

KNOWLEDGE AND OPINIONS

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Introduction

It is customary to oppose knowledge to opinions. But what constitutes knowledge, and what is only opinion? What are the criteria for making such a division? The fact is that today we have at our disposal many criteria for making the division, and it is not difficult to enumerate them. To quote in random order, by way of example: observation, reliable evidence, rigorous application of method, the use of a precise language testing by experiment, power of anticipation, formalisation, ability to proceed to applications, usefulness of these applications, accountability to certain principles or to acquired knowledge, impartiality, accepted views of specialists, etc. Usually we bear in mind a few of these criteria and attempt to coordinate them; whereas others, which we do not consider indispensable or relevant, are put aside; *this varies* according to the knowledge envisaged . . . And one would be in greater difficulty trying to find a justification for such criteria! But this is not our purpose here. If we mention it, it is only in order to make it clear that

we will not be concerned with such matters, nor with such question as when it is permissible to characterise this or that as 'opinion' or 'knowledge'? Our subject is different: we want to raise questions concerning the use which is made of this opposition between knowledge and opinions, concerning the ideology which underlies this opposition, and concerning the resultant effects for the sciences.

In what manner does one most frequently oppose knowledge to opinions? We incorporate knowledge into a certain prevailing conception of science which is characterized as objective. To this is opposed all the rest, which is grouped haphazardly under the names of *opinions* and *value judgements*; these are characterized as subjective. In this way we provide a justification for the division we make, for the wall we erect between scientific practice and everything which is said, written or thought outside of the established sciences; and we prevent the sciences from being critical. One can say more: opposition between knowledge and opinion, in its present form, partially determines the actual status of the sciences, and wrongly assigns limits to them.

The opposition between knowledge and opinion did not arise from the sciences; it comes from the dominant ideology. It is this opposition which determines to a certain degree the present day status of the sciences, and wrongly assigns them their limitations.

The division thus created between science and 'objectivity' on the one hand, and opinions and 'subjective' values on the other, is accompanied by a disqualification of what does not deserve the name of 'science', a disqualification of 'subjectivity' and 'value judgements'. There is also a disqualification of the sentiments, and needs, and the desires of the individual, of his or her life and death, in the face of the 'objective' demands of 'reality': this permits the justification of 'realistic' policies of oppression and repression.

The real alternatives confronting us are the following: between the interests of an individual and those of the larger social group to which he belongs; between the interests of different groups and classes; between the interests of the masses and those of people in positions of authority. These alternatives are deformed and retranslated in terms of subjectivity (it will be said that complaints are subjective) and objectivity (it will be said that decisions made by authorities are determined by objective realities).

The opposition of objective knowledge and subjective opinions allows

demarcation lines to be drawn between what is acceptable and what is not to those in power. Finally it is the 'knowledge' established and institutionalized by the ruling class which is used as objective knowledge. Any other knowledge is disqualified.

But in reality, the opposition between knowledge and opinion is not unquestionable, it has its rationale in the dominant ideology, and rests upon a conceptual amalgam which can be undone.

These are the principal ideas which will be developed in the following pages.

I. A Way of Thinking

1. *Thought is Cut into Two*

By opposing, as one most frequently does, 'objective' knowledge and 'subjective' opinions, one consolidates division of thought into two autonomous fields, each isolated and foreign to the other. On the one hand, the field of opinions, or of the subject, or of what one wants, where at leisure and without harm — because this is outside reality — man can nourish dreams or aspirations, pursue ideals and cut down ideas. On the other hand, the field of knowledge, of the object, or of what is: here one is realistic and one remembers that things, as they say, 'are what they are' (1). What happens to truth in all this? It is assigned a place beside the object. As for values, they are left to the subject; he will dispose of them as he sees fit.

2. *It is Unquestioned . . .*

This is not to claim that this conception of the two fields of thought, each completely isolated and hermetically sealed from the other, with truth on one side and values on the other, is the only one in current use. There are other ways of conceiving the practice of thought. On the other hand, looking more closely, one sees that day to day language, just as scientific research, does not follow, as much as one might think, this dichotomy between truth and values (2). Nevertheless the concept of two independent fields of thought (values and truth, opinions and knowledge) is most commonly accepted by everybody — ourselves included — and it dominates social life.

It is for this reason that, as often as not, in the field of opinions it seems to

be impossible to decide between those who are wrong and those who are right; it is common sense that we would not let ourselves be convinced by those who do not share our ideas, just as we would not be able to convince them either; it is common sense that 'culture' is practiced beside or above 'real' life in a closed arena; it is thought right to abandon opinions to free competition . . . All this shows that opinions are not really believed to have much connection with truth; rather they depend on sentiment, passion, free choice or interest.

There are a thousand opinions on life in town or country, on traffic, unemployment, education, the Olympic Games, the Police, and everyone makes his own choice. The opinions people have may be respectable, but they are not very serious . . .

3. . . .and It is Very Useful

The importance of the distinction between 'objective' knowledge and 'subjective' opinions appears in a flagrant and brutal manner in the use currently made of it in politics. This opposition must be placed in a larger framework, namely that of the semantic opposition between subject and object, which is a determining factor in many present-day modes of expression. Shortly, we will see the ideological scope and ambivalence of the opposition between subject and object.

In this opposition between, on the one hand, the subject, bearer of needs and subjective aspirations which are translated into opinions which are neither true nor false, and on the other hand, social, economic or military reality, which alone is objective and true, it is only right, if one of the two must predominate, that it should be reality. One must be 'realistic'. It becomes reasonable and normal to impede the expression of individual sentiments which threatens established order. There is nothing wrong in manipulating people's opinions and needs through propaganda, advertising, and electoral campaigns, in exploiting and even killing people, if (and only if . . .) reality demands it. A clear political conscience finds in this its most recurrent and banal argument. Oppression and repression at home or abroad — prisons, dismissals, wars — are justified by highly 'realistic' arguments such as social stability, economic expansion, the balance of forces, and so on. The life and death of individual human beings is not part of reality, they are placed together with the subject,

subjectivity, opinion, and values. Death, mourning, imprisonment, deportations, unemployment, grief, separation, brutishness, humiliation, are all matters of sentiment; sentiment must not predominate over reason, or over the 'objective' demands of reality.

This does not mean that the dualism — subject (subjectivity)/object (objectivity) — which creates the alternative between objective knowledge and subjective opinion, is the *cause* of a policy of oppression and repression: it is simply the outward form, the 'grid' through which political reality can be read. At the same time the subject/object dualism gives to this policy its *a priori* justification and appearance of rationality. (3)

We can find an extreme (satirical?) illustration of this concept in a small book entitled *Report from the Iron Mountain*, foreword by H. Mc. Landress (J. K. Galbraith) 1968. This would appear to be a report written in 1966, after two and a half years' work, by a Special Study Group, and intended for the American government.

To give an example, in its Recommendations to the government, the report stresses the need to study

how to compute on a short-term basis, the nature and extent of the loss of life and other resources which should be suffered and/or inflicted during any single outbreak of hostilities to achieve a desired degree of internal political authority and social allegiance (4); how to project, over extended periods, the nature and quality of overt warfare which must be planned and budgeted to achieve a desired degree of contextual stability for the same purpose; factors to be determined must include frequency of occurrence, length of phase, intensity of physical destruction, extensiveness of geographical involvement, and optimum mean loss of life; (p. 198).

The approach adopted by the Special Study Group is clearly defined;

what they wanted from us was a different kind of *thinking*. It was a matter of approach. Herman Kahn calls it "Byzantine" — no agonizing over cultural and religious values. No moral posturing. It's the kind of thinking that Rand and the Hudson Institute and I.D.A. brought into *war* planning.

Better still:

There *is* such a thing as objectivity, and I think we had it. . . . I don't say no one had any emotional reaction to what we were doing. We all did, to some extent. As a matter of fact, two members had heart attacks after we were finished, and I'll be the first to admit it probably wasn't a coincidence. (p. 35).

Here is a second example, taken from an article by John D. Williams, of the

Rand Corporation: "The absurdity of safe driving", *Fortune*, September, 1958.

I am sure that there is, in effect, a desirable level of automobile accidents -- desirable, that is, from a broad point of view, in the sense that it is a necessary concomitant of things of greater value to society.

II. The Ideology of Knowledge

4. The Strange Amalgam of Dominant Thinking

The subject/object dualism, along with its associated connotation of subjectivity/objectivity, also has another connotation, which is linked to rationalism. If we say *this* rather than *that*, this is perhaps because we are under the influence of our subjectivity, or perhaps because the objectivity of facts forces us to do so. But it can also be by reason of what has been said before, or of what could be said: we then say that we are guided by 'reason' itself (neither subjective nor objective, but rational . . .). But if reason alone is to be heard when we speak, then what we want, our needs and inclinations, must be neutralised. Thus every man is led (sooner or later), if he submits to the laws of reason, to think the same thing. Reason is autonomous, it is subordinate to neither the subject nor the object, it has its own justification and it determines its own laws. This produces a new dualism. The subjectivity of the speaker is eclipsed; speakers become interchangeable and become nothing more than the vehicle of reason, and in front of reason or the rational subject we find 'data' which lends itself to a rationalisation (4).

This conception, which can be crudely characterized as 'rationalist', has a long history, which goes from Galileo to Einstein and Planck. It is not however this history which concerns us here, but what could be called the common sense rationalism which confronts us today; how can this rationalism coexist with the subjectivity/objectivity dualism?

In fact the two dualisms, that of subject (subjectivity)/object (objectivity) and that of subject (reason/object (data)), do not at all correspond. On the contrary, reason will take its place at the side of objectivity and is presented as an alternative to subjectivity. Reason is opposed to subjectivity. Reason, as everyone knows, 'orders' and 'controls' Nature, in the same way as it controls feelings and passions. The result is that when the two dualisms are

amalgamated in the way this is done today, reason and objectivity become ranged on one side and Nature and subjectivity on the other.

At the same time the opposite can be said: it can be asserted that Nature is objective reality and that reason must be placed at the side of the subject. Once the two dualisms have been superimposed, almost anything can be said. For example: subjectivity is, because of emotions and passions, the *natural* element which remains in the subject; but at the same time it is the most *personal* dimension of the subject . . . The reason (!) for this is that we are dealing with two heterogeneous modes of thought. They have a different historical origin, and are not made to go together. The reason-Nature dualism developed in what Michel Foucault called the *epistēmē* of the 17th and 18th centuries, and the subjectivity-objectivity dualism in what he calls the *epistēmē* of the 19th and 20th centuries (5). But although the two modes are not made to go together, in practice they are indeed used together (they are both very much alive in their daily usage). Why?

When these two modes of thought are used together, *almost* anything can be said, but not *absolutely* anything! There are two things at least which are established as constant and which it is impermissible to deny: objectivity has, of right, the upper hand over subjectivity and reason has, of right, the upper hand over Nature. Subjectivity and Nature are inferior. We (subjective) subjects have to submit to objective reality, we (rational) subjects have to control Nature, bring it into submission. These two imperatives formulated by the two heterogeneous modes of thought, are of opposite meaning; it would be very difficult for us to reconcile them in practice if social organisation did not come to our aid; the subjects who submit and the subjects who bring into submission are not the same! Either this is only a semantic game, or it is the beginning of an explanation for the aberrant and unnoticed existence of two heterogeneous modes of thought. This amalgam may be explained by the role it plays in justifying and more generally maintaining social structures.

We can now deal with three interlinked questions:

- (a) The ideological role of the subject-object dualism
- (b) The ideological role of the hybrid superimposition of the oppositions of subjectivity/objectivity and Reason/Nature
- (c) The ideological role of the opposition between knowledge and opinions.

5. Objectivity is Ideological

Louis Althusser says that ideology designates to individuals the place which must be theirs (6). For example, I am 'a worker, a boss, a soldier' or a professor; but to take another example of Althusser's, I am also, by virtue of the ideological structure of the family, a boy or a girl (p. 32). Finally I can, through the religious ideology of Christianity, see myself as a subject of God, a subject subjected to God, subject through the Subject and subjected to the Subject (p. 34).

From putting forward this analysis of the religious ideology of Christianity, Althusser deduces — perhaps too hastily — that *every* ideology calls upon individuals as subjects in the name of a single and Absolute Subject. Every ideology, he writes, is *centred*; "the Absolute Subject occupies the single place at the centre, and calls upon around him the infinity of individuals as subjects, in a two-way specular relation of such a kind that it subjects the subjects to the Subject, while in the Subject where every subject can contemplate his own image (present and future), it gives them the guarantee that it really is a question of them and of him (. . .)" (p. 35).

This theoretical definition of all ideology, which is proposed by Althusser, helps us understand the ideological role played by the dualism of the subject and the object. In this dualism *the subject is placed opposite the object*, and no longer opposite the absolute Subject (God), described by Althusser for the religious ideology of Christianity. This represents a great upset. And one can see in the history of the European bourgeoisie the signs of the struggle for the triumph of the subject/object ideology over another ideology, that of subject/Absolute Subject (God). The revolutionary bourgeoisie of the 18th century refused to accept an ideology of subjects 'centred' on the absolute Subject, depositary of authority and centralised power, and accepted no constraints except those which came from the order of things and from Nature, or again from Reason, and it was this order and this Reason which in their turn defined subjects as having equal rights (natural rights, the Rights of Man). But the bourgeoisie, when it came to power, dressed its needs with another sauce. It is here that we see the emergence of the amalgam of the subjectivity/objectivity and Reason/Nature oppositions. The struggle continues under the same flag (the flag of Reason and the observation of Nature); it can also continue with the same intentions among its principal leaders, but it is diverted to the

service of another cause: it is no longer a question of contesting the old authority of a centralised and absolute power 'subjecting' 'subjects' through the grace of God, but of strengthening bourgeois power. In other words, subjects must not, in respect to the 'place' they have been assigned opposite the object (Reason and Nature), really have equal rights, but they must think they have. (Otherwise bourgeois ideology would turn against bourgeois power.) How can the conjunction of the oppositions of subjectivity/objectivity and Reason/Nature achieve this objective? It fulfils its ideological role by parasitically attaching itself to the bourgeois revolutionary ideology of subject/object, and drawing off all its strength and power of persuasion.

To follow this, it is necessary to recall the two opposing imperatives which flow from the subjectivity/objectivity and Reason/Nature amalgam: we (subjective) subjects must submit to objective reality, we (rational) subjects must control Nature and keep it under control. Under these conditions what happens to the 'place' assigned to the 'subject' opposite the 'object'? The subject is at the same time *above* the object and *below* the object! (The subject dominates the object and 'subjects' itself to it.) It is not only a very uncomfortable position for anyone without the gift of ubiquity it is also contradictory; unless that is, those who bring into submission and those who submit are not the same. But who is going to bring into submission and who is going to submit? One can say that in relation to the object (with Reason, Nature, and the nature of things) *everybody* is a subject; and in turn everybody is called upon both to bring into submission and to submit. The bourgeoisie no longer knows, or pretends no longer to know, who is the master and who is the slave. For everybody is *called upon* to bring into submission, i.e. to assume responsibilities and powers according to his merits and competence, and if everybody is in turn called upon to submit, it is no longer to masters that he has to do so, but to law. Masters no longer exist, there are only leaders, themselves only the guarantors, the preservers, the guardians — in short the servants — of this order. These servant-leaders are themselves *subjected* to the order and the laws of society which are no more personified than the laws of Nature; they are subjected to them just like 'anyone else'. (And woe betide that leader who weakens belief in this ideological schema by some tax-evasion or abuse of language.)

Unlike religious ideology which explicitly consecrates the authority of those who have power by basing it on the absolute Subject, here authority

bases itself on the nature of things, on Reason and on objectivity, which also have absolute value. Thus, it is now important to characterise contemporary politics as 'rational', 'necessary', 'realistic', 'objective', and even 'scientific'! In short, those who exercise authority justify it by claiming that they are on the side of reality, of objectivity, and of reason; as for those they keep under control, they are on the side of subjectivity (ignorant) and of Nature (uncultured) (7). But at the same time we are taught that *all subjects are, at the same time*, subject to reason, that all have both to bring into submission and to submit, and that all are given the same culture, the same Reason, the same knowledge.

One might say that the subject/object ideology, as transformed by the subjectivity/objectivity and Reason/Nature amalgam has become a *substitute* for the subject/Absolute Subject ideology. Here the Absolute Subject is no longer God-king but 'Reason' and 'objectivity'; which now 'occupy the single place at the Centre', which is also the place taken by those who have power; and it is they which class the infinity of individuals as subjects. Let us paraphrase a formula of Althusser's concerning religious ideology (p. 35). It is in reason and objectivity (and sometimes more spectacularly in the show and glory of "scientific" reason and objectivity and their technological display) that the subjected subject now contemplates its own image (the image of a subject equal to all subjects, still tainted with subjectivity and non-culture (Nature), but called to Reason and universal objective knowledge) and finds the guarantee that recognising itself in this image it will be saved . . .

Is it excessive here to speak of *salvation*? Here is a learned example of this salvationism:

Perhaps even more than an 'explanation' (. . .) man needs to go beyond himself, to transcend himself (. . .) No value system can pretend to constitute a real ethic, unless it proposes an ideal which transcends the individual to the point of justifying, if need be, his sacrifice. By the very loftiness of its ambition, the ethics of knowledge could perhaps satisfy this demand to go beyond. It defines a transcendental value, true knowledge, and proposes not that man should make use of it, but that from now on he should serve it through a deliberate and conscious choice'. Jacques Monod, *op. cit.* (p. 192).

Faith in 'progress' through science is another version of this salvation, less 'noble' and more current than that of Monod.

6. *The Ideological Role of Objective Knowledge, When It is Opposed to Subjective Opinions*

If knowledge and opinions are opposed to each other, it is due to the ideology we have just outlined. The role of this opposition is to draw different lines of demarcation between what is acceptable and what is not acceptable for those who are in power.

Objective knowledge, *as opposed* to subjective opinions, *determines* 'objective reality' in relation to which the 'subjects' must define themselves and submit. What we learn from objective knowledge must not be put in doubt; it would be sheer madness not to submit to it . . . And it would be sheer madness not to submit to the decisions of the powers that be when such decisions are the fruits of this knowledge. (8)

Objective knowledge is universal, it is the same for every subject; and all the better if, as though by chance, the imperatives of knowledge regularly match the objectives of the authorities (at all levels and in all fields). Let us see how this happy chance occurs . . .

What are the imperatives of knowledge which decide what is acceptable and what is not . . . ? They come straight from the scientific ideal. They are observation, faithfulness to facts, the obligation to keep to reality, operative value, and scientificity as the exclusive access to the truth. In reality these imperatives of knowledge have an imprecise content, they are rather like invocations, and all send us back to the even more vague requirement of 'objectivity'.

(a) *One must keep to what is observable*

What is not observable is not acceptable. It follows that the feelings and desires of people cannot be taken into account in the decisions which must be taken for security, defence, economic growth, order, legality, profitability, educational selection. (As has been pointed out.) This imperative consigns to subjective non-reality not only 'inner' life (feelings, desires, needs), but also everything connected with individual interests (including life and death).

(b) *One must keep to the facts*

This means that 'value judgements' which call into question the facts endorsed

by the powers that be can be ignored. These value judgements are rejected as "subjective opinions", or as partisan options, stripped of objectivity.

(c) *One must keep to reality*

To promote changes not foreseen by the authorities and which are not already sketched out in established 'reality', becomes an unrealistic enterprise. It follows that to forbid these changes is to make a show of reason.

(d) *One must keep to what is efficient*

This imperative is in competition with the contemplative ideal of science. But it is powerful. The idea of Bacon's, of science as a producer of wealth, has become the powerful ally of industry. Science is steadily turning into technology and from now on wants to be 'operative'. It is not by chance that the word 'operative' is (improperly) used to refer to efficiency. One must keep to what is efficient, so that any reality which is not in accord, either directly or indirectly, with the aims of production, or which does not appear to be profitable, is consigned to non-reality.

(e) *One must keep to what is scientific*

Anything which does not belong to 'scientific' knowledge is unacceptable. Outside of science there are only idle chat and subjective opinions. But what is scientific and what is not? The words 'science' and 'scientific' are used many ways; today they are used to designate the so-called Natural Sciences, as well as the so-called Human Sciences; even sexology, pedagogy, journalism and philosophy are now 'scientific disciplines'. If we take a closer look, the label 'scientific' simply covers all university and academic 'knowledge', the 'knowledge' established and institutionalised by the class in power. Anything which is said outside of this established knowledge is not recognized as scientific.

III. Ideology Linked to the Natural Sciences

7. *Ideology Based on the Natural Sciences*

The ideology which opposes 'subject' and 'object', with its connotations of

objectivity, Reason, subjectivity, Nature, is closely linked to the 'Natural Sciences'. What is this link?

A scientific practice is always linked to a *general* discourse which goes beyond particular practices: for example, one which asserts the demand of objectivity, or one which puts forward the operative ideal. Such a general thesis gathers together the different scientific practices: it is this which serves as a common denominator, which makes them a part of 'science' in spite of their diversity. This general discourse is not simply superimposed onto scientific practices from the outside, in the same way as a 'philosophical' reflection on the sciences might be; it intervenes in the determination of methodological requirements and it partly determines the meaning, the orientation and the limits of these practices.

But at the same time, the general discourse seems to lead a double life. On the one hand, it forms a part of sciences, to such a degree that it is through it that a certain number of practices are included in a group which can be identified as being the family of 'sciences'; on the other hand, it joins in many other practices which are quite different from those called 'scientific'. We call in scientific objectivity at every turn and at every event, as we said at once, to draw dividing lines we are wanting. With regard to operational ideal which is gaining ground, we refer to it for example about business management or about military strategy or pedagogy . . . (9).

We could suppose at first sight, that that 'double life' to which the general discourse of science seems to lead, only results in the fact that we indulge too freely in it — it would be sufficient not invoking the principles and general constraints of science into areas which are unknown to it. But one can also propose that if these general constraints are so imperative inside as outside sciences, it is because they are coming from prevailing ideology. Otherwise, it is because scientific practices are defined across prevailing ideology of knowledge, it is because they are looking for their oneness or their common denominator into that ideology, it is because they accept that ideology as a general discourse of 'the' science, that that (ideologic) discourse also impose itself as inside as outside sciences.

We may say now that it is 'the' science (it is a group of united practices owing to a same general discourse) which constitute the basis of the knowledge ideology. For it is about science that the opposition between subjectivity and objectivity, which connotes and determines the ideology subject/object,

gets its guarantee. Science by its very existence and by its success gives substance to the exigency of objectivity against subjectivity and the credit of which disposes ideology coincides with the credit which possesses science.

All this does not imply that the sciences are by 'nature' in solidarity with this ideology: there is nothing to indicate that the general thesis of the sciences cannot change and redefine the scientific practices in terms that are foreign to this ideology, a redefinition which would be accompanied perhaps by modifications in this practice. In relation to this let us consider two contemporary perspectives in the sciences.

8. Different Perspectives

There is first of all, as we quoted above, the operative ideal which tends to substitute itself today for the ideal of objective observation, and which is alien to the oppositions of (subjective) subject/(objective) object and Reason/Nature. Does science deprive so much prevailing ideology of knowledge from its guarantee? Surely not. Because the way by which one commonly opposes knowledge and non-knowledge is not put in doubt by the operative ideal. This rather reinforces the prestige of scientific knowledge, makes even more ludicrous everything that is not connected with 'science' and by emphasising the opposition between knowledge and non-knowledge, lends its support to the objectivity/subjectivity opposition. So much is this the case that there is frequently confusion between the ideal of objectivity and the operative ideal; thus for example the genuine(!) 'objectivity' of any scientific matter is judged by its 'operative' character!

The second perspective is what certain Anglo-Saxon researchers have called 'critical science'; it consists in wanting to relocate scientific practice in its socio-political and cultural background. It is a question of confronting 'science' with that which is not science, of calling it into question according to non-scientific criteria; in short, of destroying the wall which exists between 'knowledge' and non-knowledge'. Such an approach, undertaken by scientists, can lead to the dominant ideology being deprived of the support given by the sciences. For it asserts that these scientists no longer *believe* that there exists a *region* of objectivity ('science') where the whole truth can be found, a gilded temple of knowledge surrounded by the darkness of ignorance and subjectivity, with some people inside and some people outside. These researchers,

on the contrary, witness the necessity of judging the 'inside' from the 'outside' . . .

This approach has the value of a testimony. But in addition to this testimony this 'critical' approach to the sciences has the advantage of showing that the sciences are *not only* a language and a unity of experimental practices, but that they are also a social, political, cultural and economic practice.

A socio-political analysis, although in juxtaposition to scientific theory, does in fact allow us to consider the connections between scientific theory and its conditions and finalities; not of course from the interior of scientific theory, as though one could open up a football and find inside the passing match. It is too easy to maintain that the connections between 'science' and 'the rest' are difficult to conceptualise since these connections are not visible, and cannot be formulated in the interior of scientific theory. It is true that scientific theory possesses a relative autonomy: it must not be confused with the conditions of its production, it does not change according to the weather, it can be the same in New York and in Peking. But the question is to reverse the perspective and instead of looking inside scientific theory for the traces of what is external to it, instead of being astonished at not finding the whole in the part, it is a matter of locating the (historical and changing) role of scientific theory and scientific practice, in socio-political life.

Moreover, if the socio-political analyses of scientific practice are 'exterior' to it, if they are *juxtaposed* to the exercise of the sciences, they nevertheless show the (political and scientific) necessity of a further undertaking: that of establishing a new general thesis (discourse) of the sciences.

The present general thesis of 'science' excludes from consideration the extra-scientific conditions and objectives of scientific practice (10). This thesis demands, in the name of scientific objectivity, that science should obey only its own imperatives, that its development should be ordered by nothing but its own *internal* logic. The general thesis of 'science' masks the relationship that in fact exists between the specific requirements of the sciences and social requirements, and it masks the fact that the perspectives of scientific research are subordinated to socio-economic constraints. The possibility can be considered that the sciences might be given a new general thesis. It would be a thesis which would define scientific truth in such a way that it was no longer juxtaposed to 'all the rest', and in such a way that scientific practice would

again be understood as a social and political practice, with the choices which that implies.

If they were given such a thesis, the sciences would cease to be defined through the dominant ideology of knowledge, and they would deprive that ideology of the indispensable support that they give it at present.

9. *The Sciences are Stripped of Their Critical Power*

To the extent that the sciences are defined through the dominant ideology of knowledge, they are stripped of their critical power.

In the 17th and 18th centuries, the truth of the Natural Sciences had a real critical force which brought into the light of day the social and political scope of scientific practice. As we have already mentioned above, it was a question of opposing the order of Nature or Reason to the order of the Monarchy and the Church. To accept only the truth which comes from the nature of things is to reject the 'truths' which come from elsewhere or from above and which are imposed by *authority*. It is also to give *value* to reality as against dogmatism, beliefs, prejudices and the magic of words which conveyed the established values and justified the social order. We need not think that all the people concerned with science had such an objective, or that every scientific discovery contributed to it. It is sufficient to note that the scientific thesis was, by giving *value* to facts, in opposition both to the dominant system of thinking and to the ideology which subtended it (subject/Absolute Subject). The scientific thesis was playing a critical role, and this is confirmed by the various forms of opposition which it encountered.

But everything changes from the moment when the knowledge of facts, instead of calling into question what is said and what one tends (is obliged) to believe, claims that it is sufficient in itself. Facts for facts' sake. Objectivity for objectivity's sake. Criticism can only exist if the sciences are to be examined on what are today called 'opinions', which presupposes that they are to hear the questions asked of 'opinion' in the language of 'opinion'. Instead of this, the partitioning between the sciences and 'the rest' is total. *Truth*, instead of resulting from the confrontation of what is said and what is, becomes confused with facts and imprisoned in the closed arena of the scientific thesis. On the one hand there is the 'objective' scientific knowledge of the facts, and on the other 'subjective' opinions or value judgements. Thought

is cut into two. And this is unquestioned only because of the prevalent belief that science is only made up of statements of fact obtained through neutral observation, through a pure contemplation of the Nature which surrounds us; also because of the conviction that value judgements are mere options which vary according to individual taste. Of course value judgements can be just that. Of course statements of fact exist. But to assert that the sun did not revolve around the earth, and that light was a wave, to carry out the dissection of human bodies, and to 'see' that the nerves originated in the brain and not in the heart -- that, too, was to make a value *judgement* on established ideas, and moreover on the old way of establishing relations with Nature (it was to reject the dominant ideology of the time: subject/Absolute subject).

The subject/object ideology of the sciences in the 17th and, more openly, the 18th century, demanded that humanity should have no other master but the laws of Nature and of Reason. It rejected other masters. The ideology of the division between subjectivity and objectivity on the contrary obliges the sciences to keep silent, that is to say to ignore what is 'exterior' to them, and to close themselves inwards, to speak about themselves and to finish by saying nothing, to turn themselves into operative (or operational) machines seeking their place in the system of production. The ideal of the 17th and 18th centuries is still floating above scientific practice, but it is no longer linked to that practice; it is merely an academic and ornamental slogan which allows us to forget the real conditions under which the sciences are practiced today.

Notes and References

1. This way of opposing knowledge to opinions is illustrated in the well-known book of Jacques Monod, *Le Hasard et la Necessite, Essai sur la Philosophie Naturelle de la Biologie Moderne*, Le Seuil, Paris, 1970. It must be realised that on this point Monod has merely illustrated what is an everyday and generalised practice of the dominant thinking.
2. On this point, see the works of Mario Bunge, especially *Scientific Research*, Springer, N.Y. 1967.
3. While we must denounce the manner in which this permits the ruling authorities to justify the oppression and repression of people in the name of the so-called 'objective' demands of reality, it does not follow that we should only accept individual values as significant, and that social and economic realities are to be despised. In both cases the dualism of subjectivity/objectivity produces mystification, and one remains a prisoner of the individual/reality opposition.

4. The question is then asked, in terms of rational scientific knowledge, and first of all in terms of physics: What is ascribable to reason and what to data? Such a question is based on a presupposition: that of the dualism of reason and data. This dualism determines the very meaning of the question and anticipates the answer which will be given by allowing no way forward other than the division of the 'dowry' between data and reason. A dead end.
5. Foucault, M., *Les Mots et Les Choses* Gallimard, Paris, 1966.
6. Althusser, L., 'L'Ideologie et appareils ideologiques d'etat (Notes pour une recherche)', *La Pensee*, no. 151, June 1970, p. 29.
7. There can be no other culture, no other reason, no other knowledge, apart from those of the dominant class.
8. How can those who are in power make us believe that they are on the side of reality, objectivity and reason? By taking account of their knowledge. It is through the acquisition of knowledge (at school and at university) that one passes from subjectivity to objectivity. It is knowledge which guarantees the objectivity and rationality of the leaders.
9. It will simply be noted here that there is an ambiguity in the word operational which is connected as much to *operationalism* as to *operational* research . . . Such an ambiguity is no accident. The two different interpretations of the word 'operational' translate the same option: that of putting in parentheses *reality*, or the question: What is it? What about the nature of things, their meaning and value? (What about light, matter . . . , the good of man?) This is done to the benefit of another preoccupation which could be roughly formulated as follows: provided that it works . . . (operational concepts, economy, functionalism-functional, economic, efficient . . .) There is need for an analysis of how the ideological implications of that operational ideal are articulated in the ideology of objectivity we are analysing, but this is not our present purpose.
10. "... researchers who stood up against the arms race or against the war in Vietnam have, at the same time, continued to receive military funds. Everybody found that normal, because for researchers, research as such is the main priority, a priority which requires money (. . .) Science is considered as a neutral field with its own laws". *Les scientifiques et la course aux armements, entretien de Pierre Thuillier avec Milton Leitenberg*, in *La Recherche*, Paris, No. 19 January 1972, p. 16.