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Environmental Communication Research in the French-Speaking World

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The aim of this chapter is to present and comment on the scientific literature on environmental communication published in French. We focused on a part of the so-called “francophonie,” the French-speaking world. The aim is to continue the inquiry started in Catellani, Malibabo and Pascual (2019), in order to present the internal features and dynamic of the research works published in French. This work aims at doing for the French-speaking world what Evans Comfort and Park (2018) have done for the English-speaking production. The main questions of our research are the following: How do we qualify environmental communication in the French-speaking world? What are its particularities? What are the scope and themes of the field? What can be said about it today?

We propose here a quantitative vision of the state of research in environmental communication in French-speaking Canada, France and French-speaking Belgium, with a more limited opening toward the French-speaking African context, particularly the Congolese (DRC). We therefore do not claim to be exhaustive concerning the French-speaking world as a whole; the choice of countries depends on our knowledge and the availability of data. This is in addition to the importance of the French-language scientific production of the countries considered in the field of information and communication sciences.¹

More than 300 French-language books, articles and theses on environmental communication have been published since the early 1990s in France, Canada and Belgium to a lesser extent. Environmental communication has been gaining ground in all media (books, doctoral theses, articles) since 2007 and particularly over the last five years with a tripling of production. It can be considered now as a research field in its own right, institutionalized within the information and communication sciences discipline, structured around a Study and Research Group (GER) on communication, environment, science and society. It was created in 2018 by two of the authors of this chapter (Andrea Catellani and Céline Pascual Espuny), recognized by the French society for information and communication sciences (SFSIC), and now includes about 50 confirmed researchers.

Although the overall richness of this field is still not well-known outside the academic world and is poorly used by popularization works² – a project to which the research community, now linked within the GER, is now committed to – the mapping of this field drawn up in 2019 by

Catellani, Malibabo and Pascual shows maturity not only in terms of production, but also in terms of the complexity of analysis and the intertextual framework that has been built up over 30 years.

Several waves can be observed in this literature regarding scholarly approaches and research sub-fields. While the beginnings of scientific research on environmental communication are essentially based on semantic analysis, the analytical and methodological spectrum is now much broader. These cover a variety of themes (e.g. journalistic coverage of environmental issues, organizational communication, advertising and greenwashing, risk and controversies) and propose hybrid analyses between several sub-fields, not to mention texts of critical reflection or theoretical framing that are not directly based on an empirical methodology (books and articles in journals such as *Hermès*, for example). In terms of sub-fields, the same configuration exists: a first wave of writings on environmental topics has been followed by a second wave that has focused on organizational practice and corporate social responsibility (CSR), including texts dedicated to analyzing the media coverage of environmental issues and the analysis of controversies. Today, the topics include questions concerning participation, devices, circulation and reception.

Another preliminary remark, which we will develop later in this chapter, is that this research field is built in an interdisciplinary way. This is in relation to social psychology and psychosociology, management sciences, political science and anthropology, geography, biology, environmental sciences, geosciences, epidemiology and others.

This presentation of environmental communication in the French-speaking world will be developed in four steps. We will start with a diachronic-historical presentation of the emergence of this field in French “info-com” (information and communication) research. Then, we will draw up a quantitative state of the art that will allow us to understand the dynamism of this field of research, preceded by a quick methodological note. In a third part, we will focus on the themes and subjects that are analyzed. The last part will focus on the main paradigms and fields, basing on the two previous steps; a classification of paradigms and sub-fields, specifically adapted to the French-language context, will be proposed. This will lead to some conclusions, concerning the strengths and weaknesses of this research field, and gaps in scholarship that researchers should address in the future. We hope that after reading this chapter, many collaborations will be created, driven by converging research interests in different continents and countries. The environment has no borders, and neither does environmental communication research.

THE EMERGENCE OF THE FIELD

Overall, we can formulate two major trends that we will develop. The first one concerns the emergence of environmental communication, which started in the 1990s from crisis and dispute situations. This origin will connote the field of knowledge and create a pressure toward research on societal impacts and behavioral changes. The second one concerns international opening and interdisciplinarity. Initially self-focused on the presence of environmental issues in the French-speaking professional world, it was not until the end of the 2000s that a second, more open, interdisciplinary and international breath of fresh air emerged.

Societal Impacts at the Heart of Environmental Communication Research

In French-speaking countries, the first researches on EC were conducted more than a decade later than the first Anglo-Saxon works (see Catellani et al., 2019), with the work of researchers such as Nicole d’Almeida and Françoise Bernard, and with the reflections of authors such as Thierry

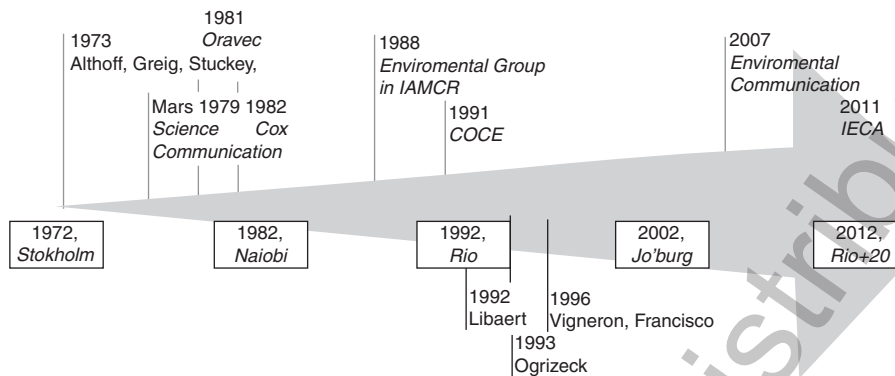


Figure 16.1 Timeline of EC first publications in English and French

Libaert (1992) and Michel Ogrizek (1993). Figure 16.1 presents three different timelines. The first (in the center) is made of international important meeting on environmental issues. The second (in the upper part) shows the first important publications in English on EC, and some dates that mark the evolution of the EC studies field, in particular the creation of COCE and of IECA. The third (in the lower part) shows the dates of the first publications in French on EC. The whole figure shows clearly the time difference between English-speaking (mainly American, at the beginning) and French-speaking researches.

The first French-speaking works and publications appear to be connected with the growth of environmental issues in mediated communication and in public opinion, and so to the practice of EC. Crises and disasters (like Chernobyl, Bhopal, the Exxon Valdez and the Erika oil spills) have been crucial for this evolution; later, associations (NGOs like Greenpeace and WWF) and institutions (like the United Nations Environment Program) have become important actors in this field. Thierry Libaert has summarized the evolution of the practice of EC, with a specific focus on France.

The emergence of environmental communication is difficult to date precisely. Its history is linked to the media treatment since the Torrey Canyon disaster [...]. This history is also linked to the anti-industrial protests that grew after the birth of major environmental associations, such as France Nature Environnement or Friends of the Earth in 1969, and Greenpeace in 1971; to its institutionalization in public policies with the creation in France of the first Ministry of the Environment and the following year, at the international level, with the launch of the first United Nations Conference on the Environment in Stockholm and the creation of the United Nations Environment Program (UNEP), as well as its inclusion in political discourse, particularly after 1974 and the first environmentalist candidacy in a presidential election, that of René Dumont.

(Libaert, 2016: 11–12, authors' translation from French).

Concerning organizations, in particular companies and institutions (governments or the European Union, for example), the practice of environmental communication is forming a shield: always according to Thierry Libaert (2016), environmental communication has also developed as a form of protection for organizations like businesses and institutions, concerning controversial subjects such as animal experimentation and GMOs.

In the French-speaking world as elsewhere, environmental disasters and scandals have driven the development of crisis communication; together with the increase of public concern about health issues, they have also increased the development of acceptability communication, concerning conflicts over projects such as highways, high-voltage lines, airports, and dams. Environmental issues have also invaded risk communication, with themes like pesticides and trawling.

This rapid overview shows the context of the appearance of studies on EC in the French-speaking countries, which are relatively recent and have focused on a social phenomenon that is still in progress, the one of the integration of the environment into social concerns. For example, new PhD research embraces thematic like reuse and recycling, ecological transition, or the question of participation and empowerment. These studies tried to offer a contribution by answering questions now faced by scientists and decision-makers, particularly regarding the dissemination of knowledge and behavioral changes. This research field is sometimes at the forefront of issues, and even ahead of society, but still little known, no doubt because of its hybridity and its youth.

Maturity of the Field and Gain of Openness: Interdisciplinarity and the Opening to the Cross-Cultural Scene

The evolution of French-speaking researches on EC, as it is presented in the following sections, shows a progressive increase in connections, structuration and institutionalization, even if with a certain delay in relation to the international (English-language) scene. Researchers have begun to collaborate between different French-speaking countries (Belgium, France, Canada, Africa, South-East Asia), but also toward the English-speaking and the Spanish-speaking worlds. We are confident that we will also see new results at the institutional level, at least at the inter-university level, soon. As for the moment, this improvement in connections has been almost completely spontaneous since no institutional impetus has framed the efforts.³

Research networks do exist, and there are some fine dynamics, such as the activities around researchers like Françoise Bernard or Nicole D'Almeida, conferences such as Communicating Green at UCLouvain in Belgium (2011) and the now numerous journal issues, like the seminal issue of the journal *Mots – les langages du politique* in 1994, entitled “Environment, Ecology, Greens.” A more recent example of journals are the two issues of RFSIC n. 21 (*Revue Française des Sciences de l'information et de la communication*) “Environmental communication at the age of the Anthropocene,” and *Etudes de Communication* n. 56 (« Sciences participatives: utopie démocratique, innovation, exigence sociale? » on Participatory Sciences, 2021). For a long time, they have not produced any explicit structuring and institutionalization in the form of networks, associations – at least, before the constitution of the GER group in 2018 – or scientific journals. An increase in intra- and inter-linguistic “connectivity” between these researchers is therefore essential. Another requirement is an increase in the production of textbooks and reference books that can enable the knowledge produced (often dispersed in a large number of journals, books and theses) to be synthesized, and the results of research to be made available to a wider public.

EVOLUTION OF FRANCOPHONE RESEARCH

What exactly does this field of research represent within the broader field of information and communication sciences in France and “francophonie”?

First, we need to present a very French-language (and most of all, French) specificity: French-language information and communication sciences concern both communication studies and information studies (Pascual Espuny, 2018, 83).⁴ French-language environmental communication

covers a wide range of media, political, influence and organizational issues. Environmental communication in the French-speaking world can be considered as a meta-field whose exclusive research focus is on environmental issues.

This vision is based on a bibliographic research work, made in 2019 and updated in 2020.⁵ We have used some specific combinations of keywords: environment and communication, sustainable development and communication, social responsibility and communication. We used this list of keywords to identify pertinent publications in a series of databases: theses.fr (a database providing access to all theses defended in France); the French version of the Libraries and Archives Canada database; Erudit; the HAL database; the search engines of the sites of scientific journals recognized as qualifying⁶ in the info-com sector in France. This mass of publications (books, thesis, articles) has been analyzed to understand the basic trends.

An Increase in the Importance of Research in Environmental Communication

Scientific articles are the major means of expressing thoughts in this field, and it can be noted that the spectrum of authors is much wider than just PhDs who have written a thesis on environmental communication. We will present below the quantitative evolution by media, in a finer analysis, but which generally reflects the same trend: a wave and rise from 2007 onward (Figure 16.2).

A total of 18 articles on the topic of environmental communication have been published in French in peer-reviewed scientific journals until 2019. Many other articles have already appeared in 2020 on the topic, confirming the dynamism and the take-up of this theme in info-com research. Data show the increase in articles since 2007. In 2010, the threshold of ten published articles over the year was crossed. The average number of publications on EC over this period was 18. The years 2011 and 2016 show peaks in articles, with 27 and 36 publications, respectively.

The first articles in our list are contemporary with the first defended theses. The first complete issue was published by the journal *Mots – les langages du politique* in 1994, entitled “Environment, Ecology, Greens,” edited by Lamria Chetouani and Maurice Tournier. These first articles were based on a typical French approach to EC, the semantic and discourse analysis, applied to a broad range of themes.

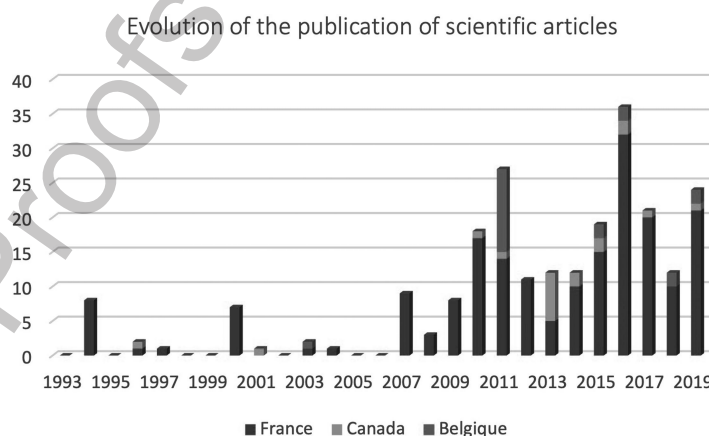


Figure 16.2 Evolution of the publication of scientific articles on EC in French in France, Canada and Belgium

As for Canadian French-language journals, many of them have published articles on EC on a regular basis (*Communication. Information, Médias, Théories* in 1993; *Argus* in 1996; *Protée* in 2010, *Revue de la Communication & Bibliothèques* in 2017). The journal *Communication* has been particularly important in this field, with 11 articles from 2001 to 2016 (2001, 2011, 2013, 2015, 2016).

The Belgian journal *Recherches en communication* has published 16 articles on EC, and two special issues, n. 35 and 42.

As for France, 23 journals hosted articles on the topic on a constant basis. After the journal *Mots. Les langages du Politique*, another important place of publication on EC has been *Hermès*, since 1996. Together with *Quaderni, Communication et langage* and *Communication et organisation*, these two journals alone have published more than half of the French corpus.

Fifty-two doctoral theses have been defended on EC issues in Canada and France. The first to date in Canada are those of Nathalie Lewis, *Ideology and Action Four Quebec Ecological Groups* (1994, University of Ottawa), and that of Sylvie Berthelot, *Study on the Motivations of Managers to Include Environmental Information in Their Annual Reports* (1994, University of Sherbrooke); the thesis of Jacqueline Rey, *Scientific Information and Lexical Morphology: The Linguistic System of Continental Water Ecology*, University of Lyon 3, is the first in France (Figure 16.3).

Many theses were defended in French-speaking Canadian universities in the 1990s (universities of Ottawa, Sherbrooke, Concordia and Montreal), on corporate environmental and CSR discourses. As for France, 42 theses were defended between 1994 and 2018, with two highlights from 2007 to 2011 and then from 2014 to 2018. There have been three theses defended per year between 2014 and 2019. The most represented universities are Aix-Marseille University and the University of Toulon.

As for the major themes of French theses, we can observe three periods. From 1994 to 2006, the attention was focused on the emergence of the environment as a concern for people. Two areas of interest in the following years were media and social treatment of environmental issues, and the links between environmental crisis, risk and communication. The most recent years show a larger spectrum, with a growing interest in public institutions, territorial networking, participation, decision-making and stakeholder involvement.

A More Tenuous Popularization

We identified some 20 books published on EC in France and Canada mainly, with different focuses, like the link between communication and sustainable development (Tremblay, 2007;

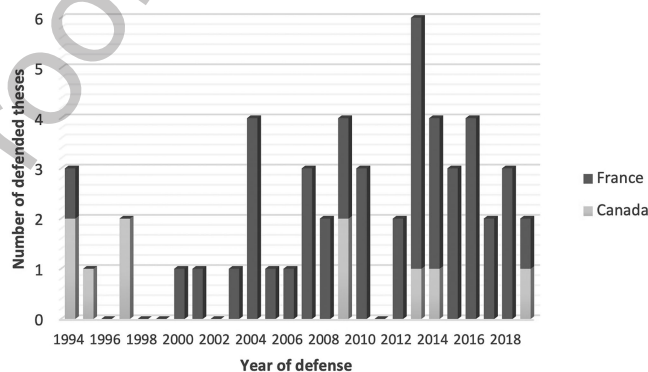


Figure 16.3 Evolution of the defended PhD thesis in French, in France and Canada

Tremblay, D'Almeida and Libaert, 2018). Many of these books are simply entitled with expressions like “environmental communication” or “sustainable development communication,” sometimes with a subtitle (such as *Environmental communication: issues, actors, and strategies* by Oumar Kane, published in 2016 by Éditions l'Harmattan, our translation). Books written by academics or by professional authors have sometimes preceded the increase in the number of scientific articles and thesis. Most of these books are monographs. Perhaps the first book on the subject is Thierry Libaert's practical book on “green communication” (1992).

OBJECTS OF STUDY AND METHODOLOGIES

Let us now turn to the major objects of study in French-language research in EC. By object of study, we mean the knowledge project that can orient research and guide methodological choices (Allard – Poesi et Maréchal, in Thiétart et al., 2014). An object of study is presented in the form of a general question articulating theoretical, methodological and empirical objects. Research objects in EC among French-speaking people are no exception to this rule. They articulate empirical, theoretical and methodological objects.

In general, the empirical objects dealt with among French-speakers are the media⁷ (including the Internet), organizations (in the broad sense) and the public (or, the actors). These empirical objects are observed from the point of view of their relationship with the environment, using theoretical and methodological tools borrowed from the social and human sciences. For example, there are studies on the process of erasing political divisions in Congolese daily newspapers dedicated to urban waste management (Malibabo Lavu, 2019), the development of environmental communication models for effective eco-socialization and the development of ecological behavior (Elongo et al., 2016), the communication and organizational challenges of biodiversity in French CAC40 companies (Lachaud, 2014), etc.

Each one of these three empirical objects is studied from different points of views that identify more transversal general themes. We prefer to classify French-language research publications from the point of view of these transversal themes. Thus, following an inductive analysis of existing studies, we found that French-language research converges toward three main themes, namely the climate agenda and its communicative implications in society, discourse and narratives of sustainable development, and the strategies, attitudes and behaviors of actors.

The boundaries between these categories of studies are not watertight, as some work may fall into one or the other category. Thus, it is not possible to reduce their authors to this classification. Moreover, the categories of studies presented below and illustrated by a few examples are not the only ones that exist in the field of Francophone research. They are simply treated more deeply and more broadly than others.

Objects of Study

Climate Agenda and Its Communicative Implications in Society

The issue of climate change is studied from the point of view of media, organizations or the public. Several aspects of the issue are addressed, such as the social and political causes of this phenomenon and the controversies it generates (Comby, 2013), its representations in political (Lamizet, 2013) and media discourse (Bolka-Tabary, 2012). Francophone researchers are also interested in analyzing discourses dedicated to climate change and the environment. They particularly study the discursive constructions of climate change (Susan Kovacs, 2012), performative strategies

in environmentalists' discourse (Gramaccia, 2011), discursive strategies mobilized to express emotions due to climate events (Teissier, 2008) and correlations between the climate agenda and popular science journals aimed at young people on climate change (Micheau, 2012).

Correlated with the consequences of global warming, addressed in terms of crisis, risk or sensitive subject for organizations and society as a whole, some articles deal with crisis communication, sensitive communication (Libaert and Allard-Huver, 2014), the construction of environmental crisis (Allik, 2018), the discourse of legitimation in the event of a crisis (Amira, 2014), the transition from risk confrontation to resilience (Gilbert, 2013) and media representation of the ecological crisis (Abi Karam, 2013). Others are interested in the transition from risk confrontation to resilience (Gilbert, 2013), and the role of information in the management of environmental health risks (Maison, 2010).

Discourse and Stories of Sustainable Development

In this category, the researchers are generally interested in topics related to argumentation and narration of sustainable development. The studies focus particularly on the context in which the concept of sustainable development emerges and how its discourse is transmitted, disseminated and evolves over time (Pascual Espuny, 2007). These scholars approach this concept as a communicational innovation (Gagnebien, 2012), and also show how it strongly influences discourse in different areas of society, such as education (Kohlmann, 2017), architecture (Camus and Durand, 2015), tourism (Marcotte and Bourdeau, 2014), energy (Daruihe Ismaïl, 2004), agriculture (Dondeyne, 2010) and many others. They open up new horizons through the concepts they address, such as eco-ICTs (Deltour et al., 2010), the sustainable city (Gagnebien and Bailleul, 2011), sustainable tourism (Elisabeta Pomeanu, 2013), businesses and CSR in its environmental dimension (Catellani, 2016) and many others.

Actors' Discourse, Strategies, Attitudes and Behaviors

The objects of study in this category generally concern the interactions between man, individually or collectively, and the environment. They consist of an analysis of the development of the anthropopoiesis into a semio-ecopoiesis (Calame, 2017), an examination of the anthropocene (Petitimbert, 2017), the issues and strategies of actors in environmental communication (Kane, 2016), the motivational power of actors (Huiban et al., 2017), their strategies, the change in their behavior, the logic of their commitment and their participation. Participation is studied from several angles. Francophone researchers are particularly interested in alternative forms of participation (Crémin et al., 2018), public participation in environmental conflicts (Boyer et al., 2017), participation as one of the strategies to get out of the paradox linked to sustainable development (Boulanger, 2017), the participatory injunction at work in the imagination of the Internet and in the principles of sustainable development (Galibert, 2013).

This category also includes studies on eco-citizen engagement (Hily, 2018), responsible environmental behavior (Kurtycz, 2001), the impact of information on the functioning and behavior of man considered as a dissipative structure (Javeau, 2016), social innovation among actors of the social and solidarity economy (Duracka, 2016), environmental activism (Allouche, 2015), the perception of journalist-activists (Vrignon, 2015), the process of territorial dialogue to combat violent floods (Riegel, 2018), the regimes of disagreement marking the contestation of nuclear power (Carlino, 2018), the multiplicity and complexity of relations between activists and journalists in anti-nuclear information mobilizations (Chambru, 2015).

All in all, the various studies that we have just mentioned as examples in each category of study objects show both the extent and the dynamism of the French-language field of research in environmental communication. However, the entry into this field through the constituent themes of its objects of study has not made it possible to identify the methodologies used to examine these objects. Hence, there is a need to briefly present a list of the analysis methods generally used, even if we return to them in more detail in the last part of our chapter.

Methodologies

There is a wide range of analytical methods and techniques that are used in research on environmental communication among francophones. Discourse analysis is used in works on organizations, institutions, the media or actors, etc. Some of these works also use content analysis (in its different meanings), lexicometry, lexical analysis, semiotics, semio-pragmatic, eco-semiotics (a new emerging method), etc. Studies devoted to actors' strategies and to behavior change, and related areas use interviews, questionnaires, experimentation (sometimes combined with netnography), netnography associated with ethnography, relational analysis as developed by the Palo Alto School (Schott, 2016), participant observation, document analysis, action research and ethnomethodology.

THEORETICAL AND METHODOLOGICAL PARADIGMS

The lists of methods and objects of the previous section pave the way to the identification of more general tendencies concerning the French-language research on environmental communication. As stated in the introduction, this research has developed in ways that do not fit well into the frame of the main international (English-speaking) typologies. Hansen (2011) distinguishes researches on the production of messages, like in the case of newsrooms, analysis of contents and analysis of effects, but this tryptic is too general to describe the articulations of French-language research in an interesting way. Catellani et al. (2019) indicated that the seven categories⁸ proposed by Pezzullo (2017a, cited by Cox and Pezzullo, 2018/2016, 14), and the six categories⁹ proposed by Cox and Pezzullo (2018/2016), are interesting but do not completely fit the francophone scholarship. For example, the Anglo-Saxon tradition of rhetorical studies is completely replaced in the French-speaking world by the semiotic and discourse analysis approaches.¹⁰ Also, as already stated, in France, the specific academic discipline (recognized by the national governmental scientific authority, the "Conseil national des universités," CNU) puts together communication studies and information studies, and the last research field is completely absent in the English-speaking typologies.¹¹

A way to understand the French-language articulation of researches on information and communication that will also help for describing the researches on environmental communication is to have a look at the book published in 2018 by the "Standing Conference of Directors of Research Units in Information and Communication Sciences" (CPDirSIC). This book presents ten research fields (p. 12):

media and journalism; images, film, audiovisual media and cultural industries; public and political communication; communications and organizations; memory, cultural and heritage mediations; digital technology: strategies, devices and uses; information, documents and writing; design; organization of knowledge; knowledge mediation, education and training.

Our bibliometric analysis of articles, books and PhD thesis shows that many of these fields include works on environmental communication, but that environmental communication is not a specific sub-field identified as such. Going beyond this general overview, we can identify more specifically a shorter list of schools or “paradigms,” and another list of “research subfields” concerning environmental communication. Let us start with paradigms.

We take this term in a sense not far from the vision of Thomas Kuhn, as it is synthesized by the *Oxford Dictionary of Philosophy* (2008): “a framework of concepts, results, and procedures within which subsequent work is structured.” The French – and in a big part the French-language research on information and communication – is structured in a series of paradigms that includes specific theoretical visions of communication and its place inside society, and a specific way of using methodologies and research techniques. These paradigms are also schools formed around some influential founders. These schools or paradigms are not completely mutually exclusive nor airtightly separated, as concepts and approaches circulate and sometimes mix, but it is often easy to identify specific “memberships” and even oppositions. We cannot describe all paradigms, and we limit to identify the ones that are clearly most influential on research concerning environmental communication. This is even if many publications cannot be classified clearly in one of these paradigms, and deeper observations can improve our list.

The *semiotic paradigm* is clearly important. We can distinguish two different contributions: theoretical reflection on themes linked to the environment, on the one hand, and analysis of textual and visual corpora based on semiotic analytical tools on the other. An example of the first contribution that could be placed also outside the field of information and communication sciences are some articles published in 2018 in the semiotic journal *Actes sémiotiques*. For example, “Pour une sémiotique anthropo- et éco-poïétique” (for anthropo- and eco-poietic semiotics) by Claude Calame, or the contributions of Nicole Pignier on design and eco-semiotics (2018). The examples of the second type of contributions are more abundant and various concerning different contents and supports, including media and organizational communication. Semiotics is often used as an analytical toolbox, in which authors draw in a more or less “orthodox” and complete way. We can find, for example, analyses on the representation of young people facing climate change in novels (Ferenc Fodor, 2012, inspired by the structural semiotics) and on organizational communication on climate change (Ferenc Fodor, 2011), or the analysis of climate change on TV (Laure Bolka-Tabary, 2012, more inspired by a semio-pragmatic approach), or the analysis of environmental themes in corporate reports or in internal corporate communication (Catellani, 2012, 2015). This paradigm is articulated into different “sub-paradigms,” following the distinctions between the heritage of structural semiotics (Algirdas Julien Greimas in particular) and other traditions, like the so-called “semio-pragmatic” one (that focuses on the analysis of sense construction inside interactions, and on how text prefigures relation with the reader).

A paradigm that is partially autonomous from the semiotic one is the one built around the works of Yves Jeanneret and other researchers like Emmanuel Souchier (GRIPIC research laboratory in Paris). These authors integrate semiotics elements with the attention to the circulation of cultural objects inside the public space. A crucial concept in this sense is “*triviality*,” a notion that indicates the creative circulation, transformation and interpretation of “cultural beings” (ideas, notions, texts, images). Yves Jeanneret himself proposed, for example, an analysis of the notion of “sustainability” (2010).

France has seen the development of a rich and specific tradition of *discourse analysis*, which developed in the 1960s as a reaction to the limits of content analysis, imported from the USA. This tradition forms perhaps another paradigm, linked to the rich French narratological tradition (influenced by the work of the philosopher Paul Ricoeur), to rhetorical studies, and

to the semiotic heritage too. Examples of the application of discourse analysis are articles like the one on controversies concerning water quality (Hervé-Bazin, 2014), the one by Senkel on corporate reports (2011) and in particular the articles published in the already-mentioned two issues of the prestigious journal *Mots. Les langages du politique*, in 1994 (issue 39) and 2019 (issue 119).

A specific paradigm is the one of “*engaging communication*,” developed by Françoise Bernard at the University of Aix-Marseille. This paradigm is based on works on persuasion and the usefulness of preparatory acts to influence behavior: it is an example of how external disciplines, like psychology and social psychology, can influence information and communication studies. This paradigm is present through a small number of theoretical and epistemological reflections (Bernard, 2011), but also theses (Amato, 2013) and empirical researches (Ely et al., 2018).

Alongside these paradigms, we can also observe less structured “research subfields.” They present a certain degree of internal connection (researchers interact through publication in the same journals and share a certain number of common research objects and notions), without a clear homogeneity concerning methodologies and theories. Specific paradigms can be applied to these research fields. They are open to the influences of different human and social sciences while not forgetting that the paradigms listed before are also the result of mixing and transfers of ideas from different scientific fields.

The research sub-field on *organizational communication*, including strategic communication of businesses but also communication of other types of organizations like NGOs and public institutions, presents different orientations. A research group inside SFSIC (the French national association of information and communication studies) contributes to interconnection of research in this field. Our corpus shows examples of more theoretical works (like Bernard, 2016 on eco-responsibility), semiotic analysis of discourses on CSR (like articles by Andrea Catellani), other types of analyses of CSR discourses (with authors like Catherine Loneaux or Patrice de la Broise), on greenwashing and green communication (Pascual Espuny, 2007), on public communication (communication of public and governmental institutions and concerning project of local institutions) and on NGOs (Jahier, 2016, 2017). Given the non-paradigmatic nature of this field, we can find examples of applications of engaging communication, discourse analysis and semiotic approaches in this field, together with theories and research techniques coming from fields like philosophy, organizational studies and sociology.

A specific sub-field not far removed from the previous one concerns *participation*. It focuses on all types of devices and situations linked to the action of taking part and improving and soliciting the action of taking part into decision-making and public policies. Some articles published in the scientific journal *Participations* (2017, 2018, like Boulanger, 2017 or Boyer et al., 2017) offer examples of this kind of analysis, based often on sociological analytical techniques. This sub-area has also developed as a result of the importance of public policies (national and local) in France, and of the development of legal impulses to improve participation and information of citizens (for example, via the « code de l’environnement » and a series of laws on environmental issues). A whole issue of the journal *Quaderni* in 2000 was dedicated to urban ecology.

Another sub-field that has developed in the French-speaking world is the *analysis of controversies, debates and polemics* concerning environmental issues, like natural resources and energy production (Stein, 2018 on coalbed methane, a thesis by Carlino, 2018 on nuclear energy) or the role of museums confronting controversies (Girault and Molinatti, 2011). An “academy of controversies and sensitive communication,” made of experts and researchers, has recently been founded in France (<http://academie-ccs.org/>).

The analysis of *environmental contents in media and journalism* is a specific sub-field, with analysis like the ones by Comby on climate change (2009, 2015) and Chambru (2015), and others

on specialized press. This sub-field mobilizes different methodologies, like content analysis – also computer-based, discourse analysis and more sociological approaches.

As we said before, the French scientific sector of information and communication sciences also includes *information studies*. In an issue of the scientific journal “I2D – Information, données & documents” (2016), many different researchers proposed analysis on the application of sustainable development and CSR to information services. Some other researches deal with the implication of sustainable development for libraries.

This list is not exhaustive, and we cannot end it without underlining the fact that information and communication studies are intrinsically an “interdiscipline,” born from the contributions of different traditions (semiotics, sociology of media and communication, social psychology, discourse analysis). This means that it is sometimes difficult to distinguish what is inside and outside the discipline, and that authors tend to hybridize different theories, paradigms and methodologies that come from fields like language sciences, management studies, organizational studies, psychological and social studies.

CONCLUSIONS: STRENGTHS AND WEAKNESSES OF FRENCH-LANGUAGE ENVIRONMENTAL COMMUNICATION STUDIES

This research has tried to present some aspects of (a part of) the French-language research on environmental communication, focusing on the disciplinary field of “Information and Communication Sciences.” We explored the historical evolution of this field, also from a quantitative point of view, and then we described some specific objects, methodologies, paradigms and fields. These data allow us to point out some final elements.

In the field of information and communication sciences, environmental communication studies are more and more developed, with an increase in the number of doctoral thesis, articles, books, journal issues, meetings and conferences. They do not constitute a unified field for the moment, even if the constitution of a specific “research and studies group” inside the national French society of information and communication studies (SFSIC) in 2018 is a clear step toward more interconnection of researchers, groups and projects. The constitution of specific book collections, the launching of regular scientific meetings and the increase in the collaboration between researchers are among the basic objectives of this group.

Our work has showed that qualitative approaches dominate over quantitative ones. There are a large number of papers that are not based on structured original field researches, and that are aimed more at a critical presentation of notions, facts and situations. This is quite visible in a journal like *Hermès*, which develops an approach of social critique of communication based on the notion of “incommunication” (non-communication), proposed by Dominique Wolton. Empirical works coexist with papers in which critical thinking is less linked with specific empirical and methodological bases.

Some weaknesses of the French-language researches on environmental communication seem to emerge, even if we don’t have complete quantitative proofs and these observations are open to future researches. Visual aspects seem to be less studied than verbal texts (excepting some works on colors, cartoons or TV). It is the same for the presence of environmental content on the Internet and social digital media; only a few articles are dedicated to ecological aspects of digital technologies, and a new issue of the journal *Interfaces numériques* (2020) develops a reflection on the relations between artificial intelligence and the living. We also have the impression – constituting a hypothesis for future research – that there is traditionally a weak connection with the international, English-language research themes and tendencies. This is, of course, a problem

for both scientific communities. It is linked to the power of language, the defense of “francophonie” and the fact that publishing in non-French journals was traditionally not so important for the academic careers in France. Things change today: some calls for papers are now bilingual, and more links between SFSIC and associations like ICA and IAMCR open the way to an increase in trans-linguistic connections.

But there are also important strengths, such as the theoretical richness provided by the links with French-language contributions and authors (the so-called “French-theory”), the great sophistication of tools and concepts for the analysis of discourse and for the understanding of the circulation of issues in the public and mediatic spaces. In many cases, results are rich and nuanced, for example, concerning the reasons of limits to climate change coverage in the press (Jean-Baptiste Comby), the “trivial” nature of sustainability (Yves Jeanneret) and the contributions of engaging communication (Françoise Bernard). We hope that these strengths will increase, and that the “information and communication studies” will give a real contribution to the understanding of EC issues, and thus a contribution to the protection of life on this planet.

NOTES

1. France and RDC are the two most populated French-speaking countries, and Canada is the fourth (source: [http://esa.un.org/unpd/wpp/DVD/Files/1_Excel%20\(Standard\)/EXCEL_FILES/1_Population/WPP2015_POP_F01_1_TOTAL_POPULATION_BOTH_SEXES.XLS](http://esa.un.org/unpd/wpp/DVD/Files/1_Excel%20(Standard)/EXCEL_FILES/1_Population/WPP2015_POP_F01_1_TOTAL_POPULATION_BOTH_SEXES.XLS), accessed on October 30, 2020).
2. In our research, we found a very limited number of books in French dedicated to the popularization of environmental communication notions and researches. The books of Thierry Libaert (like the one published in 1992) are among the few exceptions.
3. An indicator of the recent increase in institutional interconnection between the French-language research world in information and communication and the international, English-speaking world is the very recent partnership between the International Communication Association and the SFSIC (Société Française des Sciences de l'Information et de la Communication), the national French research association.
4. This is true in particular for France, and in part for the French-speaking Belgium and the African context, not for the French-speaking Canada.
5. For a complete presentation of the work and of its methodology, see Catellani et al. (2019).
6. This means that publishing in the journals of this list is crucial for the academic career in this scientific area.
7. Climate change's covering or pesticides mediatic treatment, for example, have been widely analyzed in French-speaking research.
8. Analysis of the personal and interpersonal dimensions of environmental communication; analysis of the environmental communication of organizations; analysis of discourses concerning the links between environment and science, health and technology; analysis of participation in environmental decision-making; analysis of the treatment of the environment by the mass media (environmental mass media studies); analysis of environmental media and artistic practices; rhetorical research and cultural studies.
9. Environmental rhetoric; public participation and decision-making; collaboration and conflict resolution; media and environmental journalism; representations of nature in advertising and popular culture; social utility campaigns and engaging communication.
10. French-language discourse analyses also include researches on the rhetorical aspects of discourse, like in the work of Ruth Amossy, among others.
11. As already stated, the French articulation of the discipline is influential in other parts of “francophonie” (French-speaking world), for historical reasons.

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