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Pesticides

Pluridisciplinary Dialogues in Social and Human Sciences

Edited by
Nataly Botero, Hélène Ledouble and François Allard-Huver

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coordinated by
Andrea Catellani and Céline Pascual Espuny

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A member of the management committee of the *Communication, environnement, science et société* (CESS) study and research group of the *Société française des sciences de l'information et de la communication*[1], he is also the scientific director of the *Académie des controverses et de la communication sensible* (ACCS)[2].

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1 French Society for Information and Communication Sciences.
2 For more information and recent publications, see: www.allardhuver.fr and www.cv.archives-ouvertes.fr/francois-allard-huver.

ecological issues in France, both in terms of the formal features of these discourses (romanticism, use of metaphors) and public issues (programmed obsolescence, air pollution, pesticides). She has also worked on digital practices related to health and healthcare (rare dermatological conditions, continuation of pregnancy and neonatal palliative care). Her most recent publications are *Influenceurs et influenceuses santé*[3] and *Pollution atmosphérique à la une : visibilité médiatique d'un problème environnemental*[4].

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3 Botero, N. (2022). Influenceurs et influenceuses santé. In *Études de communication*, Sedda, P. and Hernandez Orellana, M. (eds), 58.
4 Botero, N. (2021). Pollution atmosphérique à la une : visibilité médiatique d'un problème environnemental. *Revue Française des Sciences de l'Information et de la Communication*, 21.
5 Ledouble, H. (2024). *Popularizing Science: The Complex Terminological Interactions between Scientific and Press Discourses within the Field of Agroecology*. ISTE Ltd, London, and John Wiley & Sons, New York.
6 Badau, E. et al. (in press). Médiatisation des liens entre l'usage alimentaire du sel et la santé dans le quotidien *Le Monde*. *Le Temps des médias*, 41.
7 Badau, E. and Hugol-Gential, C. (2023). L'alimentation à l'épreuve du risque et de la controverse. *Manifeste du réseau AGAP*.

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Antoine Blanchard holds a degree in agricultural engineering and a master's degree in the social studies of science and technology. His personal and professional career has taken several directions. His first focus is on digital transformations in the academic and research field: he has been working on these issues at the University of Bordeaux, France, since 2014, with a break between 2020 and 2023 within the Datactivist cooperative society. His second focus is a personal and associative commitment to science-society issues; after co-founding and chairing the Café des sciences community of web popularizers, he joined the board of directors of the Traces association. Last but not least, he holds an interest in environmental issues, particularly in relation to agriculture. He is a freelance researcher on these topics, drawing on approaches from information and communication sciences, digital humanities, and social studies of science and technology.

Eve Bureau-Point

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8 Bertomeu, J.R. (2019). *Entre el fiscal y el verdugo*. PUV, Valencia.
9 Bertomeu, J.R. (2021). *Tóxicos: Pasado y Presente*. Icaria, Barcelona.
10 For a list of his publications, see: www.orcid.org/0000-0003-2040-4507.

France and Cambodia on the social life of pesticides (production, market, regulation, uses, waste and residue management). At various stages of her career, she has studied the social construction of environmental health problems. Since 2020, she has coordinated the SHS-pesticides network with Carole Barthélémy.

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Alain Garrigou is a professor of ergonomics in INSERM's EPICENE team, and the vice-president in charge of quality of life and health at work at the Université de Bordeaux. His doctoral thesis, supported in 1992 at the CNAM, focused on worker participation in the design of the Figaro printing works. He carries on the legacy of ergonomics pioneers such as Alain Wisner, Catherine Teiger and Antoine Laville, both conceptually and methodologically, as well as the political role of ergonomics research in responding to the social and technological challenges put forward by studies and its changes. For over ten years, he has contributed to the development of ergotoxicology, a transdisciplinary approach integrating ergonomics, public health, toxicology, anthropology and law, with the aim of contributing to the prevention of exposure to substances which can cause cancer.

Fabienne Goutille

Fabienne Goutille is a researcher-speaker in HSS, attached to INRAE's ETTIS (Environment, Territories in Transition, Infrastructures and Societies) research unit. She took part in the ARC-CMR project as a member of the EPICENE team at INSERM (Université de Bordeaux, France). Her doctoral thesis in ergonomics deals with the construction of pesticide risk prevention, and addresses the issue of how farmers' concerns can be taken into account in occupational health policies through

extended research communities. The aim of her current work is to support individuals who are working and to make visible and address what challenges them by contributing to the development of personal and collective agency, particularly through the proposal of methods for shared analysis of work or exposures based on popular metrology and developmental ergotoxicology.

Annie Martin

Annie Martin holds a doctorate in private law and is a research fellow at the CNRS Societies, Stakeholders and Governments in Europe. She has a background in private international law and international trade law. Her publications focus on economic law and space law. More recently, her research has focused on conflicts of interest in the field of pharmaceuticals, European pesticide regulation, and the dissemination of standards between international organizations in the chemical sector. She is the author of several book chapters, including "Managing conflicts of interests at the European Medicines Agency. Success or weakness of the soft law tools?"[11] and "The limits to access to information on risks concerning pesticides"[12].

Clémence Rambaud

Clémence Rambaud, a labor lawyer, took part in the ARC-CMR project in 2015 as part of INSERM's EPICENE team.

Jan Smolinski

Jan Smolinski holds a doctorate in sociology, specializing in the sociology of uses, markets and the digital environment, using pragmatic methods. His research ranges from the design of innovations to their assessment, and examines how digital technologies transform user experiences. Sectors include the food industry, mechanical engineering training, tourism, mobile marketing and cultural mediation. As a postdoctoral fellow in the SAGE (Societies, Actors, Government in Europe) laboratory at the University of Strasbourg, France, he is currently involved in the NA'Stras (digital tools for healthy and sustainable food in Strasbourg and the

11 Martin, A. (2021). Managing conflicts of interests at the European Medicines Agency. Success or weakness of the soft law tools? In *Conflict of Interest and Medicine Knowledge, Practices and Mobilizations*, Hauray, B. et al. (eds). Routledge, London.
12 Martin, A. (2017). The limits to access to information on risks concerning pesticides. In *Governance and Perceptions of Hazardous Activities: A Franco-German and European Approach*, Kresse, B. and Lambert, E. (eds). University of Hagen, Hagen.

Bas-Rhin region) and Phyt'Info (digital tools for pesticide reduction) projects. His most recent publications are entitled *Des dispositifs numériques d'aide aux choix alimentaires aux dispositifs des jugements : quelle régulation de l'information des consommateurs?*[13], *Un musée qui conjugue les temps composes*[14] and *How can the use of a mobile application change the course of a sightseeing tour?*[15].

Laurence Thery

Laurence Thery is the Director of Aract Hauts-de-France (Agence régionale d'amélioration des conditions de travail), and holds a master's degree in sociology from Sciences Po Paris. She coordinated the ARC-CMR project with Alain Garrigou in 2015.

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Albin Wagener is Professor in discourse and communication analysis at the School of Social Sciences at the Catholic University of Lille. Working in the ETHICS research lab, he specifically works on digital, social and environmental discourse in the public, media and political spheres. He specializes in communication issues within social networks. He is the author of *Blablabla : en finir avec le bavardage climatique*[16], *Mèmologie : théorie postdigitale des mèmes*[17], *Ecoarchie*[18] and *Discours et système*[19]. He has also written a study on representations and perceptions linked to climate issues in France, during Emmanuel Macron's first five years in office (2017–2020)[20].

13 Smolinski, J. and Lambert, E. (in press). Des dispositifs numériques d'aide aux choix alimentaires aux dispositifs des jugements : quelle régulation de l'information des consommateurs ? *Revue interdisciplinaire d'études juridiques*.
14 Smolinski, J. (2021). Un musée qui conjugue les temps composés. *Antiquités nationales*, 50–51.
15 Smolinski, J. and Calvignac, C. (2019). How can the use of a mobile application change the course of a sightseeing tour? *Tourist Studies*.
16 Wagner, A. (2023). *Blablabla : en finir avec le bavardage climatique*. Éditions Le Robert, Paris.
17 Wagner, A. (2022). *Mèmologie : théorie postdigitale des mèmes*. Éditions de l'Université de Grenoble-Alpes, Grenoble.
18 Wagner, A. (2021). *Ecoarchie*. Éditions du Croquant, Vulaines-sur-Seine.
19 Wagner, A. (2019). *Discours et système*. Peter Lang, Lausanne.
20 See: www.sysdiscours.hypotheses.org.

Foreword

With the growing power of questioning, social mobilization and lawsuits brought against industries, and also with the increase in public policy systems with reduction objectives, pesticides have become a concerning matter, shaking up the social, economic and political spheres. Researchers in the humanities and social sciences (HSS), attuned to societal changes, have become increasingly involved in these issues. Up until the end of the 20th century, pesticides were rarely the subject of studies in the HSS in their own right. However, since the 2000s, a field of study has been progressively emerging in French academia, with numerous studies, teams and researchers documenting the controversies raised by the production, regulation and use of pesticides[1]. It was against this backdrop of expanding work in the social sciences and humanities that a network was set up in February 2020. Coordinated by Eve Bureau-Point and Carole Barthélémy, it had a view to better identify the scientific community on the subject, the diversity of work in progress, and link people with their knowledge on the subject.

The network's activities focused on organizing a series of study days (annual or biannual) and managing a mailing list designed to facilitate the flow of information concerning HSS work on pesticides (events, publications, calls for projects, etc.). To date, 120 people have subscribed: an almost equal number of men and women, 50 researchers, around 20 teacher-researchers, and 40 doctoral and postdoctoral students, underlining the interest of the subject for young researchers. Around 50 people work for EPSTs, mainly INRAE, while the others work in joint research units. Sociology (37 people) and anthropology (18 people) are the most represented disciplines. Researchers in agronomy (11) and life sciences (10) have also subscribed, underlining the network's appeal to colleagues outside the HSS field.

1 Bureau-Point, E. and Temple, L. (2022). La recherche en sciences humaines et sociales sur l'objet pesticide dans le cadre académique français : état des lieux et perspectives. *VertigO – la revue électronique en sciences de l'environnement*, 22, 2.

Economics (11), geography (7) and history (5) are the other main disciplines represented. In addition to facilitating exchanges within the pesticide research, this list is proving to be a very useful way of linking researchers with public policy or civil society players. They can also be used to meet a variety of social demands (such as finding speakers for public debates, improving the research-public policy interface, etc.). They also have several objectives during the study days: to deepen the angles of analysis in HSS on the "pesticides" matter, to reinforce interdisciplinarity (HSS/environmental sciences/medical sciences interactions) and to improve the link between science/society (impact of research in society, research systems and knowledge sharing). On each day, a moment of collective reflection is devoted to the network's coordination and the choice of themes to be addressed on future days. Participants propose new topics, and an organizing committee is set up with the network's initiators and theme leaders. Three study days were thus organized in 2020, 2021 and 2022, each of which was the subject of a publication (a thematic issue in the *VertigO*[2] journal, an article for the "Vie de la recherche" section of the *Natures, sciences et sociétés*[3] journal, and a collective work published by OCTARES)[4]. The fourth study-day event was held in Paris in March 2024, on the theme of pesticide industries.

Other events were organized in parallel with those of the network, such as the "*Pesticides : dialogues pluridisciplinaires en sciences humaines et sociales*" (Pesticides: multidisciplinary dialogues in the humanities and social sciences) study days in Dijon in October 2021, which led to the publication of this collective work. Organized by Nataly Botero, Hélène Ledouble and François Allard-Huver, as well as laboratories specializing in communication and media issues (CIMEOS, CREM, BABEL), these events have provided an opportunity to approach pesticides from the original perspective of linguistics, communication and interdisciplinarity. Case studies from sociology, ergonomics and economics were also presented on other aspects (prevention, public policy, farmer/riparian relations, etc.). The two-day event brought together around 30 participants, who specifically examined the discursive and argumentative activity surrounding pesticides, scientific and communication practices, legal initiatives and court proceedings, as well as productions from the cultural industries. These events were unique in that they brought together academic researchers, independent researchers and activists (crop reapers). Each of the conference contributors addressed these diverse issues from the perspective of their own discipline. Interdisciplinarity was a rare feature of the contributors' research. As

2 Bureau-Point, E. et al. (2021). Les mondes agricoles face au problème des pesticides. Compromis, ajustements et négociations. Introduction au dossier. *VertigO – la revue électronique en sciences de l'environnement*, 21, 3.
3 Bureau-Point, E. et al. (2022). Focus sur les deuxièmes journées d'études du réseau sciences humaines et sociales/pesticides. *Natures, sciences, sociétés*, 30(1), 82–88.
4 See: https://www.octares.com/accueil/306-exposition-aux-pesticides-ce-quen-disent-les-sciences-humaines-et-sociales.html.

the title of this book suggests, the focus was on multidisciplinary. Interdisciplinarity, which implies a real co-construction of research from different disciplines, was ultimately not very frequent in the research schemes of the participants over these few days. Its modalities, benefits and limits can be analyzed in a more specific framework, yet to be determined.

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Introduction

This book presents the work of researchers in the humanities and social sciences (SHS), presented at a conference held at the University of Burgundy in Dijon on October 21 and 22, 2021. The aim of this scientific event was to provide an overview of contemporary research on pesticides in the humanities, as well as to encourage multidisciplinary and interdisciplinary approaches on the subject.

Conceived and organized by researchers from the fields of information and communication science and linguistics, this conference outlined insufficient research in these disciplines. Indeed, the problem of pesticides seems to have been little explored in its communication, language and lexical aspects: a few articles were produced on the media coverage of pesticides in the written press (Ledouble 2020; Botero 2021) or on the controversial aspects of the subject. (Allard-Huver 2021). However, this issue was already debated by numerous geographers, sociologists, ergonomists, anthropologists and historians, which the conference brought together. Some were members of the SHS–Pesticides network, whose work reflects both a growing interest and a change in perspective in the SHS. While for much of the 20th century, pesticides were seen as a vector for agricultural modernization, a turning point has been reached in recent years: pesticides are increasingly being studied as problematic and controversial technologies (Galochet et al. 2008; Roussary et al. 2013; Aulagnier and Goulet 2017; Chateauraynaud and Debaz 2017; Chlous et al. 2017; Catellani et al. 2019; Foucart 2019; Jouzel 2019; Lambert 2020; Bureau-Point et al. 2022). The emergence of this research group and questions concerning the circulation of pesticide-related information in the public sphere reflect a deeper dynamic linked to environmental social sciences. Indeed, while the contribution of life sciences is essential to understanding and highlighting the issues surrounding the use of pesticides, so is the contribution of the SHS.

Introduction written by Nataly BOTERO, Hélène LEDOUBLE and François ALLARD-HUVER.

Our initial aim is to contribute to the emergence of cross-disciplinarity and the transfer of methods specific to interdisciplinarity, which has become necessary to understand the complexity of environmental issues (Jollivet 2008). Convinced of the richness that dialogues, confrontations and debates between different scientific disciplines can bring, such interdisciplinarity has proven difficult to implement and remains a work in progress on this subject, as on others. There are numerous barriers: the need for scientific acculturation to other disciplines; the identification of objects and the fields in between; the social organization of research (particularly in France, where disciplines have differentiated perimeters and are strongly framed by national bodies); the valorization of work in higher education and research; etc. The research presented in this book is therefore more of a multidisciplinary approach, which is nonetheless proving to be a fruitful scientific approach to the problems caused by pesticide use, and suggests avenues for further reflection.

As a result of our interest in discursive and linguistic aspects, this book pays particular attention to the ways in which the object of study is named, what it refers to and what it produces in terms of risks and benefits. Indeed, the act of naming "is less about designating fragments of reality than conveying the speakers' social experience"[1] (Branca Rosoff 2007, p. 14). As this social experience is not devoid of interest, the words used to refer to pesticides are conflicting and competitive. On the one hand, industries, trade unions and public authorities favor relatively established names such as "phytosanitary products" or "phytopharmaceuticals", recalling the need for plant protection, implicitly suggesting the threat imposed by "crop enemies", "pests" and "weeds". These products are thus often presented as unavoidable for agricultural production, food sovereignty and competitiveness. As such, these names can be used in communication strategies aimed at presenting these products in a relatively neutral way, in contrast to current debates on the issues they raise. On the other hand, the names used by associations and professionals with alternative practices, such as "agro-toxic", "biocide" and even "pesticide", have a more conflictual and accusatory impact. We are therefore faced with the same reference, but with a lexicalization which conveys opposite values: while the former are focused on plant protection, the latter evoke their potential to destroy biodiversity.

Historicizing and politicizing pesticide use

Crop protection has been documented since antiquity, with the use of sulfur, copper and arsenic. From the 1960s onwards, agricultural production began to modernize, abandoning the production methods of agrarian societies and adapting to Fordist capitalism. This period saw a series of technological innovations that

1 Author's translation.

enabled unprecedented increases in yields: mechanization, irrigation, monocultures and synthetic pesticides (Deléage 2019). However, this green revolution was achieved "at the cost of serious environmental consequences" (Gisclard 2020, p. 15). Biologists in the United States became interested in these effects, as witnessed by Rachel Carson's *Silent Spring* in 1962. At the same time, toxicologists set out to understand the consequences of pesticide use on human health. These studies were carried out thanks to public pressure, exerted by representatives of immigrant farm workers, who were particularly exposed (Jouzel 2019). With both a cognitive and a moral dimension, pesticide use has rapidly become a public problem in this country. From a cognitive point of view, a production of knowledge began to unfold, revealing facts and figures related to health consequences. Morally speaking, the highly problematic nature of the problem called for its resolution (Gusfield and Cefaï 2009, p. 9).

Historians and sociologists of science have identified three periods corresponding to modes of governance, linked to the widespread toxification of ecosystems and organisms (of which pesticides are just one manifestation). The first period is "government by control" (from the end of World War II to the end of the 1960s), in which pollution was seen as something that could be contained, circumscribed and limited. The second period is "government by risk" (from 1970 to 1990), in which the possibility of damage from pollution was accepted, but this damage remained manageable. The third period is "government by adaptation" (since the 1990s), characterized by the organization of a contaminated world that has become impossible to properly manage. The challenge is no longer to limit it, but to live with it, reflecting a shift in the paradigm of negative externalities, as public authorities disengage in favor of individuals, who are forced to manage their own exposure (Boudia and Jas 2019).

In Europe, challenging the dominant agricultural model only took place in the 1990s, placing farmers between the imperative of productivity and the expectations of civil society (Gisclard 2020), and also reflecting the complex position of regulators and institutions in charge of risk assessment and management. In France, large-scale public measures began with the Grenelle de l'environnement (political environmental forum), launched under the Sarkozy government in 2007. One of the working groups was mandated to reduce "the use of phytopharmaceutical products by 50% within ten years, if possible" (Ministère de l'Agriculture et de l'Alimentation 2020), giving rise to the Écophyto program. Two opposing perspectives clashed within this group: on the one hand, advocates of a systemic vision of agronomy, arguing for the profound transformation of agricultural practices; on the other hand, actors in favor of the substitution of the most dangerous pesticides (Aulagnier and Goulet 2017). This second vision was the one that prevailed from 2012 onwards, and which currently remains dominant in the Écophyto II plan, whose objective has been postponed to 2025. There are at least