations and the way relevance with respect to them is evaluated. They also influence rational acceptance of theories or conceptual schemes. This meets Kuhn's claim about the role of paradigms in problem framing. Paradigms as "universally recognized scientific achievements" provide models of what count as a problem (Kuhn 1996 [1962], x). Moreover, while Kuhn did not directly frame mismatches in what count as a problem to be solved as an occurrence of incommensurability, he nonetheless indicated that scientific revolutions can generate incommensurable paradigms that embed different models of how problems should be framed and of what count as a problem (Kuhn 1996 [1962], 6 and 148).

In consequence, Kuhn's notion of methodological incommensurability may be fruitfully extended to include the role of problematic situations. To the extent that the requirement of relevance with respect to problematic situation embeds context-sensitivity, divergences in contextual sources influencing it can trigger disagreements about conceptual schemes assessments between differently contextualized groups of inquirers. Kuhn mentioned the possibility of such divergences. For instance, elucidating the cause of attractive forces between material bodies was not considered as a problem to be solved in the framework of Newtonian mechanics, while it constitutes a recognized and solved issue as well in Aristotle's and Descartes' frameworks as in the context of general relativity (Kuhn 1996 [1962], 148). This type of discrepancies is susceptible to generate some misunderstandings about the evaluation of conceptual schemes according to incommensurable paradigms to the extent that "there is simply no transparadigm criteria of problem-individuation which allows us to say that the paradigms address the same problem" (McGuire 1992). This type of mismatches fits well in our general picture of rational inquiry. Incommensurability in conceptual schemes assessments does not need to be restricted to divergences in methodological standards. It can be extended to discrepancies between problematic situations and associated judgments of relevance that are also influenced by contextual sources (which can therefore be associated with Kuhn's notion of paradigm). Furthermore, it is possible to delineate two main types of divergences that can occur between different groups of inquirers in the application of the criteria of relevance with respect problematic situation. First, several rational investigations might (quite obviously) target the elucidation of different problematic situations, leading them to rationally accept different conceptual schemes. For example, "flour," "baking soda" and "sour cream" are central concepts for investigations in kitchen chemistry, while they are

irrelevant with respect to the goals of physics or biochemistry (Boyd 2013, 57). In the same vein, one can imagine divergent medical inquiries answering problematic situations such as ‘curing a human being from a disease in employing certain drugs’ or ‘optimizing the functioning of a physiological system through the action of certain molecules’. These inquiries would surely differ in their assessments of produced conceptual schemes. Second, inquirers engaged in differently contextualized inquiries might diverge about the manner they judge the relevance of conceptual schemes with respect to problematic situations (even in the case of shared problematic situations). Remobilizing the preceding example, one might imagine different groups of inquirers addressing the identically framed problematic situation: ‘curing someone from a disease’. Depending on their specificities and the context they are situated in, some groups of inquirers might admit as relevant concepts like ‘human being’, ‘pain’ and ‘drugs’, while other might restrict relevant terms to ‘physiological systems’, ‘neurological activity’ and ‘molecules’. Arguably, both groups of inquirers would diverge about their understanding of what conceptual schemes should be like.

In addition of the elucidation of these two main forms of mismatches that might occur about relevance with respect to problematic situations, our general account of rational inquiry also permits a refined analysis of the contextual sources triggering these mismatches. To the extent that contextual sources are linked with Kuhn’s paradigms, a delineated view of what composes the latter can thereby be laid out. Notably, the framing of problematic situations necessarily borrows pre-existing terms from conceptual schemes admitted in the contexts of inquiries. These conceptual schemes might have been accepted through commonsense. Depending on cultural, sociological and historical contexts, they might be different. Some conceptual schemes might also have been rationally accepted through previous rational inquiries. In function of standards of rational acceptability mobilized in these inquiries and of the pre-existing terms they themselves receive from their own contexts, these previously rational accepted conceptual schemes can be different. Furthermore, actual inquirers’ pre-admitted evaluative commitments are susceptible to influence the recognition that a given situation is problematic and the choices about which particular terms should enter into the framing of problematic situations. They can also guide judgments about the relevance of specific conceptual elements with respect to a situation recognized as problematic – that is to say, judgments that a given term should be integrated in a conceptual scheme under elaboration. Provided that evaluative commitments of actual persons can vary from context to context, so do these elements<sup>113</sup>. In sum, judgments about rational acceptability of conceptual schemes can diverge between differently contextualized rational inquiries relying on different (or differently framed) problematic situations and on distinct manner of judging the relevance of conceptual elements with respect to these problematic situations. Kuhn might not have explicitly talked about incommensurability in the case of divergences in problem framing, contrarily to what he did regarding methodological mismatches. Nonetheless, contextual sources influencing the criterion of relevance with respect to problematic situations seem to play the same type of role as contextual sources shaping methodological practices. They both permit and contribute to the assessment of conceptual schemes<sup>114</sup>. As it is accepted concerning methodological mismatches, it does not appear unreasonable to also consider that certain divergences in the criterion of relevance with respect to problematic situations generate phenomena of incommensurability.

<sup>113</sup> One could also mention the process of selection of uses among the ones available for pre-existing terms that are borrowed during the framing of problematic situations. Relying on inquirers’ ability of attunement that is context-sensitive, this process can produce different results in differently contextualized inquiries. Involved contextual sources include notably background knowledge, effectively encountered entities, and practices engaged in.

<sup>114</sup> The sets of contextual sources influencing methodological standards and problematic situations need not to be mutually exclusive.

### **Incommensurability involving confrontation with independent facts**

Compliance with methodological standards and relevance with respect to problematic situations are only two elements the guiding judgments of rational acceptability. The notion of incommensurability can also be discussed in connection with the third component constituted by successful confrontation with independent facts from inquirers' environment. As detailed in section 2.3.3 of preceding chapter, this third component also embeds context-sensitivity. It cannot thereby be accounted for in a purely algorithmic approach based on context-independent rule-following only. This echoes Kuhn's attack against the possibility to confront scientific theories with neutral observational or experimental facts. He opposed logical positivist ideas about the possibilities of sharply separating scientific theories and scientific observation and of producing a neutral observation language (Kuhn 1977, 267). According to him, scientists belonging to incommensurable paradigms "must be attaching some of those terms to nature differently" (Kuhn 1996 [1962], 198). Consequently, they can achieve at best partial communication about the experimental support their respective theories receive from observations. In the Kuhnian approach, incompatibilities between scientific communities at the level of confrontation of their theories with independent facts thus rely on taxonomic incommensurability. Kuhn seems to assume that taxonomic incommensurability standing between lexicons employed in different research groups necessarily contaminates their framing of experimental data. Our general account of rational inquiry permits refining this conclusion. As exposed in the section 2.3.1 of previous chapter, it recognizes the impossibility of relying on neutral facts during assessments of rational acceptability. Independent facts are established through apperceptive judgments that are necessarily based on given conceptual schemes. However, to deserve the qualification of independence, such facts need to be apperceptively established and to be framed according to conceptual schemes that are different from those produced in ongoing inquiries (requirement of relative theory-neutrality; see: Sober 2008). Conceptual schemes permitting the establishment of independent facts against which outcomes of inquiries can be confronted need to be pre-admitted – that is to say, they need to be independently considered true (or rationally acceptable). So, the fact that several inquiries produce taxonomically incommensurable conceptual schemes does not suffice to establish incomparability of the respective bodies of independent facts they are confronted with. It does not necessarily imply that the independent facts are themselves expressed through incommensurable schemes. Nothing prevents conceiving several inquiries that produce incommensurable conceptual schemes but confront them to independent facts established and framed through commensurable lexicons. Then, the way these inquiries connect to independent facts can be incommensurable, the same body of evidence might lead to different validations and members of the two communities could disagree about what the experience proves. However, this does not amount to disagreement or miscommunication about observations. In this case, misunderstandings susceptible to occur between the corresponding groups of inquirers pertain to issues of translation between incommensurable conceptual schemes they produce before bearing on disagreement about the assessment of their reasonableness through confrontation with independent facts.

Nevertheless, our general account of rational inquiry might allow framing something similar to what Kuhn seems to have in mind. In general, the form taken by pre-admitted conceptual schemes, required for the establishment of independent facts, cannot be accounted for through a purely algorithmic and context-independent approach. These pre-admitted conceptual schemes can differ from context of inquiry to context of inquiry. Consequently, several inquiries

grounded in different contexts can mobilize distinct pre-admitted conceptual schemes for the establishment of independent facts (for their conception first, and then for their acknowledgement or their apperceptive verification). Provided contexts diverge enough, these conceptual schemes might prove taxonomically incommensurable. In this case, a genuine disagreement might occur between different groups of inquirers about the assessment of conceptual schemes they settle through confrontation with independent facts. Independent facts being established and expressed through incommensurable conceptual schemes, confrontations in these different settings would be incomparable. Additionally, and in a maybe less radical manner, a selection needs being made among the different possible bodies of independent facts (confrontation never involves all available independent facts). Not all of them are relevant with respect to the goals of inquiries or suitable regarding their methodological standards. This process of selection also escapes any reduction to a purely algorithmic and context-independent approach. Accordingly, different inquiries might mobilize different bodies of evidence, leading to divergences about the assessment of produced conceptual schemes. Although maybe in a way slightly different from the one Kuhn expected, the assessment of conceptual schemes through confrontation with independent facts from inquirers' environment is influenced by contextual sources that can be linked with Kuhn's paradigms. When contextual sources available to several groups of inquirers are divergent enough, disagreement can occur about the assessment of the rational acceptability of conceptual schemes via confrontation with independent facts. As it was the case when analyzing the other types of misunderstandings and disagreements, our general picture of rational inquiry possess the additional value of permitting to delineate involved contextual sources, instead of mobilizing rather monolithic paradigms. As it has been exposed, conceptual schemes required for the establishment of independent facts pre-exist in contexts of inquiries and have to be independently accepted. They can be so in virtue of commonsense. As such, they would be highly sensitive to the historical, social and cultural context of inquiry. Provided the latter changes, conceptual schemes for the establishment of independent facts might strongly differ. But these conceptual schemes might also have been rationally accepted via past rational inquiries. Nonetheless, even in these cases they can differ from context to context, to the extent that standards of rational acceptability of these past inquiries and the pre-admitted conceptual schemes they themselves rely on can be different. In addition, problematic situation and methodological standards of rational inquiries are likely to drive the selection of suitable bodies of evidence. As already discussed in various places, problematic situations and admitted sets of methodological principles are themselves influenced by contextual elements. In sum, it appears that phenomena of incommensurability, occurring between inquiries situated in different contexts, about judgments of rational acceptability of conceptual schemes do not restrict to mismatches in requirements of compliance with methodological standards and of relevance with respect to problematic situations, but also include discrepancies in confrontation with independent facts from inquirers' environment.

### **A generalized definition of incommensurability**

Arrived at this conclusion, it might be worthwhile to propose an extension of Kuhn's notion of incommensurability considered in its methodological dimension. According to Kuhn, different groups of inquirers guided by distinct sets of examples of successful methodological practices are likely to disagree about conceptual schemes assessments. Although this phrasing does not come from Kuhn himself, such mismatches have been designated under the term 'methodological incommensurability' (Oberheim and Hoyningen-Huene 2013, section 2.3.2). Through our general

picture of rational inquiry, methodological incommensurability have been accounted for as mismatches in assessment of conceptual schemes' rational acceptability along one of its three main faces: compliance with methodological standards. In conformity with Kuhn's conclusion, inquirers guided by different methodological standards (or different ways of understanding and applying them) are likely to diverge about their evaluations of the rational acceptability of conceptual schemes. As we just saw, the same consequence also arises from contextually-driven divergences in the requirements of relevance with respect to problematic situation and of confrontation with independent facts from inquirers' environment. Accordingly, it might be reasonable to generalize the notion of incommensurability to integrate divergences in assessment at these levels as well. Methodological incommensurability might therefore be seen as a particular case of incommensurability about rational acceptability. Each component guiding judgments of rational acceptability embeds context-sensitivity. Consequently, groups of inquirers situated in different contexts (and thereby influenced by different contextual sources that can be linked with Kuhn's notion of paradigms) can adopt divergent specifications of each element guiding judgments of rational acceptability. To be more concise, they can adopt different 'systems of rational acceptability'. Then, incommensurability about rational acceptability can occur and generate disagreements about the assessments of conceptual schemes.

Based on this generalized view, a precise definition of incommensurability can be established. To this aim, two core elements have to be delineated. First, incommensurability occurs only if differently contextualized rational inquiries mobilize *incompatible* systems of rational acceptability, under the influence of different available contextual sources. Systems of rational acceptability are *incompatible* if they cannot be merged in a single one permitting a common and unique assessment of elaborated conceptual schemes. For instance, two inquiries admitting differently ordered sets of methodological principles or distinct bodies of independent facts would rely on incompatible systems of rational acceptability. By contrast, inquiries addressing different problematic situations but based on same sets of methodological standards and of bodies of evidence would not deploy incompatible systems of rational acceptability if problematic situations can be joined (in particular, if they are not taxonomically incommensurable). Second, incommensurability occurs only if, based on incompatible systems of rational acceptability, differently contextualized rational inquiries are conducted to elaborate and rationally accept differently featured conceptual clusters for *same terms*<sup>115</sup>. In consequence, differently structured conceptual schemes are admitted. However, it is important to keep in mind that merely admitting different conceptual schemes through incompatible systems of rational acceptability is not yet incommensurability. The definition proposed here is more restrictive. Incommensurability corresponds to the fact that different conceptual schemes hosting *some common terms* that are associated with different conceptual clusters are admitted in differently contextualized inquiries guided by *incompatible* systems of rational acceptability<sup>116</sup>. Accordingly, one can imagine at least three main configurations in which incommensurability can occur. First, some inquiries may try

<sup>115</sup> In many cases, elaborated conceptual clusters for same terms are incompatible (for instance, they deploy contradictory attributions of properties to same terms). But this incompatibility is not necessary for incommensurability to occur. It can occur when compatible but differently featured conceptual clusters are associated with same terms according to incompatible systems of rational acceptability.

<sup>116</sup> Although systems of rational acceptability provide important constraints for the elaboration of conceptual schemes, it should be mentioned that they do not need fully determining this elaboration. As exposed in details in the previous chapter, conceptual clusters of terms embedded in conceptual schemes of rational inquiries are settled through several context-sensitive semantic mechanisms (pre-existing terms and their uses are borrowed from background conceptual schemes, suitable uses are selected, new terms with their uses and new uses for pre-existing terms are introduced, conceptual clusters associated with specific uses of pre-existing terms are corrected) that are impacted by available contextual sources, either directly or through constraints imposed by systems of rational acceptability. Thereby, some features of elaborated conceptual schemes can be shaped directly by contextual sources. In any case, the important point is that all features, whatever may be their sources, are considered as reasonable in the light of systems of rational acceptability.

solving the same problematic situation in relying on divergent criteria of compliance with methodological standards and-or of confrontation with independent facts. They are likely to rationally accept conceptual schemes in which the shared terms of the problematic situation are associated with differently featured conceptual clusters. Second, there could also be differently contextualized inquiries whose problematic situations only overlap (sharing common terms) while mobilizing divergent methodological standards and-or independent facts for confrontation. Here also, shared terms may be associated with different rationally accepted conceptual clusters, generating incommensurability. Finally, it should be indicated that incommensurability can bear on common terms that do not appear in the framing of problematic situations, but are nonetheless borrowed from common pre-existing background conceptual schemes to initiate the elaboration of conceptual schemes. Such terms could also be associated with differently featured conceptual clusters. This could happen in the two previous configurations, but also shows that there may be incommensurability between inquiries whose problematic situations share no common terms (to the extent that problematic situations cannot be joined or that they are addressed through incompatible methodological standards and-or bodies of evidence for confrontation).

In the light of this generalized definition, taxonomic incommensurability can be understood as a specific instance of the broader phenomena of admission of differently featured conceptual clusters for same terms when guided by incompatible systems of rational acceptability. Although this is not necessary to get incommensurability, divergences in the way differently contextualized groups of inquirers specify their respective systems of rational acceptability might become strong enough to lead them to elaborate and adopt incompatible conceptual clusters for shared terms that form conceptual schemes with non-homologous systems of categories. The elaboration of conceptual clusters can also be influenced by available contextual sources that may introduce taxonomic incommensurability directly. But the later can also be generated just because of incompatible systems of rational acceptability (even between rational inquiries situated in contexts embedding commensurable pre-admitted conceptual schemes). A particularly interesting case of taxonomic incommensurability bears on the way actual inquirers account for and mobilize essential properties of entities they study. These properties are tightly connected with the manner inquirers conceive natural kinds to which belongs entities under investigation. Essential properties define or structure systems of categories that form lexicons at the ground of elaborated conceptual schemes. Accordingly, inquiries based on incompatible systems of rational acceptability and producing or mobilizing different conceptions of essential properties of same entities are likely to face taxonomic incommensurability.

Through the generalized definition of incommensurability proposed just above, one can imagine differently contextualized rational inquiries that investigate essential properties of same entities under the guidance of incompatible systems of rational acceptability. The goal of such inquiries would be to establish conceptual clusters (for terms pointing these studied entities) that include descriptions of their essential features. This may be achieved in radically different ways in the differently contextualized inquiries. It may involve different pre-existing terms (with their specific conceptual clusters) available in each context. It could also rely on the introduction of new terms and new uses for pre-existing terms as well as on the correction of pre-established conceptual clusters under the guidance of the incompatible systems of rational acceptability of each inquiry. In particular, it is possible that the methodological standards they admit reflect different broad background conceptions about the way inquired entities might be like. One can for example consider the impact of Newtonian revolution that imposed a “mechanic-corpuscular” framework in

terms of which rational explanations have to be developed. Before this revolution, discourses about occult qualities were methodologically admissible (Kuhn 1996 [1962], 103-104). Whatever may be the precise source of divergence, differently contextualized rational inquiries guided by incompatible systems of rational acceptability can produce different accounts of essential properties of same entities, thus generating incommensurability. Because these properties structure the admitted systems of categories, one would not only face incommensurability but, more precisely, taxonomic incommensurability<sup>117</sup>. Furthermore, the case of rational inquiries that only mobilizes different conceptions of essential properties of the same entities, while pursuing other targets can also be developed. Under the guidance of incompatible systems of rational acceptability, such rational inquiries may borrow, from conceptual schemes available in their contexts, pre-existing terms (pointing concerned entities) that are already associated with conceptual clusters hosting different descriptions of corresponding essential properties. These available conceptual schemes may belong to different ordinary languages accepted through commonsense of each context or to different previous rational inquiries (like the ones described just above). Provided with different conceptions of essential properties of entities they study, these differently contextualized rational inquiries would surely develop conceptual schemes structured by incompatible systems of categories (conceptual schemes that would be taxonomically incommensurable). Putnam's provide an example of rational investigations that mobilize different conceptions of essential properties for lively being. He indicates "that for a molecular biologist, it is the kind of DNA that is 'essential', while for a population biologist it is belonging to a certain 'reproductive population', and that the two criteria do not pick out the same animals in all cases" (Putnam 2002d, 107)<sup>118</sup>.

Taking distance with this topic of taxonomic incommensurability, several interesting consequences of the precise definition of incommensurability proposed here are worth-mentioning to close this section. Up to now, we focused only on descriptive terms. Nevertheless, the present account also applies to evaluative matters. In fact, nothing prevents imagining differently contextualized rational inquiries that try evaluating the same entity (a behavior, an event, an action, etc.) inserted in the same practical problem under the guidance of incompatible systems of rational acceptability. Such inquiries could produce differently featured conceptual schemes in which the same terms (those pointing this entity and the surrounding practical problem) are associated with incompatible conceptual clusters including contradictory evaluations (for example, 'this action is right' versus 'this action is wrong'). Following the definition proposed above, this would constitute a case of incommensurability. As mentioned in the previous chapter, evaluative

<sup>117</sup> As it has been exposed in the previous chapter, essential properties play an important role with respect to the issue of stability of reference (through the process of proto-rigid designation). The possibility of establishing differently featured and taxonomically incommensurable accounts of essential properties of same entities legitimately raises interrogation about stability of reference of terms pointing these entities (Kuhn 1990b). However, the present sections are limited to the discussion of incommensurable discrepancies as cognitive phenomena possibly occurring during rational investigations. Therefore, only knowledge effectively possessed by actual inquirers about essential properties is here considered. Determining to which extent mismatches in such knowledge can impact essential properties themselves and related issues about reference (are new introducing events settled or can there be replays of shared introducing events) requires considering background philosophical commitments about realism, reference, truth and rationality. This goes beyond the present purposes, but is explored in the following.

<sup>118</sup> In the same spirit as the one inhabiting the previous footnote, consequences of mismatches in conceptions of essential properties with respect to the violation of the no-overlap principle cannot be studied independently of background philosophical commitments. This issue is discussed in the following. An interesting comment can nonetheless be made here. According to the proposed definition, the violation of the no-overlap principle is not considered as an intrinsic element of taxonomic incommensurability. In preventing the unification of incompatible linguistic fields, it may be better conceived as a tool for characterizing the consequences these phenomena. One can even notice that it may be relevant, not only with respect to taxonomic incommensurability, but even regarding incommensurability without taxonomic incompatibilities. For instance, it could be seen as forbidding the unification of conceptual schemes admitted in virtue of incompatible systems of rational acceptability and embedding contradictory claims (like 'earth is a solid sphere' and 'earth is a flat solid'). Preventing overlap in extensions of commensurable categories that are not related as genus and specie amounts rejecting contradictions.

inquiries are not restricted to ethical or moral questions, but can also bear upon assessments of standards of rational acceptability, such as given methodological principles. With respect to such issues, incommensurability could also occur. Furthermore, it is possible to consider the case of differently contextualized inquiries mobilizing incompatible systems of rational acceptability that elaborate differently featured conceptual clusters for same terms because some provide only descriptions of associated entities, while other establish evaluative judgments. This configuration is not radically different from the case of several descriptive inquiries focusing on different aspects of same entities (without generating taxonomic mismatches), or from several evaluative inquiries assessing same entities inserted in same practical problems through different evaluative notions. In all these configurations, differently contextualized inquiries are susceptible to produce and rationally accept differently featured conceptual clusters for same terms. Provided these inquiries are guided by systems of rational acceptability that are genuinely incompatible (and not just by unifiable problematic situations accompanied by compatible sets of methodological standards and common bodies of evidence), incommensurability would stand between them. Arguably, these configurations might sound less incommensurable than the ones previously analyzed. Usually, incommensurability is discussed in situations in which theories or conceptual schemes are competing (before and after scientific revolutions or in sciences undergoing a crisis state). Nevertheless, as the argument in the next section will aim to show, competing perspectives are not the only ones in which phenomena of incommensurability can be legitimately considered.

### **3. Competing and non-competing perspectives for incommensurability**

According to the generalized definition delineated in the previous section, incommensurability occurs when differently contextualized rational inquiries admit differently featured conceptual clusters for same terms (differently featured conceptual schemes hosting same terms) under the guidance of incompatible systems of rational acceptability. Up to this point, incommensurability has been considered only in the diachronic perspective of inquiries standing in the same historical line and separated by a scientific revolution, or in the synchronic perspective of inquiries in a state of crisis during which sub-groups of inquirers might evolve in incommensurable frameworks. Because of incommensurability, these rational inquiries can be understood as generating incompatible (or even taxonomically incommensurable) conceptual schemes about same issues that cannot be the object of compelling and shared assessments of rational acceptability. Disruption in reference of some shared terms may also occur. Basic intuitions about (scientific) realism lead to interpret such phenomena of incommensurability in a *competing* perspective. Results of rational inquiries should be seen as conflicting answers to same questions. In this perspective of rational inquiries diachronically or synchronically competing, phenomena of incommensurability may be acknowledge as genuine features of inquirers' cognitive functioning while nonetheless arguing that they do not propagate beyond inquirers' cognitive sphere. Phenomena of incommensurability would thus be interpreted as cognitive imperfections or limitations, which should be removed if possible. Such an interpretation of incommensurability nonetheless requires meeting certain prior conditions. For instance, truth and rational acceptability should be distinguished robustly enough to permit that, although several divergent conceptual schemes produced in competing and incommensurable inquiries might escape comparative assessments (and even prove untranslatable), such conceptual schemes could still be conceived as more or less close to truth. This would permit claiming that admitting only one of



these competing conceptual schemes can constitute a progress in knowledge (although no choice can be made with absolute certainty). Similarly, interpreting incommensurability in competing perspectives as cognitive limitation may demand ensuring stability of reference despite taxonomic incommensurability (with possible divergences about conceptions of essential properties involved in proto-rigid designation)<sup>119</sup>. Provided this type of challenges could be met (this question is extensively discussed in sections 4 and 5), the phenomena of incommensurability in diachronic and synchronic competing perspectives could be seen as (maybe unavoidable) cognitive limitations or imperfections in processes of knowledge production and their outcomes, which should be removed if possible. Nevertheless, competing perspectives may not be the only legitimate ones in which incommensurability could be relevantly considered.

Even a brief look at our actual scientific landscape permits bringing to the fore “the evident plurality and disunity of the sciences” (De Caro and Macarthur 2012, 18). This may suffice to show the importance of avoiding the confinement of incommensurability to competing perspectives only. In fact, many different scientific disciplines study various topics in mobilizing distinct methodological principles and bodies of evidence (physics, biology, sociology, psychology, etc.). One can easily imagine cases in which different disciplines produce differently featured discourses about same entities under the guidance of incompatible standards of rational acceptability. For instance, discourse of physics or chemistry about the chemical composition of water could be compared with descriptions of the role played by water in our societies provided by sociology. Standards of rational acceptability deployed in these types of inquiries are likely to be incompatible (for instance, requirements for law-based claims and for universal generalization in physics and chemistry would oppose to the involvement of interviews and questionnaires in sociology). In the same vein, descriptive investigations of water conducted in physics and chemistry may be contrasted with evaluative inquiries about inequalities with respect to the access to water. This type of mismatches may well be considered as phenomena of incommensurability. Kuhn himself approached such contemporary or synchronic phenomena through the lens of his notion of incommensurability (e.g. Kuhn 1990a, 2000 [1993], 238). He presented paradigms as crucial elements allowing for a specific discipline to possess its own identity and its own conceptual framework (Kuhn 1990a, Sharrock and Read 2002, 189, Andersen 2013). Through shared examples of successful practices, the efficiency of communication and mutual understanding among the inquirers of the same community is enhanced. However, actual persons engaged in different contemporary inquiries might receive different training and focus their attention on different questions. They might rely on different paradigms and failure in communications or divergences in theory assessment might occur between these different groups of inquirers (Kuhn 1996 [1962], 176-181, 1977, 296).

Our present account of incommensurability based on Putnam’s pragmatist theory of knowledge seems suitable to consider such synchronic mismatches between contemporary scientific disciplines or rational inquiries. In particular, Putnam defends the hypothesis of the division of linguistic labor (Putnam 1996 [1975]). Accordingly, nothing prevents considering specialized groups of inquirers conducting rational inquiries devoted to the deepened treatment of

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<sup>119</sup> Preserving the stability of reference may even count as a condition of possibility for conceiving incommensurability in a competing perspective. To be seen as talking about same issues, differently contextualized rational inquiries need to employ terms with stable reference. More precisely, stability of reference appears crucial to allow violation of the no-overlap principle, either through contradictions between properties ascribed to same entities, or through cross-classification of same entities into non-homologous systems of categories. Only when the no-overlap principle is violated conceptual schemes can be understood as competing or conflicting.

particular topics. Only the concerned experts are expected to produce and master the corresponding conceptual schemes. In addition, this division is not confined to semantic matters but also occurs at the level of rational acceptability. Socially speaking, admissions of rational inquiries' outcomes do not reflect judgments of rational acceptability of every individual (Putnam 1981, 107-108). For each specific domain, non-experts transfer their authority to experts of this domain, who are in proper position to assess produced conceptual schemes. This institutionalized deference to experts reflects what can be called a division of rational labor. In virtue of the divisions of linguistic and rational labors, it becomes possible to conceive distinct communities of inquirers that coexist while independently conducting different rational inquiries. Thereby, one can imagine differently contextualized though contemporary rational inquiries elaborating and admitting differently featured conceptual clusters for same terms under the guidance of incompatible systems of rational acceptability. These inquiries would then produce differently featured conceptual schemes hosting same terms that may even prove taxonomically incommensurable. This means that some mismatches between contemporary scientific disciplines or rational inquiries can be understood as phenomena of incommensurability. Therefore, appropriately understanding our actual landscapes of rational or scientific knowledge may require taking distance with competing perspectives upon incommensurability. This might also prove crucial for suitably approaching interdisciplinary or boundary crossing research that often requires gathering investigations coming with radically different standards of rational acceptability and-or systems of categories. In this respect, considering phenomena of incommensurability as cognitive limitations or imperfections appears hardly sufficient. A non-competing perspective in which incommensurability could be considered as legitimate and significant – instead of mere cognitive imperfections to be resorbed if possible – seems required. In fact, it may be legitimate in some cases to elaborate and admit differently featured (though compatible) conceptual clusters for same terms under the guidance of incompatible systems of rational acceptability. It might even be sometimes legitimate and significant to establish incompatible conceptual clusters for same terms in virtue of incompatible systems of rational acceptability.

More thickness can be granted to this proposal of considering incommensurability also in non-competing perspectives in noticing that our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge applies to contemporary rational investigations that do not compete. As any inquiry, such rational investigations embed context-sensitive elements in admitted systems of rational acceptability, in the manners these systems are deployed, and in conceptual schemes that are accordingly elaborated and accepted. These context-sensitive elements are influenced by various contextual sources. Mismatches between differently contextualized contemporary inquiries can therefore be studied according to possible divergences between these sources available in each specific context. Following this line of thinking, it is possible to delineate contextual variations that can be admissible in synchronic non-competing situations and to reconstruct divergences between inquiries they may generate. To facilitate the exposition, an oversimplified picture of synchronic contexts and of the associated variations they permit is first drawn. Progressive complexification allowing a more realist account is then proposed.

Accordingly, one can first consider synchronic contexts from which several contemporary inquiries might start that would embed only a background conceptual scheme in which terms are associated with single conceptual clusters, all elaborated and validated through a single system of rational acceptability. In particular, there could be no pre-existing phenomena of incommensurability. Although such synchronic situations would prevent variation in many

contextual sources, certain divergences could nonetheless occur. Notably, actual groups of inquirers could still be driven by different evaluative commitments<sup>120</sup>. Consequently, some of the context-sensitive components of rational inquiries conducted by differently contextualized groups of inquirers can diverge. Variations in evaluative commitments can induce differences in systems of rational acceptability. First, relevance with respect to problematic situations may be impacted. Different judgments about the problematic nature of given situations can be established. Different problematic situations could be framed in mobilizing different pre-existing terms. Divergences could also occur about what counts as relevant elements with respect to given problematic situations. In addition, the assessments of rational acceptability through compliance with methodological standards could also be influenced. Provided different groups of actual inquirers rely on different evaluative commitments and-or try to solve different problematic situations, orderings of methodological standards might diverge. Finally, inquirers belonging to differently contextualized groups might disagree about their respective assessments of rational acceptability through confrontation with independent facts. Although in this oversimplified case there is only a single independently accepted conceptual scheme according to which independent facts can be established, actual inquirers might diverge in their selections of bodies of evidence insofar as they are guided by different problematic situations and-or by different methods.

These divergences, permitted by an extremely simplified account of initial synchronic contexts, are already sufficient to allow the occurrence of phenomena of incommensurability. Differently contextualized groups of inquirers relying on divergent evaluative commitments can initiate inquiries to address different problematic situations (with or without initial overlapping) under the guidance of incompatible systems of rational acceptability (at least at the level of methodological standards). These inquiries may result in the association of same terms with differently featured conceptual clusters. They could thus produce differently featured conceptual schemes hosting same terms. In fact, different pre-existing terms can be borrowed from the shared pre-admitted conceptual scheme of ordinary language (through mismatches regarding problematic situations and assessments of relevance with respect to them). Similarly, new uses for pre-existing terms (associated with new-conceptual clusters) and new terms with their uses (also associated with new-conceptual clusters) can be introduced in different manner (with differently featured conceptual clusters) under the guidance of incompatible systems of rational acceptability. Furthermore, conceptual clusters associated with pre-existing terms can undergo different corrections. In consequence, even in oversimplified synchronic contexts that initially embed no variations in available conceptual schemes or in systems of rational acceptability, and no phenomena of incommensurability, differently contextualized inquiries guided by incompatible systems of rational acceptability and admitting differently featured conceptual clusters for same terms (or differently featured conceptual schemes hosting same terms) can emerge. There could be incommensurable descriptive or evaluative inquiries as well as inquiries considered as incommensurable because either describing or evaluating same entities. Furthermore, differences generated in conceptual schemes hosting same terms (in conceptual clusters associated with same terms) may reach incompatibility or taxonomic incommensurability.

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<sup>120</sup> They could also engage in different (world-involving) practices and be confronted with different real entities. These contextual sources influence inquirers' ability of attunement mobilized in selection of terms' uses. In the oversimplified model under consideration here, such contextual elements would have nothing to influence because we assumed that the available background conceptual scheme includes terms associated with unique conceptual clusters (that is to say, with single uses).

Furthermore, realistic situations from which differently contextualized rational inquiries can start are far richer than the oversimplified model considered until now. Notably, actual synchronic landscapes of knowledge – from which differently contextualized contemporary rational inquiries could start – embed an evident diversity of scientific disciplines and rational investigations that provide many different conceptual schemes about different issues under the guidance of various systems of rational acceptability. Ordinary language and its associated conceptual schemes validated through commonsense are also available as background in which new rational inquiries can be grounded. The first analysis proposed just above starting from the oversimplified view even vindicates the idea that these backgrounds can include differently featured conceptual schemes hosting same terms that are admitted according to incompatible systems of rational inquiries. Phenomena of incommensurability can thus structure contexts from which inquiries begin. Consequently, synchronic variations in contextual sources influencing contemporary inquiries that do not compete may be far more varied and radical than our preliminary oversimplified model suggests. Obviously, possible differences in actual inquirers' normative, ethical or moral commitments as well as in their (world-involving) practices and in the real-world entities they encounter remains. But in addition, many other contextual sources that influence rational inquiries can vary. For instance, inquiries can also mobilize pre-existing terms from different available conceptual schemes (that may even be taxonomically incommensurable). The latter can be provided by ordinary language but also by the diversity of previous rational investigations. Borrowed pre-existing terms may be already associated with different uses (and conceptual clusters). In addition, different bodies of background knowledge may be involved in selections of terms' uses through attunements, or in methodological principles such as the one of external consistency. In the same vein, independent facts could be framed according to different (and possibly taxonomically incommensurable conceptual) schemes. Furthermore, previous inquiries might furnish different sets of acknowledged methodological principles, either directly through the results of past explicit meta-methodological investigations, or indirectly as principles that have been successful in past-inquiries (implicit meta-methodological inquiries). Arguably, possibilities for phenomena of incommensurability to occur between differently contextualized contemporary rational inquiries (that may not compete) are considerably enlarged when synchronic situations they start from are accounted for in this more realistic way. One can easily imagine that mismatches and incommensurability could stand between inquiries grounded in different broad disciplines (or different research traditions) whose past histories impose specific manner of understanding rational acceptability and specific previously admitted conceptual schemes.

In this view, it becomes possible to understand how differently contemporary contextualized inquiries may be conducted to settle taxonomically incommensurable accounts of same entities without necessarily competing. They could borrow from conceptual schemes available in their respective contexts pre-existing terms associated with already taxonomically incommensurable conceptual clusters (for instance embedding descriptions based non-homologous systems of categories). They could also inherit incompatible methodological prescriptions about the types of properties that should be mobilized. Under the guidance of incompatible systems of rational acceptability, such inquiries could admit differently featured conceptual clusters for same terms mobilizing incommensurable systems of categories. As already indicated, Putnam himself mentions possible divergences between molecular biologists and population biologists. The former might consider that DNA is essential, while the later might consider that belonging to a certain reproductive population is the right sort of fundamental

properties (Putnam 2002d, 107). The coexistence of psychological and neuro-physical inquiries about, say, human being might constitute a more striking illustration. The former is likely to describe human being based on different types of psychological states. By contrast, neuro-physics may account for human being based on neurological states. As Putnam explains, psycho-physical identification is an extremely complex issue that might even prove unsolvable (Putnam 1999, 71-134). Psychological and neurological properties could thus be understood as non-homologous systems of categories. Psychological and neuro-physical inquiries could thus be seen as producing, under the guidance of their respective systems of rational acceptability, taxonomically incommensurable conceptual schemes accounting for the notion of human being.

In sum, our general account of rational inquiries based on Putnam's pragmatist theory of knowledge permits conceiving the coexistence, in synchronic non-competing perspectives, of differently contextualized investigations guided by incompatible systems of rational acceptability and producing differently featured conceptual schemes hosting common terms (differently featured discourses about same issues). Instead of being considered as something to be removed, the phenomena of incommensurability occurring in non-competing perspectives may indicate that there could be different legitimate rational way of studying same issues or entities. This would amount admitting a kind of pluralism about systems of rational acceptability. Consequently, differently featured discourses about same things could all be considered as legitimate and rational. Such a claim, suggested by the consideration of incommensurability phenomena in non-competing perspectives, echoes Putnam's defense of conceptual or pragmatic pluralism (Putnam 2004, 21-22, 2013f, 29-30).

Importantly, the results established in this section indicate that incommensurable inquiries may produce not only differently featured but also incompatible accounts of same things (because of contradictory attributions of properties or of taxonomic incommensurability). It may be tempting to claim that if incompatibilities arise, phenomena of incommensurability should be automatically considered in a competing perspective as cognitive imperfections to be removed if possible. Nevertheless, this temptation should be resisted (at least temporarily) because, until now, the analysis of phenomena of incommensurability has been restricted to their consideration as possible features of the cognitive functioning of actual inquirers. In this respect, it has been explained that inquirers may be conducted to deploy incompatible accounts of same things under the guidance of divergent systems of rational acceptability. Here, a mere possibility is opened for considering this also in non-competing perspectives. Determining what may count as competing or non-competing cannot be done without mobilizing additional philosophical insights about reference, realism and truth. For instance, the admissibility of incompatible conceptual clusters associated with same terms requires discussing both the stability of reference and the features of what is referred to. If reference is disrupted, incompatibility may vanish. Similarly, if reality referred to can be multi-faceted, incompatibilities may be significant. Such questions merge with broader challenges raised when trying to account consistently for incommensurability. For instance, can the possibility for pluralisms about systems of rational acceptability and conceptual schemes hosting same terms (suggested by the present discussion of incommensurability in non-competing perspectives) be harmonized with minimal scientific realist claims (such as the idea that scientific inquiries provide information about reality or the notion of scientific progress)? Can we make sense of the idea that incompatible contemporary inquiries unveil different aspects of the same reality? But some challenges also need to be met in competing perspectives. For example, is it possible to conceive that scientific investigations progress along history and provide improved

information about reality in spite of possible incommensurable evolutions of conceptual schemes and of systems of rational acceptability? The question echoes Kuhn's criticism of the notion of scientific progress. Furthermore (and independently of the perspectives considered), what is the role of the violation of the no-overlap principle with respect to taxonomic incommensurability? Does taxonomic incommensurability induces conclusions similar to Kuhn's criticized 'World-Change' thesis? Can we say that persons admitting taxonomically incommensurable conceptual schemes nonetheless experience the same reality?

Although a precise definition of phenomena of incommensurability has been provided above, these questions remain. This indicates that consequences of incommensurability cannot be properly delineated independently of philosophical backgrounds about realism, truth or reference. Nevertheless, they cannot be properly accounted without a precise definition of incommensurability either. Provided with such a definition that we tried to keep as neutral as possible with respect to background philosophical commitments, it is now possible to turn to the detailed analysis of the consequences of phenomena of incommensurability and of the associated challenges.

#### **4. Philosophical and epistemological challenges raised by incommensurability**

In the general introduction of this work, we indicated that Kuhn's claims about incommensurability are widely recognized as raising philosophical and epistemological issues, bearing in particular on the topics of truth or realism, and specifically threatening scientific realism. Through taxonomic and methodological incommensurabilities, Kuhn denied the possibility of thinking our scientific theories as susceptible to represent reality as it is in itself, and thereby of thinking truth as correspondence between claims and mind-independent matters of fact (Kuhn 2000a [1991], 95). This denial in particular amounts rejecting the received view of science indicating that the latter can have no rival and progresses toward the unique correct description of natural reality (Bird 2000, 13, Sharrock and Read 2002, 16, Ladyman 2012, 37). Historical studies of scientific enterprises show that science can successively admit taxonomically incommensurable theories, for instance because of the occurrence of scientific revolutions. Terms employed at different times in different frameworks can prove untranslatable and evidence discontinuities in reference. Consequently, comparison of taxonomically incommensurable theories might be impossible. This issue can be reinforced by phenomena of methodological incommensurability according to which differently contextualized researchers admit different methodological standards and are likely to disagree about the assessment of theories. Consequently, the idea that science advances through the progressive building of a conceptual system matching the real ontology of the world is under attack (Kuhn 1990b, 1996 [1962], chapter 13 and postscript section 6, Bird 2000, 27, Sharrock and Read 2002, 125). In addition, Kuhn claimed that the world is experienced through conceptual systems, lexicon or taxonomies. Thereby, scientists relying on taxonomically incommensurable theories, lexicons or taxonomies do not conceive, and do not experience, the same world (Kuhn 1996 [1962], chapter 10, Bird 2000, chapter 4). Therefore, the attack against the idea that science progresses in the description of a single real world is reinforced. Although the existence of a mind-independent reality might still be defended, this World-Change thesis undermines the claim that a mind-independent world is cognitively accessed and could be successfully described by science.

These consequences that are deduced from Kuhn's notion of incommensurability severely conflicts with most of the versions of scientific realism (Psillos 2000, 706, Sankey 2000a, 212, note 6, Almeder 2008, 94-95, Putnam 2013f, 21, note 3). The threats incommensurability may raise regarding truth or (scientific) realism have been explored by numerous philosophers along many different philosophical perspectives (Shapere 1989, Nola and Sankey 2000b, Hoyningen-Huene and Sankey 2001, Brown 2005, Soler, Sankey, and Hoyningen-Huene 2008, Sankey 2009, Oberheim and Hoyningen-Huene 2013). Such diversity does not permit building a single and overarching account of incommensurability and related philosophical and epistemological issues. However, Sankey (2009) suggests an interesting idea regarding the manner incommensurability should be discussed (p. 199). For him, incommensurability cannot and should not be employed to make a case in favor of antirealism or against (scientific) realism. Rather, consequences of incommensurability cannot be understood independently of background commitments that have to be legitimated through dedicated independent arguments. Basically, persons admitting (scientific) realist background commitments are likely to propose radically different accounts of the consequences of incommensurability than people relying on antirealist background philosophical positions. Accordingly, the account of incommensurability developed in this chapter does not need confronting with the huge variety of already existing interpretations. More modestly, our account can focus on the delineation of challenges that are raised by the precise definition of incommensurability it adopts and on the development of answers that can be brought to these challenges according to its own background philosophical commitments (basically, the commitments expressed in Putnam's pragmatist theory of knowledge).

To this aim, the philosophical and epistemological challenges raised by incommensurability will first be fully elucidated and reframed according to our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge. As just made clear, philosophical challenges associated with incommensurability largely bear upon issues of realism, truth, reference and (scientific) rationality. Therefore, the following analysis is focused on challenges linked to descriptive inquiries only<sup>121</sup>. In a second time, a detour is made before analyzing the answers to incommensurability challenges that can be developed in Putnam's pragmatist theory of knowledge. As a preliminary delineation, challenges of incommensurability are considered when deployed in metaphysical realism and internal realism. The interest of such a detour is twofold. On the one hand, metaphysical realism and internal realism are two opposed frameworks that can be used as oversimplification representing the two major interpretative streams about phenomena of incommensurability delineated in the general introduction (realistically oriented approaches opposed to Kantian-like or verificationist frameworks). On the other hand, metaphysical realism and internal realism are crucial steps in the intellectual trajectory conducting Putnam to commonsense realism (and, thereby, leading us to the reconstruction of Putnam's pragmatist theory of knowledge). As we have seen, interfacial approaches of conceptions and perceptions constitute a lock – the antinomy of realism – preventing the settling of consistent understanding of reality, truth and reference. Discussing challenges of incommensurability in metaphysical realism and internal realism is therefore the occasion of determining to which extent these interfacial approaches of conception and perception may also act as roadblocks on the path of a context-

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<sup>121</sup> This means that phenomena of incommensurability involving evaluative terms are set aside in this part. A brief and more speculative account of incommensurability in connection with evaluations is proposed in the conclusive section of this chapter. Merging both discussions would considerably weaken the clarity of exposition of the important arguments proposed in the following. One can nonetheless keep in mind that cases of incommensurability involving descriptions of something opposed to evaluations of the same thing are one of the reasons that led us to consider seriously the possibility of non-competing perspectives on incommensurability.

sensitive and realist account of incommensurability. Finally, metaphysical and internal realist interpretations of incommensurability are contrasted with the context-sensitive and realist account that can be developed through the general picture of rational inquiry based on Putnam's pragmatist theory of knowledge and the associated rejection of these interfacial approaches.

#### **4.1. Core challenges of incommensurability**

The objective of this section is to express the core challenges associated with phenomena of incommensurability according to our general picture of rational inquiry, without yet deploying the fruitful philosophical insights of Putnam's pragmatist theory of knowledge. For the purpose of the present discussion, phenomena of incommensurability are still accounted for as possible features of rational inquirer's cognitive functioning. This permits evidencing the features philosophical background should possess (challenges they should permit addressing) to allow settling a context-sensitive and realist understanding of the consequences of incommensurability. As a brief summary, it can be reminded that the account proposed above of incommensurability as possibly occurring in rational inquirers' cognitive functioning has been established starting from core connections with Kuhn's ideas. These connections rest on Kuhn's elucidation of the irreducible role played by shared examples of successful practices in the functioning of sciences. These shared examples correspond to paradigms in the original and core sense of the term. Paradigms cannot be conceived as sets of rules to be followed. Their indispensability shows that the functioning of science cannot be accounted for only in an approach based on rule following. It thereby becomes vain to try establishing a universal scientific method that could (should) be applied context-independently in any rational investigation. At least paradigms escape reduction to rules or formalized methods and can vary depending upon the contexts in which particular inquiries are situated. When several inquiries admit distinct paradigms, they can become incommensurable. Misunderstandings and disagreements about theory assessment between groups of inquirers conducted them can occur.

This approach of incommensurability proposed by Kuhn has been reconstructed based on our general picture of rational inquiry that does justice to the idea that systems of rational acceptability guiding rational inquiries, as well as semantic structures of conceptual schemes they elaborate, are context-sensitive. Thereby, they are influenced by various types of contextual sources (which can be associated with Kuhn's paradigms). Notably, in function of contextual sources, rational inquirers engage in specific investigation processes targeting the description of diverse domains of investigation (formed by particular pools of entities being given ways along specific sets of points of view<sup>122</sup>). Under the guidance of context-sensitive systems of rational acceptability, inquirers initiate the construction of conceptual schemes in borrowing pre-existing terms from available linguistic backgrounds. To achieve the description of intended domains of investigations, they introduce new terms and uses associated with new conceptual clusters. In addition, they either correct pre-establish conceptual clusters associated with pre-existing terms' uses, or inaugurate new uses for these pre-existing terms together with original conceptual clusters<sup>123</sup>. All these semantic processes are also context-sensitive. Differently contextualized rational inquiries can thus produce and rationally accept differently featured conceptual schemes formed by interconnected

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<sup>122</sup> It is worth-mentioning that not all philosophical backgrounds admit the possibility of a plurality of ways of being for single entities. This point will prove crucial in the elaboration of a context-sensitive and realist account of incommensurability.

<sup>123</sup> Again, plurality of uses for single terms is not legitimate in all philosophical background. This is also crucial for developing a context-sensitive and realist understanding of incommensurability.



conceptual clusters of terms they host. On this ground, incommensurability has been reconstructed as occurring when differently contextualized rational inquiries produce and admit differently featured conceptual clusters for *same terms* (differently featured conceptual schemes hosting *same terms*) under the guidance of *incompatible* systems of rational acceptability. Incommensurability can take different faces because differently featured conceptual clusters associated with same terms can be compatible, incompatible without taxonomic incommensurability or incompatible with taxonomic incommensurability. In the following, we focus only on cases in which conceptual clusters for same terms are incompatible. It is for these cases that challenges are the most acute and interesting. Moreover, once such cases are accounted for, compatible configurations can be approached through the same line of thought.

### **The threat of total isolation**

Before progressing further with the detailed analysis of the specific challenges that should be addressed for these phenomena of incommensurability to be interpretable in a context-sensitive and realist manner, a first general challenge deserves mention and consideration because it constitutes a condition of possibility for any consistent framing of the very notion of incommensurability. In fact, phenomena of incommensurability should not be seen as generating total isolations between whole languages and whole systems of rational acceptability. Putnam opposes a general transcendental argument to such a radical framing of incommensurability. Total isolation between groups of actual persons at the levels of languages and systems of rational acceptability would prevent mutual recognition by persons of totally isolated groups that members of the other groups are also intelligent and rational people using meaningfully their language (Putnam 1981, 114-115 and 119). From the perspective of each group, members of the other groups would have to be seen as mere animals emitting noises in response to stimuli. Therefore, the fact that different groups of actual persons are not conceived as totally isolated in incommensurable languages and systems of rational acceptability is a condition of possibility of considering these actual persons as genuine rational persons competently using a language. Consequently, the fact that at least some terms (with associated conceptual clusters and referents) as well as some minimal elements of rationality (or rational acceptability) have to be shared can be seen as a condition of possibility for a consistent framing of incommensurability. In addition to this general transcendental argument, a specific point can be made concerning taxonomic incommensurability. The very idea of wholly (taxonomically) incommensurable languages seems inconsistent. If two languages are considered as wholly incommensurable, any translation from one to the other is prevented. But for something to be considered as a language, it has to be translatable (Baghramian 2008). If another language cannot be translated (at least partially), it should not even count as a language. Therefore, taxonomic incommensurability understood as total isolation between whole languages might become an incoherent notion. There could not be incommensurability between different languages taken as whole because radical impossibility of translations would mean, from the perspective of persons using a given language, that the other languages cannot be languages at all. However, Feyerabend argued that this criticism is misled (Feyerabend 1987). He claimed that understanding foreign concepts does not require translation. Even when no possibility of translation exists, learning a language remains possible (as it occurs for instance with young children learning their native languages from scratch). In such a learning process, marks and noises that are not initially meaningful are crucial. Consequently, even deprived from any possibility of translation, a foreign language can still be considered as a full-fledged language to the

extent that it can be learned. Kuhn concurred with Feyerabend. He argued that translatability is not required for understanding a language, only the possibility of language learning is (Kuhn 1990b, 300).

While the objection of Feyerabend and Kuhn seems correct, it might not be sufficient to defuse the idea that taxonomic incommensurability, understood as total isolation between whole languages, is an incoherent thesis. If no elements of two languages can be translated, one can wonder how to even make sense of the idea that terms in each language can be associated with incompatible networks of concepts. The example of taxonomic incommensurability standing between Ptolemy's and Copernic's celestial theories adequately illustrates this point. Establishing that some incompatible links stand between 'planet', 'star', 'earth' and 'orbit' in both frameworks demands at least a match about the term 'orbit'. Without such stable elements, conceptual networks could at best be said different, but hardly incommensurable. In the same vein, the idea of cross-classification of same objects in different categories would become impossible to frame. First, it requires that at least some objects are conjointly identifiable in both languages. For example, to be in position to even state that Ptolemy's and Copernicus' celestial theories cross-classify some objects, it is required to be entitled to say that 'earth' and 'sun' refers to earth and sun in both cases. Only then it becomes possible to say, at the same time, that 'sun (and not earth) is in the extension of 'planet' in Ptolemy's system', and that 'earth is in the extension of 'planet' and sun in the extension of 'star' in Copernicus' one'. Moreover, it is required that 'planet' (in Ptolemy's system) and 'star' (in Copernicus' one) can be recognized as different categories (that talking about them as different or not is meaningful). One might concede that, in becoming bilingual, a language user could identify some objects as connected to specific categories in each framework (this would be possible only to the extent objects can be perceived independently of conceptual schemes). Even in admitting this possibility, a second element is necessary to deploy talk about cross-classification. The bilingual person needs establishing whether or not concerned categories, to which conjointly identified objects belong to in each language, are the same or not. This assessment seems impossible across wholly incommensurable taxonomic systems. In consequence, taxonomic incommensurability, understood as total isolation between languages, appears self-refuting because fully incommensurable languages could not be characterized as incommensurable. It is worth-mentioning that this self-refuting understanding of incommensurability conflicts with Kuhn's own discussion of the notion. Kuhn himself claimed that taxonomic incommensurability is not to be thought of as extending to whole languages or as implying radical translation's impossibilities (Sankey 1994, 17 and 29, Kuhn 1996 [1962], Postscript Section 5, 2000 [1993], 238, Sharrock and Read 2002, 148-149 and 166). What Kuhn has in mind is more precise and restricted than that. For instance, he claims that, when two languages are taxonomically incommensurable, there can be "no common language into which both could be *fully* translated" (our emphasis). What is prevented is not "the activity of professional translator," but rather "a quasi-mechanical activity governed in full by a manual that specifies, as a function of the context, which string in one language may, *salva veritate*, be substituted for a given string in the other" (Kuhn 1990b, 299). Therefore, taxonomic incommensurability should not be considered as applying to languages as whole and as leading to total isolation. Incommensurable taxonomic systems can be considered only on the background of broader shared or translatable notions.

In itself, this restriction on the possible formulations and accounts of taxonomic incommensurability does not constitute an epistemological or philosophical challenge. However, some authors, like Quine or Davidson, employed it to claim that any formulation of taxonomic

incommensurability is inconsistent. They relied on the thesis of ‘meaning holism’ (McGuire 1992, 148, Bertolet 2008) to argue that taxonomic incommensurability necessarily degenerate into “semantic relativism,” that is to say, total isolation between whole incommensurable systems of meaning (Sharrock and Read 2002, 141-142). Meaning holism states that the meaning and reference of any term are determined through its relationships with all the other terms of the language they belong to. If meaning holism holds, the occurrence of taxonomic incommensurability phenomena between some terms of two languages renders these languages incommensurable as wholes. Consequently, taxonomic incommensurability coupled with meaning holism would necessarily become an inconsistent thesis. Interestingly, this attack against taxonomic incommensurability might meet Putnam’s transcendental argument. First, if meaning holism applies, there can be no shared terms with same referents between linguistic systems embedding taxonomic incommensurability. Moreover, if taxonomic incommensurability propagates to whole languages, then it reaches formulations of standards of rational acceptability<sup>124</sup>. Accordingly, no minimal elements of rational acceptability could be shared between frameworks embedding taxonomic incommensurability. Therefore, taxonomic incommensurability could not be framed without denying the possibility for actual persons belonging to one of these frameworks to recognize members of the others as intelligent and rational persons meaningfully employing their own language. In sum, it seems that meaning holism has to be rejected for taxonomic incommensurability to be consistently formulated. Kuhn’s own formulation seems to attempt escaping this problem. He indicated that taxonomic incommensurability in general propagates only in scientific languages (or in part of them) which embody localized clusters of interdefined terms, such as ‘mass’ and ‘force’ in Newtonian mechanics (Kuhn 1990b, Sharrock and Read 2002, 148-152). This corresponds to admit a restricted form of meaning holism that can be called “local holism” (Nola and Sankey 2000a, 29-30). In sum, taxonomic incommensurability is a consistent notion only to the extent meaning holism can be confined to local holism. Although this does not constitute a challenge raised by incommensurability but rather a condition of possibility, any philosophical background meant to permit the consideration of the consequences of incommensurability should allow escaping generalized meaning holism.

Now, we can turn to the exposition of the challenges that philosophical backgrounds have to permit answering for achieving a context-sensitive and realist account of the consequences of incommensurability. In this respect, our reconstruction of phenomena of incommensurability evidences that their consequences should be understandable along two classes of perspectives. First, incommensurability can occur between rational inquiries along competing perspectives. This is the case when rational inquiries study the same entities but produce incompatible conceptual schemes hosting terms referring to them. One can mention configurations such as scientific investigations on the same historical line separated by scientific revolutions (diachronic competing perspective) or sciences entering in a crisis state and embedding several contemporary sub-groups of researchers promoting competing alternative theories (synchronic competing perspective). In competing perspectives, phenomena of incommensurability should be interpretable as cognitive limitations or imperfections to be removed if possible. Second, incommensurability may also occur between rational inquiries along non-competing perspectives. In such cases, rational inquiries

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<sup>124</sup> One can note right now that taxonomic incommensurability would also reach descriptions of the contextual sources that influence the endorsement of particular specifications of rational acceptability and provide pre-existing terms for the production of conceptual schemes. No common description of these contextual sources could be achieved, preventing any common assessment of their legitimacy.

would also study the same entities and produce incompatible conceptual schemes hosting terms referring to them. But in non-competing perspectives, incommensurability should be interpretable as legitimate and significant. As an illustration, one can imagine two inquiries talking about water with one focusing on liquid water in a lake, while the other study ice on Mars. Another illustration is given by the comparison of accounts of what is a human being in neuro-physiological on the one hand and in psychological terms on the other. It seems to us that incommensurability should be interpretable along these two classes of perspectives in a suitable account of its possible consequences that would be at the same time context-sensitive and respectful of realist intuitions. Furthermore, challenges to be met depend upon perspectives in which incommensurability is considered. Let's begin with challenges philosophical backgrounds needs facing to permit interpreting incommensurability as cognitive limitations in competing perspectives.

### **Challenges for competing perspectives**

One can first focus on the issue of truth and rational acceptability in competing perspectives. To facilitate the following exposition, the expression 'incommensurable systems of rational acceptability' will be employ to designate incompatible systems of rational acceptability leading to the elaboration and the admission of (incompatible) conceptual clusters for same terms. When considered at the level of truth and rational acceptability, securing the possibility of competing perspectives, along which incommensurability is considered as cognitive limitations, amounts defusing the threat of a kind relativism stating that incommensurable systems of rational acceptability grounded in different contexts cannot be compared. This echoes the general need to distinguish between truth and rational acceptability extensively discussed in section 3.4 of chapter 1. Deprived from such distinction, there would be nothing more than contextualized systems of rational acceptability. Nonetheless, avoiding the threat of relativism generated by the possibility to get incommensurable systems of rational acceptability in different contexts requires something more precise than merely distinguishing truth and rational acceptability. What is necessary is the possibility for conceiving that incommensurable (because differently contextualized) systems of rational acceptability might not be equally valuable and legitimate, that they may enable approaching more or less close to truth. This can be seen as a condition of possibility for persisting to consider theory choice as rational, even in presence of incommensurability. **Thereby, the first challenge that should be met to permit interpreting incommensurability in competing perspectives is elucidated: philosophical backgrounds need securing conceptual room for the idea several incommensurable systems of rational acceptability may be unequally truth-conducting.** To the extent that this idea can be vindicated, it becomes possible to think that the coexistence of incommensurable systems of rational acceptability is cognitive imperfection. It would then become consistent to consider incommensurable systems of rational acceptability in competing perspectives. Retaining only one of them would count as an improvement (when the more truth-conducting one is retained).

In addition, challenges on the road of a competing interpretation of incommensurability need to be considered with respect to the issues of realism and reference. In fact, incommensurability consist in the elaboration and admission of incompatible conceptual schemes in which same terms are associated with incompatible conceptual clusters under the guidance of incompatible systems of rational acceptability (let's call them incommensurable conceptual schemes). For this to be interpretable as cognitive imperfection, the idea that conceptual schemes describe same mind-independent entities of a common domain of investigation needs being

preserved. **This second challenge that has to be met if a competing perspective on incommensurability is to be possible can be expressed more precisely: philosophical backgrounds should secure conceptual room for the idea incommensurable conceptual schemes (formed by incompatible conceptual clusters for same terms) may be unequally successful descriptions of same entities of same domains of investigation (thus, entities being ways along same sets of points of view, when plurality in this respect is allowed). Alternatively framed, this second challenge amounts to wondering about the possibility to make sense of the idea of violation of the no-overlap principle.** Conceiving that incommensurable conceptual schemes compete is equivalent to thinking that gathering them would lead to violate the no-overlap principle. If they provide incompatible but commensurable descriptions of same things, conceptual schemes cannot be conjoined without contradiction. If descriptions of these same things are taxonomically incommensurable, gathering conceptual schemes would lead to inconsistency because of non-homologous systems of categories<sup>125</sup>. In order to meet this second challenge, philosophical backgrounds have to permit stability of reference of terms concerned by incommensurability phenomena. Deprived from such a stability, incommensurable conceptual schemes hosting same terms could not be understood as competing accounts of a common set of real entities (Sankey 2009, 196-197). It should be possible to employ these terms to replay shared introducing events. But to even start considering consistently the question of stability of reference, there has to be a stable mind-independent reality to refer to. This requires elucidating relationships standing between reality and conceptual schemes. It is extremely important to determine whether the existence of a mind-independent reality (a reality existing and being what it is independently of rationally admitted conceptual schemes) can be conceived or whether rationally accepted conceptual schemes are involved in what reality is (whether they somehow make the world). If conceptual schemes shape reality, nothing more can be conceive about the latter than what is delivered by the formers. The second challenge could be answered, preventing considering incommensurability in competing perspectives. On the contrary, this would lead to claim that incommensurable conceptual schemes rationally admitted in different contexts systematically shape incompatible worlds or realities (or at least incompatible domains of reality). With such a philosophical background about realism, terms belonging to incommensurable conceptual schemes could never be employed to replay shared introducing events. Reference could not be stable. Terms would be associated with new uses through new introducing events in each conceptual scheme. Therefore, to meet the second challenge of competing perspectives, and to allow conceiving that incommensurable conceptual schemes can be unequally successful descriptions of same entities of single domains of investigation (same entities considered along same sets of points of view), philosophical backgrounds have to do justice both to the idea that reality described is mind-independent and not shaped by rationally accepted conceptual schemes, and to the possibility for stably referring to same entities of single domains of investigations. Then it becomes possible to conceive incommensurability as cognitive imperfection in competing perspectives. Rejecting all but one among several incommensurable conceptual schemes (or incompatible conceptual clusters), or correcting them to achieve a unique description, can be understood as improvement. Furthermore, one can notice that this discussion permits addressing Kuhn's World-Change thesis. If the second

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<sup>125</sup> Here again, the proposed line of argumentation conducts thinking that the no-overlap principle should not be considered as an intrinsic component of taxonomic incommensurability. It can be violated when incommensurable conceptual schemes embed commensurable but contradictory descriptions of same things. The no-overlap principle may be better conceived as a criteria indicating that the phenomena of incommensurability at stake should be considered as competing or not. This point is further clarified below.

challenge is answered, actual inquirers may have different and incompatible experiences based on their rationally accepted conceptual schemes. But, such divergences could be interpreted as misperceptions or hallucinations provoked by inadequate conceptions of the domains of reality at stake.

The two previous paragraphs express pressing challenges that should be met by any philosophical framework targeting a realist account of incommensurability. Answering these challenges can be seen as a condition of possibility or as a necessary condition for considering the phenomena of incommensurability in competing perspectives as reflecting only cognitive limitations or imperfections. It renders meaningful the idea that, at least in some cases, only one among several incommensurable systems of rational acceptability should be admitted. Then, if possible, identifying and adopting the more truth-conducting one would be an improvement. In the same vein, it renders meaningful the idea that, at least in some case, several incommensurable conceptual schemes describe unequally well the same aspect of mind-independent reality and that only one of them should be admitted. Then, if possible, identifying and adopting the conceptual scheme that is closer to truth (that best describes reality) would be an improvement. Put in a nutshell, philosophical frameworks answering these challenges would permit accounting for phenomena of incommensurability as corresponding to some genuine aspects of the cognitive functioning of actual persons engaged in rational investigations, while preventing any disastrous propagation of these phenomena up to what truth or reality are in themselves (independently of the cognitive and epistemic processes of actual inquirers). Meeting these challenges might be considered as the minimum an adequate account of incommensurability should provide. However, more might be expected. It has been shown that the possibility for non-competing perspectives on phenomena of incommensurability is also desirable. A philosophical background permitting both interpretations (competing and non-competing) would ensure compliance with basic intuitions of realism while remaining context-sensitive. To support a context-sensitive *and* realist account of incommensurability, philosophical background should then allow that, in some cases, phenomena of incommensurability can be interpreted in non-competing perspectives as legitimate and significant – in these cases, removing all but one among several incommensurable systems of rational acceptability and admitting only one among conceptual schemes they lead to admit would not count as an improvement. But crucially, admitting this non-competing interpretation should not threaten the possibility for the competing one. What is therefore required from philosophical backgrounds is that they allow competing interpretation in some cases, and non-competing interpretation in other ones.

### **Challenges for non-competing perspectives**

**To support this balanced reading of incommensurability, philosophical backgrounds in which it is accounted for have to address a third challenge: they should permit admitting, at least in some cases, the idea that several incommensurable systems of rational acceptability can be said as equally leading to truth (pluralism about systems of rational acceptability), without rendering incomparability systematical.** Notably, the recognition that truth-conductivity of certain incommensurable systems of rational acceptability cannot be compared should not be settled at the cost of the distinction between truth and rational acceptability. More precisely, recognizing that two incommensurable systems of rational acceptability are not competing should not prevent conceiving that other systems might compete with them taken separately. Although the coexistence

of these two initial systems could be interpreted as legitimate, the possibility should remain opened for considering their respective oppositions with additional systems of rational acceptability as cognitive limitation. To the extent that such a balanced recognition of incomparability of certain incommensurable systems of rational acceptability can be achieved, removing all but one or adapting them to produce a unique overarching system would not count as improvement. Furthermore, the possibility of non-competing perspectives is not restricted to equally truth-conducting systems of rational acceptability. The important point is that, if such non-competing perspectives are possible, truth-conductivity of concerned incommensurable systems of rational acceptability is not to be compared. One can therefore imagine a system of rational acceptability leading to truth that is incommensurable with another one leading only approximately to truth. In a non-competing perspective, such differences in truth-conduction would not indicate that one system is better than the other and should replace it. In sum, it is desirable that philosophical backgrounds in which incommensurability is to be considered permit pluralism about incommensurable systems of rational acceptability. But the opening for such a possibility should not degenerate in imposing systematically this pluralism.

The discussion of the possibility for non-competing perspectives on incommensurability may become less abstract when deployed in connection with the topics of realism and reference. **To support a context-sensitive though realist reading of incommensurability, philosophical backgrounds need addressing a fourth challenge: they should permit admitting that, at least in some cases, (taxonomically) incommensurable conceptual schemes (hosting same terms associated with incompatible conceptual clusters) do not bear upon same domains of investigations although same entities are involved** – or more generally, that their respective domains of investigation include common entities that are different ways along different points of view<sup>126</sup>. To the extent that philosophical backgrounds allow such possibilities about domains of investigation, certain incommensurable conceptual schemes could be considered in non-competing perspectives as descriptions whose truth cannot and should not be compared<sup>127</sup>. The phenomena of incommensurability in these perspectives and the

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<sup>126</sup> One may legitimately wonder why the deployment, in different contexts, of same terms referring to different entities (as it may be the case for 'planet') could not be sufficient to open the possibility for such non-competing perspectives upon phenomena of incommensurability. In itself, such situation would surely be non-competing. At least, when restricting to the level of comparison between conceptual clusters associated with such terms in different contexts, differently featured descriptions would not compete for they would bear on different entities. Competition may rearise when considering broader frameworks in which terms are mobilized. But it would not really be competition between descriptions of same entities, but rather mobilization of different entities in competing explanations or descriptions of same phenomena (say, competing celestial theories). In any case, such situations are not considered as genuine phenomena of incommensurability according to the definition proposed in the present account (section 2). In fact, this definition stipulates that phenomena of incommensurability occur only when *same* terms are associated with differently featured conceptual clusters under the guidance of *incompatible* systems of rational acceptability. As already noticed in section 1, terms like 'planet' that refer to different entities in different contexts (or fail to refer to entities misleadingly held to exist) should not be seen as *same* terms susceptible to contribute to phenomena of incommensurability. Instead, cases of this type are better conceived as instances of 'Trivial Semantic Conventionalism' according to which language-users are free to employ same signs to refer to different entities (Putnam 1975 [1975], 164-165). Therefore, differences in reference of terms like 'planet' are better conceived as a case of homonymy than as an instance of reference shifting for *same* terms. Moreover, this does not prevent incommensurability from arising because of other shared terms. In the example of Ptolemy's and Copernicus' celestial theories, incommensurability is not generated directly by terms like 'planet' (according to the definition laid out in the present work). But incommensurability arises nonetheless through variations in conceptual clusters associated with other terms, such as 'earth' or 'sun', that can legitimately be considered as *same* terms. Note that this consequence of the precise definition of incommensurability proposed here meets the rivalry objection against claims about radical instability in reference allegedly generated by (taxonomic) incommensurability (Achinstein 1964, Kordig 1971, Moberg 1979). This objection amounts wondering: "how can theories with no meaning in common be rival explanations of the same phenomena?" (Sankey 2008b, 61 note 6). Accordingly, genuine incommensurability seems to require minimal stability in reference. The fact that it may be considered in non-competing perspectives in addition to competing ones does not impact this conclusion. Therefore, in the following, cases in which terms are employed in different contexts to refer to different entities are not considered as instances of incommensurability.

<sup>127</sup> As a side note, securing a non-competing perspective about several incommensurable conceptual schemes does not require claiming they are equally true. It is sufficient that these incommensurable conceptual schemes describe different domains of investigation. One can imagine that they unequally succeed at describing their respective domains of investigation. This would nonetheless not imply that one of them should replace the others. If descriptions of different domains of investigation are targeted, comparison about the distance

coexistence of incompatible conceptual schemes they generates would be legitimate and significant. Removing all but one of these conceptual schemes or correcting and unifying them would not be an improvement. Importantly, this fourth challenge cannot be met through a failure at answering the second one. Pluralism about incommensurable conceptual schemes should not become systematic. Therefore, the fourth challenge should not be answered in admitting that reality is shaped by rationally accepted conceptual schemes, or that reference can never be stable across incommensurable conceptual schemes. This fourth challenge can be rephrased with more details. **The possibility of non-competing perspectives upon incommensurable conceptual schemes requires doing justice to the idea that *same* terms can be associated with incompatible conceptual clusters (taxonomic incommensurability or not) without violating the no-overlap principle.** This finishes rendering apparent the important status of this principle as a marker with respect to the consequences of incommensurability (rather than as a component of the definition of taxonomic incommensurability). It needs to be violated in competing perspectives and preserved in non-competing ones. In the present case, for the no-overlap principle to be respected, philosophical backgrounds needs to allow making sense of the idea that *same* terms can legitimately be associated with different referents. It should be possible to admit a plurality of uses for single terms. Alternatively put, if same terms are associated with incompatible conceptual clusters, the only manner of avoiding the violation of the no-overlap principle is to permit that they can be employed according to different uses to replay different introducing events. But again, opening such a possibility cannot be done in generalizing it. The idea that, each time a term is hosted in incommensurable conceptual schemes, it receives new uses associated with different introducing events should be avoided. Such a systematic reference shifting across incommensurable conceptual schemes would render impossible any violation of the no-overlap principle. The second challenge could not be answered and incommensurability could never be interpreted in competing perspectives as cognitive limitation. In sum, to permit considering the phenomena of incommensurability in non-competing perspectives as legitimate and significant, philosophical backgrounds need to open the possibility for conceiving that certain incommensurable conceptual schemes (hosting *same* terms associated with incompatible conceptual clusters) can cohabitate as legitimate descriptions of different domains of investigation. But this should not prevent understanding incommensurability as cognitive imperfection in other circumstances. In particular, when two incommensurable conceptual schemes are recognized as non-competing because bearing on different domains of investigation, it should remain possible to conceive that each of them could be opposed with other (incommensurable) conceptual schemes providing better or worse descriptions of same domains of investigation (the competing perspective should remain meaningful). Put in a nutshell, the possibility of legitimate and significant pluralism about (taxonomic) incommensurable conceptual schemes should not degenerate in its uncritical and systematic admission. As a final remark, Kuhn's World-Change thesis can also be reconsidered along non-competing perspective. Meeting the fourth challenge in allowing legitimate and significant coexistence of incommensurable conceptual schemes bearing on same entities considered along different points of view may propagate up to experiences of the world. In non-competing perspective, actual inquirers may legitimately have genuine different and incompatible experiences of (aspects of) reality based on the incommensurable conceptual schemes they rational accept.

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to truth reached by each incommensurable conceptual scheme means nothing about the legitimacy of retaining them. The fact that they coexist needs not to be understood as a mere cognitive imperfection.



To summarize, several challenges have to be answered by any philosophical background intended to permit settling a context-sensitive and realist account of phenomena of incommensurability. Before detailing the manner these challenges can be addressed in the framework of Putnam's pragmatist theory of knowledge, a contrast might be fruitfully established with possibilities opened in metaphysical realism and internal realism, which constitute characteristic instances of the only two classes of philosophical positions (concerning truth, realism and reference) that are available when interfacial understandings of perception and conception are admitted.

#### **4.2. Incommensurability's challenges and interfacial approaches of conception and perception**

As discussed at the occasion of the exposition of Putnam's intellectual trajectory, the interfacial approaches of conception and perception act as an epistemological lock severely constraining philosophical options about truth and realism (see chapter 1 with in particular section 3.5). These widely admitted theses stipulate that perceptions and conceptions are mere interfaces between our mind and external objects. Conceiving, thinking or imagining something are understood as processes of forming a representation (a little picture) of this something in the mind (or brain) which is "causally or mysteriously" connected with the real something "out there" (Putnam 1999, 45). Perceiving something does not mean cognitively reaching it, external objects are never directly experienced. Rather, perceiving external objects amounts experiencing only representations or little pictures caused by them in our inner theater, or on our inner movie screen (Putnam 1999, 43 and 100-101, 2002e, 125, 2013f). As Putnam indicates, these interfacial approaches of conception and perception impose a forced choice between two classes of philosophical positions.

Metaphysical realism and internal realism (conceived as a sophisticated form of verificationism) constitute two representative examples of these classes that are explored and defended by Putnam in his early and intermediate periods. In metaphysical realism, mind-independent reality conceived along the God's eye point of view (as a fixed and pre-given totality of mind-independent objects and their properties) is posited beyond actual persons' cognitive sphere (behind the interfaces constituted by conceptions and perceptions). Mind-independent reality is therefore totally alien to what may occur in these cognitive spheres. Mind-independent reality is not experienced. At most, it causes actual persons' experiences. Thus, experiences have to be seen as images or events in actual persons' inner theater that represent reality, correctly or not. Similarly, actual persons' conceptions are not genuine contact with mind-independent reality. They are also considered as inner events that correspond or fail corresponding to mind-independent reality. The alternative to metaphysical realism is to reject the externalist perspective and its God's eye point of view and to admit as meaningful only what is accessible from within the actual person's point of view. Pure verificationism is an extreme instance of such an alternative that raises several unpalatable issues like antirealism, relativism and solipsism (Putnam 1999, 47 and 53-54, 2012c [2011], 78-80, Devitt 2013, 111). With internal realism and its attempt at securing truth beyond rational acceptability, Putnam proposes a more admissible alternative to metaphysical realism that take the form of a sophisticated version of verificationism, presenting similarities with Kantianism. Following Kant, internal realism claims that the internal or phenomenal reality encountered from within the actual person's point of view is the only thing that can legitimately be talked about. Obviously, what is experienced in the actual person's point of view is not the mind-

independent reality of metaphysical realism. There is no such pre-given mind-independent reality in internal realism. Accordingly, experiences of actual persons are not mere little images in our inner theater at best caused by a hidden mind-independent reality (seen as a fixed totality of objects and their properties). Rather, they are genuine experiences of internal or phenomenal world that is the only reality that can be meaningfully talked about. Internal reality is shaped by rationally accepted conceptual schemes. The distinction between truth and rational acceptability permits nonetheless preserving the idea of mind-independent reality as a kind of noumene standing at the horizon of the actual person's point of view (and not as a superthing composed by ready-made objects and properties). In the same vein, internal realism actual persons' conceptions do not intend to represent something standing beyond their cognitive sphere but rather, describe, give access to, and shape internal or phenomenal reality.

As it has been explained in detail in the first chapter, the interfacial approaches of conception and perception that are admitted as well in metaphysical realism as in internal realism generate the antinomy of realism and render these two philosophical positions inconsistent. Despite this conclusion, studying the way each alternative (metaphysical realism and internal realism) may answer the challenges linked with incommensurability can prove highly fruitful<sup>128</sup>. First, these alternatives might be considered as archetypic of important interpretative streams proposed in the literature about incommensurability. As reviewed in the introduction of this work, certain approaches of the topic may be associated with metaphysical realism (Sankey 2008b, 31-34, 2009) while other options of a Kantian flavor could be connected with Putnam's internal realism (Hoyningen-Huene 1993, Kuhn 2000a [1991])<sup>129</sup>. Second, this study may also evidence, through the comparison of the strengths and weaknesses of metaphysical and internal realisms with respect to interpretative challenges associated with incommensurability, that the antinomy of realism generated by interfacial understandings of conception and perception is susceptible to contaminate the level of incommensurability's interpretation.

Although a more detailed discussion has been proposed in the chapter 1, it is useful to briefly remind here central aspects of metaphysical realism and internal realism concerning truth and realism (how to distinguish truth from rational acceptability? Is a mind-independent reality conceivable? Do rationally accepted conceptual schemes refer to entities of mind-independent reality? Etc.). Based on the God's eye point of view, metaphysical realists define truth as a substantive (and unique) property of correspondence between conceptual schemes and mind-independent objects and properties of metaphysical reality. Accordingly, truth straightforwardly outruns verifications or assessments of rational acceptability actual persons may perform from within their cognitive sphere. Conceptual schemes might even be true without actual persons succeeding at recognizing them as such (rejection of KK-thesis; see: Glymour 1992, 108, Sankey 2000a, note 24). In metaphysical realism, verification and rational acceptability are conceived as

<sup>128</sup> As a side note, the goal of the following paragraph is not to establish as deepened and refined as possible accounts of incommensurability in metaphysical and internal realisms. Rather, their most prominent features are confronted with the core challenges that have to be met to settle a context-sensitive and realist understanding of phenomena of incommensurability. This exposition may permit settling important signposts for the account of challenges according to Putnam's pragmatist theory of knowledge that is proposed in next section.

<sup>129</sup> Kuhn (2000a [1991]) himself refers to his position as "a sort of post Darwinian Kantianism" in which "lexical categories, unlike their Kantian forebears, can and do change, both with time and with the passage from one community to another" (p. 104). Some passages suggest a striking proximity with internal realism. For instance, Kuhn wonders (p. 102): "Can a world that alters with time and from one community to the next correspond to what is generally referred to as 'the real world'? I do not see how its right to that title can be denied. It provides the environment, the stage, for all individual and social life. On such life it places rigid constraints; continued existence depends on adaptation to them; and in the modern world scientific activity has become a primary tool for adaptation. What more can reasonably be asked of a real world?"

tools to pursue truth as correspondence. By contrast, internal realists cannot conceive truth based on the God's eye point of view. Instead, truth is defined as an idealization of rational acceptability in sufficiently good epistemic conditions. More precisely, reaching truth can be equated with rationally accepting under sufficiently good epistemic conditions. Consequently, truth and rational acceptability are distinguished. What is rationally accepted may prove false to the extent assessments of rational acceptability have been performed in insufficiently good epistemic conditions.

In addition to this topic of truth, the way metaphysical realism and internal realism describe the relationship between (mind-independent) reality and rationally accepted conceptual schemes can be recalled. It is at the core of metaphysical realism that reality conceived as a fixed totality of objects and properties is what it is independently of conceptual schemes actual persons may rationally accept. Accordingly, conceptual schemes can always be understood as more or less successful attempts at referring to and describing entities of mind-independent reality posited through the God's eye point of view. What they describe may not exist. They might fail corresponding to mind-independent reality. In the framework of internal realism, the discussion is more delicate. As extensively studied (see chapter 1 section 3), internal realism admits that rationally accepted conceptual schemes shape actual persons' internal or phenomenal world through a process of self-identification between real objects and conceptual schemes. However, rationally accepted conceptual schemes do not exhaust everything there might be to think about reality. This conclusion is grounded in the distinction between truth and rational acceptability. In a Kantian fashion, truth can be seen as a horizon indicating that there will always be more to think about reality than just rationally accepted conceptual schemes. This renders meaningful the idea of a kind of noumenal world that, contrarily to the internal one, is independent of our standards of rational acceptability and of the conceptual schemes they permit rationally admitting (Putnam 1981, 134). Although this independent noumenal reality remains inaccessible to actual persons, it constitutes a source of objectivity in the phenomenal world (this is actually another way of understanding that truth outruns rational acceptability). There is something objective beyond what actual persons experience and talk about through rationally accepted conceptual schemes, something real, something resisting. Alternatively put, rationally accepted conceptual schemes being not true conceptual schemes they are always fallible. They might be false. However, falsity cannot be understood as lack of correspondence to reality conceived in the God's eye point of view. Rather, it is better considered internally. Inquirers are pushed forward from within the internalist perspective by their successive mistakes. These failures permits thinking that, although rationally accepted conceptual schemes shape actual persons' internal world, an objective noumenal world can still be meaningfully mobilized at the ground of the possibility for actual persons to progress in their views and experiences of the phenomenal world. Although in a more complicated way (tinged with Kantianism) than what is proposed in metaphysical realism, internal realism also secures the idea of a mind-independent reality beyond the cognitive sphere of actual persons that is not shaped by their rationally admitted conceptual schemes.

These aspects of metaphysical realism and internal realism being reminded, the way these two archetypic philosophical backgrounds may permit answering the challenges raised by phenomena of incommensurability can now be discussed. As a brief reminder, according to the precise definition adopted here, incommensurability occurs when differently contextualized rational inquiries elaborate and admit incompatible (taxonomically incommensurable or not) conceptual schemes hosting same terms (incompatible conceptual clusters associated with same

terms) under the guidance of incompatible systems of rational acceptability. A preliminary challenge that has been mentioned in previous section as a condition of meaningfulness of the notion of incommensurability is the need to avoid total isolation. At the level of systems of rational acceptability, the threat is rather moderate. Differently contextualized rational inquiries are likely to share some general principles about what rationality looks like (such as openness to criticism or logical consistency). The issue is more serious at the semantic level. In fact, if meaning holism is not avoided, taxonomic incommensurability propagates up to whole languages and becomes inconsistent. At this semantic level, the threat of total isolation is thus systematic and meaning holism needs to be defused. Although the way this issue might be solved highly depends on the details of semantic approaches that could be endorsed in connection with metaphysical and internal realisms, few elements can be provided here. In internal realism, same terms can legitimately belong to different rationally accepted conceptual schemes through which they designate different actual referents. This means that terms can possess several uses. The admission of such plurality is a powerful tool to restrict meaning holism. Terms along certain of their uses could be hosted in incommensurable conceptual schemes while they remain shared along other uses. It is interesting to remark that the same move cannot be proposed in the framework of metaphysical realism. Therein, reality is conceived as a fixed totality of mind-independent objects and their properties. Real entities are a unique absolute way along the God's eye point of view. In consequence, there is only a unique conceptual scheme that completely describes mind-independent reality. In this first-grade conceptual scheme, terms can legitimately possess only unique uses and can be associated only with unique conceptual clusters. This does not imply that meaning holism is impossible to circumvent in metaphysical realism. It nonetheless shows that answering the preliminary challenge concerning total isolation may be more complex in metaphysical realism than in internal realism. An in depth discussion of these elements would go largely beyond the scope of this section that is focused on the role played by interfacial understanding of conception and perception with respect to the possibility of settling a context-sensitive and realist interpretative framework for phenomena of incommensurability. Therefore, from now on, it will be assumed that taxonomic incommensurability can be consistently framed in both metaphysical and internal realisms.

On this ground, it is now possible to analyze the manner metaphysical realism and internal realism face the other fourth challenges in beginning with issues required for the meaningfulness of competing perspectives in which phenomena of incommensurability can be interpreted as cognitive limitation. In this respect, the first challenge bears upon the issue of truth and expresses the requirement for the possibility to conceive that incommensurable systems of rational acceptability can be opposed as leading more or less close to truth. In metaphysical realism, truth is conceived as correspondence between conceptual schemes and mind-independent reality. It is thereby independent of any system of rational acceptability. Thereby, nothing prevents conceiving that incommensurable systems of rational acceptability constitute unequally valuable tools for reaching truth. It is meaningful to imagine that they can be unequally truth-conducting. In this perspective, rejecting all but one of them could be seen as an improvement (provided the more truth-conducting is kept). In the framework of internal realism, things are far more complex. Truth being an idealization of rational acceptability in sufficiently good epistemic conditions, incompatible systems of rational acceptability lead to different 'versions' of truth<sup>130</sup>. Importantly,

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<sup>130</sup> As already mentioned, Putnam opposes to Peirce's idea of a unique set of sufficiently good or ideal epistemic conditions in which truth of any claims could be reached. On the contrary, what count as sufficiently good epistemic conditions depends on claims

this does not imply that truth cannot be distinguished from rational acceptability anymore. Truth being an idealization of rational acceptability in sufficiently good epistemic conditions, what is rationally admitted in a given context may not be true. Additionally, systems of rational acceptability are fallible. As Putnam explains, actual inquirers engaged in their quest for human cognitive and total flourishing can enter a virtuous circle in which improved world-views permit reconsidering standards of rational acceptability. These improved standards allow in turn elaborating better world-views, and so on and so forth (Putnam 1981, 134-137). Through this virtuous circle, systems of rational acceptability can evolve and be replaced. In consequence, it can be meaningfully conceived in internal realism that incommensurable systems of rational acceptability may not be of equal value and that some of them should be abandoned and other preferred. Retaining only one of them could be understood as an improvement. However, incommensurable systems of rational acceptability could not be seen as more or less efficiently conducting to the same 'version' of truth. Retaining only the most valuable could not be interpreted as earning better access to truth. At most, it should be understood as grounding a better version of truth.

For competing perspectives upon incommensurability phenomena to be meaningful, the second challenge about realism (and reference) also have to be answered. When several incompatible systems of rational acceptability lead to admit incompatible conceptual schemes hosting same terms (lead to attribute incompatible conceptual clusters to same terms), the idea that a mind-independent matter of fact exists should remain meaningful. It should permit conceiving that these conceptual schemes constitute unequally successful descriptions of same domains of investigation (same entities being same ways along same sets of points of view). Again, this challenge seems easily answerable in metaphysical realism. Metaphysical reality is what it is (along the God's eye point of view) independently of actual persons' elaboration and admission of conceptual schemes. Therefore, the rational admission by several groups of actual persons of incommensurable conceptual schemes does not mean that several incompatible realities are shaped. These incommensurable conceptual schemes all attempt at referring to, and at describing, real entities of mind-independent reality being their absolute way along the God's eye point of view. Although the issue of stability of reference may require deeper discussion, it is at least possible here to claim that there is something stable to be referred to. Nothing forbids to imagine same terms hosted in incommensurable conceptual schemes and sharing same introducing events (they could be employed to replay shared introducing events). Same terms can thus designate same things even when associated with incompatible conceptual clusters. The incommensurable conceptual schemes these terms form can thus be seen as competing descriptions of same entities being same unique and absolute ways (same domains of investigation). Thereby, a violation of the no-overlap principle is conceivable. In such settings, maintaining only one of such competing conceptual schemes (or correcting and unifying them) could count as an improvement (toward the settling of the first-grade conceptual scheme describing completely mind-independent reality), which corrects an imperfect cognitive or epistemic state of actual persons. In addition, this analysis permits interpreting Kuhn's World-Change thesis in a competing perspective as cognitive limitation. Actual persons mobilizing incommensurable conceptual schemes about same domains of investigation may have different experiences of the world, but it remains meaningful to conceive

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(conceptual schemes) to establish and thus on associated systems of rational acceptability.

that one (or all) of these experiences are illusive because relying on misconceptions of mind-independent reality.

In the case of internal realism, answering the second challenge for competing perspectives on incommensurability is far more complicated. In fact, admitting incompatible conceptual clusters for same terms (incompatible conceptual schemes hosting same terms) under the guidance of incompatible systems of rational acceptability amounts shaping different internal or phenomenal objects and properties. Consequently, reference cannot be stabilized for same terms across incommensurable conceptual schemes. Each of them is associated with specific introducing events. Same terms hosted in incommensurable conceptual schemes cannot be employed to replay of shared introducing events. Incommensurable conceptual schemes can never be understood as competing descriptions of same domains of investigation. Accordingly, the no-overlap principle can never be violated. Nevertheless, the second challenge may still receive a weakened answer insofar as internal realism does not absolutely prevents comparing the value of incommensurable conceptual schemes. Because rational acceptability is fallible (it is not truth), rationally accepted conceptual schemes are also fallible. Once it can be said that incommensurable systems of rational acceptability can be of unequal value, the same apply to incommensurable conceptual schemes they might conduct accepting. It is meaningful to admit that among these incompatible conceptual schemes, some permit better views about, and better experiences of, the phenomenal world than the others. Retaining only these conceptual schemes could therefore be seen as an improvement. However, this cannot be legitimized based on better or worse correspondence with a mind-independent reality. Conceptual schemes actual persons rationally admit do not describe such a mind-independent reality. They shape and describe the internal world that is accessible to actual persons (and not the metaphysical reality of the God's eye point of view). At most, the idea of mind-independent reality can be maintained as a noumenal horizon in the actual person's point of view. In sum, internal realism permits answering only partially to the second challenge. It may be meaningful to claim that incommensurable conceptual schemes hosting same terms are unequally valuable descriptions of (internal) reality. But in no case this can be understood as indicating that incommensurable conceptual schemes can be considered as unequally successful descriptions of same domains of investigation of mind-independent reality. Moreover, it is interesting to note that internal realism seems unsuitable to consider Kuhn's World-Change thesis in a competing perspective. Based on incommensurable conceptual schemes, actual persons do have different and incompatible experiences of internal reality. These experiences cannot be understood as experiences more or less adequately representing the mind-independent reality existing behind the curtain of conceptions and perceptions. Internal realism render meaningless the idea of misconception and illusive experience of reality based on false or approximate rationally accepted conceptual schemes. Incommensurable experiences cannot be understood as more or less veridical experiences of reality. At most, they could be seen as experiences of more or less valuable internal reality.

In sum, it seems that metaphysical realism scores better than internal realism when it comes to doing justice to competing perspectives in which phenomena of incommensurability can be understood as cognitive limitations or imperfections. The same comparative analysis can be conducted with respect to third and fourth challenges associated with the possibility to interpret phenomena of incommensurability as legitimate and significant in non-competing perspectives. The third challenge requires making room for the possibility of recognizing that in some cases incommensurable systems of rational acceptability should not be compared and opposed as more

or less truth-conducting (recognizing the possibility for pluralism about incommensurable systems of rational acceptability) without imposing generalized incomparability. In metaphysical realism, the coexistence of incompatible systems of rational acceptability is possible only in rational inquiries constituting complementary efforts at building the unique first-grade conceptual scheme that correctly describes all the objects and properties of mind-independent reality. In any case, these incompatible systems of rational acceptability would have to be considered as tools to pursue truth conceived as a unique property of correspondence. As the discussion of the fourth challenge will detail, incommensurability could be admitted as legitimate in metaphysical realism only to the extent it bears upon the admission of commensurable and compatible conceptual schemes hosting same terms in virtue of incompatible systems of rational acceptability. In the restricted scope of the present sections only incompatible cases are considered. Such cases cannot be recognized as legitimate by metaphysical realists. Contrastively, internal realism might prove more permissive. Its account of truth radically departs from the metaphysical realist one. Truth reached when rationally accepting under sufficiently good epistemic conditions is not a unique substantive property (and of course not a property of correspondence with mind-independent reality). In this respect, the distance Putnam takes with Peirce's views is crucial. As already reminded, Putnam denies that there could be a unique set of sufficiently good epistemic conditions in which any system of rational acceptability could reach truth conceived as a unique property. Rather, what truth comes to when reached under sufficiently good epistemic conditions, as well as the specificities of these sufficiently good epistemic conditions, are highly sensitive to the particular activity conducted by actual inquirers. Truth is an idealization of rational acceptability. In consequence, incommensurable systems of rational acceptability generate different 'versions' of truth. In such a framework, it becomes possible to conceive that incommensurable systems of rational acceptability should not be compared as more or less truth-conducting because they pursue their own versions of truth. Their coexistence could be admitted and keeping only one of such systems of rational acceptability would not count as an improvement. However, the third challenge ideally requires that this conclusion is reached without preventing meaningfully comparing incommensurable systems of rational acceptability in other cases. Although this answer was far from completely satisfying, what has been said about the possibility to preserve the meaningfulness of the comparison of systems of rational acceptability in internal realism – through fallibilism and the possibility to enter into a virtuous circle of reciprocal, though successive, improvements between conceptual schemes and standards of rational acceptability – remains valid. Incommensurable systems of rational acceptability are not equated with truth they pursue. Therefore, even when coexistence of some of them is admitted, each of coexisting systems may still be compared with other ones as unequally valuable (but not as unequally truth-conducting).

To complete the picture, let's focus on the manner metaphysical and internal realism permit answering the fourth challenge for non-competing perspectives on incommensurability. This challenge asks to open conceptual room for the possibility of recognizing, in some cases, that incommensurable conceptual schemes (conceptual schemes hosting same terms associated with incompatible conceptual clusters) should not be compared as opposed descriptions of same domains of investigation (pluralism about incommensurable conceptual schemes), without rendering such a conclusion unavoidable. In these non-competing configurations, retaining only one of incommensurable conceptual schemes could not be seen as an improvement. In metaphysical realism, real entities designated by given terms can be only unique absolute ways along the God's eye point of view. Therefore, domains of investigation can be different only if entities considered are different. Accordingly, terms can possess only single uses associated with

unique conceptual clusters. In particular, single terms cannot be legitimately associated with different conceptual clusters providing incompatible descriptions. Same terms hosted in incommensurable conceptual schemes cannot be linked with different introducing events. In consequence, the no-overlap principle would be systematically violated. Non-competing perspectives on incommensurable conceptual schemes are forbidden in metaphysical realism<sup>131</sup>. Incommensurable conceptual schemes could at best be admitted in temporary states in the elaboration of the unified, unique and true conceptual scheme matching mind-independent reality. But they would still have to be considered as reflecting cognitive imperfections or limitations that prevents reaching this first-grade conceptual scheme. In addition, these results also mean that metaphysical realism allows no non-competing interpretation of Kuhn's World-Change thesis. Divergences in experiences of actual persons relying on incommensurable conceptual schemes can be nothing else than illusion based on misconception.

Internal realism permits drawing a different and more liberal answer to the fourth challenge of making room for legitimate pluralism about incommensurable conceptual schemes. According to internal realism, incommensurable conceptual schemes admitted in virtue of incompatible systems of rational acceptability (which ground different versions of idealized truth) lead to different and incompatible shaping of internal or phenomenal world's entities. Thereby, entities being really different ways are genuinely conceived and encountered. What actual persons conceive and meet within their point of view is not mere representations of real entities of metaphysical realism that are their absolute and unique way behind the curtain of conceptions and perceptions. In virtue of self-identification between actual world's objects and rationally accepted conceptual schemes, there is no unique way real entities of phenomenal reality are. In consequence, internal realism permits admitting a plurality of different domains of investigation even when same entities are considered (or different domains of investigation including same entities that are different ways). This means that same terms can possess a plurality of legitimate uses along which they are associated with incommensurable conceptual clusters (same terms along different uses when hosted in incommensurable conceptual schemes)<sup>132</sup>. Across incommensurable conceptual schemes, same terms reference of same terms is provided by different introducing events. The possibility is thus opened to avoid the violation of the no-overlap principle when same terms are associated with incommensurable conceptual clusters and are hosted in incommensurable conceptual schemes. Internal realism permits admitting non-competing perspectives upon phenomena of incommensurability in which the coexistence of incommensurable conceptual schemes can be interpreted as legitimate and significant. Contrastively to the metaphysical realist case, these incommensurable conceptual schemes cannot be seen as fractions of the first-grade conceptual scheme describing mind-independent reality (conceived along the God's eye point of view). In internal realism, there is no unique true first-grade conceptual scheme to be achieved. Incommensurable conceptual schemes, endorsed based on incompatible systems of rational acceptability associated with their specific version of idealized

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<sup>131</sup> At most, metaphysical realism may permit non-competing interpretations of the phenomena of incommensurability bearing on commensurable and compatible conceptual schemes. Their coexistence could be admitted if they complete each other and provide unified fractions of the first-grade conceptual scheme (each achieved under the guidance of incompatible systems of rational acceptability). In these cases, rejecting all but one of them would not count as an improvement.

<sup>132</sup> One could wonder about the soundness of continuing talking about 'same' terms referring to same entities in such settings. Proto-rigid designation permits supporting this move. A given term could be seen as referring constantly to the same entity being different ways (in function of term's uses) to the extent same essential features are possessed by all referents. Nonetheless, in internal realism, this attribution of different ways of being to same entities holds as long as conceptual schemes describing essential features hold. It may prove impossible to maintain this unification of ways of being through essential properties across (taxonomically) incommensurable conceptual schemes bearing on these properties (Kuhn 1990b).



truth, can legitimately coexist as descriptions of different domains of investigation. This coexistence cannot be seen as a temporary state in the elaboration of the unified, unique and true conceptual system of the world (as the distance Putnam takes with Peirce concerning truth makes clear). It cannot be seen as a mere cognitive imperfection. Rejecting all but one of these incommensurable conceptual schemes would not count as an improvement. As explained during the discussion of the second challenge, internal realism does nonetheless not permit understanding several incommensurable conceptual schemes as competing descriptions of same domains of investigation. At most, it permits conceiving that non-competing incommensurable conceptual schemes can still be respectively opposed with other conceptual schemes as more or less valuable (as a result of virtuous circles with mutual enrichments between successive conceptual schemes and systems of rational acceptability). Moreover, in each case, distance between truth and rational acceptability is still preserved, permitting claiming that incommensurable conceptual schemes and phenomenal worlds they shape do not exhaust what can be meaningfully think concerning reality. The idea of a unique and common noumenal mind-independent reality can still be admitted as a horizon in the actual person's point of view. In addition, it is worth-mentioning that, in opening room for legitimate pluralism about incommensurable conceptual schemes, internal realism also permits considering Kuhn's World-Change thesis in a non-competing perspective. Incommensurable conceptual schemes shape different incompatible internal realities. Relying on these conceptual schemes, actual persons can legitimately have incompatible experiences of reality. These experiences are not more or less correct representation of mind-independent reality being a unique absolute way independently of actual persons' point of view. However, this does not imply that actual persons admitting incommensurable conceptual schemes are totally isolated in incompatible phenomenal realities. Assuming that meaning holism can be restricted in internal realism, actual persons would never be confronted with a plurality of conceptual schemes totally isolated from one another. Some common background conceptual schemes would always be available (this is even required for consistently framing taxonomic incommensurability). Accordingly a minimal common phenomenal world would remain. Coexisting incommensurable conceptual schemes could then shape and describe incompatible phenomenal aspects of a unique common phenomenal situation or open different incompatible phenomenal sub-worlds extending the common phenomenal basis.

In sum, the analysis proposed in this section shows that metaphysical realism and internal realism possesses opposed strengths and weaknesses when considered as potential philosophical backgrounds to interpret phenomena of incommensurability. Metaphysical realism straightforwardly allows competing perspectives in which incommensurability can be understood as cognitive limitation or imperfection. However, non-competing perspectives seem impossible. On the contrary, internal realism opens room for non-competing perspectives in which incommensurability can be seen as legitimate and significant. Nonetheless, it fails at accounting for the possibility of competing perspectives. In any case, metaphysical realism and internal realism are not semantically consistent. As extensively exposed in section 3.5 of the first chapter, they are trapped in the antinomy of realism as long as the interfacial approaches of conception and perception are admitted. Nevertheless, the present discussion remains highly instructive in bringing to the fore their respective strengths with respect to challenges associated with incommensurability. These strengths should be reconciled to settle a context-sensitive and realist account. Notably, metaphysical realism permits doing justice to the mind-independence of entities described by descriptive conceptual schemes. Conceptual schemes do not shape real objects. Consequently, different incommensurable conceptual schemes can bear upon same domains of

investigation. The no-overlap principle can thus be violated. Contextually-driven mismatches in rationally admitted conceptions can thereby be considered as cognitive limitations or imperfections. Similarly, divergent experiences based on incommensurable conceptual schemes can be interpreted as involving misconception and illusion or misperception. By contrast, internal realism permits doing justice to the irreducibility and legitimacy of contextual influence. Reality can be different ways in function of rationally accepted conceptual schemes describing it. Incommensurable conceptual schemes rationally admitted in different contexts can be understood as bearing on different domains of investigation even when talking about same entities. Different domains of investigation can legitimately include same entities being different ways. Thereby, incommensurable conceptual schemes can coexist without violating the no-overlap principle. Contextually-driven incompatibilities between descriptions of same entities can be legitimate and significant. Moreover, divergent experiences based on incommensurable conceptual schemes can be genuine perceptions of different aspects of (phenomenal) reality.

Although the interfacial understandings of conception and perception admitted in metaphysical and internal realism may not constitute absolute locks on the road of combining competing and non-competing interpretation of phenomena of incommensurability (notwithstanding issues of semantic consistency they raise)<sup>133</sup>, they nonetheless seem to raise severe impediments. In drawing a sharp separation between mind-independent reality and actual persons' cognitive sphere, the interfacial understandings of conception and perception raise the obvious temptation of positing reality as being a unique context-independent way along the God's eye point of view on one side of the separation, and contextually-triggered incompatibilities in conceptions and experiences on the other side. The idea that contextual influences constitute hindrances on the path leading to the settling of an absolute and complete description of the world "as it is apart from human perspectives and interests" (Putnam 2001b, 530) becomes extremely seducing. Accordingly, the present analysis intends to explore the possibility to establish a context-sensitive and realist account of phenomena of incommensurability when interfacial understandings of conception and perception are discarded. Following Putnam in its rejection of these hypotheses, an alternative account of the consequences of incommensurability preserving the strengths of both metaphysical realism and internal realism can be worked out, based on what we have called Putnam's pragmatist theory of knowledge and on the general picture of rational inquiry it permits drawing. As detailed in next sections, the opposition – largely triggered by the interfacial hypotheses – between preserving mind-independence of reality and recognizing the irreducibility and the possible legitimacy of contextual influences generating phenomena of incommensurability may be therein avoided.

### **4.3. Incommensurability's challenges and rational inquiry in light of Putnam's pragmatist theory of knowledge**

As extensively detailed during the two first chapters of the present study, commonsense realism and Putnam's pragmatist theory of knowledge based on it escape the antinomy of realism by abandoning the interfacial understandings of conception and perception. This move permits

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<sup>133</sup> As already mentioned, internal realism may permit conceiving incommensurable conceptual schemes as competing, even though not as opposed descriptions of same domains of investigation. But one should then be ready to admit counterintuitive ideas such as more or less valuable shaping of phenomenal reality. In the same line of thought, metaphysical realism could be adapted to permit non-competing perspectives upon incommensurability in claiming that mind-independent reality, as it is in itself beyond what actual persons can access, is various different ways along different points of view.

safeguarding the most salient insights of both metaphysical realism and internal realism. It allows proposing a semantically consistent account of mind-independent reality and truth as well as of the relationships standing between them and systems of rational acceptability or rationally accepted conceptual schemes. In particular, correctly conceiving reality is not establishing conceptual schemes that match objects and properties of an unconceptualized mind-independent reality (conceived as totally alien to conceptual schemes). In Putnam's pragmatist theory of knowledge, reality is recognized as conceptualized. But it is not reduced to phenomenal or internal reality shaped by rationally accepted conceptual schemes. Rather, the concept-property dichotomy is abandoned in favor of a kind of Aristotelianism without essentialism. Concepts are not exclusively mental, psychological or internal entities, contrarily to what is suggested by the interfacial approach of conception. A correctly conceived way reality is and the corresponding way it actually is are one and the same thing. Accordingly, correct conceptions are neither mere representations of an unconceptualized mind-independent reality nor the determinants of an only internal reality. Instead, correct conceptions are genuine direct contact with conceptualized mind-independent reality. This approach of conception possesses two striking advantages. First, it solves the issue of referential access to mind-independent reality. Correct conceptions do (almost) trivially refer to entities of mind-independent reality. Second, this view permits combining the ideas of reality as conceptualized and reality as mind-independent. When actual persons admit correct conceptions, they gain direct contact why reality in conceiving it. But the conceptions that are rationally accepted by actual persons can be false or approximate because failing to correspond to reality. They can lead to mistakes and fantasy without genuine contact with reality. In the same vein, perceptual experiences are neither mere inner or mental representations (mediated by conceptions) of a never directly cognitively accessed mind-independent reality, nor direct conceptualized experiences of an only internal reality, itself shaped by rationally accepted conceptions. By contrast, Putnam's pragmatist theory of knowledge indicates that veridical apperceptions (conceptualized perceptions) based on correct conceptions are direct experiences of mind-independent reality. This view of perception possesses the added value of reconciling the fact that perception is conceptualized (apperception) with the idea that it is nonetheless perception of mind-independent reality. In fact, apperception can fail. When based on incorrect conceptions, actual persons only misperceive reality or experience hallucinations. These different elements provided by Putnam's pragmatist theory of knowledge constitute key ideas to settle a context-sensitive and realist account of incommensurability that combines the possibilities for competing perspectives in which incommensurability can be interpreted as cognitive imperfection, and for non-competing perspectives in which it can be considered as legitimate and significant.

#### ***4.3.1. A pivotal mechanism for combining context-sensitivity and realism***

As we will attempt to show, this radical move of rejecting interfacial hypotheses permits unlocking interpretative issues linked with incommensurability. However, for this purpose, the account of reality proposed in Putnam's pragmatist theory of knowledge needs to be further delineated. In this respect, it is interesting to return to Putnam's claims concerning the irreducible context-sensitivity at play in conceptions of reality and real entities. For instance, Putnam follows James who, considering a cast of beans on a table, argues that the situation can be conceived in many different ways in function of actual persons' interests and perspectives. None of them should be considered false or irrelevant independently of situated perspectives (Putnam 2008b, 28). The same context-sensitivity occurs in the interpretation and identification of properties. Determining

“whether an apple that has just begun to form on the branch counts as an apple (or an apple that has been preserved in formaldehyde or ...)” is context-sensitive (Putnam 2001b, 529). Being water and being H<sub>2</sub>O are the same property in certain contexts but not in others (Putnam 2002f, 103-104). In the same vein, Putnam illustrates his conceptual pluralism in indicating that a room could be adequately described in terms of chairs and table or of atoms and fields in function of contexts (Putnam 2013f, 29). The validity of conceiving real entities being specific ways is context-sensitive and mobilizes elements such as “the point, or purpose, in identifying relevant ways for things to be, the functions which talking of the ways to be identified would serve, our reasons for speaking of the world as being one way rather than another” (words of Travis, quoted in: Putnam 2002f, 103). Once it is recognized that, in cases like these, no specific alternative conceptions seems truer than the others, the manner such context-sensitivity can be accounted for radically depends upon admission or rejection of interfacial hypotheses.

If it were not semantically problematic, the admission of interfacial hypotheses would permit sharply separating context-sensitive conceptions (occurring in actual persons’ cognitive sphere) and mind-independent reality considered through the God’s eye point of view. Thereby, the idea of an unconceptualized reality being a unique way along this point of view could be preserved (this is the second thesis of metaphysical realism). In turn, this would provide ground to continue defending that, despite the possibly irreducible context-sensitivity of actual persons’ conceptions of reality, the idea of an absolute or first-grade conception describing reality “as it is apart from human perspectives and interests” (Putnam 2001b, 530, 2012 [2004], 111) remains meaningful. Naturalist or physicalist could even argue that we should try building such a first-grade conception based on natural scientific properties such as the ones described by physics. In this framework, claiming that reality can be conceived in different ways do not propagates to what reality is in itself. Actual persons may well rationally accept several representations of reality in their cognitive sphere according to their contextualized perspectives and interests. But reality remains a unique and context-independent way. These different conceptions of reality could only be seen as resulting from ‘contextual pollution’ of actual persons’ representations that should, if possible, be corrected to reach the absolute conception of reality. The influence of the elements of contexts on actual persons’ conceptions of reality can be nothing but contextual pollution. Nevertheless, this way of dealing with the context-sensitivity of the conceptions of reality seems impracticable in light of Putnam analysis of the antinomy of realism as generated by the interfacial hypotheses. Positing, through the God’s eye point of view, mind-independent reality behind (or beyond) the impassable curtain of actual persons’ conceptions and perceptions is semantically inconsistent. A fortiori, positing this reality as being a unique way is semantically inconsistent<sup>134</sup>. There is nothing like an unnamed and unconceptualized privileged way reality is that could be described through a first-grade conceptual scheme (Putnam 2001b, 2012 [2004], Bernstein 2010, 158-161).

By contrast, the rejection of interfacial hypotheses in Putnam’s pragmatist theory of knowledge permits preserving the meaningfulness of the notion of mind-independent reality. But mind-independent reality cannot be posited as existing independently of, and beyond, actual persons’ cognitive experiences of conception and perception (this would be a return to interfacial approaches). Instead, mind-independent reality is considered along the sole way it can be

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<sup>134</sup> Maintaining interfacial hypotheses and exploring the other branch of the antinomy of realism, one could still argue that the context-sensitivity of the conceptions of reality is legitimate because the latter shape different aspects of phenomenal or internal reality. But mind-independence would be lost in the process. Moreover, such accounts are no less inconsistent than their antinomical alter ego. They fail escaping antirealism, relativism and-or solipsism.

meaningfully accounted for: from within actual persons cognitive experiences of real entities and properties based on their world-involving abilities. Therefore, mind-independent reality becomes conceptualized (a correct way reality is conceived being and the corresponding way it actually is are one and the same thing). In addition, mind-independent reality cannot be conceived as being a unique context-independent way along the absolute God's eye point of view, as opposed to contextualized situations of actual persons. Disconnected from any situated point of view, the idea of mind-independent reality is empty. Reality cannot be meaningfully accounted for apart from any situated point of view. According to Putnam's pragmatist theory of knowledge, not only reality is conceptualized in the sense just mentioned, but moreover reality is not a privileged way. Reality and real entities can be many different ways along different points of view<sup>135</sup>. A way real entities and their properties are is always capable of further interpretation. In particular, physics surely provides (at least approximately) correct conceptions of reality through which genuine aspects of reality are accessed. But in no case it exhausts the ways reality is. Accordingly, the problem raised by the possible cohabitation of context-sensitive conceptions of reality or of real situations (based on context-sensitive interpretations and identifications of properties) is defused. But very importantly, it is not defused in succeeding at circumventing context-sensitivity. On the contrary, it is defused in recognizing that context-sensitivity is not systematically problematic.

This admission of the possible legitimacy of context-sensitivity may appear extremely provocative and in contradiction with the general intention of settling a *realist* account of phenomena of incommensurability. In fact, Putnam's pragmatist theory of knowledge indicates that differently contextualized actual persons can build differently featured conceptions of reality that all constitute genuine contacts with different ways reality is along different points of view. One might wonder to which extent reality pictured in this manner can really be said mind-independent. Does not the involvement of contextual sources such as actual persons' interests, practices and evaluative commitments render reality mind-dependent? Putnam himself mentions a certain layer of mind-dependence (Putnam 2002d, 106). But this should not be understood as indicating that reality itself is mind-dependent. Rather, under the influence of elements available in their contexts, differently situated actual persons can tune to different points of view along which reality and real entities are specific ways. The context-sensitivity of conceptions of reality is therefore legitimate when reflecting the context-sensitivity of tunings to points of view. But, reality and real entities are not shaped by rational conceptions of them, which actual persons can establish under the influence of diverse contextual elements. In any case, reality is what it is along different points of view independently of being (rationally) conceived so by anybody. Here appears again the importance of the distinction between truth and rational acceptability. In Putnam's pragmatist theory of knowledge, the valuable insights coming from the metaphysical realist approach of truth is preserved. Context-sensitive conceptions are true or not (or more or less true) in virtue of correspondence with ways mind-independent reality is. However, truth is not correspondence with (unconceptualized) reality being a unique privileged way. It has to be thought of as correspondence with what reality is along given situated points of view. In compliance with this approach of truth, ways of being described by different true context-sensitive conceptions are ways reality is along points of view that are context-sensitively tuned to. But rationally accepted conceptions are not

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<sup>135</sup> One can legitimately wonder about the legitimacy of claiming that different ways of being are ways of being of same entities. In Putnam's pragmatist theory of knowledge, different features can be mobilized to defuse such worry. First, different ways of being of an entity are unified through the essential properties of this entity. As a first approximation that is refined below, essential properties are possessed in all ways of being of the entity. Second, the fact that entities can be essential ways is an additional element indicating that it makes sense to talk about same entities being different ways. Although entities are not their essential ways in any circumstances, only them can be the corresponding essential ways (no other entities can be these ways).

necessarily true. Somehow, true conceptions are first in reality (independently of being thought by anybody). The ways reality is and the ways reality is conceived to be (in a second time) by actual persons are one and the same thing (when correctly conceived). This order of priority secures the idea that the ways reality is can be misconceived or misrepresented by actual persons. There is thus a crucial difference between, on the one side, claiming that different correctly conceived ways of being (under the influence of different set of contextual sources) and different ways real things are along different tuned to points of view can be understood as being one and the same, and, on the other side, arguing that any contextual influence on conceptions of reality is legitimate and that these conceptions shape reality. In particular, in addition to contributing to the tunings to given points of view and to the correct elaboration of context-sensitive conceptions of ways reality is, contextual sources may also lead to admit false or misleading elements. Although Putnam employs the expression ‘mind-dependence’ in some occasions, it should not be seen as implying that reality is mind-dependent. Rather, it should be understood as claiming that what mind-independent reality is cannot be disconnected from specific points of view that are tuned to in virtue of some contextual features. The idea of the possibility of conceiving reality along a privileged point of view freed from any contextual influence (like the God’s eye point of view) is a meaningless illusion<sup>136</sup>. In Putnam’s pragmatist theory of knowledge, reality is mind-independent. What is context-dependent (and not mind-dependent) is the irreducible process of tuning to particular points of view along which reality is specific ways.

As a crucial element on the road of a context-sensitive and realist account of phenomena of incommensurability, Putnam’s pragmatist theory of knowledge includes semantic contextualism that echoes this context-sensitive picture of mind-independent reality. To the extent that real entities are different ways along different points of view, terms pointing these entities can legitimately possess different uses according to which they refer to different ways these entities are. Thereby, such terms can be legitimately associated with differently featured conceptual clusters that include more or less adequate conceptions or descriptions of the referred to ways of being. Reference of a given term along one of its uses is grounded at the occasion of a contextualized introducing event in which an entity being a particular way along a therein tuned to point of view is indexically singled out. As long as language-users stand in a proper historical-causal relationship with this introducing event, they can employ the term to rigidly refer to the entity being this specific way (contextualized rigid designation). In addition, context-sensitive conceptions or descriptions, of what is rigidly referred to through this use of the term, are settled and included in the corresponding conceptual cluster. In this respect, a part of the contextual influence on the elaboration of conceptions of reality is legitimate and irreducible (as reflecting a tuning to a specific point of view). This does not prevent certain contextual elements from polluting descriptions. In general, a term thus possesses several possible uses associated with differently featured conceptual clusters along which it rigidly refers to different ways the same entity is along different points of view (as indexically singled out during corresponding introducing events). Proto-rigid designation warrants the meaningfulness of talking about the *same* term referring to different ways of being of the *same* entity. As already mentioned, the essential properties of the entity are shared by all its ways of being. These essential properties constitute criteria strongly constraining the term in all its possible uses. This term can thereby be seen as a proto-rigid designator. It refers in any case to the

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<sup>136</sup> To those who would nevertheless like to attempt at conceiving an absolute point of view, the idea of a non-situated point of view would not constitute a correct lead to follow. More promising may be to try conceiving a ‘meta’ point of view in which all the possible points of view along which reality is could be gathered.

entity whose ways of being share these essential properties<sup>137</sup>. In consequence, when a term is employed in an actual context, a use needs being selected. This selection relies on language-users ability of attunement that irreducibly mobilizes the specificities of the actual context of utterance. As a result of this context-sensitive process, a selected use of the term is employed to rigidly refer to what have been indexically singled out during the corresponding introducing event and comes with a specific conceptual cluster. This semantic picture doing justice to the irreducible role of context-sensitivity provides the core mechanism that grounds the context-sensitive and realist account of incommensurability proposed here.

In fact, when differently contextualized language-users employ the same term in association with incommensurable conceptual clusters<sup>138</sup>, the contextually-driven mismatch can be interpreted in two ways. First, the differently contextualized language-users may employ the term according to the same use. In this case, the term replays the same introducing event and rigidly refers to the same way of being of the entity it points. The coexistence of incommensurable conceptual clusters amounts to a violation of the no-overlap principle. Incommensurability can then be interpreted in a competing perspective as cognitive limitation (one or both descriptions recollected in conceptual clusters are misled). Second, different uses of the same term may be deployed in the different contexts. In such a configuration, the uses of the term in these different contexts are replays of different introducing events, leading to rigid reference to different ways the same entity is along different points of view. Therefore, the coexistence of incommensurable conceptual clusters does not violate the no-overlap principle. Incommensurability can be seen in a non-competing perspective as legitimate and significant (coexisting descriptions are more or less correct descriptions of different ways the same entity is along different points of view)<sup>139</sup>. Through these two possibilities of interpretation of contextually-driven mismatches between conceptual clusters of same terms deployed in different contexts, a context-sensitive and realist approach of phenomena of incommensurability starts emerging. Based on our general picture of rational inquiry that integrates this semantic mechanism, it can be fully developed in confronting with the different interpretative challenges that have been delineated in previous sections.

#### ***4.3.2. Addressing the challenges for a context-sensitive and realist account of incommensurability***

As we have seen, a preliminary challenge needs to be answered for establishing a context-sensitive and realist account of phenomena of incommensurability. In fact, the latter cannot be consistently framed without defusing the threat of total isolation between systems of rational acceptability and linguistic networks of differently contextualized rational inquiries. Considered at the level of systems of rational acceptability, our general picture of rational inquiry makes clear that some standards needs being inherited from contexts. No rational investigation can rely on completely original systems of rational acceptability. This means that differently contextualized inquiries are likely to share, for instance, very general principles expressing what it is to correctly

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<sup>137</sup> As developed below, taking taxonomic incommensurability into account requires refining this mechanism of proto-rigid designation.

<sup>138</sup> To be perfectly consistent with our precise definition of incommensurability, there should also be incompatible systems of rational acceptability under the guidance of which conceptual clusters are elaborated and admitted for them to be genuinely characterized as incommensurable. This aspect is temporarily set aside to expose the core mechanism with maximal clarity.

<sup>139</sup> As already noticed in section 4.1, opening the possibility for non-competing perspectives cannot be achieved in claiming that same terms refer to different entities when deployed in different contexts. Such terms could hardly be considered as *same* terms involved in genuine phenomena of incommensurability. Instead, they would count as homonymous signs that, in virtue of trivial semantic conventionalism, refer to different entities. Therefore, the fact that Putnam's pragmatist theory of knowledge allows pluralism about uses of same terms, according to which they refer to different ways of being of *same* entities, proves crucial to open the possibility for non-competing perspectives upon phenomena of incommensurability.

reason (such as fallibilism or openness to criticism). At minimum, radically divergent systems of rational acceptability would still merge in the informal *mise-en-abîme* that necessarily supports any formalization of rationality. With respect to total isolation between linguistic networks, the semantic features of Putnam's pragmatist theory of knowledge offer an elegant solution to the issue of meaning holism. In section 4.1, it has been established that taxonomic incommensurability qua total isolation between whole languages is a self-refuting idea. To permit a consistent understanding of taxonomic incommensurability as standing between localized networks of inter-defined terms, meaning holism has to be avoided and confined to local holism bearing on these localized networks only. More precisely, it has to be shown that inter-definitions can be limited to a certain linguistic domain (that could then be taxonomically incommensurable with another one) and do not propagate to whole languages. The semantic features of Putnam's pragmatist theory of knowledge permit conceiving discontinuities between conceptual schemes established during given rational inquiries and the linguistic context in which they are grounded. According to our general picture, rational inquiries do not free-stand, but on the contrary necessarily borrow pre-existing terms from pre-admitted conceptual schemes (either the one of ordinary language admitted through commonsense or some rationally accepted conceptual schemes of past inquiries). Starting from this pre-admitted basis, original rationally acceptable conceptual schemes can be built in introducing new uses for pre-existing terms and new terms with their respective uses, or in correcting conceptual clusters of uses of pre-existing terms. One can notice that the threat of meaning holism can arise only either when new uses for pre-existing terms are introduced, or when conceptual clusters associated with pre-existing terms are corrected. Only such processes can lead to attribute new or modified conceptual clusters to pre-existing terms and potentially generate chained redefinitions of terms' meaning. But the semantic features of Putnam's pragmatist theory of knowledge permit confining these possible chained reactions.

The introduction of new uses for pre-existing terms and of their associated conceptual clusters can first be considered. As just recalled, terms can possess many different uses (referring to different ways designated entities are along distinct points of view). Therefore, new uses and conceptual clusters are added to pre-existing terms without replacing past uses and pre-established conceptual clusters. The meanings of terms do not need reducing to single uses and unique associated conceptual clusters. Therefore, meaning holism that could be generated by the introduction of new uses and associated conceptual clusters for pre-existing terms is restricted. Assuming that no correction of conceptual clusters of pre-existing terms occurs, a discontinuity is thus evidenced between broader linguistic backgrounds and original conceptual schemes produced through rational inquiries that are composed by terms borrowed from the formers (with their uses and conceptual clusters) and by newly introduced elements. The meaning of the terms of these linguistic backgrounds are not redefined but rather enriched. The different pre-established uses of pre-existing terms remain valid.

However, conceptual clusters associated with certain uses of pre-existing terms can be corrected. This mechanism might prove more threatening. Alternatively phrased, this mechanism implies that newly designed conceptual clusters opposes to pre-established ones associated with certain uses of pre-existing terms. In that case, certain past conceptual clusters may be replaced by the new ones. Then, redefinitions of the pre-existing meanings of the terms of broader linguistic backgrounds would be initiated and could propagate. When conceptual clusters associated with certain uses of pre-existing terms are corrected, the threat of meaning holism really arises. Nonetheless, the chain of redefinitions could in no case propagate up to whole languages or to



whole linguistic backgrounds. To see this, we can return to the example of Ptolemy and Copernic. Through Copernic's rational investigation, pre-existing uses of terms of background conceptual schemes do indeed receive corrected conceptual clusters. In particular, the kind term 'planet' is impacted. But there is no integral rejection of the content of the pre-established conceptual clusters: 'planet' is still a category for classifying astronomical objects. The content of conceptual clusters associated with 'earth' and 'sun' is also modified. The earth cannot be properly conceived anymore as the object planets orbit around. But some content of past conceptual clusters associated with 'earth' remain. The earth can still be conceived as the material body on which we stand. In the same vein, the sun cannot be considered as a planet anymore but can still be described as the very shiny object visible in clean sky. In addition, the pre-established meaning of many terms is left untouched. This is for instance the case of 'orbit'. In sum, even when the correction of conceptual clusters associated with some pre-existing terms induces a sequence of redefinitions, there is always a place where the sequence stops. The rational settling of conceptual schemes proposing the correction of conceptual clusters associated with some uses of some terms of linguistic backgrounds induces limited redefinitions of the latter only. At the end of the day, the establishment of such conceptual schemes can always be reconsidered as the elaboration of (larger) conceptual schemes involving only the introduction of new uses for pre-existing terms borrowed from (consequently reduced) linguistic backgrounds. At this point again, new uses are added without replacing or redefining past ones. Through this reconsideration, corrections of pre-established conceptual clusters associated with pre-existing terms that could generate the threat of total semantic isolation can always be reformulated as introductions of new terms with their uses and conceptual clusters. Therefore, even when conceptual clusters associated with some terms are corrected in a way that could generate semantic isolation, a discontinuity can always be found between broader linguistic backgrounds and original conceptual schemes produced through rational inquiries that are composed by terms borrowed from the formers (with their uses and conceptual clusters) and by newly introduced elements. Meaning holism can always be tamed and turned into local holism, securing the consistency of the notion of (taxonomic) incommensurability.

The threat of total isolation being avoided, phenomena of incommensurability can be considered meaningfully. In consequence, the way our general account of rational inquiry based on Putnam's pragmatist theory of knowledge permits addressing the other four challenges raised by incommensurability can be exposed. These challenges cover two aspects that have to be combined for reaching a context-sensitive and realist account of incommensurability. To have a context-sensitive account, the fact that differently contextualized rational inquiries elaborate and admit incompatible (and possibly taxonomically incommensurable) conceptual clusters associated with same terms (incompatible conceptual schemes hosting same terms) under the guidance of incompatible systems of rational acceptability should, in some cases, be interpretable in non-competing perspectives as legitimate and significant. But to have a realist account, this should not prevent meaningfully conceiving that, in other cases, such differently contextualized rational inquiries opposes in competing perspectives and that the coexistence of incommensurable conceptual schemes they produce reflects cognitive limitation to be removed if possible. Our account of rational inquiry constitutes a fruitful philosophical and epistemological background in which such a context-sensitive and realist account of incommensurability can be developed. As briefly introduced when exposing the core mechanism susceptible to settle this balanced view, Putnam's pragmatist theory of knowledge allows considering contextually-driven mismatches between descriptions of same real situations or entities sometimes as legitimately reflecting

tunings to different points of view along which reality is different ways, and sometimes as misleading rational results generated by an illegitimate contextual pollution.

This core mechanism needs now to be fully deployed. As detailed during the development of our general approach of rational inquiry based on Putnam's pragmatist theory of knowledge (see chapter 2), an indispensable process of indexical tuning to specific domains of investigation (pools of entities being particular ways along specific sets of points of view) necessarily stands at the ground of any rational investigation. To the extent that reality is not conceived as being a unique way along the absolute God's eye point of view, situated points of view have to be tuned to for rational discourses about reality to escape emptiness. It has been shown that settling of problematic situations cannot be disconnected from contextual features such as pre-existing background conceptual schemes from which terms are borrowed or practices and evaluative commitments of actual inquirers (impacting judgments that given situations are problematic and choices of pre-existing terms). Moreover, specific uses of borrowed pre-existing terms are selected through the context-sensitive ability of attunement of actual inquirers. Accordingly, these terms rigidly refer (through contextual rigid designation) to entities being given ways along specific points of view as indexically singled out during the corresponding introducing events (actual inquirers have to stand in proper historical-causal relationship with them). This means that rational inquiries target the settling of some discourses about indexically singled out entities being particular ways along given points of view. In function of the specific goals expressed in problematic situations (such as describing a particular way of being of an entity, identifying essential features shared by all ways of being of an entity, etc.) and possibly of some methodological prescriptions, other involved entities being particular ways are also indexically singled out<sup>140</sup>. Therefore, the indispensable tunings to domains of investigation are irreducibly context-sensitive. In consequence, the contextual influence at play in rational inquiries cannot be merely reduced to contextual pollution (Putnam 1990d, 177-178). Claiming that the rational establishment of conceptual schemes should be freed from any contextual influence to pursue truth and objectivity would be returning to the illusion of reality in the God's eye point of view that should be described by a unique first-grade conceptual scheme. In Putnam's pragmatist theory of knowledge, contextually tuned to points of view are required to even make sense of the idea of mind-independent reality. On the ground of this indispensable and irreducibly context-sensitive process of tunings to specific domains of investigations, rationally acceptable conceptual schemes describing ways of being of entities of these domains are elaborated through semantic processes that are themselves context-sensitive<sup>141</sup>. Notably, although they rigidly refer, pre-existing terms and their uses borrowed from linguistic backgrounds are associated with conceptual clusters whose content is context-dependent. Similarly, new terms and their uses are inaugurated through original introducing events and thus (contextually) rigidly refer independently of knowledge recollected in their conceptual clusters. But this knowledge is context-sensitive. It is elaborated under the guidance of systems of rational acceptability that are themselves influenced by contextual sources and involve pre-existing terms of the contexts with their associated conceptual clusters. Furthermore, new uses for pre-existing terms can also be established. Through new introducing

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<sup>140</sup> To avoid useless complications, it is assumed that these goals make sense and that methodological prescriptions are not misleading. Alternatively phrased, it is supposed that these elements do not lead to try talking about entities that do not exist.

<sup>141</sup> In a spirit similar to the one of the previous footnote, it is assumed here that the terms and uses that are borrowed from backgrounds or that are newly introduced are the correct ones with respect to tuned to domains of investigations. Contextual influences can lead to mistakes at this level. But, to the extent that phenomena of incommensurability are under investigation in the present discussion, the focus is put on divergences between the content of conceptual clusters associated with terms rather than on mistakes about the selection of terms and uses themselves.

events, terms employed along these new uses rigidly refer to same entities (as those pointed in other uses) being different ways along newly tuned to points of view. As it is the case for the inauguration of new terms, new conceptual clusters are settled in a context-sensitive manner. In sum, each use of the terms hosted in the conceptual schemes of rational inquiries are associated with conceptual clusters whose content is context-sensitive and rigidly refer to entities being specific ways along particular points of view as indexically singled out during corresponding introducing events.

Consequently to these different levels of context-sensitivity (here we consider only the levels of indexical tunings to domains of investigation and of elaborations of conceptual clusters for terms of conceptual schemes), differently contextualized inquiries guided by incompatible systems of rational acceptability can build and admit incompatible conceptual clusters associated with same terms (incompatible conceptual schemes hosting same terms), thereby generating phenomena of incommensurability. Crucially, with respect to entities pointed by terms involved in incommensurability, these differently contextualized inquiries can be tuned to same or different points of view. In the following, rational inquiries tuned to domains of investigation in which these entities (involved in incommensurability) are taken along different points of view are said to be tuned to ‘different domains of investigation’. By contrast, when concerned entities are taken along same points of view, rational inquiries are considered as tuned to ‘overlapping domains of investigation’. It is important to notice the fundamental distinction made, in Putnam’s pragmatist theory of knowledge, between contexts and tunings to domains of investigation. Contextual sources are necessary to tune to determined domains of investigation, but differences in contexts do not necessarily imply differences in tunings to domains of investigation. Nothing forbids differently contextualized rational inquiries to be tuned to overlapping or same domains of investigation. It is based on this fundamental distinction that a context-sensitive and realist account of phenomena of incommensurability can be laid out. Incommensurability standing between rational inquiries tuned to different domains of investigation can be interpreted in competing perspectives as cognitive limitation, while incommensurability standing between rational inquiries tuned to overlapping (or same) domains of investigation can be understood in non-competing perspectives as legitimate and significant. Usually, the framing of problematic situations is important to discriminate between these cases. For instance, a common competing configuration is provided by differently contextualized rational inquiries sharing same problematic situations framed with same terms (when employed according to same uses). By contrast, non-competing incommensurability may occur between rational inquiries addressing problematic situations that share only certain terms (when employed according to different uses). But it is important to notice that incommensurable inquiries sharing same problematic situations mobilizing same terms do not necessarily compete. Same terms may be employed according to different uses in each case. Similarly, different but overlapping problematic situations are no warrant of incommensurability in non-competing perspectives. Overlapping terms may well be deployed along same uses. In the same line of thought, the fact that differently contextualized inquiries address totally different problematic situations (with no common terms) is no guarantee that they cannot be incommensurable. Such inquiries could still be conducted, by incompatible systems of rational acceptability, to mobilize same terms in association with incompatible conceptual clusters. In the final analysis, what remains determinant to distinguish between competing and non-competing occurrences of incommensurability is the fact that involved inquiries are indexically tuned to overlapping or different domains of investigation.

The way this context-sensitive and realist account permits meeting the four challenges associated with the interpretation of incommensurability can be explicated in more details in beginning with challenges for non-competing perspectives. At this level, recognizing the legitimacy and significance of incommensurability amounts establishing the possibility for legitimate pluralisms about incompatible systems of rational acceptability and about incompatible conceptual schemes accordingly settled in differently contextualized rational inquiries. Such pluralisms about the possible features of rational inquiries can be called “horizontal” pluralisms (Goodman 2013, 207). First, an answer can be provided to the third challenge: opening room for the possibility of a legitimate plurality of incompatible systems of rational acceptability leading to the admission of incompatible conceptual clusters for same terms (incompatible conceptual schemes hosting same terms), without imposing such a plurality to all occurrences of incommensurability. In light of the developments proposed just above, incommensurable systems of rational acceptability can legitimately coexist when they come with indexical tunings to different domains of investigation. In such cases, incommensurable systems of rational acceptability are employed to pursue true descriptions of different entities or same entities being different ways. Therefore, their comparison as more or less truth-conducting is meaningless (even when they are not equally truth-conducting) or at least useless because abandoning one of them could not count as an improvement. Crucially, this possibility for pluralism about incommensurable systems of rational acceptability is not opened at the cost of the distinction between truth and rational acceptability. In Putnam’s pragmatist theory of knowledge, truth is a non-epistemic notion that, for descriptive claims, takes the form of correspondence with mind-independent reality. Thereby, incommensurable systems of rational acceptability admitted in differently contextualized inquiries tuned to different domains of investigation can be seen as different tools to pursue situated truth as correspondence with the matter of facts of their respective domains of investigation. Therefore, these incompatible systems of rational acceptability cannot be seen as competing or conflicting. They cannot be compared as more or less truth-conducting. It is even possible that truth they pursue mobilizes different forms of correspondence. As developed in the section 2.3 of chapter 2, different types of descriptive claims mobilize different forms of truth as correspondence. In sum, differently contextualized inquiries admitting incommensurable systems of rational acceptability may well in some case be tuned to different domains of investigation. In such cases, phenomena of incommensurability are legitimate, and pluralism about concerned systems of rational acceptability is admissible. In such non-competing configurations, rejecting all but one systems of rational acceptability would not count as an improvement<sup>142</sup>.

The same line of thought permits answering the fourth challenge: securing conceptual room for the possibility of legitimate pluralism about incommensurable conceptual schemes, without imposing such a non-competing perspective to all cases. According to our account based on Putnam’s pragmatist theory of knowledge, differently contextualized inquiries can legitimately produce incompatible conceptual clusters for same terms (incompatible conceptual schemes hosting same terms) under the guidance of incompatible systems of rational acceptability to the extent they tune to different domains of investigation. Importantly, this possibility for pluralism is not achieved in claiming that rationally accepted conceptual schemes shape different realities. In Putnam’s pragmatist theory of knowledge, reality is mind-independent, although it is always

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<sup>142</sup> Even more, trying to force choices between coexisting systems and the conceptual schemes they lead to accept would be irrational. This does not mean that incommensurability in non-competing perspectives renders theory choice irrational, but rather that there is no choice to be made in such cases.

specific ways along situated points of view. Moreover, pluralism is not admitted in claiming that contextually-driven incompatibilities between conceptual schemes automatically imply differences in tuned to domains of investigation. Divergences in tunings to domains of investigation and mismatches in elaborated conceptual schemes share a broad common cause: different contextualizations of inquiries. Tuned to domains of investigation and features of elaborated conceptual schemes can thus vary together. But this is not necessary. Therefore, nothing prevents that, in some circumstances, differently featured rational inquiries tune to overlapping (or same) domains of investigation and produce competing incommensurable conceptual schemes. Nonetheless, when incommensurable rational inquiries tune to different domains of investigation, shared terms are deployed in each incommensurable conceptual scheme according to different uses associated with different corresponding introducing events (under the assumption that terms and uses are correctly settled with respect to tuned to domains of investigations). Thereby, these shared terms rigidly refer, in each case, to same entities being different ways along specific points of view as indexically singled out at the occasion of associated introducing events. In consequence, their association with incompatible conceptual clusters does not violate the no-overlap principle. Accordingly, the coexistence of these incommensurable conceptual schemes can be understood in a non-competing perspective as legitimate and significant. The conceptions they include bear on different domains of investigation and cannot be opposed as better or worse descriptions of reality. In such cases, attempting at removing all but one of these incommensurable conceptual schemes would be pointless. Conceptual schemes bearing on different domains of investigation provide complementary knowledge about different aspects of reality.

As already mentioned, this possibility for admitting legitimate pluralism for certain cases of incommensurability rests on the semantic features of Putnam's pragmatist realism that allow a plurality of uses for same terms. An important element supporting the possibility for such plurality of uses is, at least in the case of descriptive terms, the process of proto-rigid designation based on essential properties of real entities. In this respect, the possibility for a legitimate plurality of taxonomically incommensurable conceptual clusters associated with same terms may generate some difficulties. It would mean that that same entities designated by these same terms are ways whose descriptions are taxonomically incommensurable. If these descriptions are true, these entities are different ways constituted by incompatible properties (belonging to non-homologous systems of categories). As Putnam indicates, same entities may be associated with different types of essential properties that could belong to non-homologous systems of categories (Putnam 2002d, 107, 2008b, 27-28, 2012 [2004], 120-123). But, taxonomically incommensurable sets of properties cannot be constitutive of same ways of being of concerned entities. In consequence, the possibility for a plurality of taxonomically incommensurable essential properties for same entities implies that certain ways of being of such entities possess given essential properties, while essential properties of another type are shared by other ways these entities are. It could therefore not be said anymore that essential properties are shared by all ways of being of concerned entities. The same problem can arise even when concerned entities are associated with a single type of essential properties. If these entities are certain ways constituted by taxonomically incommensurable properties (ways that are described through taxonomically incommensurable conceptions in corresponding conceptual clusters), essential properties may not be commensurable with all ways of being. Again, it could not be said that essential properties are shared by all ways of being of concerned entities. These difficulties require a refinement of the account of essential properties and of proto-rigid designation proposed until now. In simple cases, essential properties are directly constitutive of all ways of being of corresponding entities. In cases involving taxonomic incommensurability, they are

directly constitutive of a subset of ways corresponding entities are, without being possessed in other of their ways of being. Nevertheless, these properties would remain ‘essential’ if entities actually single out as being these problematic ways of being (particular entities or *same* instances of kinds) can be reconsidered differently along other points of view as being ways possessing the suitable essential properties<sup>143</sup>.

This refinement being settled, we can now turn to challenges of competing perspectives. In fact, a context-sensitive and realist account of incommensurability phenomena needs not only to open room for the possibility of legitimate pluralisms about incompatible systems of rational acceptability and the incompatible conceptual schemes hosting same terms they lead to admit. It should also secure the alternative possibility for competing perspectives. The idea that incompatible systems of rational acceptability and associated incommensurable conceptual schemes can be opposed in competing perspectives cannot be abandoned. Contextually-driven mismatches between them should be interpretable, in some cases, as contextual pollution leading to cognitive limitations or imperfections that should be removed if at all possible. In this respect, an answer has to be provided to the first challenge raised by phenomena of incommensurability: securing conceptual room for the meaningfulness of comparing, in certain cases, incommensurable systems of rational acceptability as more or less truth-conducting. To this aim, it is very important to remember that the possibility for pluralism about systems of rational acceptability in different domains of investigation has not been established at the cost of the admission of a deflationist or verificationist understanding of truth. Although the idea that truth should be seen in any case as a unique trans-contextual property of correspondence has been rejected, the truth pursued in differently contextualized inquiries remains sharply distinguished from their systems of rational acceptability. The latter remains tools to seek truth seen (for descriptive claims) as an objective relation of correspondence (that can itself take several aspects) between conceptual schemes and mind-independent reality as it is along particular points of view. Furthermore, incompatible systems of rational acceptability admitted in differently contextualized inquiries tuned to same or overlapping domains of investigation can be opposed as competing tools pursuing same or overlapping targets. They can be meaningfully compared as more or less truth-conducting. Their coexistence can be interpreted, in such competing perspectives, as cognitive limitation or imperfection. Rejecting all but one of these incommensurable systems of rational acceptability can count as an improvement.

Following the same line of thought, a solution is provided to the second challenge: permitting to interpret (in some cases) incommensurable conceptual clusters associated with same

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<sup>143</sup> In the particular case of kinds, this refinement is admissible only if essential properties of different types lead to characterize kinds as possessing same sets of instances. This is not necessarily the case. First, a type of ‘essential’ properties may conduct to a set of instances that is included in the set determined by properties of another type. In this configuration, the problem is easily solved in recognizing that properties of the former type are not essential. Rather, they are fundamental properties with respect to a sub-set of ways of being of the considered kind. Second, the essential properties of two different types may lead to overlapping sets of instances. In such circumstance, it may be preferable to recognize that a unique kind term is employed in different contexts to designate different kinds. Instead of genuine incommensurability between same kind terms associated with taxonomically incommensurable descriptions of essential features of the corresponding kind, trivial semantic conventionalism may occur, leading to name likewise different entities. Same particulars would thus be involved as instances of different kinds themselves mobilized in different descriptions of ways reality is along different points of view. These upper level descriptions would then be incommensurable in relying on incompatible types of essential properties. One can notice that these problems of overlapping between types of essential properties may also occur without taxonomic incommensurability, generating the same sort of issue. For instance, Putnam indicates “that for a molecular biologist, it is the kind of DNA that is ‘essential’, while for a population biologist it is belonging to a certain ‘reproductive population’, and that the two criteria do not pick out the same animals in all cases” (Putnam 2002d, 107). Accordingly, a kind term ‘animal<sub>x</sub>’ may be associated with two types of essential properties leading to cross-classification. This should not be seen as a case of incommensurability involving the same term ‘animal<sub>x</sub>’. Rather, ‘animal<sub>x</sub>’ is employed in differently contextualized inquiries to designate different things. These inquiries may even be non-competing incommensurable investigations of the essential properties of, say, sexed living beings.

terms (conceptual schemes hosting same terms) as unequally successful descriptions of same entities. As reminded several times now, contextual influence can lead differently situated inquiries to tune to different domains of investigation *and* to produce incompatible conceptual schemes. But both types of influences do not necessarily come together. Therefore, nothing prevents differently contextualized inquiries elaborating incompatible conceptual clusters for same terms under the guidance of incompatible systems of rational acceptability to tune to same or overlapping domains of investigation. In such configurations, shared terms associated with incompatible conceptual clusters rigidly refer to same entities being same ways along same points of view (they are employed to replay same or equivalent introducing events)<sup>144</sup>. In consequence, the no-overlap principle is violated and the coexistence of incommensurable conceptual schemes can be interpreted as cognitive limitation or imperfection in competing perspectives. These incommensurable conceptual schemes constitute unequally successful descriptions of same sets of entities being same ways along same points of view.

### ***4.3.3. Implications for the World-Change thesis and for the status of the manifest image of the world***

In the previous section, the context-sensitive and realist account developed in this work has been deployed to address the core challenges raised by phenomena of incommensurability. On this ground, interesting complementary implications can be delineated. In particular, it is worth-mentioning that this context-sensitive and realist account permits a balanced reconsideration of Kuhn's World-Change thesis. In Putnam's pragmatist theory of knowledge and the commonsense realism it is grounded in, mind-independent reality is directly experienced through apperception based on correct conceptions. Incorrect or false conceptions lead to mis-apperception or hallucination. This picture of perception can be deployed in association with phenomena of incommensurability to settle an interesting approach of Kuhn's World-Change thesis. First, incommensurable conceptual schemes bearing on same or overlapping domains of investigation can be the ground of incompatible experiences. In such competing perspectives, conceptual schemes can be compared as more or less valid descriptions of same entities being same ways. Therefore, associated experiences can be opposed as more or less successful perception of same aspects of reality. Second, incommensurable conceptual schemes at the ground of incompatible perceptive experiences can describe different domains of investigation. Incommensurability can thereby be considered in a non-competing perspective. Incommensurable conceptual schemes can legitimately coexist as descriptions of same entities being different ways. Associated incompatible experiences can therefore be considered as legitimate, as genuine veridical apperceptions (provided conceptual schemes are true) of different aspects of reality or of same entities. In non-competing perspectives, phenomena of incommensurability can thus lead to different experiences of the world. But, this should not be understood as claiming that two different worlds are experienced. When discussing the threat of total isolation, it has been shown that mismatches (including taxonomically incommensurable one) never extends to whole languages. Some conceptual backgrounds always remain untouched. Therefore, the non-competing phenomena of incommensurability generate incompatible experiences of limited aspects of reality only.

To complete this exposition of the way our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge permits accounting for incommensurability (qua

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<sup>144</sup> Here again, it is assumed that terms and uses in conceptual schemes of each inquiry are correctly mobilized with respect to indexically tuned to domains of investigation.

significant or qua cognitive imperfection), a last point is worth mentioning. The discussion has been, up to now, focused on incommensurability occurring ‘horizontally’ between differently contextualized rational inquiries (either with horizontal oppositions or with horizontal pluralism). But phenomena of incommensurability may also occur vertically, that is to say, between rational inquiries and their rational and linguistic backgrounds (in which one can find past inquiries with their systems of rational acceptability and their rationally accepted conceptual schemes as well as commonsense and its associated ordinary language or conceptual scheme). To keep the exposition as clear as possible, the following discussion will assume the simplified picture that only commonsense and the ordinary conceptual scheme constitute the rational and linguistic background of rational inquiries. In this maybe oversimplified approach<sup>145</sup>, it is possible to claim that cognitive activities of ordinary life are guided (at least in part) by commonsense. The latter can then be seen as an implicit system of rational acceptability that guides the admission of the components of the ordinary conceptual scheme. This conceptual scheme grounds the ‘manifest image’ of the world and is involved in our ordinary apperceptions. Divergences between this manifest image and the scientific one (after the previous discussion, we may use the plural: the scientific images) may be understood as resulting from phenomena of incommensurability about rational acceptability. Incompatible systems of rational acceptability coexist (the one of commonsense and those of rational inquiries) and ground the rational admission of differently featured conceptual schemes (the manifest image and the scientific images). Such an understanding of these divergences may lead to interesting conclusions about the relationships standing between the manifest and scientific images when coupled with our context-sensitive and realist account of incommensurability. In fact, authors such as Quine or Sellars argue in favor of an opposition between the manifest image and the scientific image(s) of reality (Putnam 2012 [2004], 111, Ladyman 2012, 33-34, deVries 2015). Rephrased in our picture of rational inquiry, this would mean that the conceptual schemes produced by rational inquiries should replace the ordinary conceptual scheme admitted in virtue of commonsense. The latter may be kept as a convenient tool for ordinary life, but would at best deserve a second-grade rational status. Such a positioning amounts to an exclusively competing interpretation of the phenomena of incommensurability standing between ordinary cognitive activities (guided by commonsense) and rational inquiries (guided by their respective systems of rational acceptability). In this interpretation, none of these phenomena deserves legitimacy and significance. They merely reflect cognitive limitations. Following the present discussion of incommensurability that is not restricted to such a competing interpretation, the possibility for a different conclusion might be opened.

To begin with not too provocative considerations, we may return to phenomena of incommensurability in their total definition according to which differently featured but commensurable conceptual clusters associated with same terms can also be taken into account. In this line of thought, we may imagine rational inquiries producing new conceptual clusters to be associated with some pre-existing terms of ordinary language that already possess pre-established compatible conceptual clusters. In such cases, there is obviously no need to replace the latter. Nevertheless, perspectives developed here on incommensurability may be illuminative. First, shared terms, which receive differently featured conceptual clusters when hosted in the ordinary

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<sup>145</sup> It seems reasonable to admit that cognitive activities of actual persons in their ordinary life also presents some cases of incommensurability leading to the legitimate or illegitimate mobilization of different systems of rationality and the consequent admission of different conceptual schemes. But for the purposes of the present discussion, it is more convenient to admit a more uniform picture of ordinary cognitive life as embedding a single system of rational acceptability (commonsense) and a unique admitted conceptual scheme (the manifest image).



conceptual scheme and in the conceptual schemes of rational inquiries, may be deployed along the same uses to point the same ways of being of same entities (this echoes the competing perspective discussed above). Because the contents of conceptual clusters are compatible, unique conceptual clusters can be formed. Rational inquiries producing such conceptual clusters can be seen as permitting the improvement of conceptual clusters associated with specific uses of ordinary terms. One can for instance imagine an inquiry establishing the essential properties of water. The conceptual clusters associated with all uses of ‘water’ could thereby be improved. Second, shared terms receiving differently featured conceptual clusters (in ordinary life and in rational inquiries) may be mobilized according to different uses. For instance, an inquiry may discover a new way of being of an already identified entity and describe it. One can imagine the case of scientists discovering that ice is also water. This would be equivalent to non-competing incommensurability. The pre-established uses of concerned terms remain valid and are left untouched. The associated conceptual clusters can legitimately coexist, constituting an instance of what could be called “vertical pluralism” (Goodman 2013, 207). In such cases involving compatible conceptual schemes admitted through incompatible systems of rational acceptability, the manifest and scientific images could peacefully cohabitate, or the scientific image may simply enrich the manifest one.

This being settled, we can return to more controversial grounds in remobilizing the restricted definition of incommensurability as involving only incompatible conceptual schemes (with or without taxonomic incommensurability). Rational inquiries may produce conceptual schemes in which pre-existing terms receive conceptual clusters that are incompatible with the ones pre-admitted in the ordinary background. As shown just above, this could be interpreted in non-competing perspectives, provided shared terms are employed according to different uses to designate different referents. Again, rational inquiries may unveil not yet known ways of being of already identified entities. This could be the case of chemists discovering the essential way of being of water (pure  $H_2O$ ). Such a result would clearly conflict with, for instance, the descriptions of water I can get on tap (impure  $H_2O$ ). But both would be associated with different uses of ‘water’ employed to refer to different ways of being of water (water being on tap or water being its essential way). The scientific results should therefore not replace ordinary knowledge in such a non-competing configuration. This would also count as a legitimate case of vertical pluralism. Nevertheless, it is also conceivable that shared terms are deployed with respect to same or overlapping domains of investigation according to the same uses to point same entities being same ways along same points of view. In such cases, genuine conflicts stand between conceptual schemes produced by rational inquiries and the ordinary one. But, as exposed few paragraphs above when discussing the challenge of meaning holism (see previous section), such conflicts cannot extend to the ordinary conceptual scheme as a whole. They are better conceived as incompatibilities between the conceptual scheme of a given rational inquiry and a restricted fraction of the pre-admitted ordinary conceptual scheme. Instead of being conceived as vertical conflicts between rational inquiries and their rational and linguistic background as a whole, such situations can always be reconsidered as cases of horizontal conflict between two incompatible (and possibly taxonomically incommensurable) conceptual schemes (a restricted fraction of the ordinary conceptual scheme versus a rationally accepted conceptual scheme) admitted in virtue of incompatible systems of rational acceptability (commonsense versus the system of rational acceptability of a rational inquiry). In such configurations, incommensurable conceptual schemes of inquiries and fractions of ordinary conceptual scheme can be understood as horizontally competing. They can be considered as more or less true descriptions of same or overlapping domains of investigation.

Provided that inquiries are successful, concerned fractions of the ordinary conceptual schemes should be corrected or replaced.

In sum, although the opposition between the manifest image based on ordinary conceptual schemes and the scientific images based on conceptual schemes of rational inquiries is possible in some precise cases (competing phenomena of incommensurability involving incompatible conceptual schemes), many possibilities are opened to claim that these images can cohabitate. In some circumstances involving compatible conceptual schemes in pseudo-competing perspectives, rational inquiries merely enrich ordinary knowledge about entities being given ways along particular points of view. In other configurations, compatible or incompatible conceptual schemes describing same entities being different ways along distinct points of view can legitimately coexist in non-competing perspectives. These cases can be understood as instances of vertical pluralism. In general, the manifest image and the scientific images do not compete but are, rather, complementary. This meets core claims Putnam defends with his commonsense realism, according to which ordinary conceptions and experiences of reality are (at least a priori) as real as the one provided by rational investigations (Putnam 2012b [2010], 105). As put by De Caro and Macarthur (2012), “commonsense objects like tables and books do not await the blessing of science for their reality, nor can science denigrate their existence, although it may reveal surprising facts about them” (p. 23).

## 5. Scientific realism and incommensurability reconciled

In the previous section, two main research questions have been addressed. First, our approach of rational inquiry based on Putnam’s pragmatist theory of knowledge has been deployed to account for phenomena of incommensurability. Second, it has been shown this account meets the core philosophical and epistemological challenges raised by incommensurability. This analysis permitted discussing the role of incommensurability with respect to the relations standing between ordinary conceptual schemes validated through commonsense and conceptual schemes produced through rational or scientific inquiries. To complete these developments, it is fruitful to refocus upon incommensurability standing between different rational inquiries to study the possible incompatibilities it may generate regarding scientific realism. As exposed in the introduction of this work, Kuhn believes that phenomena of incommensurability impose deep reconsideration of our picture of scientific enterprise. Scientific progress cannot be understood as constantly improved descriptions approximating closer and closer to the true account of reality:

We may, to be more precise, have to relinquish the notion, explicit or implicit, that changes of paradigm carry scientists and those who learn from them closer and closer to the truth. (Kuhn 1996 [1962], 170)

Does it really help to imagine that there is some one full, objective, true account of nature and that the proper measure of scientific achievement is the extent to which it brings us closer to that ultimate goal? (Ibid, 171)

Although normal sciences can be seen as cumulatively progressing, the occurrence of scientific revolutions disrupts this cumulative pattern. During such episodes, paradigms (providing examples of successful methodological and semantic practices) are deeply modified. Phenomena of incommensurability arise and generate “non-cumulative breaks” (Kuhn 1996 [1962], 208) during which standards for theory assessments and lexicons are radically reconsidered. The possibility for revolutionary variations in lexicons (taxonomic incommensurability) is for Kuhn a crucial

argument against the idea of “a match or correspondence between the ontology of a theory and its real counterpart in nature is illusive” (Oberheim and Hoyningen-Huene 2013, section 2.3.1). Our context-sensitive and realist account based on Putnam’s pragmatist realism can be deployed to discuss in more detail the possible conflicts that may stand between incommensurability and scientific realism. To this aim, a refined characterization of the latter is in order.

Many definitions of scientific realism can be found in the literature (see for instance: Psillos 2000, 706-707, Sankey 2000a, 226 note 6, Almeder 2008, 94-95, Baghramian 2008, Devitt 2008, Ladyman 2012, 33, Chakravartty 2014). Psillos (2000), Sankey (2000a) and Chakravartty (2014) coin their definition through the conjunction of several claims. Their approaches can be fruitfully synthesized to express scientific realism under the form of three main theses. The first one can be called the “metaphysical” or “ontological” thesis. It reflects the admission of the idea of a world or a reality whose existence and nature (the ways of being of real entities such as objects, properties, relations or processes) are independent of actual persons’ cognitive activity. This claim is crucial to rule out anti-realist and verificationist approaches. Provided that a discourse attempts at describing this reality, its truth cannot receive an epistemic account (reducing truth to verification or rational acceptability). The entities of mind-independent reality are what they are independently of descriptions actual persons may establish about them. A distance is secured between the ways the world is and the ways it is pictured to be through (rationally) admitted descriptions. Mind-independent ways real entities are constitute the truth-makers of statements describing reality (independently of the rational acceptability of these statements). In sum, this first metaphysical thesis grounds the idea that statements about reality (insofar as they are possible) are true in virtue of matching the mind-independent ways real entities are (truth as correspondence).

In addition, scientific realism is characterized by a second constitutive claim: the “semantic” thesis. Broadly speaking, it expresses the idea that scientific theories are discourses about the entities of mind-independent reality. Scientific theories are, therefore, capable of truth in virtue of correspondence with the ways real entities are<sup>146</sup>. More precisely, the semantic thesis stipulates that not only observational but also theoretical claims embedded in scientific discourses refer to entities assumed to exist mind-independently. It opposes to instrumentalism in defending the idea that even theoretical statements are capable of truth as correspondence with mind-independent reality (instead of denying that they possess truth-values or of arguing that they are truth-valued only as reduced to observational statements). If a theoretical claim is true, the entities it posits effectively inhabit mind-independent reality.

Finally, the definition of scientific realism is complemented by the “epistemic” or “epistemological” thesis that opposes to skepticism about scientific theories. It specifies that scientific investigations do not only provide sets of statements about entities of mind-independent reality that are capable of truth or falsity through correspondence with them. According to the epistemic thesis, scientific investigations also have enough epistemological power to deliver true or approximately true sets of statements – that is to say, to deliver (approximate) knowledge about

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<sup>146</sup> Sankey (2000a) and Chakravartty (2014) explicitly integrate in the metaphysical thesis the idea that sciences investigate the so-admitted mind-independent reality. In Psillos (2000), the connection is also mentioned but is less direct. In the present discussion, the metaphysical thesis is kept to its core and simplest form. Claims about the possibility for science to produce statements referring to mind-independent reality are considered as pertaining to the scope of the semantic thesis that explicitly bears on the relationship standing between scientific theories and reality. This option possesses two main advantages. First, it avoids overlapping between the first and the second theses. Second, it permits discriminating between anti-realist oppositions to scientific realism that deny the existence of mind-independent reality and line of thoughts (for instance of a Kantian type) that admit the metaphysical thesis but still discard scientific realism by questioning the idea that mind-independent reality can be epistemically accessed.

these entities of mind-independent reality. This epistemic thesis is tightly connected with the possibility of scientific progress. A large part of the epistemological power a scientific investigation may possess does not come directly from its ability at rationally establishing some statements at a given time, but rather from its ability at improving these statements – that is to say, its ability at replacing previously rationally accepted descriptions of real entities by more recent ones that come closer to truth. Accordingly, the epistemic thesis can be seen as stipulating that rationally accepted scientific theories that are mature – that is to say, that result, through scientific progress, from successive improvements – can be considered as providing true or approximately true descriptions of observable as well as unobservable entities of mind-independent reality. It can be legitimately believed that entities posited by their theoretical claims (or entities very similar to them) effectively inhabit mind-independent reality.

Coupled with our context-sensitive and realist account of phenomena of incommensurability based on Putnam’s pragmatist theory of knowledge, such a delineation of scientific realism in terms of conjoined theses allows a refined analysis of the possible conflicts standing between incommensurability and scientific realism.

### **5.1. Localization of the conflict**

In general, the metaphysical thesis is not directly threatened by phenomena of incommensurability. The present account of incommensurability delineated in section 4 is in line with Sankey’s illuminative claim that the notion of incommensurability does not have to be considered as intrinsically antirealist (Sankey 2009, 119-202). Instead, it is the realist or antirealist components embedded in philosophical backgrounds deployed to consider incommensurability that lead to realist or antirealist interpretations. In fact, reasons to reject or admit the idea of mind-independent reality appear largely orthogonal to the issues associated with incommensurability. As extensively discussed during the exposition of Putnam’s philosophical path, far more threatening and relevant are issues concerning conception and perception that highly condition the possibility of introducing the notion of mind-independent reality in a semantically consistent way. It is one of the main advantages of Putnam’s pragmatist theory of knowledge based on commonsense realism to permit such a semantically consistent introduction. By abandoning the interfacial understandings of conception and perception, commonsense realism permits elucidating how actual persons can be in direct contact with mind-independent reality through conception and associated apperception. When true, a conception of the way something is and the way it is are one and the same thing. Based on such true conceptions, entities of mind-independent reality can be directly apperceived as being certain ways. Moreover, in Putnam’s pragmatist theory of knowledge, mind-independent reality (or entities of this reality) can be many different ways along different points of view. Provided that conceptual schemes of rational or scientific investigations can refer to entities of this mind-independent reality (this question is linked with the semantic thesis of scientific realism), they would be capable of truth or falsity in virtue of correspondence with it<sup>147</sup>.

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<sup>147</sup> As discussed in the previous sections, the fact that mind-independent reality can be many different ways along different points of view is crucial for the balanced account of incommensurability proposed in this work. It permits delineating two interpretations of phenomena of incommensurability: qua cognitive limitations in competing perspectives (inquiries tuned to same or overlapping domains of investigation) and qua significant in non-competing perspectives (across different domains of investigation). This conception of mind-independent reality does not in general conflict with the metaphysical thesis of scientific realism. It disagrees only with the particular versions of scientific realism claiming that reality is only one way and that there should be only a unique and complete true first grade conceptual scheme (or absolute conception) truly describing it. In the references mentioned above, only Baghramian (2008) commits explicitly to this uniqueness requirement. Psillos (2000) wonders, when discussing Cartwright’s “local realism” that presents similarities with our approach, about the possibility of mobilizing “local truths” without admitting a “perspectival notion of truth which

Their truth could thereby be understood in a non-epistemic way. Such conceptual schemes do not shape mind-independent reality. They can be false and lead to misconception and misapprehension of reality.

While the endorsement of the metaphysical thesis of scientific realism is largely orthogonal to the issues raised by incommensurability, the semantic and epistemic theses may prove more vulnerable. Notably, securing compatibility with the semantic thesis requires clarifying to which extent the approach of incommensurability proposed here permits defending that terms of scientific theories (in particular the theoretical ones) do refer to elements of mind-independent reality (anti-instrumentalism, anti-internalism and anti-Kantianism), and that the claims they embed (in particular the theoretical ones) are capable of truth in virtue of correspondence with this mind-independent reality. Again, the potential threats to this semantic thesis seems coming primarily from the semantic commitments of philosophical backgrounds in which incommensurability is interpreted. For instance, in internalist or Kantian-like approaches, actual persons' conceptual schemes (including those resulting from rational or scientific inquiries) refer only to entities of phenomenal or internal reality they contribute shaping. In these frameworks, the semantic thesis of scientific realism cannot be admitted<sup>148</sup>. By contrast, it is perfectly admissible in our account based on Putnam's pragmatist theory of knowledge. As delineated in the sections 1.2.1 and 2.2.1 of previous chapter, reference for observable as well as theoretical terms is established at the occasion of introducing events during which actual persons are in genuine direct contact with mind-independent reality. At this occasion, terms' referents are indexically singled out. Furthermore, the rejection of the dichotomy between properties and concepts permits claiming that correct conceptions of unobservable entities are genuine contact with them. Theoretical terms involved in, or associated with, such true conceptions would thereby unproblematically refer to corresponding mind-independent entities. In sum, compliance with the semantic thesis of scientific realism is ensured in Putnam's pragmatist theory of knowledge, independently of the consideration of phenomena of incommensurability. The fact that differently contextualized inquiries can elaborate and admit incompatible conceptual clusters for same terms under the guidance of incompatible systems of rational acceptability does not threaten the idea that mind-independent reality is referred to and investigated in each case.

The metaphysical and semantic theses of scientific realism being not directly threatened by phenomena of incommensurability, incompatibilities (if any) have to bear upon the epistemic thesis. Securing compatibility with the epistemic thesis demands proving that, despite phenomena of incommensurability, scientific progress is possible and that scientific investigations can be epistemologically powerful enough to provide knowledge about mind-independent reality. It requires showing that mature scientific theories can be conceived as providing (approximately) true descriptions of their intended domain (Psillos 2000, 706-707). In this respect, phenomena of incommensurability raise a first obvious issue. Differently contextualized inquiries can adopt incompatible systems of rational acceptability leading them to elaborate and admit incompatible

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has characteristics not suitable for realism" (721-722). Although the notion of truth mobilized in our approach may be said perspectival in some respects, it is in no case an epistemic notion of truth that might open the road for relativism. The faces of truth mobilized in particular conceptual schemes do depend upon claims and their understandings. But truth is not fixed by conceptual schemes themselves. In addition, a single mind-independent reality is described that is different ways along different points of view. The threat of the loss of a common world is defused. Incommensurability qua significant is not rendered compatible with the metaphysical requirement of scientific realism in picturing reality as a "disunified" world (ibid).

<sup>148</sup> This does not need impacting the endorsement of the metaphysical thesis. Kantian or internalist approaches can be seen as illustrations of the possibility of abandoning the semantic thesis while maintaining the metaphysical one. The idea of mind-independent reality is still admitted, but not as something that can be investigated. It cannot be conceived as composed by entities that could be referred to by the terms of scientific theories.

conceptual schemes hosting same terms – that is in particular to say, conceptual schemes providing incompatible descriptions of same entities. Each group of inquirers can legitimately disagree about which conceptual schemes should be held as approaching the closest to truth. Because they rely on different and incompatible systems of rational acceptability, no compelling argument can be built in favor of one of the alternatives. In generating such an impossibility to rationally decide between incompatible descriptions of same things, phenomena of incommensurability may undermine the epistemic thesis of scientific realism. They question the fact that scientific investigations possess enough epistemological power to provide knowledge about mind-independent reality.

To a large extent, this issue has been solved in our account of incommensurability based on Putnam's pragmatist theory of knowledge. It has been shown that the admission of phenomena of incommensurability does not degenerate into deflationism or relativism. A non-epistemic understanding of truth is preserved that prevents reducing it to systems of rational acceptability. The latter remain tools to pursue truth. Despite phenomena of incommensurability, differently contextualized inquiries adopting incompatible systems of rational acceptability can still be taken as seeking truth under the guidance of their respective systems of rational acceptability. On this ground, a first question is: can they be understood as opposed in the pursuit of the same thing? The answer that has been provided in previous section is: yes, but not always. In fact, as discussed in sections 4.3.1 and 4.3.2, a crucial refinement is provided through Putnam's pragmatist theory of knowledge. In this framework, a single entity of mind-independent reality can be many different ways along different points of view. Accordingly, a given term does not merely point a particular entity without any further specification. It can have different uses. Deployed according to these uses, it refers to different ways the same entity is along different points of view. In light of this refinement, phenomena of incommensurability – the fact that same terms are associated with incompatible conceptual clusters embedding incompatible descriptions under the guidance of incompatible systems of rational acceptability – may not be systematically problematic. When investigating same entities (and thus mobilizing shared terms), differently contextualized inquiries can tune to same (or overlapping) domains of investigation (in which common entities are same ways along same points of view) or to different domains of investigation (in which common entities are different ways along different points of view). In the former case, incommensurability can be interpreted in competing perspectives as cognitive limitation. In the latter case, it can be considered in non-competing perspectives as legitimate and significant. In such non-competing perspectives, there can be different true though incompatible conceptual schemes (that can even be taxonomically incommensurable) describing different ways of being of the same entities. In each domain of investigation, rationally accepted conceptual schemes can be thought of as more or less close to the corresponding true conceptual scheme. However, they cannot be compared together as more or less true across domains of investigation, because they do not target the same referents. Consequently, it seems that the epistemic thesis of scientific realism does not need to apply across domains of investigation. In non-competing perspectives, incompatible systems of rational acceptability involved in phenomena of incommensurability do not oppose in the pursuit of same goals. Trying to compare them and to choose between the alternative conceptual schemes they lead to is pointless.

Nonetheless, in competing perspectives, incommensurable inquiries are tuned to same or overlapping domains of investigation. Same ways of being of same entities are referred to by common terms hosted in differently featured (and possibly taxonomically incommensurable)

conceptual schemes that are endorsed in virtue of the incompatible systems of rational acceptability of inquiries tuned to a single domain of investigation. Thereby, there can be only a unique true conceptual scheme correctly describing the ways of being of the entities the domain of investigation is focused on. In this case, phenomena of incommensurability can be interpreted as cognitive limitations or imperfections. Incompatible systems of rational inquiries can be understood as opposing in the pursuit of same things (they can meaningfully be compared as more or less truth-conducting). Only one among the conceptual schemes they lead to elaborate and admit should be kept (these conceptual schemes can be meaningfully-compared as more or less true). This ensures that the epistemic thesis is not rendered boldly meaningless in competing perspectives. In such settings, the notion of progress is safeguarded. Differently featured conceptual schemes of inquiries tuned to same or overlapping domains of investigation can be meaningfully conceived as being more or less close to truth. Deprived from this possibility, it would be empty to wonder to which extent rational inquiries possess enough epistemological power to provide knowledge about mind-independent reality<sup>149</sup>.

This first obstacle being overcome, another aspect of incommensurability may threaten the epistemic thesis of scientific realism. For Kuhn, reference is not stable across taxonomically incommensurable conceptual schemes such as those separated by scientific revolutions:

What characterizes revolutions is, thus, change in several of the taxonomic categories prerequisite to scientific descriptions and generalizations. That change, furthermore, is an adjustment not only of criteria relevant to categorization, but also of the way in which given objects and situations are distributed among preexisting categories. (Kuhn 2000 [1987], 30)

When embedded into non-homologous systems of categories, same terms undergo shifts in reference (Kuhn 1977, xxii-xxiii, 2000 [1993], 238, Sharrock and Read 2002, 145). This amounts endorsing a kind of descriptivism about reference according to which taxonomically incommensurable variations in the sense of terms generate variations in their reference (Sankey 2009, 197). It seems that, for Kuhn, such revolutionary changes in taxonomies were to be considered as changes in structures of reality itself (Kuhn 1996 [1962], 102). He believes that reality possesses no mind-independent taxonomies to be described and that taxonomic structures have the status of conventions (Oberheim and Hoyningen-Huene 2013, section 2.3.1). As we have seen, such a reading, which is similar to what may be provided in internal realism or similar Kantian-like approaches, already threatens the semantic thesis of scientific realism. However, interpretations of this type are not intrinsic to incommensurability and are avoided in our account based on Putnam's pragmatist theory of knowledge. But, even if taxonomic incommensurability generates only shifts in reference toward entities of mind-independent reality, the epistemic thesis of scientific realism remains under attack. To be valid, this thesis requires that scientific investigations are provided with enough epistemological power to provide knowledge about mind-independent reality. The possibility for scientific progress is a key component of this epistemological power. In this respect, the instability of terms' reference across taxonomically incommensurable conceptual schemes prevents understanding how scientific investigations could progress (or regress) on the path of establishing knowledge about constantly pointed entities or properties of mind-independent reality. Same terms hosted in taxonomically incommensurable

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<sup>149</sup> This being said, one can nonetheless wonder about the effective epistemological power rational investigations may possess to assess in practice which conceptual scheme is truer among a set of incommensurable conceptual schemes. As will be briefly developed in the conclusive section of this chapter, the possibility for rational investigations about evaluative matters provided in Putnam's pragmatist theory of knowledge is a crucial component complementing the present reconciliation of incommensurability and scientific realism. For now, it is a priority to demonstrate that the possibility of reconciliation is not closed by principle.

conceptual schemes would automatically receive different referents. Taxonomically incommensurable conceptual schemes (admitted in virtue of incompatible systems of rational acceptability) could never be understood as better or worse descriptions of the same mind-independent referents of common domains of investigation. Admitting only one of them, or replacing the earlier by the latter one, could never be conceived as a scientific progress “toward the truth about a common domain of entities” (Sankey 2009, 196-197). The epistemic thesis would become impossible to defend. The notion of scientific progress could not be framed meaningfully.

This issue of reference shifting has been largely circumvented in our context-sensitive and realist account presented in previous sections. In this framework, phenomena of incommensurability can be associated with reference shifting. However, they do not cause reference shifting. Rather, phenomena of incommensurability and reference shifting (when occurring) have a common cause: the fact that incommensurable inquiries are differently contextualized. In fact, different contextualization of inquiries can lead to tunings to different domains of investigation (and thus to differences in referents of shared terms), as well as to elaborations and admissions of incompatible (and possibly taxonomically incommensurable) conceptual clusters for same terms (incompatible conceptual schemes hosting same terms)<sup>150</sup>. In our context-sensitive and realist account of incommensurability based on Putnam’s pragmatist theory of knowledge, both types of contextual influence can occur together. In this case, differently contextualized inquiries tune to different domains of investigation. The terms they share are employed according to different uses to refer to different ways same entities are along different points of view. Thereby, the elaboration and admission of incompatible conceptual clusters for same terms can be understood in non-competing perspectives as legitimate and significant. As introduced just above, this may be compatible with the epistemic thesis of scientific realism that may not have to apply in non-competing cases. Reference shifting and the impossibility at comparing incommensurable conceptual schemes as more or less successful descriptions of same referents would not threaten scientific realism. It may be sufficient that the epistemic thesis applies in competing cases. This possibility is opened in our framework, because contextually-driven divergences in tunings to domains of investigation and in elaboration of conceptual schemes do not necessarily occur together. As made clear in the previous section, differently contextualized rational inquiries can tune to same or overlapping domains of investigation, while nonetheless elaborating and admitting incompatible conceptual clusters for same terms. In such cases, the shared terms would be employed according to the same uses to refer to same referents. This is possible because the reference of terms is not determined by the content of associated conceptual clusters. Rather, it is grounded at the occasion of introducing events during which entities being given ways along particular points of view are *indexically* singled out. Provided that actual inquirers can stand in proper historical-causal relationship with such introducing events, they can employ the corresponding terms to replay these events and rigidly designate what has been indexically singled out in each case. Thereby, as long as actual inquirers engaged in differently contextualized investigations can stand in proper historical-causal relationship with same introducing events (or with equivalent introducing events in which same referents are indexically singled out), they can employ the same terms to refer to same entities being same ways along same

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<sup>150</sup> Therefore, the possibility of shift in reference is not proper to taxonomic incommensurability contrarily to Kuhn’s claim. This specific case might have attracted more attention than other instances because taxonomic incommensurability constitutes an extreme case of conceptual divergence in which incompatibilities between entire lexicons come with wholesale referential variations (Sankey 2009, 197). In addition, one of the main mechanisms proposed to defend stability of reference under conceptual variations (Putnam’s and Kripke’s causal account of reference based on an extension of the notion of rigid designation) has been criticized by Kuhn as ineffective with respect to taxonomically incommensurable conceptual divergences (Kuhn 1990b). This last topic is discussed in the following.



points of view, independently of the knowledge recollected in associated conceptual clusters (contextualized rigid designation). In consequence, incommensurable conceptual clusters admitted in inquiries tuned to same or overlapping domains of investigation can be interpreted in competing perspectives as conflicting descriptions of same entities being same ways along same points of view. Nevertheless, Kuhn explicitly attacked the possibility for rigid designation as initially designed by Kripke and Putnam (Kuhn 1990b). For him, rigid designation cannot operate in presence of taxonomic incommensurability. If this is correct, our account could not permit competing perspectives upon phenomena of taxonomic incommensurability and reconciliation with scientific realism could not be completed.

Therefore, before turning to the analysis of the compatibility between scientific realism and incommensurability in non-competing perspectives (across domains of investigation), Kuhn's arguments against rigid designation have to be discussed and answered. It has to be clarified to which extent our context-sensitive and realist account of incommensurability permits that terms associated with taxonomically incommensurable conceptual clusters in differently contextualized inquiries can nevertheless designate same referents of same or overlapping domains of investigation. This is an indispensable component to secure the epistemic thesis of scientific realism in competing perspectives with incommensurable inquiries tuned to same (or overlapping) domains of investigations. Accordingly, the rest of the discussion can be divided in two parts. The following section exposes and defuses Kuhn's counterarguments about rigid designation. The compatibility of scientific realism with positive interpretations of incommensurability in non-competing perspectives as legitimate and significant is addressed in a second time. Such a topic is worth-discussing only if compatibility can be established in competing perspectives. Without this key element, the very idea of a possible compatibility between scientific realism and incommensurability would be a non-starter.

## **5.2. Reference stabilization despite taxonomic incommensurability**

As detailed in section 1.2.2 of previous chapter, Kripke and Putnam proposed a mechanism of stabilization for the reference of terms hosted in differently featured conceptual schemes under the form of the causal theory of reference based on the process of rigid designation. This account was intended to preserve scientific realism from attacks based on taxonomic incommensurability (Putnam 1996 [1975], Ladyman 2012, 37, Sharrock and Read 2002, 182-185). According to Putnam in his early phase, the referents of (theoretical) terms pointing entities or members of kinds are determined during the associated introducing events, independently of the knowledge gathered in the conceptual or intensional part of meaning vectors<sup>151</sup>. Such terms refer to entities having the right essential properties (for instance, kind terms refer to any entities sharing the same essential properties with the entities singled out during introducing events). They can be seen as rigid designators. The external part of rigid designators' meaning vectors is independent of the content of their conceptual part. Thereby, the knowledge associated with such terms can evolve with scientific discoveries. It then becomes meaningful to claim that scientific knowledge can progress.

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<sup>151</sup> At the time of this debate, Putnam did not yet admitted commonsense realism and semantic contextualism. Consequently, the argument only bears upon the stability of reference to entities or kinds of entities of mind-independent reality, notwithstanding the idea that each entity (or entities of each kind) may be different ways along different points of view. For Putnam at this time, as well as for Kuhn, terms refer to entities and not to ways of being of these entities. Alternatively put, an entity (the instances of a kind) can have only a unique way of being (for instance, its essential way of being) that is referred to by the corresponding term. For Putnam, these unique ways of being are stably referred to in virtue of rigid designation.

Modifications in the knowledge recollected in conceptual parts of terms' meaning vectors (that is to say, modifications in conceptual schemes hosting these terms) are susceptible to be seen as improvements of information possessed about corresponding referents, instead of being considered as the sign that referents themselves are changing. Discovering the essential properties of some entities (or of members of some kinds) deserves the same treatment. Once terms are hosted in conceptual schemes providing correct and explicit descriptions of the essential properties of their referents, what they refer to is explicitly elucidated. And it is then possible to claim that the external part of terms' meaning vectors (referents) are, and always were, the same independently of the associated conceptual parts. In virtue of this process of rigid designation, reference can be stabilized under variations in conceptual parts of conceptual schemes associated with (taxonomic) incommensurability. Same terms hosted in differently featured (and possibly taxonomically incommensurable) conceptual schemes have the same referents. For instance, a given term might be associated with different (and possibly taxonomically incommensurable) conceptions when embedded in such divergent conceptual scheme. Through rigid designation, it would nonetheless remain possible to claim that his referent (referents, for kind terms) is not impacted. The conceptions associated with the term in divergent conceptual schemes can be understood as different (and competing) descriptions of the same referent. This applies to conceptions opposing diachronically as well as synchronically. The term can be claimed as possessing the same referent across time (even through a scientific revolution) and across sub-communities of inquiry, in a discipline undergoing a crisis state. In addition, the essential properties of this referent might be discovered. Consequently, the referent (the entity possessing the right essential properties, or any entities possessing them in the case of kinds) is identified and can be attributed to the term independently of the conceptual parts it receive in differently featured conceptual schemes. In diachronic settings, the term refers now, and was referring in the past, to this identified referent. In synchronic circumstances, the term stably designates this referent even when deployed in divergent and competing conceptual schemes. In sum, such a radical stabilization of reference through rigid designation would permit arguing that same terms hosted in differently (and possibly taxonomically incommensurable) conceptual schemes refer to the same entities.

However, the possibility for rigid designation to circumvent threat to stability of reference raised by taxonomic incommensurability has been criticized, in particular by Kuhn himself. In his famous *Dubbing and Redubbing: The vulnerability of Rigid Designation*, Kuhn for instance denied that rigid designation renders "the referents of 'water' immune to changes in the concept of water" (Kuhn 1990b, 311). His criticism can be decomposed in two main components (Kuhn 1990b, 308-315, Read and Sharrock 2002). The first questions the possibility to use rigid designation to stabilize reference despite conceptual variations whatever may be the cause and the nature of these variations. The second raises counterarguments that are specific to taxonomic incommensurability.

### **Answering Kuhn's first set of counterarguments**

Temporarily notwithstanding the issues linked to taxonomic incommensurability, Kuhn's first set of concerns can be investigated. According to Kuhn, it is in general invalid to claim that a kind term refers to any entity possessing the same essential properties as paradigmatic examples singled out during the associated introducing event. 'Water' or 'gold' cannot be reasonably understood as referring to any sample possessing respectively H<sub>2</sub>O as chemical composition or 79 as atomic number. This would mean that all the referents actually pointed by language-users in the past, as well as now, did not (or do not) genuinely belong to the extensions of 'water' or 'gold'. In

fact, except in extremely specific and abstract cases, terms like these are, and have been, employed to refer to samples integrating a certain amount of impurities. The problem is even sharper with terms like ‘water’. Although this might be further discussed for certain of its present uses, ‘water’ as used in the past (say before 1750) did not refer to H<sub>2</sub>O period. Rather, it referred to liquid H<sub>2</sub>O. Broadly put, this first set of arguments indicates that it is in general incorrect to claim that the essential properties of an entity (or of the members of a kind) determine the reference of the associated term. A fortiori, rigid designation cannot secure stability of reference between same terms hosted in differently featured (and possibly taxonomically incommensurable) conceptual schemes.

In virtue of the refinements already proposed with respect to the notion of rigid designation (see the section 1.2.2 of previous chapter), this first component of Kuhn’s criticism against the possibility to stabilize reference despite taxonomic incommensurability can be overcome. Although the letter of Putnam’s and Kripke’s account is genuinely problematic, amendments can be made to preserve its spirit. Putnam’s pragmatist theory of knowledge permits adapting the manner the notion rigid designation is mobilized to secure the stability of reference across differently featured (and possibly taxonomically incommensurable) conceptual schemes admitted through incompatible systems of rational acceptability. The point raised by Kuhn about the fact that essential properties cannot fix the reference of kind terms like ‘water’ or ‘gold’ can be seen as a particular case of the already discussed conflict between the notion of rigid designation and the manner reality, and related semantic mechanisms, are accounted for in Putnam’s pragmatist theory of knowledge (commonsense realism and semantic contextualism). In fact, commonsense realism indicates that real entities are not unique ways. Thereby, the essential properties of entities do not exhaust what they are. Rather, essential properties can be seen as unifiers that are possessed by entities in all their possible ways of being<sup>152</sup>. There is therefore a crucial difference between essential properties and essential ways of being. The essential properties are shared by all ways of being of entities. By contrast, the essential ways of being are specific ways entities are along particular points of view. An essential way of being is very important because only the corresponding entity can be this way. But it is far from exhausting the ways this entity can be. In light of this account of reality, it is obvious that rigid designation based on the essential properties of entities indexically singled out during introducing events cannot fix the reference of terms. There are no single referents to be designated through rigidly referring terms. As reflected in semantic contextualism, single terms can possess many different uses to refer to specific ways the designated entities are along different points of view. Therefore, rigid designation needs to be adapted. Such an adaptation is proposed in Putnam’s pragmatist theory of knowledge (see the section 1.2.2 of previous chapter). In this framework, rigid designation is disentangled in two different mechanisms. First, it takes the form of proto-rigid designation. In the framework of proto-rigid designation, the reference of terms does not have to be fixed through essential properties. More modestly, proto-rigid designation indicates that the referents of terms have to possess given essential properties. The latter act as unifiers of all terms’ uses. Whatever may be the uses of proto-rigid designators, referents pointed through these uses (when correctly deployed) possess the corresponding essential properties (that is to say the same essential properties as the ones

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<sup>152</sup> To the extent that an entity may possess different taxonomically incommensurable ways of being, or different taxonomically incommensurable types of essential properties, this claim needs being refined in recognizing that essential properties may not be possessed in all the ways of being of such an entity, but only in ways that are constituted by commensurable properties. But, essential properties could still be conceived as possessed to the extent that an entity (an instance of a kind) being a way that is incommensurable with the relevant essential properties could always be reconsidered along other points of view and would possess these essential properties.

possessed by entities indexically singled out during introducing events). For instance, no material sample could be referred to using ‘water’ without containing a large fraction of H<sub>2</sub>O. No metallic sample could be in the extension of ‘gold’ without including a large fraction of atoms with 79 as atomic number. With proto-rigid designation, essential properties do not fix reference. Rather, they crucially constrain the correct uses of terms pointing real entities or kinds, independently of knowledge effectively possessed about entities at a given time and in a given context. To stabilize reference of particular uses of terms, proto-rigid designation needs being complemented with a second mechanism: contextualized rigid designation. The reference of specific uses of terms are grounded at the occasion of particular introducing events during which entities are indexically singled out as being given ways along given points of view. To the extent that language-users stand in proper historical-causal relationships with such introducing events, they can employ terms according to particular uses to replay these events, and to rigidly refer to entities being particular ways as therein indexically singled out. Therefore, like rigid designation, contextualized rigid designation permits the stabilization of terms’ reference independently of the knowledge effectively recollected in associated conceptual clusters. But importantly, unlike rigid designation, contextualized rigid designation does not determine the reference to all the legitimate referents of terms. It only fixes the reference to specific ways corresponding entities are along contextually tuned to points of view during introducing events. In consequence, the initially proposed process of rigid designation is adapted and Kuhn’s first set of counterarguments can be overcome. Essential properties can be mobilized to stabilize reference. In particular, they can be mobilized to secure the stability of the reference of same terms hosted in taxonomically incommensurable conceptual schemes, which are elaborated and admitted in differently contextualized rational inquiries under the guidance of incompatible systems of rational acceptability. Through proto-rigid designation, it is ensured that same entities are referred to in both cases. Through contextualized rigid designation, same terms can be employed to refer to same entities being same ways along same points of view, even when deployed in taxonomically incommensurable conceptual schemes (as long as actual inquirers can replay same or equivalent introducing events)<sup>153</sup>.

### **Answering Kuhn’s second set of counterarguments**

This first set of problems being addressed, the second part of Kuhn’s counterarguments that are specifically linked to taxonomic incommensurability remains to be discussed. Kuhn believes that, independently of the first set of problems, the account based on rigid designation and on the causal theory of reference enables reference stabilization only in some specific cases involving terms in their ordinary uses (Kuhn 1990b, 308-315). Discovering the essential property of gold might be seen as generating a mere adjustment or complementation of the ordinary meaning of ‘gold’. The essential conception can be added without disruption to the conceptual scheme

<sup>153</sup> Supplementary counterarguments from Kuhn can be briefly discussed. Kuhn argues that superficial properties of entities are as necessary as (allegedly) essential ones (Kuhn 1990b, 312-313, Read and Sharrock 2002, 154-155). In the framework of highly structured scientific taxonomical systems, superficial properties can be derived from essential ones. If essential properties are necessary, so are superficial properties. Impossibility at predicting some recognized superficial properties from essential properties would constitute an argument against the attribution of these properties to a given entity. In addition, superficial properties are crucial to settle limit cases that cannot be discriminated through essential properties (for instance, is H<sub>2</sub>O at the critical point water?). Sketches of solution can be provided. First, superficial properties and essential properties may not possess the same kind of necessity. Superficial properties that are derived from essential ones based on scientific laws deserve only physical or natural necessity. They are correctly attributed only in possible worlds ruled by the same physical or natural laws as our actual one. Contrastively, essential properties are validly attributed to their bearers in any possible world the latter exist. Second, H<sub>2</sub>O at the critical point was probably not in the extension of ‘water’ according to any of its past uses, while it could be according to present uses. But this should not be seen as a lack of stability in reference. Rather, this indicates that more uses for ‘water’ are available in the present. Taken together, all these uses describe more completely the possible ways water can be (it can be liquid, solid, gaseous or in a critical state). Accordingly, there is continuity in reference between the past use of ‘water’ and some of its present uses (those pointing liquid water).

ordinarily hosting ‘gold’. The same adjustment could be done in taxonomical systems embedding ‘gold’ at any time provided the place of ‘gold’ in these systems remains broadly constant. In consequence, claiming that ‘gold’ always referred to a substance with atomic number 79 is valid. The same might be granted to ‘water’ in its ordinary use. However, many other meanings’ modification following the discovery of some essential properties cannot be described as mere adjustments of the meaning of terms taken in isolation. In general, mobilizing essential properties is more demanding. The introduction of terms designating essential properties cannot be done in isolation (as a mere adjustment of pre-existing lexicon or taxonomical system). In the general case, such terms have to be acquired in conjunction with substantial fractions of a whole lexicon. Accordingly, introducing terms designating essential properties and associating them with a word naming an entity or a kind cannot be done without deep modifications of the lexicon previously hosting this word. It becomes incorrect to claim that the *same* term as used in the past refers now (and thereby, was referring back then) to entities with the suitable essential properties, because it cannot be seen as the same term. The conceptual schemes hosting this term are so different that its occurrences in them cannot be equated. Kuhn believes that this is the case for terms like ‘planet’, ‘star’, ‘force’, ‘heat’, ‘element’ or ‘temperature’ as well as for ‘water’ when focusing on the uses scientists made of the term before and after chemistry discoveries of the eighteenth century. Talks about essential properties cannot in general be introduced in a neutral way independently of surrounding parts of whole taxonomical systems. They are acquired in conjunction with whole systems of categories and are meaningful only if their associated taxonomical system can be deployed (Kuhn 1990b, 314-315, Read and Sharrock 2002, 156, Sharrock and Read 2002, 182-188). When terms are redeployed in systems of categories that are taxonomically incommensurable with pre-established ones (systems of categories that cannot be introduced as mere adjustments), they undergo shift in reference.

Depending on the manner this second set of counterargument is understood, it might be genuinely problematic. A first understanding can be that the reference of a past term cannot be stabilized because the description of relevant essential properties cannot be integrated as a mere adjustment of the effectively possessed past conceptual schemes hosting this term. Under this form, Kuhn’s criticism does not impact our present account. Proto-rigid designation relies on *indexically* settled connections between terms and sets of essential properties. It is thereby independent of effectively possessed knowledge about these essential properties. Similarly, contextualized rigid designation amounts to replaying introducing events in which entities being specific ways along particular points of view have been *indexically* singled out. Consequently, contextualized rigid designation also operates independently of effectively possessed descriptions of rigidly referred to ways of being of these entities<sup>154</sup>. Nevertheless, Kuhn’s criticism may not be exhausted by this first reading. According to Kuhn, when introducing the description of the essential properties of an entity referred to by a term imposes a deep modification of the lexicon this terms belongs to, a new term is settled. The new and past terms cannot be identified. They

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<sup>154</sup> Echoing the refinement already laid out in the note 152, something superficially similar to Kuhn’s point may occur. It may happen that the essential properties of an entity are not possessed in certain of its way of being that are constituted by properties taxonomically incommensurable with these essential properties (possibly because of the existence of other types of essential properties). In consequence, the descriptions of the essential properties could not be integrated in conceptual clusters associated with the uses of the term that refer to these incommensurable ways of being. Nevertheless, the essential properties would still be possessed by the entity in the adapted sense delineated in the previous note. Furthermore, this impossibility to integrate the descriptions of the essential properties in the relevant conceptual clusters is not equivalent to Kuhn’s idea that taxonomic incommensurability causes reference shifting. In such cases, our account indicates that there are different ways of being of the same entity to be referred to independently of effectively possessed descriptions (which may be taxonomically incommensurable). In no case this possibility for the existence of different incommensurable ways of being of same entities forbids stable contextualized rigid designation to the same way of being of the same entity, even when taxonomically incommensurable descriptions of this way of being are effectively possessed in different contexts.

cannot be claimed to be the same term referring to same entity because they are included in taxonomically incommensurable conceptual schemes. Alternatively put, the introduction of the essential conceptual scheme (in which knowledge about essential properties of mind-independent entities is recollected) cannot be done without disrupting the lexicon in which the past term was embedded, closing the possibility to establish connections between present and past terms. This is what Kuhn means through the expression “redubbing” (Kuhn 1990b). The past term is dubbed a certain way in the initial lexicon. Redubbing occurs when the same term is associated with a new essential conceptual scheme taxonomically incommensurable with the past lexicon. In sum, Kuhn’s second set of arguments against stability of reference can be understood as claiming that, when hosted in conceptual schemes that cannot be gathered through mere adjustments (taxonomically incommensurable conceptual schemes), same terms are not really *same* terms. Under this form, it may effectively threaten our account of incommensurability in which competing perspectives are claimed possible, despite the occurrence of taxonomic mismatches. In fact, Kuhn’s claim that terms cannot be equated could be rephrased in our framework as follows: groups of language-users effectively relying on conceptual schemes hosting same terms that undergo radical taxonomic modifications cannot use these terms to replay same or equivalent introducing events. Contextualized rigid designation is impossible across taxonomic revolutions rendering conceptual schemes incommensurable. If this argument were correct, one could deny the possibility of stabilizing reference for same terms hosted in taxonomically incommensurable conceptual schemes. The competing perspective on taxonomic incommensurability would be meaningless and the epistemic thesis of scientific realism would remain under serious attack.

Nonetheless, Kuhn’s argument may hide a weak spot to the extent that it appears opposing conceptual schemes as wholly incommensurable, without discriminating between terms as employed in background contexts (for instance, in ordinary language) and as mobilized in scientific circumstances. Kuhn seems assuming that the ordinary uses of terms like ‘gold’ or ‘water’ cannot be isolated from conceptions established by rational or scientific approaches at different times. He concedes that if ‘water’ is restricted to its ordinary use, one can have the (illusory) impression that rigid designation may apply to it, as it applies to ‘gold’ (Kuhn 1990b, 310 note 25). In its ordinary use, ‘water’ remains stable and, if there were nothing more, the essential conceptual scheme associating water with H<sub>2</sub>O could be integrated as a mere adjustment of the lexicon previously hosting ‘water’. But for Kuhn, the ordinary use of ‘water’ relies on a mere approximation of the genuine meaning the term possesses in virtue of being positioned in “an elaborate lexical and theoretical system” (Kuhn 1990b, 313). Although the full meaning of ‘water’ can be ignored by laypeople who defer to experts and rely on the presence of the latter in their society (Kuhn 1990b, 313 note 26), the ordinary meaning of ‘water’ cannot be legitimately isolated from the more refined conceptual scheme elaborated by experts (there is only a unique legitimate use associated with a unique valid conception). This permits understanding the crucial difference Kuhn sees between the cases of ‘gold’ and of ‘water’. This difference does not reside in ordinary uses, but rather in the manner refined conceptions can be integrated in terms’ meanings. Both ordinary approximate uses of these terms may appear remaining stable across time. However, the essential conceptual scheme associated with ‘gold’ does not conflict with the pre-established conception. Contrastively, the essential conceptual scheme for ‘water’ is incompatible with the past conception (that has already been refined). This is at the ground of Kuhn’s second criticism. ‘Water’ belongs to taxonomically incommensurable conceptual schemes before and after 1750. Accordingly, ‘water’ used before and ‘water’ used after 1750 are different terms referring to different entities. In this account provided by Kuhn, refined conceptual schemes provided by experts replace all background conceptions and

determine the unique correct uses of terms (even for laypeople who can nonetheless defer to experts and deploy approximate uses). Everyday or background uses are mere approximations of correct uses of terms grounded through refined conceptions. They cannot be mobilized to stabilize reference under (taxonomically incommensurable) variations of refined conceptions. In sum, Kuhn seems assuming that there are no autonomous ordinary meanings or uses of terms to which refined conceptions may be added. Refined conceptions constitute the only full-fledged meanings terms can receive. Therefore, when refined conceptions are taxonomically incommensurable, shared terms cannot be validly considered as same terms. No common ground is available to perform the identification. Language-users relying of these conceptual schemes could not share same or equivalent introducing events for same terms and contextualized rigid designation could not operate.

This precise point of Kuhn's second counterargument can be criticized as relying on an overestimation of the connections standing between conceptual schemes embedding refined conceptions and their linguistic background (that can be the ordinary language). This overestimation comes with an underestimation of the role terms in their background (or ordinary) uses may play. Alternatively put, Kuhn relies on a specific account of the manner the results of rational or scientific inquiries (produced conceptual schemes) impact pre-established knowledge. The scientific descriptions of entities necessarily replace the pre-admitted conceptions and ground the unique correct use of terms referring to these entities. Pre-existing conceptions and uses can be preserved only as useful approximations. The picture of rational inquiry proposed according to Putnam's pragmatist theory of knowledge permits a more refined account of the consequences of knowledge production (including knowledge about the essential features of real entities). The latter is crucial with respect to the topic of stability of reference in presence of taxonomic incommensurability. Based on this refined grid of analysis, several cases can be distinguished in Kuhn's discussion. First, there are inquiries whose results do not conflict with pre-established knowledge (this would be the case of gold). Second, inquiries can produce conceptual schemes that (taxonomically) conflict with pre-admitted knowledge (case of water). Finally, in both of these configurations, inquiries can seek the elucidation of essential properties or of essential ways of being. Analyzed through the lens of Putnam's pragmatist theory of knowledge, these different cases do not mobilize the same semantic mechanisms.

To begin with, the case of an inquiry elucidating the essential way of being of a given entity for the first time (no pre-established knowledge is available) can be considered. With respect to Kuhn's discussion, this could apply to gold and the discovery that gold is made of atom whose atomic number is 79. It could also apply to past inquiries about water that first settled the refined conceptions possessed about it before 1750. Importantly, elucidating the essential way of being of an entity is not establishing what the entity is in any circumstances. Rather, it amounts describing a specific way this entity is along a specific point of view. To the extent the entity is already identified being other ways that are referred to through given uses of the corresponding term, the outcome of the inquiry is to be understood as the introduction of a new use (associated with its specific conceptual cluster) for a pre-existing term borrowed from a background conceptual scheme. Therefore, the process of inquiry does not result the replacement of previously admitted knowledge, with the aim to form a unique conceptual cluster for the pre-existing term that would accordingly possess a unique updated use. In compliance with the discussion of vertical pluralism proposed in the section 4.3.3, the background uses (and their associated conceptual clusters) can cohabitate with the new use settled in the rational inquiry. In consequence, it is meaningful to say

that before and after the inquiry, the term remains the *same* term. In fact, when employed according to other uses that remain stable, the term refer, through proto-rigid designation, to the same entity (that is to say, to the entity or instances of the kind that possess the same essential properties as the one possessed by entities indexically singled out during introducing events<sup>155</sup>). Accordingly, a new use for the same term can be grounded through an original introducing event in which the same entity is indexically singled out being its essential way. Actual inquirers could do this in saying, for instance, ‘let’s study the essential way of being of the entity we call ‘gold” or ‘let’s study the essential way of being of the entity we call ‘water”’. In standing in proper historical-causal relationships with such introducing events (and here with other introducing events associated with the other uses of the same terms), actual inquirers can (contextually) rigidly refer to gold or water being their essential ways along the specific corresponding points of view (independently of descriptions they effectively possess of these ways of being). In sum, rational inquiries can establish the descriptions of the essential ways of being of given entities without disrupting pre-existing knowledge about other ways these entities are along different points of view. These new descriptions are recollected in conceptual clusters associated with new uses for pre-existing terms that add to, instead of replacing, the already available background or ordinary uses. Terms are not redubbed through these inquiries.

The case of inquiries about the essential ways of being of entities whose results conflict with pre-established knowledge can now be considered. The discussion Kuhn proposes of ‘water’ pertains to this case. Such inquiries can be understood as occurring after processes of investigation described in the previous paragraph that already settled some descriptions of the essential ways of being of studied entities. Accordingly, the process of inquiry here considered lead no more to the integral redubbing of the terms than was the one discussed just above. Uses according to which concerned terms refer to the other ways studied entities are along different points of view are not impacted by the inquiries about the essential ways of being and remain stable. Terms taken along these uses can thus be shared between the past and new inquiries in a common linguistic background. This common background permits that introducing events grounding, in past inquiries, new terms’ uses (referring to essential ways of being) can be replayed in the framework of new inquiries (or that equivalent introducing events can be replayed). Starting from the shared background, nothing prevents new inquirers to use shared terms in the same manner as past ones (they also could say: ‘let’s study the essential way of being of the entity we call ‘gold” or ‘let’s study the essential way of being of the entity we call ‘water”’). We could even imagine new inquirers knowing nothing about the manner past inquirers employed these shared terms. They could nevertheless reproduce, although without knowing it, the same introducing events, as described just above<sup>156</sup>. In consequence, both past and new inquiries can share introducing events in which

<sup>155</sup> If required, the essential properties can be said to be possessed by all ways of being of entities in the adapted sense delineated above.

<sup>156</sup> The process of contextual rigid designation mobilized here echoes Sankey’s ‘referential response’ to the threat incommensurability raises against stability of reference that mobilizes causal descriptivism (Sankey 1994, chapters 2 and 5, 2008b, chapter 4). Sankey’s account and the present approach both mobilize indexical or ostensive singling out of referents. As already mentioned in the previous chapter, the role Sankey grants to descriptions does not conflict with the picture proposed here. He argues that, in most cases, the minimal conceptual content, required for reference stability, remains stable despite taxonomic incommensurability. We draw the same conclusion while even adding that such minimal conceptual content may be preserved because belonging to stable and shared linguistic backgrounds, without which taxonomic incommensurability could not be consistently framed. Nevertheless, the present approach can be seen as pushing the reflection about incommensurability a step further. It departs from Sankey’s account in allowing for shifts in reference according to which same terms employed in different contexts may refer to same entities being different ways along different points of view. In Sankey’s framework, such a possibility does not seem available. Either same terms employed in different contexts refer to same entities or they designate different entities. Therefore, Sankey only accounts for taxonomic incommensurability in competing perspectives and for cases in which shared terms refers to different entities (which would be characterized here as an instance of trivial semantic conventionalism rather than as a genuine occurrence of incommensurability). Accordingly, he focuses on *defending* scientific realism *against* phenomena of incommensurability, as we do in the present section. To the extent that it allows for same terms to possess different uses referring to same entities being different ways, the present account permits adding the possibility for non-



same entities being same ways along same points of view are *indexically* singled out. Contrarily to what Kuhn claimed, it is meaningful to argue that, in both frameworks, the same term can be deployed according to the same use to (contextually) rigidly refer to the same referents, independently of effectively possessed descriptions of them (the fact that these descriptions may be taxonomically incommensurable does not change the picture). Therefore, the impact of new inquiries can be understood as corrections of pre-established conceptual clusters for pre-existing terms. The descriptions recollected in these conceptual clusters are corrected and replaced by new (taxonomically incommensurable) ones, while reference remains stable. In this first configuration in which essential ways of being are studied, Kuhn's argument against the stability of reference across taxonomically incommensurable conceptual schemes is circumvented. Competing perspectives upon phenomena of incommensurability bearing on descriptions of the essential ways of being of given entities are possible.

The same type of reasoning is applicable to the impact of inquiries studying the essential properties of real entities. Importantly, their goal is not to describe a specific way of being of an entity. Rather, they seek the elucidation of the common essential features shared by a given entity in all its ways of being<sup>157</sup>. As before, two configurations can be distinguished. First, the new knowledge about the essential properties can be provided by an inquiry for the first time. This corresponds to Kuhn's discussion of 'gold'. Second, an inquiry about essential properties of a given entity can take place after a previous one (the one of the first case for instance). This case echoes Kuhn's account of 'water'. Let's begin with the first configuration. Because knowledge about the essential properties of a given entity is investigated for the first time, the corresponding inquiry targets the introduction of a new term or a new expression ('essential properties of what we call 'water' or 'essential properties of what we call 'gold') coupled with the settling of an associated conceptual cluster hosting a description of these essential properties. It is important to remark that such a new expression is grounded at the occasion of a specific introducing event during which the studied essential properties are indexically singled out, based on (contextually) rigidly referring terms like 'gold' or 'water'. Then, some descriptions of these rigidly pointed essential properties can be proposed. At this step, Putnam's pragmatist theory of knowledge permits a refined account of the possible impacts such an inquiry can have on the uses of the terms that point the entities whose essential properties are investigated ('water' or 'gold'). Crucially, these pre-existing uses and terms are not replaced. Rather, the content of the associated conceptual clusters is corrected or improved with the newly established knowledge about essential properties. Furthermore, these pre-existing terms taken along their specific uses still (contextually) rigidly designate same referents (specific ways of being of water or gold), independently of the changes of the content of the associated conceptual clusters (replays of the corresponding introducing events). Therefore, in this first configuration, the newly discovered description of essential properties can be added in the conceptual clusters of all the uses of concerned terms (here, of the uses of 'water' or 'gold') as mere adjustments.

Nevertheless, the second configuration requires further elaboration. In this case, a new inquiry about the essential properties of a given entity (water or gold) is initiated in a situation in which these essential properties have already been investigated and described. This situation can be seen as the result of a past inquiry as discussed just above. The results of the new inquiry then

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competing perspectives upon phenomena of incommensurability. As developed in next section, instead of only defending scientific realism against incommensurability, this move gives meaningfulness to the idea of reconciling them.

<sup>157</sup> The refinement mentioned above is also applicable in these cases.

oppose to (are taxonomically incommensurable with) the ones of the previous inquiry. But this does not mean that reference is disrupted across their respective frameworks. Notably, expressions such as ‘essential properties of what we call ‘gold’ or ‘essential properties of what we call ‘water’ can keep stable reference provided that the reference of terms they contain, such as ‘water’ and ‘gold’, is not disrupted. If this is the case, these expressions can be employed in the frameworks of both the past and the new inquiry to replay the same introducing events, and thus to (contextually) rigidly refer to the same essential properties. And the discussion of the first configuration shows that this can be the case. We just saw that the introduction of the firstly discovered knowledge about essential properties in the conceptual clusters of these terms do not impact their reference. Before and after this first inquiry, these terms were available to replay the same introducing events, and thus to (contextually) rigidly refer to the specific ways of being of the corresponding entities. The same can be done in the context of the new inquiry. In sum, these pre-existing terms, which point different ways of being of the entities whose essential properties are under investigation, belong to a conceptual background that is common to both inquiries. On this common ground, expressions like ‘essential properties of what we call ‘water’ or ‘essential properties of what we call ‘gold’ can be employed in the new inquiry to replay the same introducing events as those mobilized in the past investigation. Accordingly, the past and new inquiries can be understood as providing competing (and possibly taxonomically incommensurable) contents for the same conceptual clusters associated with the same expressions rigidly referring to the same essential properties. The new inquiry can thereby be understood as correcting the description established by the prior investigation.

Furthermore, this correction can be propagated to the descriptions hosted in the conceptual clusters associated with the various uses of the pre-existing terms that designate the entities whose essential properties are investigated. As we saw, these terms, when deployed according to specific uses, (contextually) rigidly refer to specific ways corresponding entities are along particular points of view, independently of the (essential) knowledge recollected in their conceptual clusters. The first introduction of the past description of relevant essential properties, produced by the past inquiry, did not disrupt their rigid reference. After this first introduction, they were still available to replay same pre-established introducing events. This is still possible in the framework of the second inquiry. Same entities being same ways are still referred to by these terms (according to their specific uses). And their reference is still independent from the descriptions hosted in the associated conceptual clusters. Therefore, as it has been the case during the past inquiry, the content of these conceptual clusters can be corrected to integrate the newly discovered description of relevant essential properties. In consequence, the past and new descriptions that are included in these conceptual clusters can be interpreted as competing descriptions of the same essential properties constituting the same ways of being of the same entities. In sum, taxonomically incommensurable conceptions of essential properties of given entities can also be considered as bearing on same referents in competing perspectives. Kuhn’s second set of counterarguments against the stability of reference is also answered in this configuration involving essential properties instead of essential ways of being.

### **Generalization of the solution**

Up to this point, Kuhn’s counterexamples against the possibility for stability of reference for same terms across taxonomically incommensurable conceptual schemes have been defused in the settings discussed by Kuhn himself (diachronic conflicts about essential properties and essential

ways of being). As we have seen, it is perfectly legitimate to hold that same terms hosted in such conceptual schemes are genuinely *same* terms, which refer to same ways same entities are along same points of view. This possibility for stability of reference can be generalized. First, in diachronic configurations, one can consider a past inquiry adding a new use and its associated conceptual clusters to a pre-existing term (bearing for instance on the essential way of being of water or on water being in a given lake). Later, a new inquiry can correct this conceptual cluster, replacing its content by an incompatible or taxonomically incommensurable conception. As demonstrated above, both inquiries can share the same introducing event for the concerned term's use. In both case, the term is employed according to this use to (contextually) rigidly refer to the same way of being of the same entity. The incommensurable conceptions can thereby be interpreted in competing perspectives as conflicting descriptions of same referents. Similarly and still in a diachronic configuration, a first inquiry may correct or improve the content of the conceptual clusters associated with particular sets of uses of given pre-existing terms. A later inquiry could then correct these modifications through taxonomically incommensurable conceptions. As exposed, none of these inquiries would disrupt the reference of these pre-existing terms according to these uses (in virtue of contextualized rigid designation). Again, the taxonomically incommensurable conceptions integrated at different times in same conceptual clusters of same terms' uses can be interpreted in competing perspectives as conflicting descriptions of same referents. Second, the same mechanisms for stability of reference across (taxonomically) incommensurable conceptual schemes can be deployed in synchronic configurations. Differently contextualized contemporary inquiries may mobilize the same pre-existing term according to the same use and correct the associated conceptual cluster in taxonomically incommensurable manners. Contextualized rigid designation would nevertheless ensure that same referents are pointed in each case. The taxonomically incommensurable conceptions provided by each inquiry could be interpreted in competing perspectives as conflicting descriptions of same referents. In the same vein, differently contextualized inquiries may produce the same introducing event (or equivalent ones) grounding a new use for a pre-existing term. They would thus deploy the same term according to the same new use to rigidly designate a same newly discovered way an already identified entity is along a specific point of view. On this ground, these contemporary inquiries could produce and admit taxonomically incommensurable conceptions that could be considered in competing perspectives as conflicting descriptions of same referents.

This refined discussion of Kuhn's second set of counterargument against the possibility for stability of reference when taxonomic incommensurability occur permits showing that what Kuhn calls 'redubbing' does not occur in general. As we have seen, terms such as 'gold' or 'water' remain *same* terms even when hosted in taxonomically incommensurable conceptual schemes <sup>158</sup>. Therefore, it is meaningful to consider that differently contextualized inquiries can tune to same or overlapping domains of investigation and produce incompatible (and possibly taxonomically incommensurable) conceptual schemes hosting same terms, which nevertheless refer to the same ways of being of the same entities are along same points of view. These common terms can genuinely be the *same* terms employed as replaying shared or equivalent introducing events. Consequently, the threat raised by Kuhn's second argument against the epistemic thesis of scientific realism is removed. The competing perspectives upon phenomena of incommensurability

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<sup>158</sup> In some specific configurations, such as the already mentioned case of the term 'planet', there can be genuine redubbing of same terms. However, this merely amounts to using the same sign to refer to different things. As already noticed, this does not count as a genuine occurrence of incommensurability as defined in the present work. Instead, it is better conceived as a case of what Putnam calls 'Trivial Semantic Conventionalism' (Putnam 1975 [1975], 164-165).

are possible even when taxonomic incommensurability occur. In such competing perspectives, the variations between conceptual clusters (associated with same terms' uses) hosted in different (and possibly taxonomically incommensurable) conceptual schemes admitted under the guidance incompatible systems of rational acceptability of differently contextualized rational inquiries are not accompanied by variations in referents. Rather, these incommensurable conceptual schemes can be seen as competing descriptive proposals targeting the same or overlapping domains of investigation, which include the same ways of being of the same entities of mind-independent reality. Their coexistence can be interpreted as cognitive imperfection. There can be only one true conceptual scheme bearing on a single domain of investigation. Room is therefore available to think that one of the mobilized systems of rational acceptability is more truth-conducting than the others and that one of the rationally accepted conceptual schemes is closer to truth than the others. Attempts at establishing which conceptual scheme is the best are meaningful. Rejecting all conceptual schemes but this one would be an improvement on the road of acquiring knowledge about mind-independent reality. In consequence, the epistemic thesis of scientific realism and its associated notion of scientific progress are not incompatible with the admission of the phenomena of (taxonomic) incommensurability. It is meaningful to claim that scientific investigations, though possibly producing incommensurable outcomes in different contexts, can possess enough epistemological power to provide knowledge about mind-independent reality (notwithstanding at this point the fact that possibilities of effective assessments of incommensurable results still have to be discussed). To the extent that, in competing perspectives, incompatible (and possibly taxonomically incommensurable) conceptual schemes elaborated and admitted in differently contextualized inquiries under the guidance of incompatible systems of rational acceptability can be conceived as more or less true descriptions of common referents of same or overlapping domains of investigation, there is something this epistemological power can be meaningfully applied to.

In sum, reference stability to the entities of same domains of investigation is ensured and permits establishing the compatibility between scientific realism and phenomena of incommensurability interpreted, in competing perspectives, as cognitive limitations. However, reference variations seem admissible in non-competing perspectives. The epistemic thesis cannot be defended in such configurations. Different ways of being of same entities are legitimately referred to by common terms hosted in (taxonomically) incommensurable conceptual schemes elaborated in differently contextualized inquiries tuned to different domains of investigation. In such non-competing perspectives, phenomena of incommensurability can be interpreted as significant. Conceptual schemes cannot be compared as more or less true descriptions of the same referents. This confirms our preliminary reading suggesting, not only that the epistemic thesis may not hold in non-competing perspectives, but more importantly that it may not need to hold in such settings. It is now time to develop this preliminary suggestion.

### **5.3. Scientific realism without scientific imperialism<sup>159</sup>: incommensurability across domains of investigation**

In light of the argumentation proposed in the previous section, distance can be taken from Kuhn's understanding of the consequences of (taxonomic) incommensurability with respect to

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<sup>159</sup> This expression is extracted from De Caro and Macarthur (2012).

scientific realism. In fact, Kuhn argues that it is only “occasionally appropriate” to consider that the results of new inquiries oppose to, and thus can replace, those of past investigations (Kuhn 1990b, 299). According to him, this interpretation is valid only when these new results can be integrated as mere adjustments of the lexicons associated with the past ones. Kuhn argues that this is precisely not the case when taxonomic incommensurability occurs between these past and new results. The terms that are involved in these incommensurable results cannot be equated as same terms, stably referring to same entities. Rephrased in our framework, Kuhn’s claim can be understood as indicating that interpreting phenomena of incommensurability – defined as the rational admission, in differently contextualized inquiries, of differently featured conceptual clusters for same terms (of differently featured conceptual schemes hosting same terms) – in competing perspectives as cognitive limitations is only occasionally appropriate. Notably, such an interpretation cannot apply when taxonomic incommensurability occurs.

However, the developments proposed in the previous section demonstrate that this claim from Kuhn can be denied. The competing interpretation of incommensurability applies far more systematically and permits establishing the possibility of compatibility between incommensurability and scientific realism. In particular, the fact that the mismatches between the conceptual schemes of differently contextualized inquiries are constituted by mere adjustments, or by more radical modifications involving taxonomic incommensurability, is not a decisive criterion with respect to the validity of the competing interpretation. In our account, the pivotal criterion is rather whether or not differently contextualized inquiries tune to same or overlapping domains of investigation. Insofar as such inquiries are tuned to same domains of investigation, they can deploy same terms to replay shared introducing events (contextualized rigid designation), even in the presence of taxonomic incommensurability. This provides a mechanism of reference stabilization for common terms hosted in conceptual schemes pertaining to single domains of investigation (considered in diachronic as well as synchronic perspectives). Accordingly, phenomena of incommensurability can be understood as cognitive imperfections compatible with scientific realism, as long as they stand between rational inquiries tuned to same or overlapping domains of investigation. Nonetheless, some fruitful insights can be acknowledged in Kuhn’s criticism against the possibility to interpret incommensurability in a scientific realist reading. Although his attack largely missed the target, it may nevertheless reflect the legitimate thought that incommensurability should not always be considered as cognitive imperfection.

As developed throughout the present chapter, our approach based on Putnam’s pragmatist theory of knowledge does justice to this idea in opening the possibility for non-competing perspectives upon phenomena of incommensurability. But in no case such perspectives are rendered meaningful at the cost of admitting systematic reference shifting across (taxonomically) incommensurable conceptual schemes. In particular, descriptivism about reference, which Kuhn seems to endorse (Sankey 2009, 197), is not admitted in our framework. Such theses about reference shifting would prevent any competing reading of phenomena of incommensurability. To discuss properly the possibility of compatibility between scientific realism and the admission of non-competing perspectives upon incommensurability, a brief reminder of the general spirit of our context-sensitive and realist account may prove valuable. Based on commonsense realism, Putnam’s pragmatist theory of knowledge opposes to any metaphysical realist view that reduces reality to a fixed totality of mind-independent objects being unique ways along the absolute God’s

eye point of view. Rather, it recognizes that an entity of mind-independent reality can be many different ways along different situated points of view<sup>160</sup>. As already indicated at the beginning of this analysis of the compatibility between incommensurability and scientific realism, such a conception of mind-independent reality does not conflict with the metaphysical thesis of scientific realism. This component of scientific realism needs not to be associated with stronger metaphysical realist commitments claiming that mind-independent reality is only one way. This aspect of commonsense realism is crucial here because it implies that different domains of investigation can legitimately exist not only when different entities are studied. Domains of investigation can also be different when they reflect different tunings to different sets of points of view along which same entities are different ways. Deprived from this feature, phenomena of incommensurability could only be interpreted in competing perspectives as cognitive limitations. Since only the second thesis of metaphysical realism (which stipulates the uniqueness of the ways of being of real entities) is rejected in Putnam's pragmatist theory of knowledge while the first one (which claims the mind-independence of real entities) is preserved, both competing and non-competing perspectives are available.

Properly grasping the manner these perspectives are articulated requires remobilizing the analysis of the impact of the indispensable contextual influences upon rational inquiries. As it has been exposed, differently contextualized inquiries can tune to same (or overlapping) or different domains of investigation. In addition, differently contextualized inquiries can elaborate and admit incompatible (and possibly taxonomically) conceptual schemes hosting same terms, under the guidance of incompatible systems of rational acceptability. Importantly, these two types of irreducible contextual influences are decoupled. They do not necessarily occur together. In fact, differently contextualized inquiry can tune to same or overlapping domains of investigations, while nonetheless producing incompatible conceptual schemes hosting same terms. In this case, these shared terms refer to same entities being same ways along same points of view. Phenomena of incommensurability can be interpreted in competing perspectives as cognitive limitations. But, differently contextualized inquiries can also produce incompatible conceptual schemes hosting same terms, while, this time, tuning to different domains of investigations. In such configurations, shared terms designate different ways same entities are along different points of view (the fact that same entities are pointed is ensured through proto-rigid designation). Incommensurable conceptual schemes thus constitute non-competing attempts at describing different domains of investigation. Rejecting all but one would not be an improvement. The phenomena of incommensurability occurring in non-competing perspectives, between rational inquiries tuned to different domains of investigation, can be understood as significant. In sum, non-competing perspectives are not admitted in our account through descriptivism about reference implying that reference is disrupted across incommensurable conceptual schemes. Rather, non-competing perspectives are deployed when the reference of the shared terms and the (incommensurable) features of the descriptions of their referents co-vary because of contextual divergences. Non-competing perspectives are admissible when these divergences lead differently contextualized inquiries both to tune to different domains of investigations and to elaborate incommensurable conceptual schemes.

It becomes now possible to analyze to which extent the admission of reference shifting and of incommensurability qua significant may prove compatible with the epistemic thesis of scientific

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<sup>160</sup> It may even be possible for an entity to possess different types of essential properties and to be different essential ways.

realism. Up to this point, the possibility of cohabitation has been established only between the epistemic thesis of scientific realism and the phenomena of incommensurability occurring in competing perspectives, between differently contextualized inquiries tuned to single or overlapping domains of investigation. The differently featured (and possibly taxonomically incommensurable) conceptual schemes, endorsed through incompatible systems of rational acceptability of inquiries tuned to single or overlapping domains of investigation, can be seen as competing attempts (that can be more or less successful) at describing the ways certain mind-independent entities are along a specific set of points of view. This conclusion does not hold for incommensurability between inquiries tuned to different domains of investigation. The epistemic thesis cannot apply in these configurations because conceptual schemes bearing upon different domains of investigation cannot be compared as competing descriptions of same ways of being of same entities. The assessment of the conflicts this point may generate with scientific realism is highly dependent upon background commitments with respect to the features that should possess the rational procedures deployed in scientific investigations as well as the results they permit achieving. One can first consider the consequences of admitting that incommensurable conceptual schemes can be legitimately endorsed in virtue of the incompatible systems of rational acceptability of inquiries tuned to different domains of investigation. In such cases, pluralism about systems of rational acceptability is legitimate and significant. This does not threaten scientific realism per se. Rather it conflicts with methodological monism claiming that theory evaluation should be governed by a single method, universally applying across time and across scientific fields (Sankey 2000a, 211). Second, one can focus on the fact that *incompatible* (and possibly *taxonomically incommensurable*) conceptual schemes legitimately coexist when bearing upon different domains of investigation. The admission of pluralism about incompatible conceptual schemes describing different ways of being of same entities does not only conflict with methodological monism, but also with any version of scientific realism requiring the settling of a unique and absolute first-grade description of mind-independent reality (as it might be the case in a metaphysical realist approach).

But methodological monism and the requirement for a unique first-grade conceptual scheme do not appear as necessary components of scientific realism. Among the definitions of scientific realism we mobilized at the beginning of the present discussion (Psillos 2000, 706-707, Sankey 2000a, 226 note 6, Almeder 2008, 94-95, Baghramian 2008, Devitt 2008, Ladyman 2012, 33, Chakravartty 2014), none associates methodological monism with scientific realism. Only Baghramian (2008) explicitly formulates a requirement for the settling of a unique correct description of mind-independent reality. In our account of rational inquiry based on Putnam's pragmatist theory of knowledge, methodological monism and the requirement for a unique first-grade conceptual scheme are clearly rejected (as extensively developed in the previous chapter). In this framework, the reconciliation of incommensurability (in both competing and non-competing perspectives) and scientific realism seems thus possible. On the one hand, incommensurability between inquiries tuned to single or overlapping domains of investigation becomes compatible with scientific realism when interpreted as reflecting cognitive limitations or imperfections. On the other hand, incommensurability between inquiries tuned to different domains of investigation can be understood as significant without necessarily conflicting with scientific realism. In our account of rational inquiries based on Putnam's pragmatist theory of knowledge (in which methodological monism and the requirement for a unique first-grade conceptual scheme are not admitted), it is possible to advocate in favor of scientific realism without scientific imperialism. This expression initially reflects Putnam's rejection of naturalism or physicalism. For him, not only the descriptions produced by natural sciences are bona fide discourses capable of truth and objectivity (see for

instance: Putnam 2012 [2004], 112, 2012b [2001], 402-403, De Caro and Macarthur 2012, 16-17). In light of the above, the signification of ‘scientific realism without scientific imperialism’ can be extended to also apply in the restricted domain of descriptive inquiries. It would then indicate that no particular scientific discipline should impose its system of rational acceptability and the discourse it produces. No scientific inquiry can produce a complete description of a metaphysically sanctified set of objects exhausting all that could be correctly and objectively asserted about mind-independent reality (Putnam 1981, 147, 2012b [2010], 105-106, De Caro and Macarthur 2012, 15 and 18). According to such an understanding, the epistemic thesis of scientific realism needs not applying between inquiries tuned to different domains of investigation. When happening across inquiries tuned to different domains of investigation, contextually-driven divergences between systems of rational acceptability and between the consequently elaborated and admitted conceptual schemes – that is to say, phenomena of incommensurability in non-competing perspectives – do not have to be resorbed and to give up their seats to a single overarching system of rational acceptability permitting settling or approximating a unique true first-grade conceptual scheme about mind-independent reality (as if only a single domain of investigation could be legitimate).

In conclusion, our account of rational inquiry, based on Putnam’s pragmatist theory of knowledge, permits preserving the possibility of compatibility between incommensurability and scientific realism. In this respect, this account scores better than the metaphysical realists and internalists (or Kantian-like) readings of incommensurability. In the framework of metaphysical realism, incommensurability has to be systematically interpretable as reflecting mere cognitive limitations to allow compatibility with scientific realism. In the internalists or Kantian environments, incommensurability does not need being integrally discarded as cognitive limitations, but scientific realism is impossible to defend because there can be neither reference to, nor correspondence with, mind-independent reality. Contrastively, in the present approach, scientific realism can be defended in combination with incommensurability, rather than despite it. Incommensurability is not only interpreted as cognitive imperfection when occurring between inquiries tuned to single or overlapping domains of investigation. It is also preserved as significant when standing between inquiries tuned to different domains, without preventing the endorsement of scientific realism.

Nevertheless, a crucial and complementary remark is in order here. It is important to insist on the fact that full compatibility between incommensurability and scientific realism is not safeguarded yet. Up to this point, it is only demonstrated that the compatibility is not forbidden in principle. To achieve a full compatibility between incommensurability and scientific realism (and its epistemic thesis), the argument proposed here needs to be complemented through an analysis of the epistemological power that descriptive scientific investigation may effectively possess. It is necessary to show that scientific investigation are provided with tools powerful enough to identify the truer among several rationally admitted conceptual schemes bearing upon single domains of investigation (this amounts identifying the system of rational acceptability that is the more truth-conducting). But even this may not be sufficient. It presupposes that incommensurability can be interpreted as cognitive imperfections. But it can also be significant. Therefore, before deploying such tools, rational inquirers confronted with phenomena of incommensurability should be able to determine whether inquiries they belong to tune to single (or overlapping) domains of investigation or to different domains. A full-fledged discussion of the possibility of settling these supplementary elements for compatibility largely outruns the limited scope of the present work. Nevertheless, few



indications are provided in next section concluding the current chapter in returning to the topic of evaluative rational inquiries.

## 6. Incommensurability and evaluations

During the previous sections 4 and 5, phenomena of incommensurability have been discussed through a restricted focus upon descriptive inquiries only. To conclude this chapter, evaluative inquiries can be fruitfully reintroduced in the picture. First, our context-sensitive and realist account also applies to the phenomena of incommensurability involving evaluative terms and evaluative judgments they express. Briefly reminded, the semantic functioning of evaluation can be approached as follows: a descriptive term, taken in one of its uses, receives a conceptual cluster in which (among other elements) it is associated with an evaluative term and with other terms describing the surrounding situation. This process reflects the expression of an evaluative judgment about the term's referent situated in a specific practical problem. On this ground, phenomena of incommensurability can occur. Differently contextualized rational evaluative inquiries can produce, under the guidance of incompatible systems of rational acceptability, conceptual clusters for same terms that embed incompatible (and possibly taxonomically incommensurable) evaluations. To deploy the grid of analysis proposed in the previous sections, the ideas of same (or overlapping) domains of investigation and of different domains of investigation requires a slight extension. Domains of investigation will be said identical or overlapping when evaluated entities are same ways along same points of view *and* when surrounding practical problems are identical (involving same entities being same ways). When involving evaluations, more possibilities are available for inquiries to be considered as tuned to different domains of investigation. Domains of investigation are different if evaluated entities are different ways, even in same practical problems. They are also different if evaluated entities are same ways in different practical problems. Practical problems can be different because involving different entities, but also when involving same entities being different ways. Finally, domains of investigation are different when evaluated entities are different ways in connection with different practical problems. Based on these distinctions, the incompatible evaluative conceptual clusters for same terms, which are elaborated in differently contextualized inquiries tuned to same or overlapping domains of investigation, can be interpreted in competing perspectives as conflicting evaluations of same entities being same ways in same practical problems<sup>161</sup>. Their coexistence can be seen as cognitive imperfection. Correcting or replacing conceptual clusters to settle a unique one would count as an improvement. By contrast, such incompatible evaluative conceptual clusters for same terms can be elaborated in differently contextualized inquiries tuning to different domains of investigation. Their coexistence can then be understood in non-competing perspectives as legitimate and significant.

Furthermore, the phenomena of incommensurability involving evaluations can take other forms (which do not involve incompatible evaluations). In particular, same descriptive terms may be associated with compatible though different evaluative conceptual clusters (mobilizing different

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<sup>161</sup> Obviously, this mobilizes the fact that, according to Putnam's pragmatist theory of knowledge, rational acceptability and truth are distinguished, even in the case of evaluative inquiries. As exposed in the section 1.3.2 of previous chapter, the truth of evaluative claims is grounded in the ability of actual persons' at conceiving a distinction between what is valued and what is valuable, or between what actual persons think that should be the case and what should really be the case. Accordingly, systems of rational acceptability of evaluative inquiries might conduct to the establishment of false or imperfect evaluations.

evaluative notions). This corresponds to incommensurability in the broad sense delineated initially in section 2. Obviously, the conceptual clusters at stake being compatible, such phenomena of incommensurability are to be understood in non-competing perspectives. When inquiries producing them tune to same or overlapping domains of investigation, the conceptual clusters they produce all bear on a unique way of being of an entity that is evaluated in a unique practical problem. These conceptual clusters can be unified and associated with the same use of the descriptive term pointing the evaluated entity. The inquiries produce mutually enriching results leading to the settling of a unique conceptual cluster expressing different evaluations of the same entity being the same way in the same practical problem. In the same vein, inquiries elaborating different and compatible evaluative conceptual clusters for a same term may also tune to different domains of investigation in which an evaluated entity is the same way but in different practical problems. As just before, a unique conceptual cluster could be elaborated and associated with the use of the descriptive term pointing the commonly evaluated entity being a specific way. This conceptual cluster would host different complementary evaluations of this entity being this way in different practical problems. Contrastively, different but compatible conceptual clusters for a same term could be produce in inquiries tuned to different domains of investigation in which the evaluated entity is different ways along different points of view. In such cases, the conceptual clusters could not be unified. They are rather legitimately associated with different uses of the descriptive term pointing the evaluated entity.

Finally, an addition form the phenomena of incommensurability involving evaluations can take is worth-mentioning. Incommensurability may stand between a descriptive inquiry and an evaluative investigation. The former may produce a specific conceptual cluster for a term hosting a description of its referent (let's name it the 'descriptive conceptual cluster'). The evaluative inquiry could settle a differently featured conceptual cluster hosting an evaluation of the term's referent (although this conceptual cluster would at least include the description of the surrounding practical problem, we can call it the 'evaluative conceptual cluster'). On such grounds, two classes of configurations can be distinguished. First, the evaluative and descriptive conceptual clusters may be compatible. Incommensurability should then be interpreted in non-competing perspectives and the analysis proposed in previous paragraph could be remobilized. Second, the evaluative and descriptive conceptual clusters may be incompatible (and possibly taxonomically incommensurable). In such cases, non-competing interpretations could be possible only between inquiries tuned to different domains of investigation including different ways of being of the entity referred to by the shared term (different domains of investigation in the restricted sense of the previous sections). Accordingly, both conceptual clusters are associated with different uses of the same term. One of them hosts a description of a way of being of the referred to entity. The other integrates an evaluation of another way of being of the same entity, accompanied by a description of the surrounding practical problem (and possibly of the evaluated entity). Nevertheless, the inquiries producing the incommensurable evaluative and descriptive conceptual clusters may tune to same or overlapping domains of investigation. In such a configuration, the content of the conceptual clusters would compete. These conceptual clusters should be unified, but could not be gathered without modifications<sup>162</sup>. In sum, the analysis proposed here shows (or at least suggests in

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<sup>162</sup> If the evaluative conceptual cluster hosts a description the way the evaluated entity is, this description may be incompatible with the one hosted in the descriptive conceptual cluster. Even when the evaluative conceptual cluster includes no description of the way the evaluated entity is, the incompatibilities could take the form of taxonomic incommensurability between the description of the way the entity is, as recollected in the descriptive conceptual cluster, and the content of the evaluated conceptual cluster, composed by the evaluation and the description of the surrounding practical problem.

a speculative manner) that the context-sensitive and realist account of phenomena of incommensurability laid out in the previous sections does not restricts to descriptions, but also applies when evaluative rational inquiries are involved.

This being said, the fact that our context-sensitive and realist account may be generalized to apply to evaluations is not the most important insight the present general approach, based on Putnam's pragmatist theory of knowledge, brings to the fore with respect to the connections between phenomena of incommensurability and evaluative matters. In fact, the complete elaboration of our context-sensitive and realist account of phenomena of incommensurability seems to crucially require that evaluative matters themselves can be the object of genuine rational inquiries. This account opens conceptual room for non-competing perspectives upon incommensurability, without discarding the possibility for competing perspectives. Alternatively phrased, our account shows that contextually-driven divergences in systems of rational acceptability and in the consequently elaborated conceptual schemes are not necessarily contextual pollution, without preventing this reading in specific circumstances. Such a balanced account is secured in evidencing that these divergences in the cognitive functioning of inquirers belonging to differently contextualized investigations can be accompanied (or not) by contextually-driven divergences in tunings to domains of investigation. However, merely opening such a possibility leaves untouched the issue of effective assessment when confronted with actual phenomena of incommensurability. For instance, only the possibility for compatibility between incommensurability and the epistemic thesis of scientific realism has been ensured until now. Establishing full compatibility would in addition require providing actual inquirers with possibilities for comparatively assessing incompatible systems of rational acceptability and divergent (potentially taxonomically incommensurable) conceptual schemes. Deprived from such possibilities, competing perspectives upon phenomena of incommensurability would be possible in the abstract, but truth could not be objectively pursued in practice. Similarly, only the possibility for the legitimate coexistence in non-competing perspectives of incommensurable inquiries grounded in different contexts is vindicated up to this point. Tools for effectively assessing whether differently contextualized inquiries tune to different domains of investigation, or whether they provide competing outcomes bearing on same or overlapping domains of investigation, remain to be provided. Broadly speaking, these questions all amounts wondering about the possibility for *evaluating* the legitimacy of contextual sources influencing incommensurable inquiries, either to determine to which extent contextually-driven divergences are admissible, or to comparatively assess competing context-sensitive systems of rational acceptability and the associated conceptual schemes. In consequence, the fact that Putnam's pragmatist theory of knowledge grants a full rational status to evaluative investigations is crucial for complementing our context-sensitive and realist account of phenomena of incommensurability. This point was already crucial for considering rational inquiries (of any type) as *objective* processes of knowledge production (as exposed throughout the two first chapters of this work). It appears now that it is also crucial for *objectively* handling the phenomena of incommensurability occurring between differently contextualized rational inquiries. Developing in more detail such processes of objective management of incommensurability – that may be fruitfully considered in the framework of a kind of inter-paradigm dialogue – is far beyond the scope of the present work that restricts to establishing its possibility. Few leads are nonetheless proposed in the general conclusive section.

## Conclusion

To put it synthetically, the main result of the present study is the settling of and context-sensitive *and* realist account of phenomena of incommensurability. According to this account, these phenomena can be understood as standing between differently contextualized rational inquiries that elaborate and admit differently featured (and possibly incompatible) conceptual clusters for same terms (conceptual schemes hosting same terms) under the guidance of incompatible systems of rational acceptability. As a core feature of this account, two types of interpretation for these phenomena of incommensurability have been distinguished. First, differently contextualized rational inquiries can tune to same or overlapping domains of investigation (same or overlapping pools of entities being particular ways along same sets of points of view). Divergences between the conceptual schemes produced by these inquiries can then be interpreted in *competing* perspectives as cognitive limitation or imperfection, to be removed if possible. Second, differently contextualized rational inquiries may tune to different domains of investigation. These domains of investigation can include same entities being different ways along different points of view. In such cases, the concerned inquiries can legitimately establish differently featured (possibly incompatible) conceptual schemes. Their co-existence can be interpreted in *non-competing* perspectives as legitimate and significant. The fact that incompatibilities between the conceptual schemes elaborated by differently contextualized inquiries can reach taxonomic incommensurability does not impact these conclusions. Furthermore, the proposed context-sensitive and realist account of incommensurability permits propagating these results to Kuhn's controverted World-Change thesis. It is possible that inquirers belonging to differently contextualized rational investigation experience limited domains of the world in different ways. Our study shows that in this regard too two interpretations are possible. In competing perspectives, mismatches between the experiences of differently contextualized inquirers can be understood as involving misperception and hallucination. In non-competing perspectives, there can be legitimate divergent experiences of different, though genuine, aspects of same real entities or real situations.

An additional important result of the present work is that the developed context-sensitive and realist account permits reconciling incommensurability and scientific realism. In competing perspectives (as may be the case in conflicts across scientific revolutions or in the framework of sciences undergoing crisis states), the incommensurable conceptual schemes produced by differently contextualized rational investigations (or sub-groups of rational inquirers) can be considered as more or less true descriptions of same or overlapping domains of investigation. This conclusion holds even when taxonomic incommensurability occurs. Consequently, the meaningfulness of the notion of scientific progress is preserved. The theories elaborated and admitted through rational inquiries situated in successive historical contexts can be seen as competing accounts of same or overlapping domains of investigation. These successive inquiries can all be seen as seeking the same true conceptual scheme (truth is accounted for as correspondence with ways real entities of mind-independent reality are). However, non-competing perspectives are also possible when incommensurability stands between differently contextualized rational investigations tuned to different domains of investigation. In these cases, shared terms refer to different ways same entities are along different points of view. Their association with differently featured and possibly incompatible conceptual clusters – their inclusion in differently featured and possibly incompatible conceptual schemes – is therefore legitimate. There can be plurality of true conceptual schemes about same real entities. In non-competing perspectives,

phenomena of incommensurability can reflect the fact that differently contextualized inquiries pursue the elaboration of different true conceptual schemes about same entities. In such perspectives, phenomena of incommensurability do not threaten scientific realism (which needs to be defended only in competing perspectives).

As pointed out in the introduction with the reference to the work of Sankey (2009), what can be said about phenomena of incommensurability highly depends on the philosophical backgrounds on the ground of which these phenomena are considered. In this regard, the core contention of the present study is that Putnam's philosophical work about realism, meaning, reference, truth and rationality permits settling an adequate background to analyze and interpret the notion of incommensurability. This main claim now proves fully vindicated. Through the detailed analysis of Putnam's philosophical trajectory with respect to the topics of realism, meaning, reference, truth and rationality that have been proposed in the first chapter, a systematized and carefully extrapolated synthesis of Putnam's positions during the commonsense realist period – a period that is fruitfully seen as an outcome of a complex path through metaphysical realism and internal realism – has been established under the name 'Putnam's pragmatist theory of knowledge'. In turn, this theory of knowledge provided the ground for the elaboration of a general picture of rational inquiry (second chapter). Equipped with such a general picture, the road was opened for the delineation of a context-sensitive and realist account of incommensurability (third chapter). As a first step, a precise definition of phenomena of incommensurability understood as features of cognitive functioning of rational inquirers has been laid out. Incommensurability occurs when, in the framework of differently contextualized rational investigations, differently featured (and possibly incompatible) conceptual clusters are associated with *common* terms (differently featured conceptual schemes hosting *same* terms are elaborated) under the guidance of *incompatible* systems of rational acceptability. In itself, this definition says very few about the consequences of incommensurability with respect to topics like realism, meaning, reference, truth and rationality. It is at this step that the original features of Putnam's theory of knowledge release their full potential. They permit developing a context-sensitive and realist account according to which incommensurability can be interpreted either in competing or in non-competing perspectives and can be consequently reconciled with scientific realism.

To highlight this breakthrough, these original features can be synthetically recalled. Putnam's pragmatist theory of knowledge has been established in considering Putnam's philosophical journey through the lens of two guiding principles or two maxims that, to our mind, captures the spirit of Putnam's philosophical gesture. First, the semantic maxim indicates that it is necessary to carefully assess to which extent terms employed in a given context really make sense *in this precise context*. Second, the pragmatist maxim stipulates that what matters in our life should also matters in philosophy. The conjunction of these maxims seems to us extremely helpful to understand the evolution of Putnam's position, in particular about realism. In fact, two broad types of realism have been successively endorsed and rejected by Putnam. Initially, Putnam implicitly admits metaphysical realism according to which reality is conceive as composed by a fixed totality of mind-independent objects being unique ways along the God's eye point of view. Putnam progressively realizes that the notion of such a mind-independent reality, beyond actual person's cognitive sphere and beyond the actual person's point of view, cannot be semantically consistent. In compliance with the semantic maxim, metaphysical realism must be abandoned. However, in virtue of the pragmatist maxim, the notion of mind-independent reality cannot be merely discarded. Putnam then attempts at reconstructing realism from within the actual person's

point of view through internal realism (which can be seen as tinged with Kantianism). Nevertheless, internal realism proves unsatisfying. Either it becomes a metaphysical realism in disguise and reintroduces a semantically inconsistent notion of mind-independent reality, posited beyond the actual person's point of view (inadmissible in virtue of the semantic maxim), or it degenerates into antirealism, relativism and even solipsism (radically conflicting with the pragmatist maxim). A tension thus seems to exist between the requirements expressed by the two maxims. Putnam believes that an epistemological lock prevents introducing, in a semantically consistent way, a robust notion of mind-independent reality. He characterizes this philosophical situation as an antinomy of realism. As we have seen, this antinomy also impacts the discussion of incommensurability. Restricted to metaphysical realism, only competing perspectives could be possible. An associated account of incommensurability could be only realist but not context-sensitive. Retreating to internal realism (under its antirealist form) would render non-competing perspectives possible. But this retreat would also render them unavoidable. Incommensurability could be accounted for with context-sensitivity but not in a realist manner.

To escape this antinomy of realism, Putnam indicates that the interfacial understandings of conception and perception should be abandoned. According to these interfacial approaches, perceiving reality is only having a representation of it in one's inner theater. Reality causes (at least partially) perception, but is never directly cognitively accessed itself. Similarly, conceiving is a purely mental activity which, when correct, only represents external mind-independent reality. In such settings, conceiving the relationships between mind-independent reality and what happens in the actual person's cognitive sphere becomes extremely problematic. Once the interfacial understandings of perception and conception are rejected, the notion of mind-independent reality becomes semantically consistent because mind-independent reality is directly encountered from within the actual person's point of view. Conceiving and perceiving are world-involving abilities. Correct conceptions are not mere representations of reality. Rather, correctly conceived ways something is and ways this something actually is are one and the same (rejection of the dichotomy between properties and concepts). Similarly, veridical apperception based on correct conception is direct experience of genuine aspects of mind-independent reality. Furthermore, recognizing that mind-independent reality is directly encountered from within the actual person's point of view permits reconsidering the very idea of mind-independent reality, by contrast with the conception embedded in metaphysical realism. Abandoning the interfacial understandings is also abandoning the God's eye point of view. Reality and real entities are not a unique way along the God's eye point of view. On the contrary, reality and real entities can be many different ways along situated points of view actual persons can tune to, notably in function of contexts they evolve in. With this move, Putnam combines the most important features of both metaphysical and internal realisms (respectively mind-independence of reality and pluralism about the ways it is) to forge what can be called commonsense realism. This shift in the manner mind-independent reality and real entities are conceived is crucial for combining flexibility and realism when discussing incommensurability. It permits claiming that same entities can be accounted for either in competing perspectives (when different inquiries bear on same ways these entities are along same points of view) or in non-competing perspective (when different ways these entities are along different points of view are under scrutiny).

The evolution of Putnam's idea with respect to meaning and reference, and more precisely regarding issues of stability of the latter under variations of the former, are also particularly interesting. In his initial phase, Putnam already criticizes the idea that terms' meaning (understood

as conceptual content that can be recollected in actual persons' psychological or mental states) determines reference. This Fregean view can be connected with descriptivism about reference. With his famous twin earth story, Putnam makes a case in favor of semantic externalism. He consequently defends a causal theory of reference based on essentialism and metaphysical realism. Terms' reference is determined at the occasion of introducing events during which real entities are indexically singled out. Terms then rigidly refer (independently of variations in their meaning) to entities sharing same essential properties as the ones singled out during the corresponding introducing events. In this metaphysical realist framework, incommensurability can be interpreted only in competing perspectives because terms always refer to, independently of the contexts they are employed in, same entities being unique ways. But metaphysical realism, and the associated essentialism supporting rigid designation, are semantically inconsistent. Securing the possibility for reference to entities of a mind-independent reality, which is never cognitively accessed from within the actual person's point of view, is a hopeless task. Restricting to the actual person's point of view and turning to internal realism, Putnam tries to solve the issue of reference and its stability through a kind of verificationist semantics he hopes combining with semantic externalism. However, taken in its semantically consistent but antirealist form, internal realism fails at preserving stability of reference. Actual world's objects can be straightforwardly referred to because they are self-identified with conceptual schemes employed to conceive them. But in virtue of this very process of self-identification, actual objects themselves changes under modification of admitted conceptual schemes. Reference of terms hosted in differently featured conceptual schemes cannot be stable. Accordingly, incommensurability could only be interpreted in non-competing perspectives in internal realism since incommensurable conceptual schemes hosting same terms could never bear on same entities being same ways. Moreover, preserving the semantic consistency of Putnam's verificationist semantics leads it dangerously close to solipsism (which, in virtue of the pragmatist maxim, cannot be accepted). The same tension between the semantic and pragmatist maxims rearises at this semantic level.

Again, the rejection of the interfacial understandings of perception and conceptions permits relaxing this tension. Provided that entities of mind-independent reality become available from within the actual person's point of view (no ontological gap between reality and actual persons' cognitive spheres), it becomes semantically consistent to hold that terms' reference is indexically established during introducing events. Semantic externalism and causal theory of reference of Putnam's early phase can be validly re-mobilized. Nevertheless, referents singled out during introducing events are not real entities being unique ways along the absolute God's eye point of view. Rather, in compliance with commonsense realism, introducing events permits singling out entities being specific ways along particular points of view actual persons can tune to, notably in function of the specificities of contexts they evolve in. Consequently, in addition to the remobilization of semantic externalism, Putnam also proposes a semantic contextualism that can be understood as indicating that same terms may possess plurality of uses along which they refer to same entities being different ways along particular points of view. Uses of terms deployed in particular circumstances are selected through the context-sensitive ability of attunement of actual language-users. In this framework, rigid designation can be remobilized under an updated and twofold form. First, reference of each use of terms can be seen as determined during introducing events at the occasion of which entities are indexically singled out as being specific ways along contextually tuned to points of view. Language-users can then replay these contextualized introducing events to rigidly refer to these entities being these specific ways (contextualized rigid designation). Second, proto-rigid designation ensures that same terms can be understood as

referring, in all their uses, to same entities (namely, to entities possessing the same essential properties as the entities singled out during corresponding introducing events). This renewed semantic account is also crucial for our context-sensitive and realist account of incommensurability<sup>163</sup>. When hosted in differently featured (and possibly incompatible) conceptual schemes, same terms can refer either to same entities being same ways (competing perspectives) or to same entities being different ways (non-competing perspectives). The fact that incompatible conceptual schemes hosting same terms may be taxonomically incommensurable does not change the conclusion.

The same type of progressive picture can be drawn for the topic of truth. In compliance with the pragmatist maxim, truth and rational acceptability needs to be sharply distinguished to escape deflationism and relativism. In his early metaphysical realist phase, Putnam admits the idea of a unique context-independent property of truth as correspondence with the unique ways entities of mind-independent reality are along the absolute God's eye point of view. Truth is thereby non-epistemic and independent of the assessments of rational acceptability. But this view is not semantically consistent and has to be rejected to comply with the semantic maxim. With internal realism, Putnam hopes solving the issue in defining truth as idealized rational acceptability under sufficiently good epistemic conditions. Nonetheless, the notion of sufficiently good epistemic conditions becomes itself semantically inconsistent if one requires from it to ground the distinction between truth and rational acceptability. To perform such a task, the fact that epistemic conditions are sufficiently good needs to be determined in function of mind-independent reality conceived along the God's eye point of view. In accordance with the semantic maxim, this move cannot be admitted. But deprived from a robust distinction between truth and rational acceptability, internal realism heads toward deflationism and relativism, and conflicts with the pragmatist maxim. The same tension reappears. And again, the rejection of the interfacial understandings of conception and perception permits circumventing the problem. In fact, Putnam deploys a Tarskian approach to claim that understanding that a statement is true and understanding the statement are one and the same thing. As conceiving, understanding counts among the world-involving abilities of language-users. When they properly understand (descriptive) statements, language-users conceive a way reality is if the statement is true. Truth as correspondence can thus be reintroduced. But it is not a unique context-independent property of correspondence with entities of mind-independent reality being unique ways along the God's eye point of view. On the contrary, understanding (descriptive) statements amounts conceiving ways some entities are along contextually tuned to points of view. Truth can be seen as correspondence with these context-sensitively selected ways real entities of mind-independent reality are along particular points of view. As in the previous cases, this reconsidered notion of truth is central for our context-sensitive and realist account of incommensurability. In competing perspectives, incommensurable conceptual schemes can be compared as more or less true, with truth as correspondence to *same* ways same real entities are along *same* points of view. Systems of rational acceptability leading to their elaboration and admission can be compared as more or less truth-conducting. In non-competing perspectives, incommensurable conceptual schemes can be more or less true, but with truth as correspondence to *different* ways same entities are along *different* points of view. Therefore, they cannot be compared. Pluralism can be admitted about these conceptual schemes and about the associated

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<sup>163</sup> As already mentioned in section 5.2 of the third chapter, the present account is largely compatible with Sankey's account of reference and (taxonomic) incommensurability based on causal descriptivism (Sankey 1994, chapters 2 and 5, 2008b, chapter 4). It is nonetheless radically original in introducing the possibility for non-competing perspectives upon phenomena of incommensurability. Accordingly, it does not (only) intend to defend scientific realism against incommensurability. Rather, it proposes reconciling both notions.



systems of rational acceptability. In addition, it is important to mention that, already in his internalist phase, Putnam indicates that truth (or an ideal of validity beyond rational acceptability) is not a property that should be confined to descriptive matters. It also applies, notably, in evaluative ones. Rephrased in the later framework of commonsense realism, nothing prevents actual persons to understand what it means for evaluative statements to be true (to be valid independently of their judgements of rational acceptability). They may for instance have rationally accepted evaluative judgements that later proved being erroneous. This is in line with Putnam's intense work to undermine the fact-value dichotomy and to oppose non-cognitivism (or associated views such as expressivism, emotivism, voluntarism or prescriptivism) about evaluative questions (Putnam 1981, 1990d, 2002c, 2008c, Bernstein 2010, 156).

These original features about realism, reference and truth, synthetized and extrapolated in Putnam's pragmatist theory of knowledge permits drawing a general picture of rational or scientific inquiry that is in agreement with Kuhn's claim about the irreducible role of social, cultural or historical contexts. But this is not achieved in the radical and somehow antirealist and relativist way Kuhn defends this point. In particular, the present picture departs from Kuhn's neo-Kantianism according to which the conceptual schemes resulting from rational investigations largely shape reality. In this respect, a crucial distinction is settled between two types of contextual influence. First, there is no unique first-grade conceptual scheme rational inquiries could seek establishing that would describe the unique ways real entities are along the absolute God's eye point of view. Reality is many different way along specific points of view. There can be no knowledge about reality without tunings to particular points of view. This process of tuning is irreducibly context-sensitive. Notably, it mobilizes inquirer's ability of attunement that is itself context-sensitive. Therefore, all rational inquiries are tuned specific domains of investigation (pools of entities being given ways along specific sets of points of view) in function of the particularities of the contexts in which they take place. There could be no rational inquiry without such context-sensitive tunings. But, importantly, contexts only influence tunings. They do not shape the tuned to domains of investigation. Once a specific tuning is established, studied reality is what it is independently of what inquirers may believe about it. Second, the specificities of systems of rational acceptability and of the conceptual schemes they lead to elaborate and admit are also context-sensitive. Phenomena of incommensurability can thus stand between differently contextualized rational investigation endorsing incompatible systems of rational acceptability and producing differently featured (and possibly incompatible or even taxonomically incommensurable) conceptual schemes hosting same terms.

The main strength of our context-sensitive and realist account is then to permit recognizing the irreducibility and indispensability of these two types of contextual influence, without preventing that contextually-driven divergences can be interpreted, in some cases at least, as contextual pollution. From this main strength derives the possibility to preserve the meaningfulness of the notion of scientific progress and to combine incommensurability with scientific realism. In fact, contextually-driven divergences in tunings to domains of investigation (first type of contextual influence) and contextually-driven mismatches in systems of rational acceptability and in the consequently established conceptual schemes (second type of contextual influence) do not necessarily come together. When the second occurs without the first, contextual divergences can be interpreted as contextual pollution. Differently contextualized inquiries deploy same terms along same uses to stability refer to same entities being same ways along same points of view. The divergent conceptual schemes they produce under the guidance of incompatible

systems of rational acceptability can thus be understood as conflicting descriptions of same domains of investigation. In such configuration, phenomena of incommensurability can be interpreted in competing perspectives as cognitive imperfection. Scientific realism is defended against (taxonomic) incommensurability. Nevertheless, contextually-driven mismatches in systems of rational acceptability and in the consequently established conceptual schemes can also reflect concomitant contextually-driven divergences in tunings to domains of investigation. Then, contextually-driven divergences in systems of rational acceptability and in the associated conceptual schemes are legitimate and significant. Differently contextualized inquiries deploy same terms in different uses referring to different ways same entities are along different points of view<sup>164</sup>. This shift in reference is due to the first type of contextual influence and not to the second (which would be close to descriptivism about reference). In circumstances of this nature, phenomena of incommensurability can be accounted for in non-competing perspectives as reflecting genuine differences in the ways reality is along different sets of points of view. The articulation of these two competing and non-competing perspectives permits not only to defend scientific realism from (taxonomic) incommensurability, but, in a more accomplished manner, to reconcile them. In non-competing perspectives, phenomena of incommensurability do not threaten scientific realism. On the contrary, they enrich the possibilities for scientific investigations to explore mind-independent reality. This may be of crucial relevance when redeployed in the framework of boundary-crossing research. One can argue that different disciplines can produce differently featured account of same real things, without undermining scientific realism.

In addition to this crucial distinction between types of contextual influence, the general picture of rational inquiry proposed in this work on the ground of Putnam's pragmatist theory of knowledge provides a complementary element that is extremely important to escape the threat of relativism. In this framework, systems of rational acceptability are acknowledged as irreducibly context-sensitive, while nevertheless preserving the meaningfulness of the notion of objectivity. This point is secured in virtue of the possibility for evaluative matters to be rationally investigated. As already recalled, the notion of truth is not restricted to correspondence and descriptive issues. Evaluative judgments are also susceptible to be right or wrong beyond reasons that can be provided to admit them. Such an extension of the domain of application of truth is already crucial with respect to processes of theory (or conceptual scheme) admission, notwithstanding issues of context-sensitivity. In fact, according to Putnam these processes have to be conceived as evaluative judgments. Denying truth to evaluative matters would thus be destructive for any type of rational inquiry. As we have seen, these judgments about the reasonableness of theories (or conceptual schemes) are guided by systems of rational acceptability whose standards (such as compliance with methodological principles, relevance with respect to problematic situations and confrontation with independent facts) provide reasons to support specific judgments of reasonableness or rational acceptability. Systems of rational acceptability are tools to pursue the establishment of true theories or conceptual schemes.

This process of rational assessment and admission of conceptual schemes that is at the core of any rational inquiry applies to descriptive as well as to evaluative matters. This means that

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<sup>164</sup> Note that one cannot rule out the possibility for differently contextualized inquiries to mobilize same terms to refer to different entities. But instead of constituting a genuine phenomenon of incommensurability, this would rather amount to homonymy in virtue of what Putnam calls 'trivial semantic conventionalism' (Putnam 1975 [1975], 164-165). In such cases, it seems invalid to claim that the *same* term undergoes modifications of reference. The situation is better conceived as the deployment of two *different*, though homonymous, terms to refer to different entities in different contexts.

methods, or more broadly systems of rational inquiry as well as legitimacy of influence from contexts, can also be rationally investigated and criticized. Claims at this level are susceptible of truth or falsity and are not condemned, by principle, to be the object of endless debates. Furthermore, the reasonableness of such claims can be objectively evaluated. Notably, judgments about the reasonableness of systems of rational acceptability answer specific problematic situations (questioning the suitability of the deployment of these systems with respect to particular goals of on-going inquiries). In addition, these judgments can be guided by principles (of a methodological kind) such as, for instance, Habermas' principles of the ethics of discourse. Finally, in virtue of the rejection of the fact-value dichotomy, evaluative claims can be connected with descriptive ones, opening the possibility for confrontation with independent facts. Similarly to Laudan's normative naturalism, past successes or failures of pre-admitted systems of rationality to achieve given cognitive ends can count as reasons to admit or reject them. But importantly, these principles or standards of rational acceptability remain fallible. As it is the case for any rational inquiries, standards guiding judgments of reasonableness are no foundation for absolute certainty. Objectivity is warranted, but not absolute. Standards of rational acceptability are only tools to pursue truth. Neither they permit reaching it with certainty, nor they exhaust truth. This also holds when rational inquiries focus on meta-methodological matters or broader assessments of specific systems of rational acceptability.

In sum, recognizing that the features of systems of rational acceptability are what they are because they are influenced by specific contextual sources does not imply that these features are legitimate, that they *should* be so. They are not raw primitive elements that cannot be rationally studied and criticized. In particular, inquirers can reflexively seek the contextual sources responsible for given aspects of the systems of rational acceptability they deploy. Question like 'in virtue of which contextual elements this situation is considered as problematic or not? or 'in virtue of which contextual specificities this methodological principle is admitted?' can be rationally address. Once the contextual elements responsible for given features of systems of rational acceptability are brought to the fore, rational assessment can be deployed about the soundness of these features and about the legitimacy of the associated contextual sources. For instance, one can imagine a cultural and historical context according to which an epistemic principle like 'follow what is agreeable to reason' might be admitted. That this might be the case in a certain context does not mean that it should be and that the principle cannot be criticized. Meta-methodological inquiries (if not commonsense assessments) might easily conclude that such a principle should not be followed, and should not have been followed even in the mentioned fictional context it was actually followed. This possibility for the rational assessment of systems of rational acceptability and of associated contextual sources is also a key component of our account of incommensurability. When phenomena of incommensurability occur between differently contextualized rational inquiries, divergences between systems of rational acceptability and corresponding mismatches in contextual sources can be rationally investigated. First, inquirers can assess to which extent these divergences are legitimate or not and thereby determine whether phenomena of incommensurability need to be considered in competing or non-competing perspectives. Second, in competing perspectives, comparative assessments of the legitimacy of divergent sets of contextual sources, leading to conflicting systems of rational acceptability and to incompatible conceptual schemes, can be rationally conducted. Such evaluation processes permit objectively, though fallibly, deciding between the competing results of incommensurable inquiries. Therefore, the possibility – opened in our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge – for these evaluation processes constitutes a core element of our context-sensitive and realist account of

incommensurability. This core element holds relativism at bay and contributes to the reconciliation with scientific realism.

Returning to a broader perspective, the results summarized here show that our general picture of rational inquiry based on Putnam's pragmatist theory of knowledge and, the context-sensitive and realist account of incommensurability it permits settling, meet the objectives laid out during the introductory section. First, it is now vindicated that contextual influences in processes of rational theory admission and in the results consequently established is irreducible. Although contextual pollution sometimes occurs, no rational inquiry can free-stand independently of contextual elements. In this regard, our general picture of rational inquiry opens an intermediate path between the modern positivist epistemology, according to which context-sensitive processes of knowledge production are only 'pseudo-sciences', and relativist or antirealist views diluting truth and reality in contextual influences. Second, it is established that divergences in contextual influences upon rational inquiries and the consequent phenomena of incommensurability can be legitimate and irreducible. But these possible legitimacy and irreducibility are not generalized. The threats of relativism, antirealism or social constructivism are escaped. In some cases, contextual influence on systems of rational acceptability and on the associated conceptual schemes amounts to contextual pollution. Incommensurability can then be interpreted in competing perspectives as cognitive imperfection that does not threaten (scientific) realism. In other cases, contextual influences are legitimate and phenomena of incommensurability can be considered in non-competing perspectives as significant. Finally, our refined account of phenomena of incommensurability provides valuable insights to understand the diversity of contemporary scientific investigations. Notably, the possibility for non-competing perspectives on phenomena of incommensurability is also the possibility for considering that different contemporary inquiries can legitimately deploy incompatible systems of rational acceptability to settle complementary, though sometimes not directly compatible, conceptual schemes about same real entities. The vindication of this non-competing interpretation of incommensurability, as well as the broader account surrounding it, may prove fruitful with respect to boundary-crossing research in which different and sometimes incommensurable research processes need to interact to establish original scientific results about 'wicked problems' that resist monodisciplinary approaches.

As an ultimate comment, the results achieved in the present work suggest that further investigation may be fruitfully conducted about the notion of inter-paradigm dialogue. The general gesture of the present study – escaping the modern positivist mutilation of rationality and of scientific methodology, without rebounding too far toward relativism or antirealism (which would be no less mutilating) – seems indicating that the idea of rational dialogue (or rational investigation) across paradigms is meaningful. As we just show, provided that non-cognitivism about evaluations is avoided, investigations, criticisms and comparative assessments of context-sensitive components of rational inquiries and of the associated contextual specificities – that could be seen as tasks to be conducted through inter-paradigm dialogue – can be fully rational. Furthermore, in virtue of our context-sensitive and realist account of incommensurability, inter-paradigm dialogue may be conceived as a thick topic including a large variety of possible tasks. It does not need to be restricted to a mere tool deployed to *defend* rationality *against* incommensurability, as if the latter were only cognitive limitation or imperfection. Obviously, inter-paradigm dialogue could be such tool when confronted with phenomena of incommensurability in competing perspectives. But, inter-paradigm dialogue would receive a

totally different signification when deployed in non-competing perspectives, for instance across contemporary scientific disciplines, or at the occasion of boundary-crossing research initiatives.

In this line of thought, inter-paradigm dialogue could be further delineated as inter-paradigm rational inquiries conducted by inter-paradigm communities – that is to say, by groups of inquirers separated by phenomena of incommensurability – to perform different types of tasks. First, confronted with phenomena of incommensurability, inter-paradigm dialogue may be deployed to establish the precise face of these phenomena (which context-sensitive components are impacted), as well as to evidence divergences in contexts generating them. This would also amount identifying shared elements and common contextual ground. On such preliminary investigations, a second aspect of inter-paradigm dialogue could be deployed under the form of a rational investigation about the way these incompatibilities should be managed. Questions like ‘should incompatibilities be accepted and handled through a certain form of pluralism?’ or ‘should incompatibilities be considered as unacceptable and be defused?’ are susceptible of being rationally addressed. This corresponds to rationally determining whether phenomena of incommensurability should be considered in competing or non-competing perspectives. Taken together, these two first tasks of inter-paradigm dialogue would provide members of inter-paradigm communities with static pictures of the epistemic landscapes they are confronted with. Furthermore, this characterization of inter-paradigm epistemic situations may be the point of departure for other inter-paradigm tasks triggering evolutions of the epistemic landscapes under scrutiny. Provided initial inter-paradigm investigations conclude that incommensurable divergences should be removed if possible (competing perspectives), inter-paradigm dialogue may take the form of rational inquiries aiming either at establishing the superiority of one of pre-existing frameworks, or at unifying them. Contrastively, if the admissibility of pluralisms about systems of rational acceptability and about the associated conceptual schemes is vindicated (non-competing perspectives), inter-paradigm rational investigations could target the development of suitable tools to manage these pluralisms and to permit fruitful mutual enrichments between the coexisting incommensurable frameworks.

Whatever may be the precise form such inter-paradigm tasks could take, inter-paradigm dialogue, inter-paradigm communities or inter-paradigm inquiries seem crucial notions deserving further developments. They may count as key ideas to preserve objectivity in sciences undergoing crisis states, as well as to properly account for the complexity of reality and of the legitimate cognitive activities actual persons can conduct within it. Contrarily to what the modern positivist approaches suggest, the human quest for cognitive and total flourishing may prove incompatible with monolithic and universalized conceptions of knowledge. Living as full-fledged rational persons, and knowing (within) reality, may require cooperation between different types of rationalities and world-views. This is anything but condemnation to only local knowledge and subjective choices deprived from any meaningful appeal to truth beyond what seems rational to us. Rather, it constitutes an opportunity to diversify and enrich our always contextualized (cognitive) experiences; an opportunity to pursue, objectively though fallibly, constant improvement of our forms of (cognitive) life.

# Bibliography

- Achinstein, Peter. 1964. "On the Meaning of Scientific Terms." *The Journal of Philosophy* 61 (17):497-509.
- Albert, David Z, and Rivka Galchen. 2009. "A quantum threat to special relativity." *Scientific American* 300 (3):32-39.
- Almeder, Robert. 2008. "Pragmatism and Science." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 91-99. Routledge.
- Andersen, Hanne. 2013. "The Second Essential Tension: on Tradition and Innovation in Interdisciplinary Research." *Topoi* 32 (1):3-8.
- Bacon, Michael. 2012. *Pragmatism: An Introduction*. Polity Press.
- Baghramian, Maria. 2008. "Relativism about Science." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 236-247. Routledge.
- Baghramian, Maria. 2013. "Introduction: A life in philosophy." In *Reading Putnam*, edited by Maria Baghramian, 1-16. Routledge, London and New York.
- Barker, Peter. 2011. "The Cognitive Structure of Scientific Revolutions." *Erkenntnis* 75 (3):445-465.
- Belousek, Darrin W. 2005. "Underdetermination, Realism, and Theory Appraisal: An Epistemological Reflection on Quantum Mechanics." *Foundations of Physics* 35 (4):669-695.
- Ben-Menahem, Yemima. 2005. "Introduction." In *Hilary Putnam*, edited by Yemima Ben-Menahem, 1-16. Cambridge University Press.
- Bernstein, Richard J. 2005. "The Pragmatic Turn: The Entanglement of Fact and Value." In *Hilary Putnam*, edited by Yemima Ben-Menahem, 251-265. Cambridge University Press.
- Bernstein, Richard J. 2010. *The Pragmatic Turn*. Polity Press.
- Bertolet, Rod. 2008. "Philosophy of Language." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 36-46. Routledge.
- Bird, Alexander. 2000. *Thomas Kuhn*. Princeton University Press.
- Bird, Alexander. 2008a. "The Historical Turn in the Philosophy of Science." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 67-77. Routledge.
- Bird, Alexander. 2008b. "Incommensurability Naturalized." In *Rethinking Scientific Change and Theory Comparison*, edited by Léna Soler, Howard Sankey and Paul Hoyningen-Huene, 21-39. Springer Netherlands.
- Boyd, Richard. 2013. "What of Pragmatism with the World Here?" In *Reading Putnam*, edited by Maria Baghramian, 39-94. Routledge, London and New York.
- Brenner, Anastasios, Paul Needham, David J. Stump, and Robert Deltete. 2011. "New perspectives on Pierre Duhem's The aim and structure of physical theory." *Metascience* 20 (1):1-25.
- Brewer, William F., and Bruce L. Lambert. 2001. "The Theory-Ladenness of Observation and the Theory-Ladenness of the Rest of the Scientific Process." *Philosophy of Science* 68 (3):S176-S186.
- Brown, Harold I. 2005. "Incommensurability reconsidered." *Studies in History and Philosophy of Science Part A* 36 (1):149-169.
- Bunge, Mario. 1973. "Concepts of Model." In *Method, Model and Matter*, 91-113. Springer.
- Burge, Tyler. 2013. "Some Remarks on "Externalisms"." In *Reading Putnam*, edited by Maria Baghramian, 263-271. Routledge, London and New York.
- Campbell, Lisa M. 2005. "Overcoming Obstacles to Interdisciplinary Research." *Conservation Biology* 19 (2):574-577.
- Carrier, Martin. 2013. "Values and Objectivity in Science: Value-Ladenness, Pluralism and the Epistemic Attitude." *Science & Education* 22 (10):2547-2568.
- Cartwright, Nancy. 2005. "Another Philosopher Looks at Quantum Mechanics, or What Quantum Theory Is Not." In *Hilary Putnam*, edited by Yemima Ben-Menahem, 188-202. Cambridge University Press.
- Cartwright, Richard L. 1968. "Some Remarks on Essentialism." *The Journal of Philosophy* 65 (20):615-626.
- Castle, David, and Edward Jones-Imhotep. 2007. "A Century of Transition in the Philosophy of

- Science." In *Columbia Companion to Twentieth-century Philosophies*, edited by Constantin V. Boundas, 270-284. Colombia University Press.
- Chakravartty, Anjan. 2014. "Scientific Realism." In *The Stanford Encyclopedia of Philosophy*, ed Edward N. Zalta, <http://plato.stanford.edu/entries/scientific-realism/>.
- Clarke, Steve. 2008. "Some Optimism for the Pessimist." In *Rethinking Scientific Change and Theory Comparison*, edited by Léna Soler, Howard Sankey and Paul Hoyningen-Huene, 203-206. Springer Netherlands.
- De Caro, Mario, and David Macarthur. 2012. "Hilary Putnam: Artisanal Polymath of Philosophy." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 1-35. Harvard University Press.
- De Langhe, RogierDe. 2013. "Peer disagreement under multiple epistemic systems." *Synthese* 190 (13):2547-2556.
- Devitt, Michael. 1983. "Realism and the Renegade Putnam: A Critical Study of Meaning and the Moral Sciences." *Noûs* 17 (2):291-301.
- Devitt, Michael. 2008. "Realism/Anti-Realism." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 224-235. Routledge.
- Devitt, Michael. 2013. "Hilary and Me: Tracking down Putnam on the realism issue." In *Reading Putnam*, edited by Maria Baghramian, 101-120. Routledge, London and New York.
- deVries, Willem. 2015. "Wilfrid Sellars." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta.
- Dogan, Mattei. 1997. "The new social sciences: Cracks in the disciplinary walls." *International Social Science Journal* 49 (153):429-443.
- Dostie Proulx, Pierre-Luc. 2012. *Réalisme et vérité : le débat entre Jürgen Habermas et Richard Rorty*, *Ouverture philosophique*. L'Harmattan.
- Douven, Igor. 2011. "Abduction." In *The Stanford Encyclopedia of Philosophy*, ed Edward N. Zalta, <http://plato.stanford.edu/archives/spr2011/entries/abduction/>.
- Earman, J., and W.C. Salmon. 1992. "The Confirmation of Scientific Hypotheses." In *Introduction to the Philosophy of Science*, edited by M.H. Salmon, J. Earman, C. Glymour, J.G. Lennox, P. Machamer, J.E. McGuire, J.D. Norton, W.C. Salmon and K.F. Schaffner, 42-103. Hackett Publishing Company.
- Fairweather, Abrol. 2012. "Duhem–Quine virtue epistemology." *Synthese* 187 (2):673-692.
- Feyerabend, Paul. 1987. "Putnam on Incommensurability." *The British Journal for the Philosophy of Science* 38 (1):75-81.
- Feyerabend, Paul Karl. 1993 [1975]. *Against Method*. Verso. Original edition, 1975.
- Fraassen, Bas C. Van. 1977. "The Pragmatics of Explanation." *American Philosophical Quarterly* 14 (2):143-150.
- Friedman, Michael. 2008. "Ernst Cassirer and Thomas Kuhn: The Neo-Kantian Tradition in History and Philosophy of Science." *The Philosophical Forum* 39 (2):239-252.
- Gattei, Stefano. 2008. *Thomas Kuhn's "Linguistic Turn" and the Legacy of Logical Empiricism: Incommensurability, Rationality and the Search for Truth*. Ashgate.
- Ghins, Michel. 2003. "Thomas Kuhn on the existence of the world." *International Studies in the Philosophy of Science* 17 (3):265-279.
- Ghins, Michel. 2005. "Howard Sankey on Scientific Realism and the God's Eye Point of View." *Epistemologia: an Italian journal for the philosophy of science* 28:123-134.
- Glymour, C. 1992. "Realism and the Nature of Theories." In *Introduction to the Philosophy of Science*, edited by M.H. Salmon, J. Earman, C. Glymour, J.G. Lennox, P. Machamer, J.E. McGuire, J.D. Norton, W.C. Salmon and K.F. Schaffner, 104-131. Hackett Publishing Company.
- Goldstein, Sheldon. 1998a. "Quantum theory without observers - Part One." *Physics Today* 51 (3):42-47.
- Goldstein, Sheldon. 1998b. "Quantum theory without observers - Part Two." *Physics Today* 51 (4):38-42.
- Goodman, Russell B. 2013. "Some Sources of Putnam's Pluralism." In *Reading Putnam*, edited by Maria Baghramian, 205-218. Routledge, London and New York.
- Hacking, Ian. 1983. *Representing and Intervening: Introductory Topics in the Philosophy of Nature*. Cambridge University Press.
- Hartley-Brewer, Julia. 1999. "Mars scientists fail to measure up." *The Guardian*, Saturday 2



- October 1999,  
<http://www.theguardian.com/science/1999/oct/02/spaceexploration.internationalnews>.
- Haukioja, Jussi. 2006. "Proto-Rigidity\*." *Synthese* 150 (2):155-169.
- Holbrook, J. Britt. 2013. "What is interdisciplinary communication? Reflections on the very idea of disciplinary integration." *Synthese* 190 (11):1865-1879.
- Hoyningen-Huene, Paul. 1993. *Reconstructing scientific revolutions: Thomas S. Kuhn's philosophy of science*. University of Chicago Press.
- Hoyningen-Huene, Paul. 2008. "Commentary on Bird's Paper." In *Rethinking Scientific Change and Theory Comparison*, edited by Léna Soler, Howard Sankey and Paul Hoyningen-Huene, 41-46. Springer Netherlands.
- Hoyningen-Huene, Paul, and Howard Sankey, eds. 2001. *Incommensurability and Related Matters*. Edited by Robert S. Cohen, Jürgen Renn and Kostas Gavroglu. Vol. 216, *Boston Studies in the Philosophy of Science*. Springer.
- Hume, David. 2009 [1740]. *A treatise of human nature*. The Floating Press. Original edition, 1740.
- Irzik, Gürol. 2008. "Critical Rationalism." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 58-66. Routledge.
- Jasanoff, Sheila. 1997. "Civilization and madness: the great BSE scare of 1996." *Public Understanding of Science* 6 (3):221-232.
- Kordig, Carl R. 1971. "The Methodological Undesirability of Adopting a Position of Radical Meaning Variance." In *The Justification of Scientific Change*, 50-84. Springer Netherlands.
- Kordig, Carl R. 1978. "Discovery and Justification." *Philosophy of Science* 45 (1):110-117.
- Kripke, Saul A. 1972. "Naming and Necessity." In *Semantics of Natural Language*, edited by Donald Davidson and Gilbert Harman, 253-355. Springer Netherlands.
- Kuhn, Thomas Samuel. 1977. *The Essential Tension*. University of Chicago Press, Chicago, US.
- Kuhn, Thomas Samuel. 1990a. "The Road since Structure." *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 1990:3-13.
- Kuhn, Thomas Samuel. 1990b. "Dubbing and Redubbing: The vulnerability of Rigid Designation." In *Scientific theories*, edited by C. Wade Savage, 298-318. University of Minnesota press.
- Kuhn, Thomas Samuel. 1996 [1962]. *The Structure of Scientific Revolutions*. Third ed. University of Chicago Press. Original edition, 1962.
- Kuhn, Thomas Samuel. 2000 [1987]. "What Are Scientific Revolutions?" In *The Road Since Structure*, edited by James Connant and John Haugeland, 13-32. University of Chicago Press. Original edition, 1987.
- Kuhn, Thomas Samuel. 2000a [1991]. "The Road Since Structure." In *The Road Since Structure*, edited by James Connant and John Haugeland, 95-104. University of Chicago Press. Original edition, 1991.
- Kuhn, Thomas Samuel. 2000b [1991]. "The Trouble with the Historical Philosophy of Science." In *The Road Since Structure*, edited by James Connant and John Haugeland, 106-120. University of Chicago Press. Original edition, 1991.
- Kuhn, Thomas Samuel. 2000 [1993]. "Afterwords." In *The Road Since Structure*, edited by James Connant and John Haugeland, 224-252. University of Chicago Press. Original edition, 1993.
- Künne, Wolfgang. 2002. "From alethic anti-realism to alethic realism." In *Hilary Putnam: Pragmatism and realism*, edited by James Conant and Urszula Zeglen, 144-165. Routledge.
- Ladyman, James. 2002. *Understanding philosophy of science*. Routledge.
- Ladyman, James. 2012. "Science, metaphysics and method." *Philosophical Studies* 160 (1):31-51.
- Lakatos, Imre, and Alan Musgrave, eds. 1970. *Criticism and the Growth of Knowledge*. Vol. 4, *Proceedings of the International Colloquium in the Philosophy of Science*. Cambridge University Press.
- Lang, Daniel J, Arnim Wiek, Matthias Bergmann, Michael Stauffacher, Pim Martens, Peter Moll, Mark Swilling, and Christopher J Thomas. 2012. "Transdisciplinary research in sustainability science: practice, principles, and challenges." *Sustainability science* 7 (1):25-43.
- LaPorte, Joseph. 2011. "Rigid Designators." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta.
- Laudan, Larry. 1996. *Beyond Positivism and Relativism: Theory, Method, and Evidence*. Westview Press.
- Leplin, Jarrett. 1986. "Methodological Realism and Scientific Rationality." *Philosophy of Science* 53 (1):31-51.



- Lipton, Peter. 2008. "Inference to the Best Explanation." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 193-202. Routledge.
- Macbeth, Danielle. 1995. "Names, natural kind terms, and rigid designation." *Philosophical Studies* 79 (3):259-281.
- Mäki, Uskali. 2010. "When economics meets neuroscience: hype and hope." *Journal of Economic Methodology* 17 (2):107-117.
- McDowell, John. 1996. "Putnam on Mind and Meaning." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 305-317. M.E. Sharpe.
- McGuire, J.E. 1992. "Scientific Change: Perspective and Proposals." In *Introduction to the Philosophy of Science*, edited by M.H. Salmon, J. Earman, C. Glymour, J.G. Lennox, P. Machamer, J.E. McGuire, J.D. Norton, W.C. Salmon and K.F. Schaffner, 132-178. Hackett Publishing Company.
- McMullin, Ernan. 1982. "Values in Science." *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association* 1982:3-28.
- McMullin, Ernan. 2008. "The Virtues of a Good Theory." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 498-508. Routledge.
- Miller, Thaddeus R, Timothy D Baird, Caitlin M Littlefield, Gary Kofinas, F Stuart Chapin, and Charles L Redman. 2008. "Epistemological pluralism: reorganizing interdisciplinary research." *Ecology and Society* 13 (2):46.
- Moberg, Dale W. 1979. "Are There Rival, Incommensurable Theories?" *Philosophy of Science* 46 (2):244-262.
- Nickles, Thomas. 2003. "Introduction." In *Thomas Kuhn*, edited by Thomas Nickles, 1-18. Cambridge University Press.
- Nola, R., and Howard Sankey. 2007. *Theories of Scientific Method: An Introduction*. Acumen.
- Nola, Robert, and Howard Sankey. 2000a. "A Selective Survey of Theories of Scientific Method." In *After Popper, Kuhn and Feyerabend: Recent Issues in Theories of Scientific Method*, edited by Robert Nola and Howard Sankey, 1-65. Kluwer Academic Publishers.
- Nola, Robert, and Howard Sankey. 2000b. *After Popper, Kuhn and Feyerabend: Recent Issues in Theories of Scientific Method*. Kluwer Academic Publishers.
- Norgaard, Richard B. 1989. "The case for methodological pluralism." *Ecological Economics* 1 (1):37-57.
- Norris, Christopher. 2001. "Putnam on realism, reference and truth: The problem with quantum mechanics." *International Studies in the Philosophy of Science* 15 (1):65-91.
- Oberheim, Eric, and Paul Hoyningen-Huene. 2013. The Incommensurability of Scientific Theories. In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta.
- Ostrom, Elinor, Joanna Burger, Christopher B Field, Richard B Norgaard, and David Policansky. 1999. "Revisiting the commons: local lessons, global challenges." *science* 284 (5412):278-282.
- Pessin, Andrew, and Sanford Goldberg. 1996a. "Preface." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, xi-xiii. M.E. Sharpe.
- Pessin, Andrew, and Sanford Goldberg. 1996b. "Part II Natural Kinds and Philosophy of Language: Introduction." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 53-59. M.E. Sharpe.
- Poteete, Amy R, Marco Janssen, and Elinor Ostrom. 2010. *Working together: collective action, the commons, and multiple methods in practice*. Princeton University Press.
- Pritchard, Duncan. 2009. "Defusing epistemic relativism." *Synthese* 166 (2):397-412.
- Psillos, Stathis. 2000. "The present state of the scientific realism debate." *British Jnl. for the Philosophy of Sci.* 51 (3 SUP (3 p.3/4)):705-728.
- Putnam, Hilary. 1975a [1962]. "What is mathematical truth?" In *Mathematics, Matter and Method: Philosophical Papers*, edited by Hilary Putnam, 60-78. Cambridge University Press. Original edition, 1962.
- Putnam, Hilary. 1975b [1962]. "What theories are not." In *Mathematics, Matter and Method: Philosophical Papers*, edited by Hilary Putnam, 215-227. Cambridge University Press. Original edition, 1962.
- Putnam, Hilary. 1975 [1965]. "How not to talk about meaning." In *Mind, Language and Reality*:

- Philosophical Papers*, edited by Hilary Putnam, 117-131. Cambridge University Press. Original edition, 1965.
- Putnam, Hilary. 1975 [1970]. "Is semantics possible?" In *Mind, Language and Reality: Philosophical Papers*, edited by Hilary Putnam, 139-152. Cambridge University Press. Original edition, 1970.
- Putnam, Hilary. 1975 [1973]. "Explanation and Reference." In *Mind, Language and Reality: Philosophical Papers*, edited by Hilary Putnam, 196-214. Cambridge University Press. Original edition, 1973.
- Putnam, Hilary. 1975 [1975]. "The refutation of conventionalism." In *Mind, Language and Reality: Philosophical Papers*, edited by Hilary Putnam, 153-191. Cambridge University Press. Original edition, 1975.
- Putnam, Hilary. 1978. *Meaning and the moral sciences*. Routledge and Kegan Paul Ltd.
- Putnam, Hilary. 1979a. "Reply to Dummett's Comment." In *Meaning and Use*, edited by A. Margalit, 226-228. D. Reidel Publishing Company.
- Putnam, Hilary. 1979b. "Reference and Understanding." In *Meaning and Use*, edited by A. Margalit, 199-217. D. Reidel Publishing Company.
- Putnam, Hilary. 1981. *Reason, truth and history*. Cambridge University Press.
- Putnam, Hilary. 1982a. "Beyond the Fact-Value Dichotomy." *Crítica: Revista Hispanoamericana de Filosofía* 14 (41):3-12.
- Putnam, Hilary. 1982b. "Why there isn't a ready-made world." *Synthese* 51 (2):141-167.
- Putnam, Hilary. 1983a. "Introduction: An overview of the problem." In *Realism and Reason: Philosophical Papers*, edited by Hilary Putnam, vii-xviii. Cambridge University Press.
- Putnam, Hilary. 1983b. "Models and Reality." In *Realism and Reason: Philosophical Papers*, edited by Hilary Putnam, 1-25. Cambridge University Press.
- Putnam, Hilary. 1983c. "Computational psychology and interpretation theory." In *Realism and Reason: Philosophical Papers*, edited by Hilary Putnam, 139-154. Cambridge University Press.
- Putnam, Hilary. 1988. *Representation and Reality*. The MIT Press.
- Putnam, Hilary. 1990a. "Is Water Necessarily H<sub>2</sub>O?" In *Realism with a Human Face*, edited by James Conant, 54-79. Harvard University Press.
- Putnam, Hilary. 1990b. "Why Is a Philosopher?" In *Realism with a Human Face*, edited by James Conant, 105-119. Harvard University Press.
- Putnam, Hilary. 1990c. "Preface." In *Realism with a Human Face*, edited by James Conant, vii-ix. Harvard University Press.
- Putnam, Hilary. 1990d. "Objectivity and the Science/Ethics Distinction." In *Realism with a Human Face*, edited by James Conant, 163-178. Harvard University Press.
- Putnam, Hilary. 1990 [1982]. "Beyond the Fact/Value Dichotomy." In *Realism with a Human Face*, edited by James Conant, 135-141. Harvard University Press. Original edition, 1982.
- Putnam, Hilary. 1990 [1984]. "The Craving for Objectivity." In *Realism with a Human Face*, edited by James Conant, 120-131. Harvard University Press. Original edition, 1984.
- Putnam, Hilary. 1992. *Renewing Philosophy*. Harvard University Press.
- Putnam, Hilary. 1994a. "Sense, Nonsense, and the Senses: An Inquiry into the Powers of the Human Mind." *The Journal of Philosophy* 91 (9):445-517.
- Putnam, Hilary. 1994b. "Pragmatism and Moral Objectivity." In *Words and Life*, edited by James Conant, 151-181. Harvard University Press.
- Putnam, Hilary. 1994a [1987]. "The Question of Realism." In *Words and Life*, edited by James Conant, 295-312. Harvard University Press. Original edition, 1987.
- Putnam, Hilary. 1994b [1987]. "The Diversity of the Sciences." In *Words and Life*, edited by James Conant, 463-480. Harvard University Press. Original edition, 1987.
- Putnam, Hilary. 1994 [1989]. "Model Theory and the 'Factuality' of Semantics." In *Words and Life*, edited by James Conant, 351-375. Harvard University Press. Original edition, 1989.
- Putnam, Hilary. 1994 [1991]. "Does the Disquotational Theory of Truth Solve All Philosophical Problems?" In *Words and Life*, edited by James Conant, 264-278. Harvard University Press. Original edition, 1991.
- Putnam, Hilary. 1995. *Pragmatism: An Open Question*. Blackwell.
- Putnam, Hilary. 1996. "Introduction." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's 'The Meaning of 'Meaning''*, edited by Andrew Pessin and Sanford Goldberg, xv-xxii. M.E. Sharpe.

- Putnam, Hilary. 1996 [1975]. "The Meaning of "Meaning"." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 3-52. M.E. Sharpe. Original edition, 1975.
- Putnam, Hilary. 1999. *The threefold cord: mind, body, and world*. Colombia University Press.
- Putnam, Hilary. 2001a. "Reply to Jennifer Case." *Revue internationale de philosophie* 218 (4):431-438.
- Putnam, Hilary. 2001b. "Reply to Charles Travis." *Revue internationale de philosophie* 218 (4):525-533.
- Putnam, Hilary. 2002a. "Comment on Nicholas Rescher's paper." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 80-85. Routledge, London and New York.
- Putnam, Hilary. 2002b. "Pragmatism and Nonscientific Knowledge." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 14-24. Routledge, London and New York.
- Putnam, Hilary. 2002c. *The collapse of the fact/value dichotomy: and other essays*. Harvard University Press.
- Putnam, Hilary. 2002d. "Comment on John Haldane's paper." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 105-108. Routledge, London and New York.
- Putnam, Hilary. 2002e. "Comment on Tadeusz Szubka's paper." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 125-127. Routledge, London and New York.
- Putnam, Hilary. 2002f. "Travis on Meaning, Thought and the Ways the World Is." *The Philosophical Quarterly* 52 (206):96-106.
- Putnam, Hilary. 2004. *Ethics without ontology*. Harvard University Press.
- Putnam, Hilary. 2008a. "12 Philosophers: And Their Influence on Me." *Proceedings and Addresses of the American Philosophical Association* 82 (2):101-115.
- Putnam, Hilary. 2008b. "What Makes Pragmatism So Different?" In *Following Putnam's Trail: On Realism and Other Issues*, edited by Mara Uxa Rivas Monroy, Celeste Cancela Silva and Concha Martínez Vidal, 19-34. Rodopi.
- Putnam, Hilary. 2008c. "Capabilities and Two Ethical Theories." *Journal of Human Development* 9 (3):377-388.
- Putnam, Hilary. 2008d. *Jewish Philosophy as a Guide to Life: Rosenzweig, Buber, Levinas, Wittgenstein, The Helen and Martin Schwartz Lectures in Jewish Studies*. Indiana University Press.
- Putnam, Hilary. 2012 [1997]. "Functionalism: Cognitive Science or Science Fiction?" In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 608-623. Harvard University Press. Original edition, 1997.
- Putnam, Hilary. 2012a [1998]. "Skepticism and Occasion-Sensitive Semantics." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 514-534. Harvard University Press. Original edition, 1998.
- Putnam, Hilary. 2012b [1998]. "Strawson and Skepticism." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 535-551. Harvard University Press. Original edition, 1998.
- Putnam, Hilary. 2012 [2000]. "Aristotle's Mind and the Contemporary Mind." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 584-607. Harvard University Press. Original edition, 2000.
- Putnam, Hilary. 2012a [2001]. "Rules, Attunement, and "Applying Words to the World": The Struggle to Understand Wittgenstein's Vision of Language." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 405-420. Harvard University Press. Original edition, 2001.
- Putnam, Hilary. 2012b [2001]. "Was Wittgenstein Really an Antirealist about Mathematics." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 356-403. Harvard University Press. Original edition, 2001.
- Putnam, Hilary. 2012c [2001]. "Skepticism, Stroud, and the Contextuality of Knowledge." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 495-513. Harvard University Press. Original edition, 2001.
- Putnam, Hilary. 2012 [2004]. "The Content and Appeal of "Naturalism"." In *Philosophy in an Age*

- of Science: Physics, Mathematics, and Skepticism, edited by Mario De Caro and David Macarthur, 109-125. Harvard University Press. Original edition, 2004.
- Putnam, Hilary. 2012 [2005]. "The Depths and Shallows of Experience." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 567-583. Harvard University Press. Original edition, 2005.
- Putnam, Hilary. 2012 [2006]. "Philosophy as the Education of Grownups: Stanley Cavell and Skepticism." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 552-564. Harvard University Press. Original edition, 2006.
- Putnam, Hilary. 2012 [2007]. "Wittgenstein and Realism." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 339-354. Harvard University Press. Original edition, 2007.
- Putnam, Hilary. 2012a [2010]. "Science and Philosophy." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 39-50. Harvard University Press. Original edition, 2010.
- Putnam, Hilary. 2012b [2010]. "On not Writing Off Scientific Realism." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 91-108. Harvard University Press. Original edition, 2010.
- Putnam, Hilary. 2012a [2011]. "How to be a Sophisticated 'Naïve Realist'." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 624-639. Harvard University Press. Original edition, 2011.
- Putnam, Hilary. 2012b [2011]. "The Fact/Value Dichotomy and Its Critics." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 283-298. Harvard University Press. Original edition, 2011.
- Putnam, Hilary. 2012c [2011]. "Corresponding with Reality." In *Philosophy in an Age of Science: Physics, Mathematics, and Skepticism*, edited by Mario De Caro and David Macarthur, 72-90. Harvard University Press. Original edition, 2011.
- Putnam, Hilary. 2013a. "Comments on Micheal Devitt's 'Hilary and Me'." In *Reading Putnam*, edited by Maria Baghramian, 121-126. Routledge, London and New York.
- Putnam, Hilary. 2013b. "Comments on Travis and McDowell." In *Reading Putnam*, edited by Maria Baghramian, 347-358. Routledge, London and New York.
- Putnam, Hilary. 2013c. "Comments on Russell Goodman's 'Some Sources of Putnam's Pluralism'." In *Reading Putnam*, edited by Maria Baghramian, 219-224. Routledge, London and New York.
- Putnam, Hilary. 2013d. "Comments on David Macarthur's 'Putnam and the Philosophical Appeal to Common Sense'." In *Reading Putnam*, edited by Maria Baghramian, 140-141. Routledge, London and New York.
- Putnam, Hilary. 2013e. "Comments on Tyler Burge's 'Some Remarks on 'Externalisms''." In *Reading Putnam*, edited by Maria Baghramian, 272-274. Routledge, London and New York.
- Putnam, Hilary. 2013f. "From quantum mechanics to ethics and back again." In *Reading Putnam*, edited by Maria Baghramian, 19-36. Routledge, London and New York.
- Putnam, Hilary. 2013g. "Comments on Ruth Anna Putnam's 'Hilary Putnam's Moral Philosophy'." In *Reading Putnam*, edited by Maria Baghramian, 257-260. Routledge, London and New York.
- Putnam, Ruth Anna. 2002g. "Taking pragmatism seriously." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 7-11. Routledge, London and New York.
- Putnam, Ruth Anna. 2013h. "Hilary Putnam's Moral Philosophy." In *Reading Putnam*, edited by Maria Baghramian, 240-256. Routledge, London and New York.
- Quine, W. V. 1968. "Ontological Relativity." *The Journal of Philosophy* 65 (7):185-212.
- Quine, Willard Orman. 1976 [1951]. "Two Dogmas of Empiricism." In *Can Theories be Refuted?*, edited by SandraG Harding, 41-64. Springer Netherlands. Original edition, 1951.
- Read, Rupert, and Wes Sharrock. 2002. "Thomas Kuhn's Misunderstood Relation to Kripke-Putnam Essentialism." *Journal for General Philosophy of Science* 33 (1):151-158.
- Rescher, Nicholas. 2002. "Knowledge of the truth in pragmatic perspective." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 66-79. Routledge, London and New York.

- Roth, Paul A. 2008. "The Epistemology of Science after Quine." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 3-14. Routledge.
- Rouse, Joseph. 1998. "New Philosophies of Science in North America – Twenty Years Later." *Journal for General Philosophy of Science* 29 (1):71-122.
- Rowbottom, Darrell P. 2011. "Kuhn vs. Popper on criticism and dogmatism in science: a resolution at the group level." *Studies in History and Philosophy of Science Part A* 42 (1):117-124.
- Sankey, Howard. 1994. *The incommensurability thesis*. Ashgate Publishing Company.
- Sankey, Howard. 2000a. "Methodological Pluralism, Normative Naturalism and the Realist Aim of Science." In *After Popper, Kuhn and Feyerabend: Recent Issues in Theories of Scientific Method*, edited by Robert Nola and Howard Sankey, 211-229. Kluwer Academic Publishers.
- Sankey, Howard. 2000b. "Kuhn's Ontological Relativism." *Science & Education* 9 (1-2):59-75.
- Sankey, Howard. 2008a. "Scientific Method." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 248-258. Routledge.
- Sankey, Howard. 2008b. *Scientific Realism and the Rationality of Science*. Ashgate.
- Sankey, Howard. 2009. "Scientific realism and the semantic incommensurability thesis." *Studies in History and Philosophy of Science Part A* 40 (2):196-202.
- Sankey, Howard, and Paul Hoyningen-Huene. 2001. "Introduction." In *Incommensurability and Related Matters*, edited by Paul Hoyningen-Huene and Howard Sankey, vii-xxxiv. Kluwer.
- Schwartz, Stephen P. 1996. "Putnam on Artifacts." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 81-88. M.E. Sharpe.
- Searle, John. 1996. "From *Intentionality*: Are Meanings in the Head?" In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 89-97. M.E. Sharpe.
- Shapere, Dudley. 1982. "The concept of observation in science and philosophy." *Philosophy of Science* 49 (4):485-525.
- Shapere, Dudley. 1984. *Reason and the Search for Knowledge: Investigations in the Philosophy of Science*, *Boston studies in the philosophy of science*. D. Reidel Publishing Company.
- Shapere, Dudley. 1989. "Evolution and Continuity in Scientific Change." *Philosophy of Science* 56 (3):419-437.
- Sharrock, Wes W, and Rupert J Read. 2002. *Kuhn: Philosopher of scientific revolution*. Polity Cambridge.
- Sober, Elliot. 2008. "Empiricism." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 129-138. Routledge.
- Soler, Léna. 2008. Introduction. In *Rethinking Scientific Change and Theory Comparison*, edited by Léna Soler, Howard Sankey and Paul Hoyningen-Huene. Netherlands: Springer Netherlands.
- Soler, Léna, Howard Sankey, and Paul Hoyningen-Huene, eds. 2008. *Rethinking Scientific Change and Theory Comparison*. Edited by Robert S. Cohen, Jürgen Renn and Kostas Gavroglu. Vol. 255, *Boston Studies in the Philosophy of Science*. Springer Netherlands.
- Stanford, Kyle. 2013. "Underdetermination of Scientific Theory." In *The Stanford Encyclopedia of Philosophy*, edited by Edward N. Zalta.
- Sterelny, Kim. 1996. "Natural-Kind Terms." In *The Twin Earth Chronicles: Twenty Years of Reflection on Hilary Putnam's "The Meaning of 'Meaning'"*, edited by Andrew Pessin and Sanford Goldberg, 98-114. M.E. Sharpe.
- Szubka, Tadeusz. 2002. "The causal theory of perception and direct realism." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 109-124. Routledge, London and New York.
- Teller, Paul. 2008a. "Of Course Idealizations Are Incommensurable!" In *Rethinking Scientific Change and Theory Comparison*, edited by Léna Soler, Howard Sankey and Paul Hoyningen-Huene, 247-264. Springer Netherlands.
- Teller, Paul. 2008b. "Representation in Science." In *The Routledge Companion to Philosophy of Science*, edited by Stathis Psillos and Martin Curd, 435-441. Routledge.
- Thompson-Klein, Julie. 1996. *Crossing Boundaries: Knowledge, Disciplinarity, and Interdisciplinarity*. University Press of Virginia.
- Travis, Charles. 2002. "What laws of logic say." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 188-208. Routledge, London and New York.
- Travis, Charles. 2013. "Affording Us the World." In *Reading Putnam*, edited by Maria Baghramian,

- 322-340. Routledge, London and New York.
- Veldkamp, A., and P. H. Verburg. 2004. "Modelling land use change and environmental impact." *Journal of Environmental Management* 72 (1–2):1-3.
- Zeglen, Ursula M. 2002. "Introduction to Part II." In *Hilary Putnam: Pragmatism and Realism*, edited by James Conant and Ursula M. Zeglen, 89-96. Routledge, London and New York.