



The placing of matter: industrial water pollution and the construction of social order in nineteenth-century France

Romain Garcier

Department of Geography, University of Sheffield, Winter Street, S10 2TN Sheffield, United Kingdom

Abstract

Set within a Douglasian framework, this paper explores the genesis and the social significance of the concept of environmental 'pollution' in late nineteenth-century France by drawing on printed scientific and medical sources and analysing archival material from administrations and industrial companies. 'Pollution' brought together various strands of water research (especially water analysis, bacteriology and hydrology) but also served as the foundation of a discourse on industrial responsibility. It was a response to the new material circulations created by industrial discharges in river. Paradoxically, it condoned industrial discharges in watercourses, which the hygienist community deemed less dangerous than domestic wastewaters. The co-production of pollution science and nineteenth-century industrial order explains why industrial water pollution was allowed to go unabated. The incapacity of the legal framework of the time to accommodate polluting discharges as legal objects and find legitimate places for them, the power politics at work around pollution and scientific controversies themselves made discharges very difficult to challenge in court. Accordingly, water pollution was regulated informally and industrialists were able to claim rivers as legitimate places for industrial matter against challenges brought up by other social actors.

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For R.J. McNeill studying the environmental history of the twentieth century, the colossal amounts of matter and energy put into forced circulation by industrialisation are the defining features and ultimate sources of most of the environmental changes brought about by human action.¹ Increased material circulation has had many environmental consequences and 'pollution' is one of them. In the environmental sciences, pollution seems trapped within a tautology – defined by the introduction of 'pollutants' into the environment. Standard textbooks will have long lists of chemicals and precise information about where they come from and how they interact with the environment and the biosphere.² However, what constitutes a pollutant is generally ill defined and remains only implicit. The chemical nature of the material or its origin (natural or artificial) is not enough to qualify it as a pollutant: many pollutants occur naturally but can also be synthesized. Likewise, concentrations or quantities alone cannot define pollution. Many mineral waters have such a high mineral content that they would be unsuitable for public distribution in water networks

but they are far from being considered 'polluted'. The environmental sciences' approach to pollution is essentially functional: their interest does not lie with what pollution *is*, but with what pollution *does* to ecosystems. Accordingly, pollution remains a rather slippery scientific concept – and probably cannot be defined outside of a framework that is essentially social.

Mary Douglas' famous definition of pollution as 'matter out of place' reincorporates pollution into the realm of the social.³ Douglas' well-known argument is that pollution cannot be understood without reference to an ordering framework that allocates legitimate places for matter and material flows. In this, pollution is a matter of position rather than ontology. For Douglas, 'there is no such thing as absolute dirt'⁴ and a pollutant is a material that escapes the conventional ordering of things – or those 'positioning frameworks' that each society or community develops and strengthen its cultural unity. Socially excluding some materials or people on grounds of impurity, the creation of purification rites and practices contribute to structuring a community's cultural practices

E-mail address: romain.garcier@normalesup.org

¹ J.R. McNeill, *Something New under the Sun: An Environmental History of the Twentieth-Century World*, London, 2000.

² R.M. Harrison (Ed.), *Pollution: Cause, Effects and Control*, Cambridge, 2001; J.P. Smol, *Pollution of Lakes and Rivers: a Paleoenvironmental Perspective*, Oxford, 2008.

³ M. Douglas, *Purity and Danger: An Analysis of the Concepts of Pollution and Taboo*, London, 1966.

⁴ Douglas, *Purity and Danger* (note 3), 2.

and values.⁵ Douglas applied the concept to the investigation of cultural taboos (e.g. menstruation or dietary restrictions) but made it clear that it could be extended to other 'types' of pollution and geographical objects – such as the pollution of rivers.⁶ Nitrates, for example, are considered as fertilizers when applied to a field but as pollutants if they reach a river or an aquifer. Accordingly, pollution can be best understood as a factor of the material's nature and of the symbolic and geographical place it occupies.

Douglas' framework has been used in the social environmental sciences to explore contemporary perceptions of environmental pollution,⁷ but some critics have argued that to apply it beyond its social anthropological context is somewhat misconstrued.⁸ Further, the a-historicity of Douglas' approach in particular seems problematic: insisting on pollution as a mental structure, as a way of ordering the world, eschews consideration of the historical emergence of new placing frameworks – that is, how and when some objects, materials or people come to be seen as impure, and the social implications of new discourses accruing around matter and impurity.

This is precisely this sense of historicity that I would like to recover in this paper by analysing the emergence of the environmental concept of 'pollution' in the late nineteenth century. If pollution (in Douglas' sense) reveals an underlying socio-symbolical order in a given society, what are we to make of the emergence of the scientific concept of pollution itself in Western Europe in the mid-1860s? By drawing on the French case, I suggest that the concept might be seen as a response to the environmental changes brought about by industrial development in the country: initially marshalled with reference to water issues, the scientific concept of 'pollution' was a way to confer meaning to water alteration from urban and industrial sources and thus contributed to the social 'placing' of matter discharged in rivers by large-scale industrial activities. By giving visibility to a whole slew of phenomena resultant upon industrial and urban discharges, 'pollution' came to provide a new lexicon with which to talk about human impact on the environment. Exploring the emergence of 'pollution' in this way sheds new light on the whole industrial experience in France and on the way the environmental and social modifications it induced were interpreted and accepted.

My argument is twofold. First, the concept of 'pollution' helped structure scientific research on water at a time when massive flows from urban and industrial sources began to severely modify river environments in France: scientific research was prompted by first-hand observation of environmental damage. Second, 'pollution' was also constructed as the foundation of an ethical and political discourse on the relationship between the environment and society in the age of industrialisation. In this sense, it was never completely 'objective' in so far as 'scientific knowledge [...] is not a transcendent mirror of reality. It both embeds and is embedded in social

practices, identities, norms, conventions, instruments and institutions'.⁹ Pollution studies did not simply establish facts and study processes but also provided sense and meaning to the environmental transformations brought about by fast-developing and controversial industrial activities. In this respect, the national and local controversies around 'pollution' served to define how French society might cope with the social and environmental consequences of increasing flows from industrial origin. New regimes of legitimacy were constituted around 'pollution', that ultimately shaped the relationship between the French and industrial activities for a long time.

Existing research on the subject has focused on urban pollution because of the density of archival information available, the urban location of early industrial undertakings and the relevance of pollution and contamination to hygienist thinking on urban health issues.¹⁰ Another strand of research has shown how watercourses have been reshaped by human action from the late eighteenth century to fulfil productive functions.¹¹ Pollution, in this case, is seen as an objective consequence of increased water use and the technical modifications of rivers. My approach here is somewhat different. I seek to delineate how 'pollution' became a new placing framework for industrial practices and waste materials. Paradoxically, its scientific content, political narratives and legal aporias all acted as *conditions of possibility* of river alteration in France between the 1860s and the Second World War.

To substantiate this hypothesis, I draw on two main sources. In the late nineteenth century, an exploration of pollution issues was conducted in a diverse literature – medical papers, treaties on hygiene, hydrology monographs – that had national diffusion. To document industrial water pollution on a more local scale, I used previously unexploited archival material from a region in eastern France, Lorraine, which by the end of the nineteenth century constituted one of the nation's industrial strongholds. In Lorraine, industrialisation picked up late (after 1870) and was driven by new, heavy industry (coal, steel and chemical industries) that severely impacted local watercourses. At the very same time, the concept of 'pollution' began to gain scientific currency nationwide, research conducted at regional institutions (for example the University of Nancy) was instrumental in developing the concept. In addition, a large amount of information produced by the local technical and administrative bodies of the state can be found in the public archives of every *département* (county) in the region¹² and some private archival sources have been of use, most notably those of the steel industry.¹³ Of particular interest here are the archives of the dominant French steel company until the early 1970s, the House of Wendel, because they include the private correspondence of the company's leadership on industrial and environmental issues.

In the first part of this paper, I analyse the emergence of the scientific concept of pollution in France in the mid-1870s. In the

⁵ M. O'Brien, *A Crisis of Waste? Understanding the Rubbish Society*, New York, 2007, 125–133.

⁶ M. Douglas, postface to the French edition of *Purity and Danger [De la souillure. Essai sur les notions de pollution et de tabou]*, Paris, 2005].

⁷ K. Bickerstaff and G. Walker, The place(s) of matter: matter out of place – public understandings of air pollution, *Progress in Human Geography* 27(1) (2003) 45–67.

⁸ O'Brien, *A Crisis of Waste* (note 5), 133 sq.

⁹ S. Jasanoff, The idiom of coproduction, in: S. Jasanoff (Ed.), *States of Knowledge: the Coproduction of Science and Social Order*, New York, 2004, 2. See also S. Shapin and S. Schaffer, *Leviathan and the Air Pump: Hobbes, Boyle and the Experimental Life*, New Haven, 1985.

¹⁰ M.V. Melosi, *The Sanitary City: Urban Infrastructures in America from Colonial Times to the Present*, Baltimore, 2000; C. Bernhardt, G. Massard-Guilbaud (Eds), *The Modern Demon. Pollution in Urban and Industrial European Societies*, Clermont-Ferrand, 2003; M. Gandy, The bacteriological city and its discontents, *Historical Geography* 34 (2006) 14–25; Christine M. Rosen, Noisome, noxious, and offensive vapors, fumes, and stenches in American towns and cities, 1840–1865, *Historical Geography* 25 (1997) 49–82.

¹¹ R. White, *The Organic Machine: the Remaking of the Columbia River*, New York, 1995; T. Steinberg, *Nature Incorporated: Industrialization and the Waters of New England*, Cambridge, 2004 [1994]; M. Cioc, *The Rhine: An Eco-Biography, 1815–2000*, Seattle, 2006.

¹² For river and water issues, the best archival sources are found in series M (industrial management) and S (public works) of the public archives. A comprehensive survey of public data sources for environmental history in France can be found in: A. Corvol (Ed.), *Les Sources de l'Histoire de l'Environnement: le XIXe Siècle*, Paris, 1999 and A. Corvol (Ed.), *Les Sources de l'Histoire de l'Environnement: le XXe Siècle*, Paris, 2003.

¹³ The archives of the steel companies of the Northern iron basin in Lorraine have been conveniently gathered in a dedicated facility in Sérémaigne after the merger of all steel companies in the late 1970s.

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