

# Lateral Comparisons

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## Introduction

Comparison has been an important, perhaps even defining, methodological and conceptual preoccupation in fields ranging from anthropology and history to linguistics. However, to the extent that comparison has been important in science and technology studies (STS) — our ‘home field’ — it has largely functioned implicitly and rarely programmatically (but see Barnes 1973; Jasanoff 2007: 13–42; Knorr-Cetina 1999). Considered genealogically, the disinclination towards comparative studies per se can be related to the generic constructivism of most STS and its attendant scepticism towards stable yardsticks capable of grounding comparative analysis. Indeed, it does not seem likely that a long-lasting agreement on the relevant units of comparison will ever be reached, or even that it would be desirable: for what might be the units guiding comparative study? The cultures of national science policy (Jasanoff 2007)? Organisational forms (Scott 1981)? Types of technology relations (Ihde 1990)? Epistemic cultures (Knorr-Cetina 1999)? Modes of existence (Latour 2013)? Held under a constructivist microscope, each of these units seems equally prone to disperse as units.

A similar dispersal has fuelled the growing scepticism towards comparison (in the classical ‘grand style’) in anthropology. Indeed, whereas comparison used to be something of a ‘gold standard’ in anthropology, it is noteworthy that the comparative endeavour has increasingly fallen by the wayside. Like STS, this decline can be related to vigorous postmodern and reflexive critiques of representation, universalism, and holism. Not least, these critiques were directed at an earlier evolutionism premised on the large-scale comparison of different ‘cultures’. Even so, certain modes of comparison have recently regained vigour (e.g. Otto and Bubandt 2010). This paper aims to further that trajectory by examining some potentials of comparison at the intersection of STS and anthropology.

The notion of ‘lateral reason’ comes from anthropologist Bill Maurer’s (2005) work on Islamic Banking and alternative currencies in the US. Laterality centres on the observation that it is not the prerogative of social scientists to conceptualise and compare, for ethnographic fields are rife with such efforts. Informants are thus ‘fellow travellers along the routes of social abstraction and analysis’ (Maurer 2005: xv). As a consequence, social science comparisons are located ‘alongside’ the worlds of those they compare; they offer no general overview or meta-perspective on them. And, as a result, the traffic of comparisons and their effects run in multiple directions. It follows that although social science comparisons are often viewed as *elucidating* aspects of a found social reality, social science might also *learn from* indigenous comparisons about how to rethink its own analytical strategies.

At one level, this is to do with extracting and transforming modes of understanding found in the field. At another, it is a matter of recognising that comparison takes material-technological forms as often as linguistic-discursive ones.

And yet another laterality points to the fundamental open-endedness of the relation between academic analysis and (other) worldly practices. Comparisons of the kinds we describe below, might therefore give rise to further comparisons that extend into other academic, practice, or policy domains — as testified by several contributions to this volume. The lateral point is that no rulebook can predict how this may happen, nor can it dictate how it ought to happen.

The present analysis focuses specifically on *comparative technologies*; those used on board a Danish fishery inspection vessel for assorted purposes (including the navigation of the sea and Danish and EU bureaucracies). Exploring assemblages of comparison on the ship's bridge (and in the broader ecologies of bureaucracy), we elicit acts of comparison as parts of variably configured and emergent practices that move across a series of standard divisions of social science. These comparisons include description and conceptualisation (Jensen 2011; Maurer 2011, 2012; Ratner 2012; Riles 2000), informant and researcher (Hansen 2011; Maurer 2005), and indeed, humans and technology (Gad 2012; Walford 2013).

The comparisons at hand are diverse. Some are built into machines. Some are deployed by informants to make sense of the sea environment, and yet others are put to use by researchers to address social scientific questions. This diversity suggests the difficulty of localising comparison at any particular empirical or analytical level. Our attempt to take into account the coexistence and movement of multiple forms of comparison, is thus lateral in a double sense. Its premise is based on a refusal to circumscribe what counts as comparative material. Moreover, it centres on the variability, hybridity, and extendibility of comparison.

As an analytical propensity, lateral comparison is relentlessly non-hierarchical. It refuses to assume the privilege of any particular kind of comparator, including the researcher. Instead, the motor of lateral comparison is that the most heterogeneous actors unceasingly compare the most unpredictable things in the most surprising ways (see Meyer, this volume). Indeed, this point is exemplified by Deville, Guggenheim, and Hrdlickova's appropriation of the very notion of the comparator (this volume). While they tell us the term generically refers to a standard against which an object is compared, their usage is drawn from the capacities of a *microchip* (also called a comparator) which both compares and regulates fixed and variable voltages. Offering this lateral comparison *of comparison* enables Deville et al. to conduct their analysis in a novel register, emphasising description and intervention in the same analytical movement.

Aside from enriching description, one of the benefits of such a move is that it steers clear of the always-lurking representationalism in anthropology and STS which tends to belittle the value of inventive conceptualisation in the name of getting descriptions right (see Holbraad 2012). Instead, Deville et al. emphasise that it is premised on the recognition that representation is both intervention (see Hacking 1983; Haraway 1994) and invention (see Wagner 1975). It highlights the notion that who compares, what is invented by comparing, how such inventions may come to matter, and in which ways, is undecided from the get go.

The premise does not suggest that everything *is* always compared, or that everything necessarily *should be* compared. Rather, the point is that everything *may* be rendered comparable (Latour 1988: 161– 62; see Stöckelová, this volume). We might then say that our own comparisons should also be allowed to intermingle with those of others. Yet this formulation is slightly misleading insofar as it suggests that the researcher retains the capacity to make the decision. More precisely, we know that social scientific comparisons often *come to mingle* with those conducted by

informants in unforeseeable ways. Lateral comparison takes this contingent possibility seriously, but just for that reason, it contains no normative prescription — for enforced comparative mingling is not what is at stake.

To locate the distinctiveness of lateral comparisons, we begin by turning back the clock to the mid–late ‘80s (a time when the comparative methods of anthropology had begun to show some serious cracks).

## Forms of Comparison: A Short Genealogy

### Comparison and Its Discontents

In 1987, the anthropologist Ladislav Holy dedicated his introduction to *Comparative Anthropology* — showing that the anthropological preoccupation with ‘cross-cultural comparison as the method for generating and testing hypotheses derives from the positivistic paradigm’ (1987: 1). Classical anthropology, Holy wrote, considered itself a branch of Durkheim’s comparative sociology; not a ‘particular branch of sociology’, but rather, ‘sociology itself insofar as it ceases to be purely descriptive and aspires to account for facts’ (Ibid: 2; citing Durkheim 1964: 139). According to this understanding, ‘description provided the facts, and comparative method was adopted to account for them; it was seen as a means of formulating and testing hypotheses and generalizations valid not only for one specific society or culture but cross culturally’ (Holy 1987: 2; see Kuper 2002: 144–45). For Mark Hobart (writing in the same volume),

the special status of comparison in anthropology related to the fact that it underpinned explicitly or implicitly almost all the ways of talking about other cultures. Whether we study agriculture or food, narrative or myth, divinity or witches, we are comparing our popular or technical categories with other peoples. Analysis in terms of economic ‘infrastructures’ or self-interest assumes the shared reality of production or the utilitarian nature of human action. Discussions concerning ‘political systems’ presuppose the generality of systems, and makes a suggestion that forms of power are comparable (1987: 22).

Hobart further noted that comparison has been viewed as the ‘anthropological equivalent of the controlled experimentation of natural scientists’ (Hobart 1987: 23; see Jensen 2011: 3–5).

In tandem with the interpretive, reflexive, and postcolonial turns in anthropology, comparison nevertheless came to be viewed with increasing scepticism. One problem concerned ‘the relations between anthropologists’ descriptions of particular cultures and societies and their generalisation about human culture and society’ (Holy 1987: 1). As Fox and Gingrich argued in *Anthropology, By Comparison*, though comparison from afar seems both fundamental and unproblematic, upon closer inspection it tends to dissolve ‘into dozens of other issues, pieces and fragments’ (2002: 1). Adam Kuper similarly pinpointed the tendency of comparison to fragment: he argued that the units

of anthropological comparison are fundamentally contestable since the boundaries of what is compared are always uncertain:

Are the South African Bushmen one ethnographic case or several? Second, in what sense are the units that are constructed strictly comparable? Can the Bushmen reasonably be treated as a ‘case’ alongside ‘the Bedouin’, let alone Ming China? Much the same difficulties arise when it comes to defining an ethnographic object for purposes of comparison. Is ‘sacrifice’ among the Nuer really a distinctive, separable thing? And in what sense is it like ‘sacrifice’ among the ancient Israelites, or in Classical Greece or among the Aztecs? (Kuper 2002: 145).

In 1987, Holy had already argued that ‘there is no longer a “comparative method” in anthropology’ (1987: 2). If ever there was such a method, it had been ‘replaced by varying styles of comparison’ (Ibid), generally used ‘to facilitate our understanding of [...] culturally specific meanings, i.e. to identify or bring into focus cultural specificity’ (Ibid: 10). In their later edition, Fox and Gingrich argued that

it is possible to move beyond the ruins of a monopolistic claim to one kind of comparison and beyond the stifling of intellectual competition it visited upon anthropology. Now, a rich *plurality of qualitative comparative methodologies* has emerged — none claiming exclusive rights, each offering its insights and evidence (2002: 12).

In a special issue on ‘Thick Comparison’, Jörg Niewöhner and Thomas Scheffer likewise observed that ‘the standard *mode of comparison* has been criticised as mechanistic, technical, and naïve (vis-à-vis hegemonic concepts and categories)’ (2008: 274). They strengthened the argument for a plurality of comparisons by emphasising that ‘the rising demand for cross-cultural and comparative research has proved productive for ethnographers (as cultural translators)’ (Ibid).

However, the pluralisation of comparison identified by Holy, promoted by Fox and Gingrich, and enhanced by Niewöhner and Scheffer, has also been considered analytically costly. Specifically, it has undermined what some view as one of the central virtues of comparison in the ‘grand style’ — namely in its attempt to generalise. This effort has been replaced by a plethora of specific studies that generally have limited comparative aspiration (see Beaulieu et al. 2007; Jensen 2013).<sup>1</sup> As rich and diverse as such ethnographies may be, they often rely on a descriptivist ethos, opening their flanks to Edmund Leach’s classical swipe at an ethnographic ‘butterfly collection’ (1961: 25) where the harvesting of descriptions and facts serve no overarching analytical or comparative purpose.

Forty years after Leach’s complaint, Kuper offered an amplified version of the same critique:

Ethnography is now the core business of social anthropology [...] and long-term immersion in ethnographic research is increasingly common. [...]The

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<sup>1</sup> Holy noted that ‘[t]he possibility of generalizing from a single case was of course not ruled out, but the merits and deficiencies of this type of generalizing in contrast to generalization on the basis of systematic comparison of several cases, were addressed as a methodological problem (Köbben 1970, cited in Holy 1987: 2). This intriguing possibility has been reintroduced under the rubric of ‘comparative relativism’ (Jensen 2011).

challenge is to add value to the dauntingly large body of ethnographic and historical reports available on almost any region (2002: 144).

Yet, Kuper lamented, some refuse 'to move beyond the handful of people they have studied intensively at first hand, though it is difficult to see why we should take an interest in an arbitrary little network of friends or informants unless we can learn something of more general relevance' (Ibid: 148). Quoting Maurice Bloch's denouncement of ethnographies consisting of 'assemblages of anecdotes of this and that' (Holbraad 2012: 32, citing Bloch 2005: 9), Martin Holbraad similarly points to 'the strong tendency in recent years to refrain from comparative theoretical generalisations and to favor accounts of particular ethnographic instances' (2012: 31).

One way forward is found in Niewöhner and Scheffer's argument that 'thick comparison' implies a focus on the production of comparability itself (2008: 275). They ask ethnographers to pay close attention to how ethnographic comparisons interact with comparative endeavours already occurring in the field, and how this *produces* comparability and 'objects of comparison' (Ibid: 280). They urge engagement with such emergent objects of comparison 'in their performative force, meaning the ways they make new links and relations and explicate novel qualities and dynamics (both within the ethnographic field and in ethnographers' social scientific discipline)' (Ibid). In a related vein, Helen Verran (2001) has turned the empirical study of forms of generalisation into a comparative project in its own right. Thus, she has compared the ways in which Western educators and Nigerian math teachers do mathematical generalisation, and the forms of understanding that undergird Australian aboriginals' and eco-scientists' forms of land management.

Some of our own recent work similarly advocates for an agenda of 'comparative relativism' (e.g. Jensen 2011; Strathern 2011; Viveiros de Castro 2011), emphasising the importance of conducting 'comparison of comparisons' in order to open up and relativise understandings of what different people 'compare for'. This latter aspect ties in directly with the lateral comparisons we pick up on in this paper. What laterality adds is a sense of the unforeseeable movements of such diverse, relativised comparisons.

## Comparison with a Difference

Though STS by no means embraces comparative relativism, some scholars in this field have also grappled with the question of how to do comparison differently. In his contribution to the aforementioned special issue on thick comparison, Robert Schmidt draws on Max Weber to consider what comparison might mean if detached from a positivist agenda. Schmidt argues that Weber's perspective offers a distinct vantage point from which to redefine comparativism. For Weber, he reminds us that

comparing critically (*kritische Vergleichung*) does not serve a search for analogies and parallels but rather should be deployed to shed light on the peculiarity (*Herausarbeitung der Eigenart*) of the cases and objects (1999: 7).

Quite contrary to the frequent scepticism about comparative analysis in ethnography and qualitative research, Weber depicts comparative perspectives not as

abstracting from or overriding the uniqueness of social phenomena, but rather as uncovering them (Schmidt 2008: 357). Accordingly, Weber's comparative project does not presuppose 'shared properties of objects' and should not be seen as 'equating objects and cases to each other' (Ibid: 358). Instead, Schmidt's reading of Weber suggests that the focal interest is 'to make use of contrasts and differences, to gain insights from incomparability and inadequacy' (Ibid).

In STS, one of the best examples is Karin Knorr-Cetina's studies of epistemic cultures. Her interest is in charting the different contours of 'expert systems' (1999: 1) such as the different modes of making knowledge that characterise molecular biology and physics. Rather than strive to identify 'shared properties', Knorr-Cetina calls attention to the fragmentation and disunity of science (see Galison and Stump 1996). Her aim is to display 'different architectures of empirical approaches, specific constructions of the referent, particular ontologies of instruments, and different social machineries' (Knorr-Cetina 1999: 3). 'A comparative optics', she argues, 'brings out not the essential features of each field but differences between the fields' (Ibid: 4) such as 'the communitarian science of physics', and 'the individual, bodily, lab-bench science of molecular biology' (Ibid: 4). Whereas physics aims to go beyond 'anthropocentric and culture-centric scales of time and space in its organization and work, the other (molecular biology) holds on to them and exploits them' (Ibid). While physics 'is characterized by a relative loss of the empirical', molecular biology is 'heavily experiential' (Ibid). Furthermore, whereas physics 'transforms machines into physiological beings' (Ibid), the reverse is the case for molecular biology.

In the context of science policy studies, another prominent STS scholar, Sheila Jasanoff, has likewise proposed a novel comparative agenda. In the chapter 'Why Compare?', Jasanoff (2005) notes the general decline of universalism and objectivism and the rise of poststructuralist and constructivist approaches in much of social science. She suggests it is increasingly recognised that science, technology, and policy are mutually embedded and co-produced.

Whereas comparison of science policies used to seem unnecessary (since science, assumed universal, was not supposed to be influenced by politics or culture), a first wave of comparative studies came to focus on the 'national styles of policy', aiming to identify the 'styles' most conducive to supporting scientific progress. Advocating a second wave, Jasanoff states that such research needs

a different justification than simply propagation of improved managerial techniques. Rather than prescribing decontextualized best practices for an imagined global administrative elite, comparison should be seen as a means for investigating the interactions between science and politics, with far-reaching implications for governance in advanced industrialized democracies (2005: 15).

In agreement with Weber's injunction, her proposal centres on the exploration of political culture — defined dynamically. Thus, her comparisons both rely on, and challenge, such 'quasi-holistic' notions as 'the state' and 'political culture'. Aiming to elucidate topographies of comparison inhabited by national and scientific cultures, Jasanoff's comparative agenda is explicit about its own ontological and epistemological commitments.

Knorr-Cetina and Jasanoff offer some of the most explicit illustrations within the STS corpus of what comparison after positivism might look like. Neither 'equates' cases with one another, but uses comparison to highlight distinctive features of

phenomena. In some ways, however, both also retain a rather classical vision of comparison.

First, while their comparisons work by the extraction of certain 'traits' from practices, they do not generally extend their interest to acts of comparison within practices. Thus, they exhibit limited interest in how and why the actors themselves compare. In that sense, they fall short of Niewöhner and Scheffers' call for 'thick comparisons'. This is probably due to the fact that both Knorr-Cetina and Jasanoff maintain a rather strict separation between empirical practices (which are compared) and academic analyses (where researchers use theoretical frameworks to compare). It is therefore little surprise that neither pay much attention to the lateral comparisons that informants themselves use to relate and distinguish their practices from one another. Furthermore, these authors show little concern for how their own comparisons establish lateral linkages.

In contrast, our ambition is to push the comparative envelope by focusing on such linkages. We find inspiration to do so in a series of recent studies located at the intersection of STS and anthropology.

## Lateral Inspirations

One inspiration for the interest in lateral comparison arises from the now generally observed complexity of the relationship between 'observer' and 'observed'. If this complexity has diverse sources, one of them is the experience of meeting informants whose projects and ways of thinking are not radically different from (or indeed sometimes very similar to) and certainly comparable to those of the researcher (Riles 2000). This is prominently (but by no means exclusively) the case when anthropology and STS study 'modern' knowledge practices.

This increasingly common situation challenges the implicit, if not basic, 'social scientific contract', according to which the relationship between researcher and informant implies a division of labour such that the latter 'offer' to the former their practices and thoughts for analysis and explanation. Presently (whether in science or business), expert informants with significant cultural capital are fully able to read and comment on social science texts, and they are quite likely to disagree and offer alternative perspectives.

Annelise Riles has argued that the collapsing distance between 'our' and 'their' knowledges calls for a new anthropological response; one that is capable of drawing, in more sustained ways, upon the ways in which informants themselves theorise their activities. Her argument aligns with actor-network theory's insistence that informants' theories are often more relevant for 'our' understanding of 'their' practices than social scientific ones. Insofar, however, as actor-network theory (at least sometimes) claims to eschew theory in favour of elucidating actors' perspectives, the solutions diverge. For Riles, the pressing question is how to respond to the threat of collapsing distance, without unwittingly accelerating that collapse through efforts to mimic our informants. In *The Network Inside Out*, for example, she compares the making of Fijian mats to the making of policy documents by a Fijian NGO working on gender issues (2000: 70ff).

Bill Maurer has also pinpointed the undercurrent of representationalism lurking underneath actor-network theory (and much other STS thinking). In Maurer's view,

Latour's realism is problematic for the same reason that it is so useful: refusing the separation of epistemology from ontology opens up the enumerable black boxes that warrant 'reality,' but it does so in terms of that refusal's own agnosticism (Maurer 2005: 14).

Even so, actor-network theory has considerably more on offer than an inclination to realism. For one thing, it has attuned us to the notion that acts of comparison are not carried out exclusively by human actors (e.g. Hutchins 1995; Latour 1988). Instead, it offers a view of comparison as a distributed activity, a hybrid achievement involving heterogeneous actors that only retrospectively tends to be condensed and attributed to (individual) human actors, rather than networks *in toto*. Anthropologist Atsuro Morita (2013) has also recently deployed this argument to inventive effect: comparisons, he argues, occur not only in the human domain, but also 'within' machines that contain their own contexts and scales. Morita accepts anthropologist Marilyn Strathern's premise that the study of others cannot avoid entailing the study of our own practices and knowledges. This mutual implication is invariably brought out in the discrepancy between our own presuppositions and the surprises arising from ethnography.<sup>2</sup>

Describing the work of Thai mechanics to make a Japanese cultivator operate efficiently in the environment of Northeastern Thailand, Morita argues that the breakdown of the cultivator led not only to comparisons of the expertise or skill levels of Thai and Japanese engineers, but also to the elicitation *from within* the machine of comparisons between the ecological conditions of Thai and Japanese fields. In a lateral extension, Morita continues to compare the operations of the cultivator to ethnography, a move that allows him to envision the anthropological enterprise as itself a 'machine' for articulating 'strange connections'.

Now, if the separation between human and technology is a modern preoccupation, so is the maintenance of boundaries between analysis and description, and theory and practice. However, Morita's analysis shows that lateral comparison enables a crosscutting analytical movement, whereby the 'theories' embedded in machines can inspire the practice of anthropological analysis. In our view, the principal interest of this study lies in its demonstration of the inventive potentials of tracing comparisons ethnographically, only to subsequently utilise them for other analytical or practical purposes.

As a final example, Bill Maurer aims to reinvigorate comparison by explicit deployment of lateral comparisons. In his exploration of alternative currency experiments in the US, Maurer refrains from comparing these cases using theoretically derived categories. Instead, he traces lateral connections between them:

Islamic banking and Ithaca HOURS [an alternative currency] became necessary to one another in my own efforts to restage what I saw them doing. They do not 'represent' each other or 'shed light' on each other so much as they draw on each other — but only sometimes contingently and laterally. They metastasise into one another, but that metastasis is not essential to either of them nor is it causal. For each overlaps and draw on other things, too' (2005: 10).

Maurer insists this does not mean that the two cases 'automatically suggest each other, either' (Ibid). Instead, he writes, 'at every step my effort to "compare" got

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<sup>2</sup> For example, Strathern has used Melanesian ethnography to elucidate English kinship (1992) and Western audit cultures (2000).



interrupted by the form of that which I was “comparing” (Ibid). These movements, at once empirical and conceptual, ‘revealed the tropes of Islamic Banking, alternative currencies, and my inquiry as open and unsteady’ (Ibid: 11).

It is precisely this sense of the ‘open and unsteady’ course of comparisons that guides us as we turn to a study of comparative technologies in fisheries inspection.

### On the West Coast<sup>3</sup>

The *West Coast* is a 49.9 metre-long vessel used for fisheries inspection on the Danish sea.<sup>4</sup> A crew of nine men (including a captain), one or two mates, two marine engineers, a cook, and one to three ship assistants, operates the ship. Contemporary fishing is a highly regulated arena, involving a range of regulatory issues including (but not limited to) quotas, equipment, catch landing, registration, and licensing issues. The inspection work carried out by the *West Coast* aims to ensure that fishermen comply with these regulations. Presently, inspection accounts for about 95% of the work hours, though the ship is also a key actor in the Danish National Rescue Service. Equally crucial is the fact that work on the *West Coast* relies on technologically mediated information of many sorts. Not least, technologies provide updated knowledge about the environment of the ship and its location. As we discuss in the following, the production of reliable information is integrally related to a series of comparisons.

### On the Bridge: Local Assemblages and Immanent Comparisons

In her study of Dutch drug users under rehabilitation, Emilie Gomart (2004) found comparison to be an important preoccupation among doctors and patients. These comparisons were consequential: ‘drugs were alternatives, they were the very possibility to negotiate, to adjust and to change slightly’ (2004: 98). As we shall see, the need ‘to adjust and change slightly’ is also an important aspect of the navigational requirements on the bridge of the *West Coast*. It, too, is facilitated by comparison. Contrary to Gomart’s study of human comparisons, however, these comparisons are embedded in technological assemblages.

Upon boarding the *West Coast*, one is immediately struck by the density of the technological environment. This is especially the case on the ship’s bridge. Throughout Gad’s fieldwork, one of the most prominent tasks of inspectors consisted of engagement with multiple navigational technologies. It would not be unreasonable to suspect that these technologies embody a division of labour in which each fulfils its own specific and specialised role. Certainly, this was Gad’s assumption when, ignorant to their purposes, he first encountered these technological blackboxes.

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<sup>3</sup> Gad did fieldwork on the *West Coast* from 2008–2009 mostly on the ship’s bridge.

<sup>4</sup> The ship *might* as well have been just a bit over fifty metres long, Gad was told, but in that case the law would have required the ship to have an additional crew member. In this sense, the length of the *West Coast* was ‘determined’ by a comparison between the ship and security standards.

However, it gradually became clear that many of these different technologies had similar functions.

Today, navigation is primarily done using the electronic sea chart. This chart was introduced on the *West Coast* around the mid-00s. However, even as this chart (on which the position of the ship is continuously updated by a geographical positioning system [GPS]) is now the primary means for navigation, the striking fact is that none of the older technologies have been discarded. Thus, in principle (and occasionally in practice) navigation can be done in several ways — namely, using radar, compass, or landmarks. Danish law requires the ship to maintain paper maps and even a sextant. Somewhat absurdly, a positioning system that used to receive FM waves from land towers filled an entire panel on the bridge, although it had not been used for a long while.

Perhaps the apparent irrationality of this (more or less) obsolete technological arrangement diminishes if one thinks in economic terms. If the space is not urgently needed, there is little incentive to refurbish the whole bridge simply because one technology no longer serves a current purpose. However, the overwhelming sense of redundancy (extending to compasses and sextants) which few have the skills to use anymore, points to a more general aspect of the technological environment: technologies tend not to replace one another on the *West Coast*. Instead, new ones are simply added to the existing assemblage of technologies and tasks on board the ship. The sense of redundancy or replication is intensified once it is realised that some technologies come in pairs. For example, on the bridge there are four steering gears and two radars.

What might account for such functional overlaps? The most obvious reason is safety and risk management. A variety of technologies, similar and different, new and old, are available as backups in case others fail. If, as Marilyn Strathern observed about the comparative enterprise of anthropology, that ‘a distinct challenge [...] is how to pace oneself for a future that is not ashamed of finding ‘old’ as well as ‘new’ resources’ (2002: xiv), then this might be equally said of navigation (whether ‘old’ anthropological resources might be seen as a ‘backup’ in case newer ones fail need not detain us at this point). Even so, figuring out just what these diverse technologies are good for and in which situations, is not simple. This is not only the case for the ignorant ethnographer, but also for the members of the crew. Moreover, these complications are precisely the starting points for acts of comparison.

For example, determining whether the new electronic sea chart is more ‘trustworthy’ than the older radar, is contingent upon various considerations. The similarity of these technologies is easily understood, since both display the position of the ship relative to land and other vessels. However, when queried about their differences, crewmembers stated that the radar shows reality as it ‘really’ is. Over the years, stand-alone radars have proven their capacity to reliably represent the position of the ship. In contrast, the more advanced representation made available on the sea chart is mediated by software running on a PC, which makes it vulnerable to assorted errors and breakdowns.

At the same time, the radar is not considered sufficiently trustworthy and the ship regularly used two radars at once. Furthermore, the information collected via radar could also be challenged by comparison with other positioning technologies, including the sea chart. Thus, while the radar can be tuned to filter out high waves in bad weather, this comes with the risk of missing small boats. For the sailors, as for Isabelle Stengers’ scientists, ‘objectivity is not the name for a method but for an achievement, for the creation of a rapport authorizing the definition of an object’

(2011: 50). Comparison, that is, facilitates the making of situated, but authoritative definitions of which information is reliable and safe — i.e. what is ‘real’. This is not a question of using a failsafe method, but of learning to ‘pay due attention’ (2011: 62) to relevant differences.

Reliability and safety varies with the constantly changing sea environment. This sets in motion another series of comparative acts. For example, it might be assumed that looking out the window is the best way to observe ‘reality’. Why bother then with all these technologies? For one thing, the radar can ‘see’ far in all directions and it will sound an alarm if other ships or obstacles approach. Second, ‘unmediated’ observation using eyesight is only feasible in situations where the sky is clear and the sea is calm. If there is heavy rain, a gusting storm, or if waves splash against the window, it is hardly possible to see anything. Since the radar can ignore most deflections due to bad weather, it offers a far better ‘window’ onto the realities of sea under such conditions (one captain explained — not without pride — that he had once docked in harbour using *only* the radar). Again, the trustworthiness and reliability of technologies are comparatively established and relative.

However, there is more to this variability than technological properties, for the addition of new technologies to the bridge also affects crewmembers’ skills and knowledge. Not least, the introduction of advanced technologies means that sailors must exert themselves to learn their use. Invariably, the ability to use old technologies like the sextant begins to fade. Though many technologies are available, not every crewmember is able to use them. Today, few can position using the sextant or fully master the mandatory paper charts.

The question of how to maintain ‘good old’ seafaring skills in a context where new technologies are continuously added, was indeed a matter of concern aboard the ship. After all, as one crewmember said, technologies are only good ‘as long as they work’. Thus, the fading ability to use older technologies — intimately bound up with the traditional skills and identities of sailors — was linked to a common worry about ‘deskilling’. In the parlance of actor-network theory, this process can be described in less nostalgic terms as the ongoing (and invariable) redistribution of technical and social competencies, and the attending (again invariable) transformations of what it means to be a sailor. The important point, however, is that establishing what counts as deskilling in this context (saturated by technology), can *only* be done comparatively.

Surprisingly, concerns about the use of technology were brought to light not only in consideration of technologies that, although available, may in fact no longer be usable, but also about technologies that seem to *work too well*. Insofar as technologies appear to operate with smooth efficiency, sailors are prone to rely too much on them and this can be dangerous. Stories circulated about captains who had trusted their equipment so much that they had failed to look out the window and wrecked their ships. Whether apocryphal or not, these stories highlight the life and death importance of relevant and timely navigational comparisons. Certainly, the GPS system is not infallible. Thus, paradoxically, in an inherently unstable sea environment, any technology that appears to be *too* trustworthy, risks losing trust.<sup>5</sup>

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<sup>5</sup> Situations in which too much trust turns out to be dangerous and may cause subsequent breakdowns of trust, are also prevalent elsewhere. For instance, uncritical reliance on mapping and positioning devices is also problematic for drivers (see e.g. ranker.com 2014). These cases illustrate that trust in technology without a comparative basis is common, but also that it is often risky. This is an insight of which fisheries inspectors were well aware.

Similarly, the autopilot and other technologies of automation were seen to carry the risk of rendering sailors inattentive at the precise moment when their skills would be most needed. To fight the threat to vigilance posed by automation, the crew adopted innovative, if somewhat banal, routines. Rather than removing sailors from the bridge, the autopilot gave rise to the new demand that *two* persons must always be present. A motion detector linked to an alarm ensured that the crew would be alerted if the bridge had become too quiet for comfort.

By looking into immanent comparisons on the bridge, this section has aimed to show that reliability and safety are effects of ongoing practices of comparison at sea. Technologies, new or old, become trustworthy only insofar as they are confirmed by other technologies. In rare cases where the technologies on the bridge produce realities that refuse to align, the entire assemblage ceases to resonate and becomes unreliable and unstable. Under such circumstances, crewmembers initiate investigative ‘repair work’. Reparation, however, does not move us outside the orbit of comparison. Instead, it entails even more detailed and intensive comparative efforts, such as recalibrating the radars, and using one radar to check the reliability of another display.

On the *West Coast*, reliable navigational information is thus constructed through a series of interlinked comparative practices. Comparisons are elicited through relationships between technologies on the bridge. They are neither human centred, nor strictly technology driven. Instead, the whole technological setup on the bridge can be seen as *an assemblage for comparison*. What it generates is temporary and partial trust in information, which allows the *West Coast* to navigate safely.

## Techno-bureaucratic Practices: Within a Comparative Ecology

If the previous section focused on immanent comparisons on the bridge, the present discussion highlights the web into which a single one of these technologies (i.e. the Vessel Monitoring System [VMS]), is spun. Rather than narrowing analysis, this exploration requires extension.

Brit Ross Winthereik and Henriette Langstrup Nielsen have argued ‘in favor of comparing sites [...] by juxtaposing analyses’ of contexts (2008: 364). Similarly, Timothy Choy’s work on *Ecologies of Comparison* urges attention to ‘techniques and politics of specification, exemplification, and comparison’ (2011: 5). Choy offers these as ‘trigger words inviting reflection’ on how ‘practices draw and conceptualize connections’ between an array of concerns and things such as ‘forms of life and their environs [...] what is considered big and [...] small, between particulars and universals, between particular cases of a common rule, between specificities and generalisations’ (2011: 5–6). The VMS too, is part of an ecology that stretches far beyond the *West Coast* and invites consideration of how sites are comparatively juxtaposed.

The VMS, as other technologies we have encountered, enables inspectors to position the *West Coast* and it helps them make decisions about how to move around at sea. As a navigational device, the VMS is also part of the assemblage of comparisons on the bridge. At the same time, it is tied into a broader, distributed ecology of comparisons that extend far beyond the physical confines of the ship. As

part of this ecology, it relates to other techno-bureaucratic practices. It is therefore interwoven with different 'scales and levels of obligation' (Povinelli 2000: 509).

The VMS was introduced in 1999 in response to an EU initiative, which committed member states to adopt information technologies for the inspection of their fishing fleets. By 2005, all Danish fishing vessels longer than fifteen meters were subject to this requirement. Technically, the VMS consists of a transceiver and an aerial installed on board each fishing vessel, and the transceiver is connected to GPS. It sends information about position, course, and speed to a satellite controlled by the International Maritime Satellite Organisation (INMARSAT). The satellite passes on this information to a communication centre located in the Netherlands, which in turn, passes it on to the fisheries directorates of the member states. The VMS on the *West Coast* receives this information from the Danish directorate. The *West Coast* retrieves information about vessels registered in Denmark and located in any maritime territory in Europe, as well as foreign vessels operating in Danish territory. The frequency of the signals can be set individually for each boat.

Aboard the *West Coast*, this information is accessible on a PC sitting on the bridge. An application called V-Track allows for visualisation of the whereabouts, speed, and course of each vessel. In order to decide where to head next, inspectors open V-track several times each day. To enable efficient boarding of many vessels, they usually look for clusters of ships.

In addition to information about the location of ships, inspectors can use V-track to trace the movements of a vessel over time. As well, they can gather information about the state of the transceiver on any vessel. For example, if the transceiver has been turned off, this information is automatically stored in the VMS. The importance of this hinges on the fact that a boat that emits no signals (in fact it signals possible misconduct) since the transceiver signal may well have been intentionally shut off.

Furthermore, inspectors can access information about previous sightings of a vessel, whether registered by the *West Coast*, by other inspection ships, or by land-based inspection. Information about any previous illegalities, quotas, and licenses is also available. The monitoring system is thus quite comprehensive.

Yet, the inspection system does not rely exclusively on the VMS. Indeed, multiple forms of data are necessary to make inspection decisions. Thus, the ship has Internet access via satellite connection, enabling the crew to send and receive messages about inspection plans, new legislation, and other relevant data. This 'Fisheries System' complements the VMS by providing information about vessels, records of catches, personal details about fishermen, information about licenses, observed vessels, law-breakers, and more. The combined set of information is used by inspectors to prioritise their efforts, and determine what to search for on a vessel boarded for inspection.

In principle then, the VMS makes available to inspectors knowledge of the whereabouts of each vessel, and they have a range of supplementary information at their fingertips. However, because this information is continuously updated, they struggle to keep abreast and maintain an overview. The abundance of information both expands and limits their practical knowledge (see Jensen and Winthereik 2013: 159–163). The result is new forms of specialisation, whereby an inspector may become an expert in regulations about cod, while another may be knowledgeable about the allowed sizes of nets, and so on. To enable comparison of specific fishing vessels with the most updated regulations, inspectors increasingly rely on one another as information brokers.

Even if information is turned into knowledge, it is by no means certain that it can be made relevant and useful for inspection purposes. The problem of creating operational knowledge out of a sea of information is most clearly seen in relation to the phenomenon of ‘quota jumping’. Suspicions of quota jumping are likely to emerge when a ship is observed crossing back and forth over the border between two fisheries zones. The zigzagging movement suggests that the vessel is catching fish in one zone, and registering it in another, thus jumping the quota. However, in order to establish a legal case for quota jumping, the pattern of movement seen on the computer screen provides insufficient evidence, for it is not illegal merely to sail in this pattern. Conclusive evidence requires the *West Coast* to be co-present with the offending vessel and observe the act of illegal fishing directly.

The trouble is that if the *West Coast* sails even remotely close to the zigzagging boat, the latter is highly unlikely to continue to do anything illegal. Hence, the legally required comparison is almost impossible to effect in practice. The consequence is that even when inspectors using the VMS observe what they take to be unequivocal signs of quota jumping, they often decide *not to investigate*. Since the *West Coast* has no way of sneaking up on an offending vessel, the effort would at best be only temporarily preventive, and most likely futile.

Delving into the comparative ecology of the VMS, we can identify in another guise, a ‘problem of representation’ to which acts of comparison on the bridge were also the solution. On the bridge, we showed acts of comparison deployed to establish trustworthy information about the sea environment. The question was how to know that technologies reliably represent the world. Focusing on the sociotechnical ecology of V-track, the problem is in some sense the reverse: inspectors do ‘know’ that the technologies are reliable, but they cannot reliably link that knowledge with action as required by law. In principle, inspectors are convinced of the commensurability between sign and reality. In practice, the ‘sign’ displayed by V-track remains incommensurable with this reality, since the time and movement required to verify illegality would disrupt the verification process. The problem of comparison here is not about knowledge’s validity, but about how to make the world respond to reliable knowledge.

Our discussions have highlighted that at sea no technology is an island. On the bridge, the efficacy of each technology is established within a localised assemblage of comparison, but technologies like the VMS are also part of more extended ecologies, stretching into legal systems, Danish bureaucracies, Dutch databases, and into the EU. Indeed, the very existence of the VMS is partly the result of the EU’s own comparisons of the monitoring capacities of its member states (Ministry of Food, Agriculture and Fisheries of Denmark 2006: 52–7). Whether we focus on local assemblages or broader ecologies, the general fact thus remains that in all cases, technologies are used comparatively to deal with the ‘fields of embodied obligation’ (Povinelli 2000: 510) of inspection work.

There is no room within this mode of analysis for the assumption that any form of comparison is more *inherent* to work on the *West Coast*, than any other. We can neither define navigational comparisons as primary and legal comparisons as derivative, nor *vice versa*. No aspect of comparative activity ultimately indexes the ‘real stuff’ (Ibid) of fisheries inspection more authentically than any other. Laterally speaking, the form comparisons take (as well as the implications they may have) are always in principle open-ended (see Krause, this volume).

## Lateral Comparisons

On the *West Coast*, we encountered an assemblage of comparison. Upon further inspection, technologies also turn out to operate as comparative devices in a much broader bureaucratic ecology. But wait — did we really ‘encounter’ such an assemblage? Did the technologies simply ‘turn out’ to operate comparatively? The lateral answer is both ‘yes’ and ‘no’, for whereas our characterisation is supported by ethnography, it is not *determined* by it. Rather, the analysis is actualised simultaneously by our concern with comparison, as a social scientific tool *and* as empirical finding. It thus moves between the two, in both directions.

The intrinsic relationship between comparisons unfolding ethnographically and comparisons activated analytically, can be elucidated by means of a contrast between two approaches that, at first glance, appear radically opposed. On the one hand, anthropologists like Riles and Maurer insist on the inventiveness of ethnographic re-description, a form of creativity they consider stifled by actor-network theory’s purported ‘realism’. As Maurer insists, ‘[t]he point is not to identify entanglements and name them when you see them, but to obviate that very move as the analysis proceeds and to remain very much within that procession’ (2005: 14).

On the other hand, philosopher of science Isabelle Stengers argues that the central question is whether ‘we impose comparison or we [are] authorised to compare by the subjects we address?’ (2011: 48). Stengers argues that this question is ‘very demanding’ because it implies that ‘no comparison is legitimate if the parties compared cannot each present his own version of what the comparison is about; and each must be able to resist the imposition of irrelevant criteria’ (2011: 56). No comparison is legitimate, she argues, if it is unilateral — and most social scientific comparisons are. If Riles takes the liberty of comparing Fijian mats with policy documents, or Maurer compares Chinese characters with offshore banking (Martin and Maurer 2012), are we not witness to the imposition of irrelevant criteria? Similarly, when we describe the bridge on the *West Coast* as an assemblage of comparison, does this not introduce an extant analytical apparatus? This worry begins to dissipate with the realisation that comparisons are at once omnipresent and multiple, immanent and crosscutting, both among our informants and ourselves.

For one thing, much that happens on board the *West Coast* is in response to things that are *as foreign* to the crew as our characterisation of their work: things like international law, EU regulations, and regimes of natural resource management. However, while the demands these regimes impose are in some sense ‘unilateral’, the ongoing comparisons on the ship work to ‘indigenise’ these impositions. Local comparisons make them amenable to particular forms of manipulation and reflection. Through comparative work, the impositions gradually become *part of the local assemblages*. In other words, the clear-cut distinction between external and internal blurs.

Even so, it can surely be said that the terminology of assemblage and ecology that we use to describe these situations is foreign to the field. This is certainly the case, for it comes out of reading works by scholars like Latour, Deleuze, Strathern, and Maurer as part of our disciplinary education, and in response to our own emergent research interests. Obviously, and unavoidably, those interests shape our sense of what an interesting comparative project might look like. Hence, the particular comparisons on which we have focused are elicited in a dynamic interplay between our intellectual preoccupations *and* what we encountered on the *West Coast*. These comparisons are

neither ‘imposed’ nor simply found there. Exemplifying the lateral point, they operate in the uncertain space in-between. At the end of the day, these are nevertheless our comparisons. After all, Christopher’s informants have other things to do than write for this volume. However, that these comparisons are ours *in that sense* does not imply that we were ever in a position to fully control them, even if we wanted to. But then, we explicitly did not.

Explaining her analytical interest in Dutch doctors and drug addicts, Gomart wrote that

I would not assume they were *like* me; but I would allow that others pose questions *with* me. My aim became to describe [...] the experimentations they were able to deploy in such settings (2004: 86).

Gomart insisted that ‘[t]o learn something from these actors’, she would have to discipline herself to be ‘surprised’ by their experiments (Ibid). For Gomart, as for us, such disciplining is not simply an act of will. It is a learning process that draws not only on ethnographic experience, but also on a set of emergent intellectual dispositions. Such dispositions are shaped by a corpus of readings and discussions that train us to be attentive to *empirical* and *conceptual* surprises, as well as to the surprises of their interacting effects, *all at once*.

Undoubtedly, this creates a vantage point from which social science comparisons are *imposed* in that they are not those of informants — but also one in which the imposition is not unilateral — since the comparisons conducted by informants turn into surprises for research. Those surprises, in turn, generate the comparisons made by the social researcher *for other purposes*. Intentionally or not, some of those comparisons may fold back upon, and affect, the practices of informants. One of the surprises generated by the study of fisheries inspection on board the *West Coast* is that, in a certain sense, their reasons for deploying comparisons are analogous to the reasons for social scientific comparison. In both cases, comparisons are about tuning and attuning to reality in order to make it amenable to both analysis and action. Nevertheless, of course, *the kinds of analysis and action* that the comparisons enable are *radically different*. It is this interplay between similarity and difference that subsequently facilitates lateral deployments of others’ comparisons.

The work of fisheries inspectors unfolds in a world only partially known. This uncertainty guides their comparative efforts to maintain navigational safety. Each technology within the assemblage on the bridge offers a ‘generous constraint’ (Gomart 2004: 105), contingently taken into account in producing a trustworthy picture. As part of inspectors’ practical ontological work then (Gad, Jensen, and Winthereik 2014), acts of comparison function as tools for creating reliability. Comparison helps them calibrate a reality experienced as potentially disorderly.

In the social sciences, the ‘problem of representation’ continues to recur in a range of situations and debates. How can we know what the world *is*? How can we know that we are representing it *correctly*? As we have argued, on board the *West Coast*, this problem is routinely dealt with in a form far more pressing than the one encountered by most social scientists: at sea, failure to know the world adequately can lead to shipwreck. We cannot say whether the inspectors are realists or constructivists with respect to this world, for though they come up with what we might refer to as realist or constructivist responses as part of their comparative practices, they never named such positions. Even so, *the way* in which this question is handled bears little resemblance to the demands of social scientists or philosophers keen on accurate



representation. Inspectors maintain a pragmatic attitude, premised on the precautionary refusal to ascribe trust in any single version of reality offered by any technology.

Though fisheries inspectors need accuracy to navigate safely, they have little need for the idea of a static reality. More akin to Maurer's depiction of anthropology as 'open and unsteady', the fluctuating reality of fisheries inspection is temporarily stabilised through ongoing efforts to make timely comparisons. The technological assemblage and wider ecology of comparison into which fisheries inspection is spun, enables inspectors to hold the dynamic sea environment sufficiently in check to continue their work.

Stefan Helmreich (2011) has observed that over the decades, social scientists have mined the sea for metaphors and concepts. Indeed, he suggests, the sea functions akin to a 'theory-machine' from which widespread theories and frameworks centring on flows, fluidity, and circulations have emerged. Helmreich draws the conclusion that

[t]heory (and for that matter seawater) is at once abstraction as well as thing in the world; theories constantly cut across and complicate our paths as we navigate the 'real' world (2011: 5).

Rather than engage with the sea as an entity on its own, we have followed the work of fisheries inspectors who are constantly preoccupied with its unpredictable behaviour. Their attempts to maintain a sense of control in this fluid environment rely on a technological assemblage of comparisons. Even their much-cherished idea of the 'free life at sea' (Gad 2012) is deeply entangled with the management of uncertainty enabled by this assemblage.

## Comparative Imaginations

In her preface to *Anthropology, By Comparison*, Marilyn Strathern expressed concern that an abiding sense of connectedness generates epistemic laziness among its proponents (2002: xv). She suggested the metaphor of extended networks 'gobbles up all the spaces between' and depicts 'a continentalizing empire, leaving nothing that is not potentially connectable to everything else' (Ibid). Although our comparative endeavour can hardly be said to refute 'twenty-first century imaginings', the *West Coast's* ecology of comparisons might give us pause.

There is no doubt that fishery inspection is entangled in an extended web. Indeed, was it to be detached from this wider ecology, there would be little chance that the work could continue. Yet, it is not clear whether this ecology adds up to an 'empire': certainly all the spaces in between have not yet been 'gobbled up'. Indeed, even though fishery inspectors worry about their increasing dependence on wider networks of regulations and technologies, their concern is not with a general 'continentalisation' of their work. It is rather with retaining room for specific kinds of manoeuvre within their ecologies of comparison. Thus, while fishery inspectors are unceasingly critical about the bureaucratic regimes of which they are part, they also manage to find ways to 'operate in the gaps' in order to do 'good' inspection. Distancing themselves from governmental demands made by the Danish state and the

EU, they often emphasise their similarity with the fishermen whose job it is to inspect.

This particular comparative alignment elicits the paradox (from the point of view of the inspectors) that it is their task to control other sailors, who, like themselves, ought to be 'free'. An important aspect of inspection is the navigation of this troubling contradiction, both in terms of the 'identity crisis' it generates for the inspectors, and in relation to the question of how to respectfully enter the private homes (i.e. the ships) of fishermen in order to control their behaviour. A similar carefulness might, in turn, be said to describe the relationship between the crewmembers, their own ship, and its different technologies. Reciprocally, the technological assemblage on the ship could of course also be seen as taking care of the inspectors. Indeed, inspectors quite often referred to the ship as their 'second home'.

It is impossible to say how long this comparative chain could be expanded. However, this is precisely the point of lateral comparison. For in the cases we have characterised, the location and boundaries of comparisons are invariably somewhat loose and indeterminate. They stretch across inspectors and their machines; bureaucracies and tracking systems; felt moral obligations and legal requirements; and also ethnographers' observational capacities and their conceptual inclinations. Thus, lateral comparisons are likely to occur anywhere and everywhere (Jensen and Gad 2009; Gad and Jensen 2010), but the ways in which they are conducted, assembled, and brought together across domains are altogether variable. This is the basis for our initial refusal to delimit what may count as comparative material.

Even so, in a book chapter there are clear practical limitations on extendibility, and therefore there are always choices to be made about description and exposition. Here, we have articulated *just this* lateral comparative chain for a very specific purpose: not primarily to give deep insight into the working lives or technologised practices of fisheries inspectors, but precisely, to make visible some potentials that lateral comparison might hold for STS, anthropology, and social science.

In our view, a reinvigoration of the comparative imaginations of the social sciences is both timely and promising, but its promise does not lie in the specification of a new comparative agenda *tout court*. One of the major problems with such an agenda is that it offers few possibilities for 'inventing around'. Its rigor comes in the way of noticing and playing with the lateral comparisons that invisibly sustain it. As Strathern wrote about the now deceased project of grand style anthropological comparison:

it was hard to see how it could be added to, qualified, introduced into other contexts or travel, like Latour's mutable mobiles — in short, how it could become interesting. It only produced knowledge like itself (2002: xv).

However, whereas a return to comparative studies in the grand style is thus not only epistemologically and methodologically unfeasible, but also delimiting and uninteresting, it seems equally clear that acts of comparison — both ethnographic and analytic — still matter. Indeed, as our cases have suggested, acts of comparisons are both practically crucial and conceptually magnetic, not only to social scientists, but also to their informants who deploy them in the most diverse ways. As Stengers wrote, we are indeed, 'all comparativists' (2011: 48).

Here we have argued that one way to heighten our comparative imagination and keep the surprises and effects of comparisons in full view, is to focus on their lateral movements and to experiment with new ways of inventing around them.

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