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# Latour's Gaia – Not down to Earth?

## Social Studies of Environmental Management for Grounded Understandings of the Politics of Human–Nature Relationships

*Ingmar Lippert<sup>1</sup>*

### Abstract

In a recent instantiation by Bruno Latour of how STS can engage with matters of concern, he conceptualises a changing relationship of humans with earth. For Latour, the scientists' notion 'anthropocene' illustrates how humans accept that their industrial activities are not merely causing some surface environmental problems but that they establish a geological force. His proposal is that each of us must struggle inwardly to achieve a proper engagement with Gaia (Lovelock). Questioning this individualist take, this paper reviews STS studies on how humans and societies enact the imagery of 'being able to manage' environments. We find conflict. I argue that studying the practices of so-called environmental management shows that through this activity environments are not merely known, but also enacted. This move implies that competing enactments of the subjection of environments to management are possible. Consequently, the performative capacities of environmental management emerge as a fundamentally politically and ethically relevant object of study.

### Introduction

For many, earth itself seems to be at stake; or is it merely human existence? At the latest since the 1970s hegemonic institutions increasingly accept the view that humans and earth must succeed in getting along with each other if the human species is to survive. This paper aims to contribute to an emerging discussion in the field of Science and Technology Studies (STS), the engagement with enactments of environmental problem-solving by scientists and politics in the form of so-called management. Science is considered a key actant in providing analyses of earth, serving policy-makers to draw up strategies for saving mankind from troubles like climate

change, loss of biodiversity or water resource depletion. And big politics, often in agreement with big business, claims to have its handles on these problems. The message is often: yes, out there, we recognise, environmental crises exist, and, no, no need to change the existing rules of society. Indeed, ecological modernisation – the hegemonic policy approach to tackle environmental problems (Hajer 1995) – insists that while the problems are likely to ‘have been caused by modernisation and industrialisation, their solutions must necessarily lie in more – rather than less – modernisation and “superindustrialisation”’ (Buttel 2000, 61). However, as Latour (1993) remarked, *we have never been modern*: Western societies never managed to put into practice the imagined and presupposed separation of nature and culture. Politics that consistently seeks to conceptualise human-nature relationships through the image of separated nature and culture is likely to construct more and more environmental problems, which are neither purely cultural nor purely natural. Following the studies carried out by actor-network theory (e.g. Latour 1987) and by feminist techno-science studies (e.g. Haraway 1991), knowledges are always constructed. This includes scientific knowledges of so-called nature. Yet, in 2004 Latour emphasised a political nuance of his work: ‘The question was never to get away from facts but closer to them, not fighting empiricism but, on the contrary, renewing empiricism’ (2004b, 231). For him the point was that STS should reconstruct the networks encompassing earth and heaven, which hold together the matters of concern affecting humans (246). Pressing concerns, for him, seem to include so-called environmental problems, resulting in global crises. To engage with matters of such importance, Latour (2011) turns both earth and humans on their heads, and calls for engaging with ‘Gaia’ and ‘Terrians’. In the 2011 lecture *Is it Possible to Get Our Materialism Back? An Inquiry into the Various Idealisms of Matter* he provides more than a nod to the *Gaia hypothesis* (Lovelock & Lodge Jr 1972; Lovelock & Margulis 1974). First, Latour points to the understanding that humans may be shaping earth more than the modernist take assumed. This understanding is becoming widely acknowledged as indicated by the term *anthropocene* (Crutzen & Ramanathan 2000; Falkowski et al. 2000). The concept marks a geological era in which, in Latour’s interpretation, industry and humans have become

a geological force, just like plate tectonics. The move by natural scientists to recognise that humans may constitute a force powerful enough to shape earth, conceptually challenges the modernist dream in which humans were to control nature but at the same time nature was supposed to be unconcerned about humans, i.e. not fundamentally reconfigured by humans. Latour (2011) proposes that recent environmental discourse can be aptly conceptualised through the notion of Gaia. Earth has become a closed place, an ecologised cosmos. Whereas earth was a universal place, Gaia is local and thin; Gaia designates an entity which is reactive while nature was stable and indifferent to humans; and while environmental problems had been accepted as happening on earth (the planet was not under threat, it would survive), Gaia emerged as a fragile being. He refers to the International Panel of Climate Change (IPCC) as trying to measure Gaia's fragility; and in 2010 he laments that at the Copenhagen Climate Change Summit (in 2009) actors 'sit on their hands for days doing nothing' instead of averting the 'revenge of Gaia' (Latour 2010, 473). Subsequently, he challenges the identity of earth-dwelling humans and proposes: let us call *Terrians* all those who enact a sustainable footprint, i.e. live in a way which utilises not more than one earth. With this argument Latour leads us directly to the measurement of 'carrying capacities', hegemonic in ecological modernisation politics (Hajer 1995, 26–29). Latour is disconcerted by the thought, which he references to Lovelock, that only two of seven humans would survive Gaia given the hegemonic trajectory of human-nature relationships. The moral imperative implicit to his argument is that 'we' should act in a manner that will give greater leeway to survival. He talks of a war that 'we' have to fight – within ourselves, between the human and the Terrian side (which, he proposes, are part of each of 'us'). He wants us to develop better, sustainable, ways of cohabitation between humans and non-humans (2010): experimenting together in a civilised manner to bring about Gaia (2004a). I must admit, I inserted the universal 'we' myself for reasons of grammar; Latour did not point at all to different interest groups or societal conflicts between competing sides in struggles over environmental *goods or bads* (Beck 1996).

This discussion leads us to a point at which it seems urgent to fight for a more sustainable way of conducting life. If we follow this interpretation

we are in great company – in the heart of the hegemonic discourse of sustainable development, win-win situations, the global green New Deal, emissions trading and green consumer lifestyles. The talk of Gaia and Terrians resonates with discourses that stress the responsibility and agency of the individual to fight their non-sustainable behaviour. This is a take that fits perfectly to the program of ecological modernisation. Latour is not calling for grand revolutions or changes of state policy, but proposes that ‘we’ understand that we are actually engaging with Gaia, that we should abandon the modernist dreams. This raises the question of whether the individualist take is not in itself quite modernist. At least for Huber (2008) it seems self-evident that individual humans and organisations can manage to reduce their ecological footprint and, in consequence, create a green modern society. While other proponents of ecological modernisation (theory) like Mol (2010) would disagree with the reduction of ecological modernisation to individualist strategies, Latour (2011) is definitively proposing a combination of analysis (environmental problems are now global and threaten a large proportion of humans) and strategy (individual action is needed), which are discursively well compatible with the politics of sustainable development. The latter, however, has been shown to stick to modernist resource management, serving capitalist industrialism (Dingler 2003; Eblinghaus & Stickler 1996). While Marxist takes point to the threat that environmental conflict could easily be resolved not through the option of socialism but through fascism (Skirbekk 1996, 129–130) and while, e.g., anarchist practice resulted in the transformation of unsustainable infrastructure projects into mass conflicts (Wall 1999), the insight has emerged in environmental sociology and political science that so-called sustainable development is indeed mostly furthering unsustainability (Blühdorn and Welsh 2007; Wilson & Bryant 1997). Thus, Blühdorn and Welsh call for studies of how this hegemonic kind of environmental conduct is sustained. Latour’s contribution to STS is great; but his approach to Gaia seems not to be down to earth. The talk of Gaia comes with the risk of missing out the patterned differences and conflicts in material and semiotic struggles over the ways environments are enacted. I identify a gap between this talk and the required analyses of such material-semiotic struggles. Hence, here I attempt con-

tributing towards closing this gap – by way of turning to environmental management as practice.

I argue that STS is well equipped to study a key approach suspected of reproducing the (un)sustainability of human-nature relationships, namely the management of environments. For this argument I retrace the rationality of the said approach through STS studies of human-nature interaction and environmental problems. By that I reconceptualise the engagements revolving around the concept and practices of environmental management. This allows for this claim: environmental management should be considered as a form of onto-epistemic performative practice.

## Tracing environmental management

The concept of environmental management refers to directed endeavours by humans to influence, shape or control selected elements of the environment, that is, of the world *external* to the manager (for a discussion of definitions cf. Lippert 2010b, Sections 5.2-5.3). Literature within the academic field of environmental management mostly analyses 'nature' or tools and instruments to intervene in 'nature'. As a critique, Bryant and Wilson (1998) propose that social scientific takes should be utilised to understand how the environment is managed or how 'actors seek to manage the environment' (338). Albeit they demand no less than a complete 'paradigm shift' (Kuhn 1970) within the field of environmental management, they firmly reproduce the neat separation between social and natural sciences, imagining environmental management as an interdisciplinary field (cf. Bryant & Wilson 1998, 331: Figure 1). STS seems to have much to offer in this respect: in laboratory studies (Doing 2008) and in studies of applied ecology and other field sciences (e.g. Waterton 2002, Wynne 1996), STS scholars scrutinised the production of facts of nature and interventions therein, finding that natural science and facts are profoundly social and that the social is also profoundly material and technical. I take this literature to suggest that environmental management studies would better recognise the ultimately hybrid character of the objects deemed to be managed as well as their managers and their instruments.

In an edited volume by Pickering and Guzik (2008), Asplen (2008) claims to provide us with the account which we are looking for: her paper takes the vantage point that studying the work and practices of environmental managers would provide ‘a potent space for mapping the inter-relationships and mutually constitutive interplay between “agents” on both sides of the traditional divide between nature and culture’ (163). Subsequently she presents the reader with amazing claims: environmental managers and their approaches emerge as ‘mangle-ish’, i.e. ‘they reflect an explicit recognition and sensitivity to [...] posthumanist perspectives [...] through a fundamentally decentered and open-ended approach to environmental management practice’ (166). This would indeed be great news: the picture she draws differs utterly from the criticisms so aptly summarised by e.g. Bryant and Wilson (1998); if environmental managers in their engagement with realities recognise the implicatedness of humans in the objects which they presumably manage, we might expect less environmental management imagining and seeking to dominate nature (to extract resources for capitalist purposes). She portrays managers as being open-minded with respect to the outcome of their engagement with environments. If this was the case, these human agents would be willing to abandon the exercise of managing earth, as in geo-engineering, nuclear energy production or emissions trading. Unfortunately, her empirical evidence seems to fail in substantiating her claims for a straightforward reason: she enrols the support of environmental managers’ *narratives* for her optimistic account. She optimistically reproduces these practitioners’ retrospective narratives about their work. This approach to analysis fails to engage with actual environmental management *practice*.

For a more substantial account, it seems necessary to engage with studies of the instruments of environmental management and the practices by which they are exercised upon presumably external realities. To do this we need to turn physically to study the actors and their instruments in their every-day situations (Lippert 2010a). A first point we have to recognise is that *limits to managing the environment* exist (Lippert 2011d). In many ways any management of environments is situated in particular local, material, historical, discursive and practical circumstances; and, further, the conceptions and imaginaries of the manager her- or himself

are always adapted to these circumstances – which can be considered both enabling as well as constraining (Lippert 2011a). And these limits, I propose, cannot simply be integrated and levelled out *within* environmental management practices but position the latter as precarious as well as politically and ethically problematic.

Nevertheless, environmental management is largely staged as omnipotent, performing various god tricks (Haraway 1988), not only in representing environments but also in governing them. To provide evidence for this interpretation, I sketch the field of recent STS accounts of environmental management practices, their agents and their artefacts (for an underlying review of this literature, see Lippert 2011a).

### Representing environments...

...is key for the management approach to sustainability. Its assumption is that evidence of what is happening on earth ought to be, as well as would be, used as the base for decision-making.

Evidence, however, is a tricky concept. Discursively, what counts as evidence may be heavily contested. As no universal all-encompassing world model can exist – and what would be its use(?), it would be too complex to be manageable – any representation constitutes a translation from some reality into another, whereas the very point is that the information differs after its translation (Latour 2005). Law (2009, 144) calls this quality 'betrayal'. No method seems to exist which would not imply such differences. Representation is thus inherently limited. The question is what kind of limits affect actors (Lippert 2011a) – a question which should not be too easily reduced to the question of which *externalities* (Coase 1960), or *overflows* (Callon 1998), are built into management approaches. In the discourse of global climate management, for instance, Ninan (2011b) identifies that management instruments such as the Clean Development Mechanism are modelled on the assumption that gradual changes that improve industrial practices will suffice to fight global warming. Representing environments in the climate change discourse has become an issue of economically internalising environmental goods and bads. This constitutes a stark epistemic reduction. This kind of re-

ductionism in representing environments is not limited to climate change but is being applied to all kinds of environmental entities, including ecosystem services (Sullivan 2010) – whereas the latter have been conceptualised precisely to allow them to be processed by this economic reductionism.

Scientific representations are, of course, supposedly clearly traceable back to the original raw data (Latour 1987). Thus, the following claim is widespread: even if representations are actually only narrowly representing some environmental entity, if agents wanted, in principle they should be able to get back to the original data to study the entity again, i.e. reveal it more fully. However, as Waterton (2002) shows in her study on the practices of putting the UK National Vegetation Classification (NVC) and the EU CORINE Biotopes Classification into practice, reversibility of the environmental facts produced in ecology is not necessarily given. Similarly, in climate change modelling and accounting, fact production cannot necessarily be traced back to some antecedent nature because their data is not independently given but materially-socially constructed (Edwards 2010, Lippert 2013). This can be explained through the practices of myriad translations and processes of formatting environmental data. No unmediated relation exists between knower and known. Haraway (1988) convincingly made the point that not only are knowers socially and historically positioned, but also they are biologically positioned. Consider for a moment the fact that the human eye is restricted in its perception to certain wavelengths. And no prosthetic technology will ever allow the human eye to see everything. At each step of translation data is thus reprocessed, flowing from one form into another – with corresponding overflows. Let alone the point that agents who are to represent an entity always have to interpret how exactly this representation should be performed; even if they act totally in agreement with the discursive reduction of the entity, they are normally concerned not only with the process of representation but also with practical issues, like getting the work done, as Lippert (2012) shows for the case of corporate carbon accounting. This may easily require getting the presumably internalising documents into an order that also silences (i.e. externalises, Strathern 2005) precisely in order to foreground particular realities – always with

an imagined audience in mind (Garfinkel 1967, Chapter 6). Internalisation enacts at the same time betrayal of the environmental entity.

Whether representations of environments can actually constitute an appropriate base for decision-making can often not be answered for all of the affected actors in the same way. Strauss (2011) provides a detailed account of the implications of visualisation techniques used in environmental management and landscape planning. She shows that while some form of landscape impact representation might be useful for corporations requesting a planning permission, citizens would require different perspectives to have a base for informed decision-making. In her study she shows that the bird's eye view of a planned nuclear power plant in Finland does not easily allow the affected publics to envision the visual effect of the plant from the human eye perspective at ground level. To improve participation in environmental management, a number of organisations have to some extent started to integrate affected actors in the construction of the organisation's knowledge about its environment. Lippert (2011c) reconstructs how a corresponding corporate suggestion scheme (a participative instrument) utilised for energy knowledge management worked in practice. Environmental experts may be positioned, he shows, to select in and out certain types of knowledge of the environmental situation within or around the organisation. Martello (2008) exemplifies this problem in a study of representations of climate change in the Arctic. While she points to the emancipatory potential of representations and new forms of knowledge, she also shows how for example male knowledges are privileged in representations of the effects of environmental change.

This discussion clearly indicates that no form of representing environmental entities is impartial or universal. For environmental management this implies that its knowledge base renders any activity inherently political.

### 'Governing at a distance'...

...is a concept based upon the work by Latour (1987) to denote processes by which actors persuade others to organise their practices in line with the policies of the former. For environmental management, the ability to achieve effective action at a distance is a significant presupposition.

A well-known and widely accepted concept is to refer to this issue as 'policy implementation'. Environmental management policies conceived at the top of an environmental bureaucracy need to be implemented at ground level to come into effect. The typical environmental management approach can be reduced to top-down didactics: policies are designed as scripts which need to be correctly interpreted as plans and put into practice. However, as Suchman (2007) suggests, devising plans and policies follows an utterly different logic compared to situated practice – for practical action takes place in particular locations and under particular circumstances. Any plan for an environmental management intervention has to be translated into the situation, requiring the alignment of heterogeneous entities, including humans, technologies and natures, as Åkerman, Kaljonen, and Peltola (2005) point out with respect to the implementation of agri-environmental and energy policies. Despite efforts for effective translation, some of these entities might resist: Krause (2011) indicates how a river, presumably managed, does not fit the engineers' dynamic models. Managers are, and this may be Asplen's point, aware of the fact that natures do not necessarily fit into their plans. Thus, managers can be conceptualised as *heterogeneous engineers* (Law 1987), trying to align all the entities relevant to achieve a successful management action.

When engaging with management success, we immediately encounter the fact that success depends entirely on the performance of complying with a given norm, such as a standard. Suchman (2000), studying civil engineers building a bridge, addresses the production of an Environmental Impact Statement (EIS). This kind of environmental management document constitutes not merely a document representing facts, but is also used as a technology for ordering various publics and the bridge-building process simultaneously. To allow the bridge construction process to move ahead, citizens need to be enrolled. Thus, environmental management in this case needs lay actors to agree with a construction choice. This need is legally and practically stipulated: existing official norms stipulate participation in all kinds of environmental projects. Also, in order to prevent conflict, environmental managers need to persuade powerful affected actors to accept the intervention decision. Environmental management thus needs to effectively govern these actors in order to ensure that the management

plan can be pursued. Note that successful management, therefore, is not related intrinsically to environmental ethics or the like. Rather, what norms managers use to perform their competence is an empirical question. In a study of the practice of pollution regulation in Norway, Asdal (2011) finds that while state environmental management may be able to ensure consensual pollution accounting (referring to accounting standards), this does not necessarily imply that environmental managers manage to force industry to reduce its emissions (referring to ecological norms).

This raises the question of what is actually governed at a distance and by whom. Asdal's study problematises the assumption that state environmental officers are able to manage the emissions of a factory. In theory the public office is supposed to govern the factory's polluting practices from a distance. In order to do this they have agreed that the corporation introduces emissions accounting. While the state environmental managers fail to effectively govern the factory's environmental conduct, however, the business actors are able to take the initiative and govern within the public environmental management office, ensuring that no pollution limits are defined or enforced which would threaten business-as-usual. Such a pattern of parallel directions of (non-)effective governance within environmental management is paralleled by this case on waste management: Lippert (2010, 2011e) shows how a recycling arrangement is able to govern the processing of waste, while the environmental manager is governed by the convention that the waste's existence in itself cannot be questioned. In effect, environmental management interventions may thus result in naturalisations of environmentally detrimental assemblages.

Environmental management is thus facing three dimensions of governance problems: all kinds of social, material and discursive elements need to be aligned to affect a workable solution. However, competing norms exist which could be employed to measure the success of governing these elements. Finally, we find that while environmental management interventions can be staged as successful, the networks causing environmental crises may be sustained.

This section revisited two key assumptions of environmental management – that accurate representations of environments are possible and that, based upon these representations, management can intervene in and govern

environments. STS studies on environmental management in practice can well be translated in emphasising the limits built into management approaches. Albeit environmental management normally performs the god tricks of a) unlimited vision for all practical purposes and b) possessing suitable power over the entities to be managed, the discussion showed that all representations and practices aimed at governing are ultimately limited by the particular way they are situated in practice. However, pointing to such limits does not make explicit an alternative conceptualisation of environmental management, as Ninan (2011a) comments. On this note let us turn to the STS contributions that are suitable to reconceptualise the practice we are concerned with.

## Conclusion: Reconceptualising the enactment of environmental management

Having recognised that the practices of environmental management are highly precarious and not able to pay justice to the god tricks staged, it seems apt to reconceptualise environmental management: not in terms of the degree of actual *control* of so-called nature but in terms of the ways it is played out *in relation* to other entities, including but not limited to ‘natural’ entities, social collaborators, accomplices or audiences together with, or vis-à-vis whom, management of environments is performed. To finalise this argument, I need to make two points. First, I show that the entities presumably being managed are constituted in practices, rather than existing independently of and antecedent to the manager. For this I borrow Mol’s (2002) concept of enactment: the entities are enacted into the management’s reality. Second, I conceptualise these enactments as a form of performance that plays a role in the wider political management of the political and ecological economy.

I consider the existence of entities like a bridge, a mouse, a tree, a factory or carbon dioxide emissions to be environmental(ly relevant) entities. And I assume these to be entities that can be easily imagined as objects to be subject to environmental managers. If we can show that these entities are not simply pre-existing, waiting for environmental management practice,

but have to be somehow brought into existence, we can speak of environmental management as enacting entities into reality.

Suchman (2000) shows how in the process of constructing a bridge all kinds of elements needed to be constituted. For construction management, she reports, it was important to represent human interests as well as how different bridge construction options would affect entities like a mouse or certain wetland species. In public hearings some of these entities had to be presented to citizens in order to position them to make informed decisions (a premise which we have problematised above). Experts were assembled in the public hearing to construct and provide views of spatially and temporally distant realities for citizens. The environmental entities could not simply be carried in from outside the meeting hall, but were translated into inscription devices that could be shown to the audience. The hearing situation required that the environmental experts study the reality out there beforehand, represent it and bring it to the hall where the hearing was held. Thus, we can easily identify here a spatial and past-to-present temporal displacement. The environmental entities present in the hall have certainly changed in the process of these displacements. (In saying this, I do not, however, claim that the scientific and management practices could do without such a displacement.) For the environmental managers in the hall, exactly as in a state environmental office (Asdal 2011) or a corporate headquarters (Lippert 2012), an environmental entity is not taking the form it has in the imagined 'out there'. The environmental entity is instead heavily reformatted in the process of getting it from the field onto the manager's table (see also Latour 1999). Asdal (2008) shows how 'nature as manageable' came only into existence through environmental accounting; what we need to expect are practices of *enacting environments* (Lippert 2013). Political institutions have been constructing nature as a governable space in reaction to the spreading perception of environmental crises. The specific way this so-called 'nature' is deemed manageable is premised upon the transformation of field findings into a limited set of quantifiers and qualifiers. The object under management, hence, needs to be conceptualised as being brought into and made present in the manager's reality through specific practices.

It is not at all the case, however, that environmental entities once constructed into management reality simply stay present and in shape. Much rather, Suchman (2000) argues, continuous efforts are necessary to maintain particular characteristics of environmental ‘entities as manageable’. She points to the role of persuasion required to organise affected humans into supportive relations to a long-time environmental intervention – for example building a bridge. The construction takes form over a period of several years during which humans continuously have to be aligned to the bridge idea, its materialisation and, thereafter, maintenance. Krause (2010), showing that a river is not a stable environmental entity that would allow a once-and-for-all management technology, stresses manifold rhythms through which interaction revolving around the river is shaped. River management has to take a form that is as in flow as the river’s engagement with life on and around it. Even abstract and mathematically clearly defined entities like carbon dioxide equivalent emissions of a corporation are constantly in flux: Lippert (2011b) traces how emission data is stored and processed within a corporate headquarters’ database and distributed cognition technology. Carbon emissions emerge as environmental entities that are subject to on-going computational engineering and changing accounting practices.

This discussion establishes the practical nature of environmental entities. What they are, how many they are, how they exist and undergo change – all this is subject to transformations. Managing them can only partially control or direct these transformations. The degree of control, however, is not necessarily self-evident. It is an empirical question to determine how (rather than whether or not) management actually affects entities and to reconstruct the normative and political dimensions of how entities are managed. For all kinds of entities, the attempt to control them and rendering entities subject to management is of existential importance. Lippert (2013, Ch. 4), for example, traces how enrolling global environmental accounting standards and auditors as well as an independent NGO can help a company to increase its discretion – rather than being subjected to more social control over its environmental impacts. The politics of environmental management continue as long as management practices shape environmental entities. In the efforts to

control the latter, management is constantly enacting boundaries to how these entities exist. Therefore Ninan (2011a) proposes to conceptualise environmental management as a technique of setting boundaries.

Such boundary setting practices of environmental managers can be well conceptualised by engaging with the heterogeneous assemblies which form entities. Latour (2004b) proposes that community assemblies – once called *things* – can be considered as part of shaping things. Following this move, we find that things shaped not only small material items but also norms or laws governing the issue of how to engage with land. Land was being shaped by things, resulting in the notion of land-scape (Olwig 2005). The assembly, thus, can also be understood as forming environments. Olwig (2010) argues that boundaries can be set within landscapes, enclosing commons and shaping areas for specific uses. Thus, landscapes may also be performed – as in staged – for audiences: a landscape can perform a government as the centre of a society (Olwig 2011). By performing environments, therefore, also the legitimisation of political and ecological economies can be performed. Environmental science and management practices can in this way be considered to constitute apparatuses through which not only knowledges of environments are constructed but through which also the ontic and, therefore, proper status of environments is enacted (Barad 2003). Examples for this are: a) the enactment of wolves as part of a landscape scenery (Skogen, Mauz & Krangle 2008); b) wind turbines which perform not only a vision of sustainability within the landscape but also a green polity (Dracklé & Krauss 2011); c) the formation of agricultural nature by farmers who resist governmental governance techniques but provide governments access to alternative natures in order to stage the implementation of policies (Kaljonen 2006); or d) the ontic-epistemic reconstitution of entities like water bodies as ecosystem services – in practices of messy and simultaneous (re)qualifications and (re)quantifications (Verran 2011). Latour's (2010, 2011) call for experimentation partially misses the point; moderns are in the midst of practicing new assemblages of humans and non-humans, of cohabitation – and all of this to presumably bring about 'sustainability'. The talk of Gaia seems to miss out the careful engagement with the dominant practices that attempt to integrate natures (irrespective of whether they 'succeed') and in this

process reconfigure, redo and transform nature, environments – both epistemically and ontically. Indeed, Latour seems to miss that Gaia itself is the artefact of a historical setting that approaches nature, earth and the human in peculiar ways – Lovelock developed Gaia in the midst of his engagements with NASA and the fossil fuel giant Shell (Haraway 1995, xii). With Haraway, Gaia reemerges prefigured as a cyborg engagement with reality. Gaia is a matter of power, conflict, friction, a matter between fact and fiction, mutating and never still (*ibid.*, xix).

In this messy and continuously transforming reality (Law 2004), the practices of managers should not be conceptualised as control instances, but as improvisations in which the weaving together of heterogeneous entities creates environments (Ingold 2010). Studying environmental management needs to engage with the flow of and around so-called ‘management’ practices. STS seems well positioned for taking such a down to earth approach: our take can contribute to the solution of the anthropocene’s problems by reconstructing what onto-epistemic practices are enacting environments and their subjection to management.

## Note

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*Latour's Gaia – Not down to Earth?* 107

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108 Ingmar Lippert

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*Latour's Gaia – Not down to Earth?* 109

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