

Chapter 2

Social Theories of Environmental Reform: Towards a Third Generation

Arthur P.J. Mol

Abstract For quite some time environmental sociology has been preoccupied with understanding the fundamental causes of environmental crises. It is only since the 1990s that attention has shifted stronger to understanding environmental reform. This contribution reviews three generations of environmental sociological theory on environmental reform, labelled ‘policies and protests’, ‘ecological modernisation’, and ‘networks and flows’. The three bodies of social theory follow each other chronologically, and have been developed against the background of the specific social order of that time. But they all still have their relevance in understanding how contemporary modern society copes with environmental crises and challenges.

Keywords Environmental protests • Environmental governance • Ecological modernisation • Networks and flows • Globalisation

From Environmental Crises to Environmental Reform

During the late 1960s, and especially the 1970s several social sciences witnessed the emergence of relatively small environmental subdisciplines: within sociology, political sciences, economics, and later also within anthropology and law. Strongly triggered by social developments in Western industrialised societies, social scientists started to reflect on a new category of phenomena: the changing relations between nature and society and the reflection of modern society on these changing relations.

In retrospect, the framing of environmental questions within sociology and political sciences during the 1970s and 1980s was of a particular nature. The emphasis was primarily on the fundamental causes of environmental crises in Western

A.P.J. Mol (✉)

Department of Social Sciences, Wageningen Universiteit,
Hollandseweg 1, 6706 KN Wageningen, the Netherlands
e-mail: arthur.mol@wur.nl

industrialised society and the failure of modern institutions to adequately deal with these environmental crises. Environmental protests and movements, state failures, the capitalist roots of the environmental crisis, and environmental attitudes and (mis)behaviour were the typical subjects of environmental sociology and political sciences studies in the 1970s. Many of these studies were strongly related to neo-Marxist interpretation schemes (cf. [Enzensberger 1974 \[1973\]](#); [Schnaiberg 1980](#); [Pepper 1984](#)), and even today neo-Marxism is a powerful and far from marginal explanatory theory in environmental social science research.¹

It is only by the late 1980s, and especially in the 1990s, that attention in environmental sociology and political sciences started to change somewhat toward what the sociologist [Buttel \(2003\)](#) has labelled the social sciences of environmental reform. Strongly driven by strategic and ideological developments in the European environmental movement, and by the practices and institutional developments in some 'environmental' frontrunner states, European sociologists and political scientists began reorienting their focus towards environmental reforms (only later and sometimes less strongly to be followed by U.S. and other non-European environmental social scientists). In this contribution, I will review these social science contributions to understanding environmental reform, by focusing on three generations of social theories.² Although these three generations have an historical dimension in that each has been developed in a specific period (and geographical space), they are not mutually excluding or full alternatives. First-generation theories on policy and protests are still applied and relevant today, be it in a somewhat different mode as initially developed in the 1970s. In addition, insights from the first-generation theories have often been included in reform theories of later generations.

First-Generation Theories: Policies and Protests

Although emerging as a more central theme in environmental sociology and political sciences only in the late 1980s, the subject of environmental reform also has been around in the early days of the environmental social sciences. In its birth days in the 1970s (cf. [Mol 2006](#); [Buttel 2002](#); [Dunlap 2002](#)), American and European environmental sociology and political sciences dealt with environmental reforms predominantly via two lines: analysing national environmental policies and environmental state formation, and studying environmental NGOs and protests.

¹ Arguably, this currently is more the case in the United States than in European countries. For a comparison between the developments of U.S. and European environmental sociology (including the position of neo-Marxism), see [Mol \(2006\)](#).

² It goes without saying that such a focus and emphasis on environmental reform studies/approaches does not disregard other environmental social sciences traditions (e.g., attitude-behaviour paradigms; political economy views; social constructivist perspectives; cultural theories) as being irrelevant. Several of these other perspectives are drawn into our analysis later in this paper.

As environmental problems and crises were mainly conceptualised as (capitalist) market failures in the provision of collective goods, the emerging environmental state institutions were widely conceived as among the most important developments to deal with these failures. The establishment of national and local environmental ministries and authorities, new national frameworks of legal measures and regulations, new assessment procedures for major economic projects, and other state-related institutional innovations drove sociological and political sciences interests, analyses, and investigations towards understanding environmental reform processes. To a significant extent, these analyses were sceptical of the nation-state's ability to 'tame the treadmill' (Schnaiberg 1980) of ongoing capitalist accumulation processes and related environmental deterioration. Building strongly on neo-Marxist analytical schemes, the state was often perceived to be structurally unable to regulate, control, and compensate the inherent environmental side effects of an ongoing capitalist accumulation process. The environmental crisis was seen as being closely and fundamentally related to the structure of the capitalist organisation of the economy, and the 'capitalist state' (Jessop 1990) was considered to be unable to change the structure of the capitalist economy. Jänicke's (1986) study on state failure accumulated many of the insights and themes of this line of investigation. Notwithstanding this dominant position during the birth period of environmental sociology and political sciences, some did see and analyse the environmental state as of critical importance for environmental reform. This was the case, for instance, with tragedy of the commons/free-rider perspectives, more applied policy science analyses, or Weberian rationalisation views. Much research was normative and design-oriented, focusing on the contribution to and development of new state-oriented institutional layouts for environmental policy and reform. Environmental Impact Assessment schemes, environmental integration models, policy instruments, control and enforcement arrangements, and the like were typical subjects for agenda-setting and implementation research.

Environmental nongovernmental organisations and civil society protests formed a second object of early environmental social science research on environmental reform. Investigations into local community protests on environmental pollution and studies on local and national environmental nongovernmental organisations constituted the core of this second branch of environmental reform analyses in the 1970s and early 1980s. The resource mobilisation studies in the United States (cf. Zald and McCarthy 1979; McCarthy and Zald 1977) and the new social movement approach in Europe (cf. Offe 1985; Klandermans 1986) were two dominant perspectives among a wide range of studies that tried to understand the importance of civil society in bringing about social transformations in the core institutions of modern society. In addition to a clear emphasis on the protests against what were seen as the fundamental roots of the environmental crises (Pepper 1984), many studies also focused on the contribution of the emerging environmental movement to the actual and necessary reforms of the modern institutional order, be it via escapism in small communities detached from the dominant economic (and often also political) institutions (cf. the 'small is beautiful' postindustrial utopians; Frankel 1987); via public campaigning against polluters; via lobbying and influencing

political processes; or via awareness raising and attitudinal changes of citizens and consumers. Among environmental sociologists there was often a significant degree of sympathy with, and even involvement in, these new social movements. Many of the more radical and structuralist analyses of the ‘roots of the environmental crises’ saw – and still see – the environmental movement as the last resort for bringing about change and reform.

Arguably, one could even add a third category to environmental reform studies in the 1970s, be it that this category was stronger psychology – in stead of sociology or political science – based: research on environmental values, attitudes and behaviour. Strongly rooted in psychological models and theories a new line of investigation developed in the 1970s, relating changes in environmental values and attitudes of individuals to behavioural changes. Ajzen and Fishbein’s (1975, 1977) model of reasoned action formed the basis for much fundamental and applied research, trying to relate polling and surveys on environmental values with concrete environmentally (un)sound behavioural actions and changes in social practices. In sociology, Catton and Dunlap’s (1978a, 1979b) dichotomy of Human Exemptionist Paradigm (HEP) and the New Ecological Paradigm (NEP) formed a strong model for survey research, although it was initially developed to criticise the mother discipline for failing to take environmental dimensions into account in explaining social behaviour.

Reviewing in retrospect these contributions to social science research on environmental reform, one can draw several conclusions. First, with Buttel (2003) one can conclude that in the 1970s and 1980s the majority of the environmental social science studies were not focused on explaining environmental reform, but, rather, on understanding the continuity of environmental degradation. Second, among the relatively few environmental reform studies conventional political and civil society institutions received most attention, whereas economic institutions and organisations, or mixes (hybridisations) of institutions/organisations, were almost absent. This was, of course, related to the actual state of environmental transformations in OECD countries during the 1970s and 1980s. Third, although during that period neo-Marxist perspectives dominated the sociology/political sciences of environmental devastations, no clear single dominant theoretical perspective emerged among the variety of environmental reform studies. Fourth, although these traditions in studying environmental protest, politics, and attitudes originate in the 1970s, they still have strong positions in contemporary social sciences research on the environment. This is clearly illustrated in the environmental programmes of the annual, two-yearly or four-yearly conferences of, respectively, the American (ASA), the European (ESA), and the International Sociological Association (ISA).

Second-Generation Theories: Ecological Modernisation

From the mid-1980s, but especially since the early 1990s, an explosion of empirical studies have emerged on environmental improvements, ecological restructuring, or environmental reform. These studies have focused on distinct

levels of analysis: individual producers, households, or social practices; industrial sectors, zones, chains, or networks; nation-states or countries; and even global regions. These studies all tried to assess whether a reduction in the use of natural resources and/or the discharge of emissions can be identified, either in absolute or in relative terms, compared to economic indicators such as GNP. This development is manifest in studies on cleaner production, industrial metabolism, or industrial ecology; investigations on dematerialisation and factor four/ten; and perspectives on the greening of consumption, lifestyles, and households. Although most of these empirical studies emerged in developed OECD countries, many of them have – be it often a little later – also found their way to less developed parts of the globe.

Although not all of the conclusions in these studies point in the same direction, the general picture can be summarised as follows. From the mid-1980s onward, a rupture in the long established trend of parallel economic growth and increasing ecological disruption can be identified in most of the ecologically advanced nations, such as Germany, Japan, the Netherlands, the United States, Sweden, and Denmark. This slowdown is often referred to as the decoupling or delinking of material flows from economic flows. In a number of cases (regarding countries and/or specific industrial sectors and/or specific social practices and/or specific environmental issues), environmental reform has even resulted in an absolute decline in the use of natural resources and/or in discharge of emissions, regardless of economic growth in financial or material terms (product output). These conclusions are sometimes also valid for rapidly industrialising and modernising countries in, for instance, Asia (e.g., Sonnenfeld and Mol 2006).

The social dynamics behind these changes, that is, the emergence of actual environment-induced transformations of institutions and social practices, became one of the key objects of social science research in the 1990s. I will group the studies that try to understand, interpret, and conceptualise the nature, extent, and social dynamics of environmental reform processes in this era under the label of ecological modernisation.

Fundamentals of Ecological Modernisation

The basic idea of ecological modernisation is that, at the end of the second millennium, modern societies witness a centripetal movement of ecological interests, ideas, and considerations in their institutional design. This development crystallises in a constant ecological restructuring of modernity. Ecological restructuring refers to the ecology-inspired and environment-induced processes of transformation and reform in the central institutions of modern society.

Within the so-called Ecological Modernisation Theory this ecological restructuring is conceptualised at an analytical level as the growing autonomy, independence, or differentiation of an ecological rationality vis-à-vis other rationalities (cf. Dryzek 1987; Mol 1995; Spaargaren 1997). In the domain of states, policies and politics the emergence of an ecological rationality emerged already in the 1970s and early

1980s, and ‘materialised’ or ‘institutionalised’ in different forms. The construction of governmental organisations and departments dealing with environmental issues dates from that era. Equally, environmental (framework) laws, environmental impact assessment systems and green political parties date back to that period. The same is true in the domain of ideology and the life world. A distinct ‘green’ ideology – as manifested by, for instance, environmental NGOs, environmental value systems, and environmental periodicals – started to emerge in the 1970s. Only in the 1980s, however, this ‘green’ ideology assumed an independent status and could no longer be interpreted in terms of the old political ideologies of socialism, liberalism, and conservatism, as argued by, among others, Paehlke (1989) and Giddens (1994).

However, the crucial transformation that makes the notion of the growing autonomy of an ecological rationality especially relevant, is of more recent origin. After an ecological rationality has become relatively independent from the political and socio-ideological rationalities (in the 1970s and 1980s), this process of growing independence began to extend to the economic domain in the 1990s. And because, according to most scholars, this growing independence of the ecological rationality from its economic counterpart is crucial to ‘the ecological question’, this last step is a decisive one. It means that economic processes of production and consumption are increasingly analysed and judged, as well as designed and organised from both an economic *and* an ecological point of view. Some profound institutional changes in the economic domain of production and consumption have become discernable in the 1990s. Among these changes are the widespread emergence of environmental management systems in companies; the introduction of economic valuation of environmental goods via the introduction of ecotaxes, among other things; the emergence of environment-inspired liability and insurance arrangements; the increasing importance attached to environmental goals such as natural resource saving and recycling among public and private utility enterprises; and the articulation of environmental considerations in economic supply and demand, for instance by ecolabels and other product information systems. Within ecological modernisation ideas, these transformations are analysed as *institutional* changes, indicating their semi-permanent character. Although the process of ecology-induced transformation should not be interpreted as linear, evolutionary, and irreversible, as was common in the modernisation theories in the 1950s and 1960s, these changes have some permanency and would be difficult to reverse.

Ecological Modernisation as Environmental Reform

Most ecological modernisation studies focus on actual environmental reforms in specific social practices and institutions. As I have indicated elsewhere (e.g., Mol 1995, 2001), an ecological modernisation perspective on environmental reform can be categorised in five themes.

First, there are studies on three new interpretations of the role of science and technology in environmental reform. Science and technology are no longer only

analysed and judged for their contribution to environmental problems (so dominant in the 1970s and early 1980s), but also they are valued for their actual and potential role in bringing about environmental reforms and preventing environmental crises. Second, environmental reforms via traditional curative and repair technologies are replaced by more preventive sociotechnological approaches and transitions that incorporate environmental considerations from the design stage of technological and organisational innovations. Finally, the growing uncertainties with regard to scientific and expert knowledge and complex technological systems do not lead to a denigration of science and technology in environmental reform, but, rather, in new environmental and institutional arrangements.

A second theme covers studies focused on the increasing importance and involvement of economic and market dynamics, institutions, and agents in environmental reforms. Producers, customers, consumers, credit institutions, insurance companies, utility sectors, and business associations, to name but a few, increasingly turn into social carriers of ecological restructuring, innovation and reform (in addition to, and not so much instead of, state agencies and new social movements). This goes together with a focus on changing state-market relations in environmental governance, and on a growing involvement of economic and market institutions in articulating environmental considerations via monetary values and prices, demand, products and services, and the like.

A third theme in ecological modernisation relates to the changing role, position, and performance of the ‘environmental’ state (often referred to as political modernisation in Europe [cf. Jänicke 1993; van Tatenhove et al. 2000], or regulatory reinvention in the United States [cf. Eisner 2004]). This theme evolved in the mid-1990s in environmental governance studies. The traditional central role of the nation-state in environmental reform is shifting, leading to new governance arrangements and new political spaces. First, there is a trend towards more decentralised, flexible, and consensual styles of national governance, at the expense of top-down hierarchical command-and-control regulation. Second, there is a larger involvement of nonstate actors and ‘nonpolitical’ arrangements in environmental governance, taking over conventional tasks of the nation-state and conventional politics (e.g., privatisation, public-private partnerships [Glasbergen et al. 2007], conflict resolution by business-environmental NGO coalitions without state interference, and the emergence of subpolitics³). Finally, supranational and global environmental institutions and governance arrangements to some extent undermine the conventional role of the sovereign nation-state or national arrangements in environmental policy and politics. As I will outline later in this chapter, this is more than just a matter of scale; it is, rather, a fundamental change in environmental reform dynamics, in need for a different environmental sociology and political sciences.

³As Beck explains, “sub-politics is distinguished from ‘politics,’ first in that agents outside the political or corporatist system are allowed to appear on the stage of social design [...], and second, in that not only social and collective agents but individuals as well compete with the latter and each other for the emerging shaping power of the political” (Beck 1994: 22).

Fourth, the modification of the position, role, and ideology of social movements (vis-à-vis the 1970s and 1980s) in the process of ecological transformation emerges as a theme in ecological modernisation. Instead of positioning themselves on the periphery or even outside the central decision-making institutions on the basis of de-modernisation ideologies and limited economic and political power, environmental movements seem increasingly involved in decision-making processes within the political and, to a lesser extent, economic arenas. Legitimacy, accountability, transparency, and participation are the new principles and values that provide social movements and civil society the resources for a more powerful position in environmental reform processes. Within the environmental movement, this transformation goes together with a bipolar or dualistic strategy of cooperation and conflict, and internal debates on the tensions that are a by-product of this duality (Mol 2000).

And, finally, ecological modernisation studies concentrate on changing discursive practices and the emergence of new ideologies in political and societal arenas. Neither the fundamental counterpositioning of economic and environmental interests nor a total disregard for the importance of environmental considerations are accepted any longer as legitimate positions. Intergenerational solidarity in the interest of preserving the sustenance base seems to have emerged as the undisputed core and widely shared principle, although differences remain on interpretations and on translations into practices and strategies.

Hence, all in all, this gives a much wider agenda of environmental reform studies compared to the 1970s and early 1980s, partly reflecting the changing practices of environmental reform in and between OECD countries.

Ecological Modernisation and Its Critics

From various (theoretical) perspectives and from the first publications onwards, the growing popularity of ecological modernisation studies and ideas has met opposition and criticism. Coming from subdisciplines that had been preoccupied with explaining the continuity of environmental crises and deterioration, such a move to environmental reform perspectives cannot but meet (fierce) debate. The debates and criticism on ecological modernisation have been summarised and reviewed in a number of publications.⁴ Here I want to summarise these various critiques and debates in three categories.

First, several objections have been raised during the short history of ecological modernisation, which have been incorporated in more recent versions of the theory/idea. Although these objections against ecological modernisation made sense in

⁴For evaluations and critiques on the idea of ecological modernisation as the common denominator of environmental reform processes starting to emerge in the 1990s, see, for instance, Hannigan (1995), Christoff (1996), Blowers (1997), Dryzek (1997), Gouldson and Murphy (1997), Leroy and van Tatenhove (2000), Blühdorn (2000), Buttel (2000), Mol and Spaargaren (2000, 2002), Pellow et al. (2000), Pepper (1999), Schnaiberg et al. (2002), and Gibbs (2004).

referring to the birth period of ecological modernisation studies (cf. Sonnenfeld and Mol 2002), for more recent mature ecological modernisation approaches they are no longer adequate. This is valid, for instance, regarding criticism on technological determinism in ecological modernisation, on the productivist orientation and the neglect on the consumer, on the lack of power in ecological modernisation studies and on its Eurocentricity. Notwithstanding the increased incorporation of these critiques in the majority (but not all) of ecological modernisation studies at the turn of the millennium, several scholars continue repeating them up until recently (e.g., Carolan [2004] on the productivist orientation; Murphy and Bendell [1997] on technological determinism; Gibbs [2004] on missing power relations).

Second, there are a number of critiques on ecological modernisation perspectives that find their origin in radically different paradigms and approaches. Neo-Marxist criticism by Schnaiberg et al. (2002; Pellow et al. 2000) emphasises consistently the fundamental continuity of a capitalist order that does not allow any environmental reform beyond window dressing.⁵ Scholars inspired by deep ecology argue against the reformism of ecological modernisation, as it opts for a light green reform agenda, instead of a deep green fundamental and radical change of the modern order, sometimes even towards postmodernity. Human ecologists, sometimes inspired by neo-Malthusianism, blame ecological modernisation perspectives for their neglect of quantities, not in the last place population growth and ever growing consumption quantities. Consequently, ecological modernisation perspectives are blamed to be inadequate, overly optimistic/naive, and incorrect. It is not so much that these objections are completely incorrect. From their starting points and the basic premises of these schools of thought, the points raised against ecological modernisation are internally logic, consistent, and coherent. In various publications (Mol and Spaargaren 2000, 2002, 2004), however, we have argued that their focus is too narrow, limited, and one-sided, by claiming that there is nothing new under the sun. Although ecological modernisation scholars would not deny that in multiple locations, practices, and institutions environmental deterioration is still there, they object to the conclusion of these critics that no reforms can be identified in the institutions dealing with environmental challenges.

Third, and finally, there is a category of comments that is less easy either incorporated or put aside if we want to analyse and understand environmental reform in late modern society. These issues have to do with the nation-state or national society centeredness of ecological modernisation, the strong separation between the natural/physical and the social in ecological modernisation, and the continuing conceptual differentiation in state, market and civil society actors and institutions. Here it is especially the changing character of modern society – especially through processes of globalisation – that makes that new, early-twenty-first-century environmental reform dynamics are not always easily fitting ecological modernisation conceptualisations of the 1990s. This is not too dissimilar to the fact that the

⁵ See also the work of Pepper (1999), Blowers (1997), and Foster (2002).

environmental reform dynamics of the 1990s did not fully fit the ‘policy and protest’ conceptualisations of the 1970s environmental reform studies. It is especially these comments and discussions on ecological modernisation that have started the development of what can be called the environmental sociology of networks and flows.

Third-Generation Theories: Networks and Flows

The second half of the 1990s witnessed the emergence of what we can now label the sociology of networks and flows. The foundation of a new sociological perspective, a new social theory or even ‘new rules of sociological methods’ (Urry 2003) never emerge with one publication, and also here several scholars are at its foundation. Crucial in the development of the sociology of networks and flows is the shift from states and societies as central units and concepts of analysis, to networks and flows of capital, people, money, information, images, goods/materials, and the like. These networks and flows form the true architectures of a global modernity.

It is beyond the scope of this contribution to provide a full overview, review, and assessment of the debates regarding the sociology of networks and flows. Others have done so with sufficient detail and balance.⁶ Here we will especially focus on the main characteristics of this sociology of networks and flows, which are relevant to the environmental social sciences, and how this sociology (can) change(s) the agenda of environmental reform studies and perspectives. In doing so, we start with the work of Manuel Castells and John Urry.⁷

A Sociology of Networks and Flows

Although he judges Castells’s (1996/1997) trilogy on the rise of the network society as the best effort so far to analyse networked modernity, Urry (2000, 2003) sets himself the task of elaborating and refining the conceptual apparatus as introduced by Castells. The two authors develop their analyses of time and space along very much the same track, although Urry does not make use of the dichotomy of the space of flows versus the space of place, which is so central to Castells’s work. Instead, Urry suggests that one should approach spatial patterns in three ways or modalities, distinguishing among regions (i.e., objects geographically clustered together), globally

⁶ See, for instance, Leydesdorff (2002), Simonsen (2004), and the various references in Mol and Spaargaren (2006).

⁷ It goes without saying that there are numerous others that have contributed recently in developing such a new perspective, often each with his/her own terminology, emphasis and focus (cf. Kaufman 2002; Kesselring 2006; Graham and Marvin 2001; Bauman 2000; Rifkin 2000).

integrated networks (more or less stable, enduring, and predictable relations between nodes or hubs, stretching across different regions, with relatively walled routes for flows), and, finally, global fluids (spatial patterns determined neither by boundaries nor by more or less stable relations, but by large flexibility and liquidity). The networks and flows in these three categories are partly social and partly material or technical in character. Urry employs the notion of ‘scapes’ to refer to networks in their function of sociotechnical infrastructures: “networks of machines, technologies, organisations, texts and actors that constitute various interconnected nodes along which flows can be relayed” (Urry 2000: 35). The power of these network systems vis-à-vis human agents are related to the size of the networks, their density, their relations to other networks, and so on. As ‘large socio-technical-systems’ these networks display dynamics that are described in terms of ‘path-dependencies’, ‘lock-in-factors’, ‘sunk-costs’, momentum, iteration and other concepts that figure prominently in the sociology of (large) technological systems. With that, Urry’s sociology of flows leans heavily towards systems theory, with a moderate role for human agency and with nonhuman actants getting actors qualities.⁸

The relevant innovations of the sociology of networks and flows for the social sciences of environmental reform are fourfold. First, with the introduction by Castells of the space of flows, and contrasting it with the space of place, a new kind of time-space organisation of practices is introduced that takes globalisation fully into account. Globalisation is no longer simply understood as elevating the same processes on a higher level. Second, the sociology of networks and flows lifts the sharp distinction between the social and the material world, between flows of information and money and flows of material substance, between the institutional infrastructure and the technological-material infrastructures. Within the sociology of networks and flows it is especially John Urry who – relying heavily on the actor-network theories of Latour (1987) and Callon (1980, 1987) and on the reinterpretation of these by Mol and Law (1994) – tries to overcome (or do away with) the dichotomy of the social and the material. In doing so, he goes way beyond the conventional schemes of environmental social scientists, who generally speaking remain comfortable with asserting that social systems should be seen as systems having a material base and with the recognition that material conditions do matter for social practices and institutional developments. Hybrids, actants, and sociotechnical systems are the key concepts that point to and analyse the fading dichotomy between the social and the material. Third, the strong separation between the conventional categories of state, market, and civil society is lifted, in favour of all kind of new emerging hybrid arrangements in-between. Networks and flows, scapes, and sociomaterial infrastructures, they all can no longer be understood in terms of state and markets. Hence, a new conceptualisation invades the social sciences. Fourth, ideas of governance, management, and control drastically change following the sociology of flows. Especially in Urry’s notion of global fluids, but also in more

⁸Here, Urry comes close and refers to the French work on actor-network theory by Callon and Latour. In his more recent work, Latour (2004) seems more interested in, or at least pay lip service to, ecological questions.

general ideas of nation-states losing their sovereignty and power, possibilities of governance and control are seriously questioned. Within Urry's (2003) work this is related to the emergence of complexity and the disappearance of agency, against the background of a strongly system theoretical framework.

An Environmental Sociology of Networks and Flows

In applying the sociology of networks and flows for understanding twenty-first-century environmental reform, and thus to build an environmental sociology (or social theory) of networks and flows, we cannot just rely on the work of Castells, Urry, and other general – nonenvironmental – sociologists/social theorists. Their inclusion of environment in social theory is, at best, marginal (cf. Mol and Spaargaren 2006). And, to some extent, this new social theory of networks and flows runs counter to the same frictions environmental sociologists had with earlier social theories (as was so strongly articulated in the HEP-NEP debate; Catton and Dunlap 1978a, b). So, in applying insights from the sociology of networks and flows for a third generation social theory of environmental reform, we will combine the sociology of networks and flows with earlier contributions in the social sciences of environmental reform, most notably ecological modernisation perspectives.

Whereas most of the flow literature in the social sciences emphasises flows of capital, money, images, information, and people (travel and migration) and analyse them from perspectives as diverse as economic development, governance and control, cultural diversity, or democracy, an environmental sociology of flows focuses on an explicitly environmental interpretation of the flow concept. This environmental interpretation differs in two ways from the sociology of flows: (a) by analysing flows of information, capital, goods and persons from an ecological rationality point of view (by looking at environmental information, green products, green investment funds, sustainable management concepts, environmental certifications schemes, flows of environmental activists, and their ideas); and (b) by analysing environmental flows as such, that is: energy, water, waste, biodiversity, natural resources, contaminants, and the like. Neither Castells and Urry, nor any of the other social theorists in this tradition, developed so far an in-depth account of environmental change in any of the two ways. Environmental flows are mentioned in between all other kinds of 'flows' that could become or are object of sociological analyses. And these other flows are not assessed for their role in and (potential) contribution to environmental governance, deterioration, or reform. Nowhere, however, these authors argue that the set of material flows as commonly addressed within the environmental sciences and social sciences would deserve special social science reflection. Clouds, information, capital, people, or wastes are analysed, conceptualised, and understood in similar ways. The question is whether that is helpful for a full understanding of environmental reform. I think we are in need of a more specific *environmental* social theory of networks and flows, which builds on such general conceptualisations but specify them for

environmental networks and flows. Such a specific environmental emphasis and substantiation also might reflect on and contribute to this emerging general sociology of networks and flows, perhaps stronger in the substantive formulation than in the formal social theory/concepts.

In relating environment to (global) networks and flows – both in terms of environmental flows as well as in terms of ‘conventional’ flows – conceptual space for new forms of environmental reform is constructed. Not unlike most political economists and neo-Marxist environmental social scientists, Castells discusses inequalities and power in relation to the environment primarily in the context of a rather straightforward dichotomy: place-bounded environmental movements attempt to resist the omnipotent actors of the space of (economic) flows. The environment or nature enters into Castells’ analysis mainly as negative side-effects of the space of flows. In the end, Castells’s view of environment and nature comes close to being but a reformulation of the conventional point of view of environmental economics (‘externalities’) in combination with the traditional ‘protest-approach’ in environmental sociology (social movements organising resistance against modernity, as we saw in the first generation of the social sciences of environmental reform). Castells (2004) does make room for a globalised environmental movement that locates and operates networks of protest at least partly in the space of flows (e.g., the anti-globalisation or other-globalisation movement), be it that their power to constitute and handle the switches, programmes, and codes that make a difference in the network society is marginal. Overall, within Castells’s framework there seems to be limited room for including environment and environmental reform within the time-space dynamics of the space of flows itself. Sassen (2006) gives much more credit to global environmental NGO networks as constructive parts of what she calls the global assemblage. This global environmental movement constructs a new kind of authority, which is part and parcel of the global network society. This comes much closer to ecological modernisation scholars. In their debates with political economy scholars, ecological modernisation scholars have made conceptual space for the inclusion of environmental ideas, rationalities, and interests in the dominant economic practices and processes. In a more or less similar way, in the social theory of networks and flows environment and environmental protection should be articulated and conceptualised in the space of place as well as in the space of flow. Place-bound environmental resistance and protection by local NGOs and communities are sided by articulation of the environment in international trade, in Foreign Direct Investments, in global certification schemes such as ISO 14000 or Forest Stewardship Council labels, in transnational company networks, in worldwide epistemic communities (such as those around water or climate change), and so on. By interpreting environment and nature as attached to (also) the ‘space of flows’ rather than seeing them only or primarily as part of the ‘space of place’, questions and analyses of environmental governance and reform move beyond a defensive position of only ‘blaming’ intrusions and infringements of global networks and flows on the environment of local places. The ‘space of flows’ then becomes a relevant analytical category for protecting and articulating nature and environment, opening up sets of new scapes, networks, nodes, and strategies for environmental reform.

Double Hybridisation

Although the ecological modernisation school of thought already paved the way for less conventional interpretations of the role of political, economic, and civil society actors in environmental reform, this is further radicalised in the environmental sociology of networks and flows. Following the (global) governance literature, the state becomes increasingly replaced by a proliferation of governance arrangements that create new forms, institutions, and networks for governing actors' behaviour. This transition from government to governance is based on the understanding that the political is not limited to the traditional concept of the state, in the sense of a delineated institution. Transformations of the state, new alliances between the state and other actors, new state-market configurations, and the state as only one of the many elements of global networks form all new foci of theoretical attention in the governance literature.

In understanding environmental reform from such a new perspective (or social theory) conventional conceptual and theoretical categories and boundaries are challenged. The classical distinctions among state, market, and civil society actors and institutions are increasingly mixed up or blurred in dealing with environmental flows. For instance, when transnational companies with a proactive environmental strategy are working in a 'low-governance-arena' (e.g., sub-Saharan Africa), they sometimes come to act as government-like agents, regulating flows from a broader than just an economic perspective. We then can see market-actors behaving like states. But it happens also the other way around: states buying and selling 'sinks' on international markets, competing for 'green product-flows' and rationalising their green-energy politics from a liberalisation and privatisation point of view. Finally, the sharp divisions between markets and states with their system-rationalities, on the one hand, and civil society with its broader rationality, on the other (Habermas 1981), also seem to have lost some of their significance. Civil society actors are working increasingly (also) within – and thus become parts of – the 'official' system. Here we can see environmental NGOs acting as multinational companies, trading in environmental liability or credibility (World Wide Fund for Nature WWF), and actively creating 'sub-political arrangements' in direct negotiations between NGOs and market-actors (see, for instance, Pattberg 2005; Oosterveer 2007). Sometimes non-state actors fill the gaps, which are left open by state or market institutions that cannot keep up with the forces of globalisation (e.g., in nature conservation in developing countries; in eco-labelling of wood and fish products). Consequently, such forms of hybridisation show significant continuities with (and sometimes further radicalisations of) the notions of political modernisation, regulatory reinvention, and subpolitics, which prevailed in the second generation of environmental reform studies.

The environmental sociology of networks and flows emphasises and conceptualises such shifting boundaries and pays special attention to *hybrid arrangements* in the field of (global) environmental reform. Such arrangements can be interpreted in terms of specific combinations of global networks and scapes, around particular

environmental flows. The relevant questions are of course where and when do we see, expect, need, or want these kinds of hybrid arrangements, what are the network and scape characteristics of these arrangements (for instance, in terms of infrastructures, power, inclusion and exclusion), how these hybrid arrangements are related to globalisation, and what the consequences are of such arrangements for governing environmental flows in terms of, for instance, environmental effectiveness and democracy.

There is, however, a second manner in which hybridisation makes sense in the context the environmental sociology of flows. With John Urry, one can argue that in sociology one of the most commonly used and cherished dichotomy, that of the social and the material, needs to be reconsidered and reformulated. In the tradition of Callon and Latour and the by now well-established Actor Network Theory (ANT) school, Urry criticises mainstream sociology – especially the structuration theory of Anthony Giddens – for overemphasising agency over (technological) structure in this respect. When, for example, the car-system is at (environmental) stake, the best way to make sense of the future development of this system is to conceive of it as a *hybrid system*, as a system in which material and social entities can no longer be separated in a meaningful way.

This challenging view could perhaps be neglected when working in thoroughly social fields such as labour relations, schooling or gender; but not when working in the environmental field. Since its inception, *environmental* sociology and other environmental social sciences have been struggling with society-nature/social-material interactions and the ways in which these interactions could best be conceptualised. Schnaiberg (1980) is exemplary in his arguments against the partial or total fusion of the material/natural and the social, because the social – according to Schnaiberg – is fundamentally different from the natural. Societies are “dependent from” the sets of ecosystems they rely on for their proper functioning, but they do not function in the same (mechanistic) ways ecosystems do. Because the social is different from the natural, the sciences of ecology and sociology also should be kept separate, so Schnaiberg argued. Sociology – or the social sciences in general – should not become mixed up with ecology or the natural sciences. This plea for separate tasks and identities of the social and the natural sciences also can be found in Anthony Giddens structuration theory: “those looking for natural science-based laws and explanations in the social sciences did not just pick the wrong platform, but were also waiting for a train that is never going to arrive” (Giddens 1976).

With the arrival of the sociology of networks and flows, the ongoing debate in environmental sociology on the relationship between the social and the material has taken a new direction and radicalised. John Urry – also following Ulrich Beck in this respect – argues that some of the well-defined ‘units of analyses’ so frequently used in contemporary sociology, turn out to be valid only in relation to societies of the first or ‘simple modernity’ phase of development. Key-concepts such as ‘nation-state’ or ‘environment’ – when used under conditions of second, reflexive, or global modernity – seem to have lost most of their validity. The concept of environment or nature during second modernity can no longer be used in isolation from society, because nature or environment is ‘pulled into society’, as much as society

is 'pulled into nature'. The concept of nature as external to society is outdated. According to Beck, only when it is recognised that society and environment in reflexive modernity are intermingled in many diverging ways, one can make sense of the (world) risk-society as emerging right under our eyes. The carcinogenic colouring agents in child toys, bird flu risks in your food, and climate change all give proof of the outdated character (or at least the limited usefulness) of the sociological concept of 'nature' in isolation from social practices, networks, institutions, and agents.

Power and Inequality

Finally, the social theory of networks and flows changes conceptualisations of power and inequality. Within the social theory of networks and flows, power and inequality are no longer only related to ownership of capital, as has been the dominant view in neo-Marxist studies, nor to the state, as was the mainstream conviction in most other schools of thought. In addition to these 'conventional' categories of power and inequality, the sociology of flows defines new inequalities in terms of having access to, being included in or being decoupled from, the key networks and flows. Groups, persons, cities, and regions with access to the core flows and located in or close to the central nodes and moorings of global networks, are the wealthy and powerful. Following Rifkin (2000), it is access to the information flows via the Internet, to the flows of monetary capital and to the skills of people moving around the world, that distinguishes the better-off people, groups, cities, and regions from their marginalised equivalents. This 'access to' and 'inclusion in' concerns both direct access and inclusion as well as the ability and capability to structure the scapes and infrastructures to partially influence the mobile flows in terms of speed, direction, intensity, and so on. Or, as Castells (2004) puts it: who has the power and capability to handle the switches between and the programmes of the networks that matter?

In following this analytical path, an environmental sociology of networks and flows perspective has two operationalisations of power and inequality. First, it pays attention to the conditions for access to environmental flows and to the scapes and networks that structure the current of strategic environmental flows. And it analyses in some detail the consequences for groups, actors, and organisations to whom access is denied or who do not manage to establish links with the relevant global networks. Such an operationalisation would reorient conventional environmental flow studies in directions very different from the current dominant natural science perspective on flow (e.g., material flow analysis, industrial ecology, etc.). It also would enrich present additions-and-withdrawals studies, as power and inequality are being linked to flows in a more direct way (see the discussion in Mol and Spaargaren 2005). Power is thought to reside in the 'additions and withdrawals' themselves, and not only in the social practices of production and consumption.

Second, power and inequality in an environmental sociology of flow perspective also would relate to the flows of capital, information, images, and persons that structure, condition and enable environmental reforms. The power and inequalities related to non-environmental and nonmaterial flows affect environmental reform trajectories. Those with access to and in (partial) control of the key economic and informational flows can be said to dominate the new networked world order, at the expense of the place-bound local actors outside the core nodes of the global networks.

Epilogue

Our theoretical elucidation on third generation ‘social theories’ of environmental reform has remained far from a systematic, coherent theory. We are only just starting to understand what environmental reform means in a global networked society and how and where such environmental reform processes differ from second generation environmental reforms. Some of the concepts, ideas and perspectives on environmental reform of the first and second generation will remain valid and useful under conditions of global modernity, where networks and flows seem to become increasingly important constituting parts. But the sociology of networks and flows, in its various forms and variants, teaches us that environmental reform – among many other things – will not remain unchanged following globalisation dynamics. Our elaborations above give at least an idea along which lines one can start thinking in developing new perspectives or social theories of environmental reform that fit the new social constellation. But much theoretical work and debate needs to be done before we will see the emergence of a more or less coherent theory of environmental reform in networked global modernity.

Of course, in developing such new theoretical insights empirical studies are essential. Slowly, empirical studies are being developed using an environmental sociology of networks and flow perspective for understanding environmental reform (cf. various contributions in Spaargaren et al. 2006; Oosterveer 2007; Bush and Oosterveer 2007; Mol 2007). This is not the place to review these empirical studies; others will definitely do so.

One of the subjects in the theoretical and empirical debates and discussions emerging will without doubt be related to the necessity of a new theory and the continuing validity of the first and second generation environmental reform explanatory theories. These validity claims are correct. Ecological modernisation theory remains to a major extent valid, and so do the policy and protest theories of the first generation. In a considerable number of cases these models will be very helpful in explaining and understanding environmental reform in the twenty-first century. But in a number of cases and contexts – and most likely an increasing number – we are in need of new theories, along lines of an environmental sociology of networks and flows.

References

- Ajzen I, Fishbein M (1975) Belief, attitude, intention and behavior: an introduction to theory and research. Addison-Wesley, Reading, MA
- Ajzen I, Fishbein M (1977) Attitude-behavior relations: a theoretical analysis and review of empirical research. *Psychol Bull* 84:888–918
- Bauman Z (2000) Liquid modernity. Polity, Cambridge
- Beck U (1994) The reinvention of politics: towards a theory of reflexive modernisation. In: Beck U, Giddens A, Lash S (eds) *Reflexive modernisation: politics, tradition and aesthetics in the modern social order*. Polity, Cambridge, UK, pp 1–55
- Blowers A (1997) Environmental policy: ecological modernization and the risk society? *Urban Studies* 34(5–6):845–871
- Blühdorn I (2000) Ecological modernisation and post-ecologist politics. In: Spaargaren G, Mol APJ, Buttel FH (eds) *Environment and global modernity*. Sage, London, pp 209–228
- Bush SR, Oosterveer P (2007) The missing link: intersecting governance and trade in the space of place and the space of flows. *Sociologia Ruralis* 47(4):384–399
- Buttel FH (2000) Ecological modernization as social theory. *Geoforum* 31(1):57–65
- Buttel FH (2002) Has environmental sociology arrived? *Organ Environ* 15(1):42–55
- Buttel FH (2003) Environmental sociology and the explanation of environmental reform. *Organ Environ* 16(3):306–344
- Callon M (1980) The state and technical innovation: a case study of the electrical vehicle in France. *Res Policy* 9:358–376
- Callon M (1987) Society in the making: the study of technology as a tool for sociological analysis. In: Bijker WE, Hughes TP, Pinch TJ (eds) *The social construction of technological systems: new directions in the sociology and history of technology*. MIT, Cambridge, MA
- Carolan M (2004) Ecological modernization: What about consumption? *Soc Nat Res* 17(3):247–260
- Castells M (1996/1997) *The information age: economy, society and culture*, vols I–III. Blackwell, Malden, MA/Oxford
- Castells M (2004). Informationalism, networks, and the network society: a theoretical blueprint. In: Castells M (ed) *The network society: a cross-cultural perspective*. Edward Elgarpp, Cheltenham, pp 3–45
- Catton WR, Dunlap RE (1978a) Environmental sociology: a new paradigm. *Am Sociol* 13:41–49
- Catton WR, Dunlap RE (1978b) Paradigms, theories, and the primacy of the HEP-NEP distinction. *Am Sociol* 13:256–259
- Christoff P (1996) Ecological modernisation, ecological modernities. *Environ Polit* 5(3):476–500
- Dryzek JS (1987) *Rational ecology: environment and political economy*. Blackwell, Oxford
- Dryzek JS (1997) *The politics of the earth: environmental discourses*. Oxford University Press, Oxford
- Dunlap RE (2002) Environmental sociology: a personal perspective on its first quarter century. *Organ Environ* 14(1):10–30
- Eisner MA (2004) Corporate environmentalism, regulatory reform, and industry self-regulation; toward genuine regulatory reinvention in the United States, *Governance: An International Journal of Policy, Administration, and Institutions* 17(2):145–167
- Enzensberger HM (1974 [1973]) A critique of political ecology. *New Left Rev* 84:3–32
- Foster JB (2002) *Ecology against capitalism*. Monthly Review Press, New York
- Frankel B (1987) *The post-industrial Utopians*. Polity, Cambridge, UK
- Gibbs D (2004) *Towards an environmental economic geography*. Unpublished paper, Department of Geography University of Hull, Hull
- Giddens A (1976) *New rules of sociological method: a positive critique of interpretative sociologies*. Hutchinson, London
- Giddens A (1994) *Beyond left and right: the future of radical politics*. Polity, Cambridge, UK

- Glasbergen P, Biermann F, Mol APJ (eds) (2007) *Partnerships, governance and sustainable development: reflections on theory and practice*. Edward Elgar, London
- Gouldson A, Murphy J (1997) Ecological modernization: economic restructuring and the environment. *Pol Quart* 68(5):74–86
- Habermas J (1981) *Theorie des kommunikativen Handels*, Volumes 1 and 2. Suhrkamp, Frankfurt
- Hannigan JA (1995) *Environmental sociology: a social constructionist perspective*. Routledge, London/New York
- Jänicke M (1986) *Staatversagen: Die Ohnmacht der Politik in die Industriegesellschaft*. Piper, Munich (Translated as *State failure. The impotence of politics in industrial society*. Polity Press, Cambridge, UK, 1990)
- Jänicke M (1993) Über ökologische und politische Modernisierungen. *Zeitschrift für Umweltpolitik und Umweltrecht* 2:159–175
- Jessop B (1990) *State theory: putting capitalist states in their place*. Pennsylvania State University Press, University Park, IL
- Kaufman V (2002) *Re-thinking mobility: contemporary sociology*. Ashgate, Aldershot, UK
- Kesselring S (2006) Pioneering mobilities: New patterns of movement and motility in a mobile world. *Environ Plan A* 38(2):269–279
- Klandermans B (1986) New social movements and resource mobilization: The European and the American approach. *Int J Mass Emerg Disaster* 4(2):13–39
- Latour B (1987) *Science in action*. Open University Press, Milton Keynes
- Latour B (2004) *Politics of nature: how to bring the sciences into democracy*. Harvard University Press, Cambridge, MA
- Leroy P, van Tatenhove J (2000) New policy arrangements in environmental politics: the relevance of political and ecological modernization. In: Spaargaren G, Mol APJ, Buttel F (eds) *Environment and global modernity*. Sage, London, pp 187–209
- Leydesdorff L (2002) May There Be A “Sociology” beyond “Sociology”? *Scipolicy—The Journal of Science and Health Policy* 2(1) (2002), at <http://home.att.net/Scipolicy/index.htm>
- McCarthy JD, Zald MN (1977) Resource mobilization and social movements: a partial theory. *Am J Sociol* 82(May):1212–1239
- Mol APJ (1995) The refinement of production: ecological modernization theory and the chemical industry. *International Books*, Utrecht
- Mol APJ (2000) The environmental movement in an age of ecological modernisation. *Geoforum* 31(1):45–56
- Mol APJ (2001) *Globalization and environmental reform: the ecological modernization of the global economy*. MIT, Cambridge, MA
- Mol APJ (2006) From environmental sociologies to environmental sociology? A comparison of U.S. and European environmental sociology. *Organ Environ* 19(1):5–27
- Mol APJ (2007) Boundless biofuels? Between vulnerability and environmental sustainability *Sociologia Ruralis* 47(4):297–315
- Mol A, Law J (1994) Regions, networks and fluids: anemia and social typology. *Soc Stud Sci* 24:641–671
- Mol APJ, Spaargaren G (2000) Ecological modernization theory in debate: a review. *Environ Polit* 9(1):17–49
- Mol APJ, Spaargaren G (2002) Ecological modernization and the environmental state. In: Mol APJ, Buttel FH (eds) *The environmental state under pressure*. Elsevier, Amsterdam/Oxford, pp 33–52
- Mol APJ, Spaargaren G (2004) Ecological modernization and consumption: a reply. *Soc Nat Res* 17:261–265
- Mol APJ, Spaargaren G (2005) From additions and withdrawals to environmental flows: reframing debates in the environmental social sciences. *Organ Environ* 18(1):91–107
- Mol APJ, Spaargaren G (2006) Towards a sociology of environmental flows: a new agenda for twenty-first-century environmental sociology. In: Spaargaren G, Mol APJ, Buttel FH (eds) *Governing environmental flows: global challenges for social theory*. MIT, Cambridge, MA, pp 39–83

- Murphy DF, Bendell J (1997) In the company of partners: business, environmental groups and sustainable development post-rio. The Policy Press, Bristol
- Offe C (1985) New social movements: challenging the boundaries of institutional politics. *Soc Res* 52(4):817–868
- Oosterveer P (2007) Global governance of food production and consumption. Edward Elgar, Cheltenham
- Pattberg P (2005) The institutionalization of private governance: how business and nonprofit organizations agree on transnational rules. *Governance Int J Policy Adm Inst* 18(4):589–610
- Pellow DN, Weinberg AS, Schnaiberg A (2000) Putting ecological modernization to the test: accounting for recycling's promises and performance. *Environ Polit* 9(1):109–137
- Pepper D (1984) The roots of modern environmentalism. Croom Helm, London
- Pepper D (1999) Ecological modernisation or the 'ideal model' of sustainable development? Questions prompted at Europe's periphery. *Environ Polit* 8(4):1–34
- Paehlke RC (1989) Environmentalism and the future of progressive politics. Yale UP, New Haven/London
- Rifkin J (2000) The age of access. How the shift from ownership to access is transforming modern life. Penguin, London
- Sassen S (2006) Territory, authority, rights: from medieval to global assemblages. Princeton University Press, Princeton/Oxford
- Schnaiberg A (1980) The environment: from surplus to scarcity. Oxford University Press, Oxford/New York
- Schnaiberg A, Weinberg AS, Pellow DN (2002) The treadmill of production and the environmental state. In: Mol APJ, Buttel FH (eds) The environmental state under pressure. JAI/Elsevier, London, pp 15–32
- Simonsen K (2004) Networks, flows and fluids – reimagining spatial analysis? *Environ Plan A* 36:1333–1337
- Sonnenfeld DA, Mol APJ (2002) Globalization and the transformation of environmental governance: an introduction. *Am Behav Sci* 45(9):1318–1339
- Sonnenfeld DA, Mol APJ (2006) Environmental reform in Asia: comparisons, challenges, next steps. *J Environ Dev* 15(2):112–137
- Spaargaren G (1997) The ecological modernisation of production and consumption: essays in environmental sociology. Dissertation, Wageningen Agricultural University
- Spaargaren G, Mol APJ, Buttel FH (eds) (2006) Governing environmental flows: global challenges for social. Theory, Cambridge, Mass.: MIT
- Urry J (2000) Sociology beyond society. Routledge, London
- Urry J (2003) Global complexity. Polity, Cambridge, UK
- van Tatenhove J, Arts B, Leroy P (eds) (2000) Political modernisation and the environment: the renewal of policy arrangements. Kluwer, Dordrecht
- Zald MN, McCarthy JD (1979) The dynamics of social movements: resource mobilization, social control and tactics. Winthrop, Cambridge, UK

Environmental Sociology

European Perspectives and Interdisciplinary Challenges

Groß, M.; Heinrichs, H. (Eds.)

2010, XV, 361 p., Hardcover

ISBN: 978-90-481-8729-4