

Intermediary activities: does effectiveness matter?

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ROLE OF INTERMEDIATION IN THE MANAGEMENT OF COMPLEX SOCIO-TECHNICAL TRANSITIONS

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Abstract:
In this paper, we analyze intermediary work in the context of sustainability transitions in relation to what we call the "environmental paradox". While sustainability transitions are strongly related to political or social expectations in terms of management performance and measurable results and effects, environmental problems have some generic characteristics which make these expectations partly unachievable. Those recover the notions of interdependency, complexity, uncertainty and controversy. We argue those key features condition understanding and concrete achievement of intermediary work. Drawing upon biographic narratives of intermediary actors (extension worker, mandated intermediary workers, group of experts and researcher, NGO member), we use contrasting examples to propose a comprehensive reading of what makes their strategies effective regarding the development of political narratives and of learning processes in the context of the management of 'wicked problems'. Our crosscutting approach allows us to advocate that such an intermediary work cover a set of roles or functions which involve strong articulation of objectification processes with inter-subjectivation. Then, the properties of intermediary work may be regarded as the capacity intermediary workers develop to contextualize their own activity, to create the conditions of their own performativity, both being strongly related to intermediary workers reflexive consciousness.

KEY-WORDS : INTERMEDIATION, INTERMEDIARY WORKERS, 'WICKED PROBLEMS', TRANSFORMATIONAL CHANGE, REFLEXIVITY

INTRODUCTION

Intermediation has been studied in a variety of scholar fields and under a variety of contexts (Howells, 2006; Meyer and Kearnes, 2013). A huge variety of terms are used to name individuals or organizations involved in innovation processes such as 'innovation intermediaries' (Burt 2004; Hargadon, 1998; Howells 2006), 'knowledge or innovation brokers' (Gassmann and Reepmeyer, 2005; Klerkx and Leeuwis 2008; Lomas 2001), 'systemic intermediaries' (Klerkx and Leeuwis, 2009), and 'boundary spanners' in education (Stevens, 1999), public management (Willimas, 2002) and in business organization management (Aldrich and Herker, 1977). But to be more complete, one should also consider the theoretical foundation of this notion in the sociology of science and technology with the notion of boundary object introduced by Susan L. Star and James R. Griesemer (1989) or in anthropology of development with the idea of development brokers" (Olivier de Sardan, 1995) or knowledge brokers in medicine (Ward, House and Hamer, 1997).

In most of these studies, intermediaries are commonly portrayed as 'match-makers', as entities that somehow align two (or more) entities and bring them into contact. By naming the intermediaries, scholars mainly try to identify the new actors at the boundary of organizations and the ways they to act as a third party in one-to-one or many-to-many relationships. Some authors such as Bussant and Rush (1995), Howell (2006), Guston (1999) or Klerkx and Leeuwis (2009) proposed to characterize the functions, which intermediaries fulfil within innovation systems. In doing so, they pay more attention to the brokering activities themselves. But they address it within a conceptual framework in which brokering mainly concerns business information or technological issues already at stake in innovation networks and processes. But how does this enable us to address intermediation at play in sustainability transitions, where what could be innovative is ill defined and contested?

In our perspective, sustainability transitions do not only rely on innovations supporting economic viability of knowledge based bio-economic firms, which appears to be a driver of innovation in most of the innovation policy (Barbier and Elzen, 2012). Such transitions also rely on the exploration of new governance principles, institutional arrangements at both local and global levels to cope with issues that heavily concern citizens at their place of living, such as maintaining or restoring water quality for human consumption and aquatic life, avoiding biodiversity erosion, improving food security and sovereignty, increasing social equity etc. Such issues imply both complexity and uncertainty as quoted by Connors and Dovers (2004), leading to "wicked problems" (Batie, 2008; Levin et al., 2012). They imply socio-political choices in which intermediaries can hardly claim their neutrality and have thus to express their

engagement. Therefore intermediation cannot be described as only transferring knowledge and objects in a given web of interests for technological innovation, or playing a strict functional role within the social web of innovation to fulfil knowledge gaps of system failures. It also performs specific functions which are related to the kind of problems at stake, and which support the dynamic at work between problem finding, goals and means setting within a high changing world. This phenomenon is at the heart of our research framework. As we will develop it below, we seek for identifying specific properties of intermediation in practices and in process, which takes place in sustainability transitions.

Thus, as advocated in the special issue edited by Meyer and Kearnes (2013), intermediation must be analysed like a specific type of practice in process of change and therefore study empirical questions such as: how and why intermediaries actants (as well individuals, organizations, objects) mobilize, reframe, structure and condense expertise or policy imperatives; how intermediary actants foster and facilitate interactions between arenas in which sustainability issues are framed and addressed; how the discourses of intermediaries become performative?

We shall firstly explain our analytical framework and methodology, which is grounded in four narratives of intermediation practices and processes taking place in different situations, which are all address sustainability challenges. The comparative analysis of those four cases studies will then highlight: firstly the functions which intermediation fulfils to support a transformational change and secondly the three main properties of intermediation in sustainability transitions that the crosscutting analysis of our case studies have enabled to identify. We finally discuss the systemic interplay between these properties.

ANALYTICAL PERSPECTIVE

Our analytical perspective to better understand the role of intermediation in sustainability- transitions is based on a set of claims or assumptions resulting from our research experiences in observing some intermediary activities. These claims refer to the notion of "wicked problems" and to what we mean by transformational change. It leads us to consider that intermediary activities have for main role to articulate processes meant to objectify a piece of reality with processes meant to create inter-subjectivation. These are processes which mobilize knowledge while supporting its production within various arenas by taking care of the discourses which heterogeneous actors build to describe a piece of reality and define goals and means in order to face problems which they acknowledge in the course of collective action. This analytical perspective is thus necessarily grounded in empirical works targeting very precisely the activities of intermediary actors.

Sustainable transitions as "wicked problems"

"Sustainability transitions are necessarily about interactions between technology, policy/power/politics, economics/business/markets, and culture/discourse/public opinion" (Geels, 2011). Regarding agriculture and environmental change, we can add to that list the biophysical world and its ecological functioning. Furthermore, the social world and its functioning is not only about power or discourses but also about coordination, human being, human practices and behaviours and so on. Sustainability transitions also concern the re-assembling of the Social, the Technical, the Natural that can only happen in defined circumstances of entering collective experiments where matters of concern and matters of facts are simultaneously at work in specific 'dispositifs' or promising organizational arrangement (Barbier, 2010).

Some systemic research reify this complexity through concepts such as techno-ecological systems or socio-ecological systems (Holling, 2001), and by the huge development of modelling methodologies. Despite this attempt to reify and objectify reality in order to help managing sustainability development problems, these remain mostly "wicked problems" (Batie, 2008; Levin et al., 2012). Indeed, sustainability becomes a problem (climate vs climate change, biodiversity vs biodiversity erosion, food security vs food securing etc.) once some people ask questions about how their environment evolves and is transformed under natural and anthropogenic conditions. In other words, they recover biophysical, technical or economical dimensions, which are mainly reduced by scientific evidence in a deterministic appraisal of reality; but, at the same time, those dimensions are socially constructed and built as "public problems needing to adapt and transform human practices and behaviours. We consider this is key in understanding intermediary activities in the sense that intermediation work is meant to navigate in between the knowledge produced to objectify a piece of reality, which will be necessarily partial and reduced, and people's subjectivities which are embedded in the experience each has of that same piece of reality.

We argue that dealing with sustainability problems related to environmental issues (i) brings to the forth existing but previously invisible interdependencies, (ii) confronts stakeholders to complex issues of change, (iii) reveals numerous uncertainties (iv) and generates controversies about goals and means of action. Those four features – interdependencies, complexity, uncertainty and controversy – are the conditions within which intermediary work develops once we consider sustainability transitions as a process in the making, not as a process which is straightforward, predefined and prescribed. Let us be more explicit about these four characteristics of wicked problems.

Sectorial development of human activities, which took place at large scale during the last century, resulted in a lack of consideration of some dimensions

which have then be described as negative externalities. Agricultural modernization provides numerous examples of that process. Environmental issues (like water protection or landscape management for wildlife) became public issues at the end of last century and people started to become aware of connections between what they did and knew about their own activity and ecological processes, which develop at various spatial and temporal scales. Pre-existent, but mostly ignored interdependencies became visible and generally constitute the core of what has to be managed. But, at the same time, these problems cannot be separated from a broader context made of policies, markets, norms and organizations, which contribute to the local indexicality of environmental issues. To put it differently, the increase in nature and number of interdependencies at local level leads to an increase in nature and number of local-global interdependencies. This phenomenon is affordable as a dynamic of pathways between niches of innovation and socio-technical regimes (Geels, 2002), and to what Robertson (1994) has termed "glocalisation" in regard of cultural development, that is a dynamic process of agency among what constitutes the material and immaterial dimensions of the local and the global.

Increased complexity results from such interdependencies and their dynamic over time. Snowden (2002, p116) makes a useful distinction among the complicated and the complex and its consequences for management issues. The former are so termed because "cause and effect can be separated and by understanding their linkages we can control outcomes". While the latter are irreducibly complex systems in which "the components and their interactions are changing and can never be quite pinned down". Adaptive properties, feedback loops, as well as threshold effects leading to irreversibility of a trajectory are some of the phenomena which make it very difficult to pin down the dynamics of socio-ecological systems meaning that one never can prevent things to get out of hands. More over this results in an irreducible cognitive incompleteness.

Uncertainty is intimately linked to that cognitive incompleteness. Usually, these uncertainties are termed "techno-scientific" because they refer to an understanding of a complicated world (a deterministic appraisal of reality) and are considered as a result of a lack of knowledge, which has to be reduced. Increase available knowledge by objectifying the underlying processes of environmental problems, essentially at their biophysical and technical levels, is often considered like an essential means for management. That statement links to the literature on innovation systems, which emphasizes that "working with and re-working the stock of knowledge is the dominant activity in innovation" (Arnold and Bell, 2001). But, in our sense, uncertainties go far beyond the unknown that should be known: they result from the partly unpredictable character of the complex. What is done here and now can lead to

consequences elsewhere and later; acting on a specific dimension of a problem may lead to unexpected effects on another.

Finally, sustainable transitions are highly disputed and controversial. Not only, as usually stated, because they lead to confrontations of various systems of interest asking for example to identify and implement "win-win" solutions. But, moreover, they result from the various conceptions people have of action and from their level of acceptance of the inherent uncertainties sustainable transition recover (Stirling, 2014). Controversies are very important to consider in regard of the role people assign to knowledge mobilization and production and of how they appropriate this knowledge as a resource for their own action. These processes may serve various goals we discuss below and they are primarily defined by the status of knowledge: do they lead to struggles on knowledge production and possession in order to reinforce particular social positions; are they used to inform and convince people about the relevance and need of public decision (the third pillar of European policies) or should they also, not exclusively, be used to help people exploring controversies and building new arrangements.

Fostering transformational change requires to articulate objectification and inter-subjectivation

Sustainability transitions "are goal-oriented or purposive" (Smith & al., 2005), i.e. strongly related to political or social expectations in terms of management performance and measurable results and effects. In regard of what we have developed around the notion of "wicked problem", this constitutes a kind of "environmental paradox": the generic characteristics of environmental problems make these expectations partly unachievable. As Connors and Dovers (2004) observe, there is a "need for policy discourse and learning, especially in the case of sustainability as a profound social goal pervaded by complexity and uncertainty" (p.226).

Following such a perspective, we argue that intermediary activities may not be separated from the various conceptions people hold on action and knowledge and, as a consequence, on the various expectations they have in linking knowledge to action.

Often, knowledge is considered as a thing within what Coock & Brown, (1999) called an epistemology of possession. It is viewed as something that can be appropriated, owned, stocked and circulated, in order to be used for innovation. In such a perspective, intermediaries' activities mainly consist in working and re-working the stock of knowledge (Barnett, 2004; Hall et al., 2003) and in networking the places where it is produced with those where it can be used. This kind of conception dominates in techno centric or eco-centric approaches of action (Bawden, 2003), where knowledge is supposed to objectify reality and allow goals and means definition, implementation and assessment. But knowledge can also be seen as a "flow", something that

emerges in action, encompassing both objective and subjective representations of reality, a process in the term of Whitehead (1929). This is where learning takes place. It is not only about informing or educating people through the transmission of a stock of knowledge but more about helping people to transform their own interpretive frameworks of reality (Muller, 2010), i.e their knowledge, worldviews, opinions, conceptions of action and values.

Therefore we call for a more holo-centric approach of sustainable transitions (Bawden, ibid.) in order to involve people in processes of 'transformational change'. Anderson & Ackerman-Anderson (2010) insist on the emergent character of change operating in the unknown, requiring changes in ways of thinking and cultures. In this perspective, intermediary work can be seen and understood as an activity that aims articulating processes of objectification with processes of inter-subjectivation. The latter term, borrowed from theories of pragmatic philosophy (Rorty, 1994), does not mean a radical relativistic approach of reality but, on the contrary, insists on the confrontation of interpretive perceptions people construct on a same reality. As political narratives can inform "about how people make sense of their lives, about how they construct disparate facts and weave them together cognitively to make sense of reality" (Patterson and Monroe, 1998), inter-subjectivation is key in understanding and fostering how heterogeneous people make sense of a shared reality.

In our work, we mainly studied the role of intermediary work inside and among 'deliberative arenas'. Following symbolic interactionism (Strauss, 1978) we studied such arenas to understand how humans interact and how meaning is created and interpreted in and through interactions (Blumer, 1971). Arenas are social places where political action occurs as a result of the confrontations and interactions of a potentially large number of actors between or inside different social worlds (Dodier, 2003). Their evolution is closely related to the framing of problems, a process that involves not only exploring natural or technical phenomena but also challenging the legitimacy, power relationships and identity of human communities, as many works of Actor-Network-Theory have pointed it (Latour, 1999; Callon et al., 2001).

METHODOLOGY

To investigate the role that intermediary work plays in sustainable transition processes, we rest on a set of four case studies resulting from ongoing and/or previous research projects. Each of them develops over a more or less long period of time (from three to ten years), allowing us to capture the dynamic of transformation. Three of them concern agriculture adaptation to environmental stakes: nature preservation and land use into the French Atlantic Coastal Wetlands; water pollution due to intensive use of inputs

(nitrogen, pesticides) in an arable crop farming area; struggle against green alga proliferation in the French Brittany. The last one encompasses many dimensions of sustainable agriculture through the study of standards development at transnational and local levels. Each of them offers a relevant example of the interplay that takes place between intermediary work and transformational change into collective settings.

Each case study had its own research dynamic, i.e. based upon a set of research methodologies like field observations, interviews, textual analysis, etc. To bring these research experiences together and confront them, we first started to build a narrative of those situations (see Appendix II). Then, to identify the main insights resulting from our observations, we made sevreal iterations between those narratives and the interpretive conceptual model we use. Our objective was not to benchmark our cases in order to identify similarities or dissimilarities and to provide proofs of evidence but to confront our model to a variety of experiences and successively reframe it in a tradition of grounding theory (Glaser & Straus, 1967; Olivier de Sardan, 2008; Detienne, 2009).

The grid we used to analyse intermediation in these case studies is built upon this iterative process (see Table 1). It distinguishes two parts: one describes the generic dimensions of wicked problems we have identified (i.e. interdependencies, complexity, uncertainties and controversies) and the other one identifies the key elements related to objectification-intersubjectivation processes. To give account of the dynamic of change, we identified 'critical incidents', e.g. "*events, incidents or factors that help promote or detract from the effective performance of some activity or the experience of a specific situation*" (Butterfield et al., 2005: 482) and which led to reorient goals and means of collective action and intermediary work. A sample of the use of this analytical grid is proposed in Appendix1.

Table 1: intermediary activities in situation

Characteristics of situations

Critical incidents leading to reorient goals and means of action	***Critical incident 1***	***Critical incident 2***	***Critical incident 3***
Interdependencies			
Complexity			
Uncertainties			
Controversy			

Intermediary activities in process

Critical incidents	***Critical incident 1***	***Critical incident 2***	***Critical incident 3***
Objectification			
Inter-subjectivation			

As we will see in the discussion of our results, this iterative research process put forth new insights asking for more investigations. Those relate to the variety of functions fulfilled by intermediary workers and to some key characteristics of that activity which we have termed contextualization, performativity and reflexive consciousness.

CROSS-CUTTING COMPARISONS

A heterogeneous set of case studies

The set of case studies we reported in Appendix 2 offers a variety of sustainability transition situations showing that, even in the only field of agriculture, such transitions may take a variety of forms and fulfil more or less precise and defined goals. We sum up in the table 2 below the scope of these situations in regard of intermediary work, and propose a synthetic report of each case study in Appendix 2.

Table 2: A synthetic account of situations and intermediation activities of CS

	Forms of sustainable transition situations	Characteristics of intermediation activities
CS 1	A goal oriented action (reduce the use of chemical agricultural inputs), framed by successive public policies, involves an increasing number of crop farmers into transformational change processes	An advisor taking stock of his working experience starts to play an intermediary role among a set of heterogeneous social arenas and is involved in 'outscaling' and 'upscaling' processes
CS 2	A sectorial public action framework (N2000) is transformed, through its implementation, in a territorial development plan of a marshland	Named and mandated coordinators by public authorities build their own legitimacy through a set of initiatives in order to produce a management plan of the area
CS 3	An ecological incident (algal bloom) leads to a local public action implementation covering various successive collective action regimes due to ineffectiveness, uncertainty and regulatory frames	An heterogeneous group of local stakeholders plays an active role in enrolling local farmers to adapt their farming activities and practices
CS 4	A search of greater legitimacy of private sustainability standards brings a set of stakeholders to redesign what is meant under the notion of 'good certifier'	A certifier emerges like the most empowered person in enabling debates to reframe certification activities leading to educational and organizational changes

Despite the variety of goals and social configurations, our cases show that sustainability transitions always involve a kind of public or collective action,

defined as "*a set of relations, practices and representations which contribute to the production of politically legitimated regulatory patterns of social relationships*" (Dubois, 2009). Initiated under local, political or private initiatives, these situations are all dynamic, evolve over time under internal and external conditions, are made of relations between the natural, the technical and the social, and are goal oriented and purposive in the sense that social expectations are very high and intense in regard of what has to be reached (fight against biodiversity erosion or algal bloom, reduce water pollution, implement sustainable agricultural production).

In all cases, a certain type of practices dedicated to intermediation is clearly at work while developing in various settings and being exercised in a high variety of forms. Some intermediary workers are designated and have to gain legitimacy through their actions; others decide to play such a role in regard of what is needed within the situation and in regard of their own professional experience; some emerge as being the most suitable person in regard of how the situation evolves. So, intermediary activities may be deployed by a specific intermediary worker (CS 1 and 2) but also by groups of people building alliances and sharing some same perspective about how change can be facilitated (CS 3), or even by an agency of human and non-human agents (a certifier and a code of development, CS4).

What have we learned from this in regard of the generic characteristics of 'wicked problems' and of the central role of intermediation in articulating objectification processes with those falling under inter-subjectivation? How can we then better understand intermediary activities, as a practice and as a process fulfilling various roles or functions in fostering transformational change? We will first discuss some characteristics of intermediation situations before developing related insights in regard of a theory of intermediation.

The generic features of 'wicked problems' in the flow of action.

In all our cases, an 'environmental paradox' is clearly at stake. Ineffectiveness of action against algal bloom, non-measurable effects of changes in practices on water quality, disputed role of certification in fostering sustainable agricultural production or unknown role of human activities in increasing the quality of wildlife habitats provide some evidence that these goals will remain more or less 'unreached' goals. At least, it seems clear that these goals may not be predefined by some external authority, even if their framing is needed at political level: they are constitutive of action. In many cases, these unreached goals relate to the four features of wicked problems we have identified: they are complex management problems where cause-effect relations cannot be quite pinned down. In that sense, when sustainability transitions are not regarded as only depending from some technological

innovation which has to be adopted, promoted and implemented, it buries concerned actors in messy situations where uncertainty prevails.

Claiming that sustainable transitions are 'wicked problems' made of key features does not mean that nothing has to be done or nothing will succeed. It does not correspond either to an external position conferring to a specific situation some analytical characteristics explaining why action fails or not. On the contrary, it invites to consider how these characteristics are taken on board by intermediation activities and how they evolve over time. All our case studies demonstrate these key features may not be separated from a flow of actions: interdependencies and complexity are sometimes reduced, sometimes increase and change in nature. For example, the main focus on a descriptive appraisal of nature in CS-2 leads to reinforce blocking strategies. In that case, opening the black box of how human activities influence ecological functioning is needed to allow controversy exploration and building management agreements, even if that kind of relationships remains mostly unknown and if the aim of collective action is displaced from nature preservation to territorial development. In CS-1, an exploration of how agricultural practices could be redesigned to reduce chemical pollution of water leads to a more systemic appraisal of farming activities, and finally questions the way farmers could be involved in transition pathways towards sustainability and cultural changes. In CS-3, it is clear that ineffectiveness of action related to the complexity of the problem and the techno-scientific uncertainty has framed the successive involvements (or resistances) of all actors in public action regimes: search, conviction and change, and finally evidence based regimes. No one knows how that public action will evolve in the future, with what outcomes. In CS-4, it seems that prescriptive conceptions of action struggle with more comprehensive appraisals: the problem is not so much to build a sustainable agricultural standard than to see such standards adopted by most farmers. In other words, to take on board the complexity within which farmers are practicing their activity and the ways certifiers must act to interrelate standards and these existing practical realities.

DISCUSSION: FUNCTIONS AND PROPERTIES OF INTERMEDIATION

Articulating objectification and inter-subjectivation processes and functions of the intermediary work

Does intermediary work mainly consist in '*working and re-working the stock of knowledge*' (Barnett, 2004, Hall et all., 2003) and in networking the places where it is produced with those where it is used? While this is clearly part of

intermediary workers' activity, in the case of sustainability transitions, their role may not be reduced to such an understanding, which fundamentally reveals a conception of action in which knowledge is strictly mobilized to provide the means of action. Considering transformational change, the future remains unpredictable and mostly unknown. In other words, in our view, intermediation is not supposed to produce the means to reach some predefined goals, but also to foster interactive processes in which goals and means definition are at the core of public or collective action and in which, in doing so, cultural changes are allowed to occur.

Our cases allow us to distinguish a set of functions or roles fulfilled by intermediary activities which may be categorized in regard of their aim: a first set aims at reaching and achieving collective action efficiency. The second one aims at increasing the quality of social interactions or collective action functioning (tables 3a &3b below).

The increase of collective action efficiency relates to the problem that has to be managed. It appeals for knowledge mobilization and production, in order to objectify the problem at stake and identify how changes in human practices and activities will influence the interdependencies which the problem reveals. But, such knowledge is often missing or at least very partial. In other words, one main stake of intermediary activities is to explore the problem space which is never totally stabilized: what does the problem of nature preservation recover and how does that problem meet other social preoccupations of people at territorial level (CS 2)? What are the consequences, constraints and opportunities of changes in farming practices to reduce chemical pollutions and how could this be thought and practiced at a more systemic level (CS 2) or at the territorial level of a watershed (CS3)?

Processes of problem finding and solving do not only relate to available knowledge but more importantly to the knowledge people construct in action, at individual level and through processes of social interaction (the intersubjective processes occurring into deliberative arenas). While generic knowledge may be used in such deliberative processes, it has to be adapted, reframed and redesigned at local level in regard of the natural, technical and social specificities of the local. The three action regimes identified in CS 3 provide some illustration of how knowledge is used and the consequences such a use has on collective action. In the search regime, a collective dynamic is organized around identifying cause- effect relationships of algal bloom over a long period of time. But ineffectiveness of undertaken actions led to promote an exclusive livestock farming model based on grazing through a conviction regime, with unknown consequences on farms economical incomes and even more, on algal blooms. Finally, the contingent incident of sulfuric gas emanation led public authorities to implement an evidence based action regime, knowledge being used to provide proofs and force farmers to change. What will be the more efficient regime? Nobody could really know

beforehand which regime ought to be the more effective. Anyway, the evolution in action regimes resulted in a changing aim of intermediary activities which moved from boundary work, problem finding, co-generation of knowledge and networking of human and cognitive resources to a more prescriptive way of doing leading to conflicts and contestations.

Table 3a: Functions of intermediation to foster collective action efficiency

Intermediary roles in collective action efficiency	***Outputs***
Boundary work around problem definition	Stabilized agreements
Problem finding and problem solving	Permanent iteration between goals and means of action
Co-generation of knowledge	Reduced uncertainties and explored controversies
Networking of human and cognitive resources	Enhancement of collective action capabilities
Networking of various deliberative arenas	Out-scaled and up-scaled outcomes of action

Table 3b: Functions of intermediation to support collective action functioning

Intermediary roles in collective action functioning	***Outputs***
Convince people through pedagogy	Enrollment of stakeholders and ownership of action
Reduce fears, resistances and contestations and contain overwhelming processes	Space and time for deliberation
Build new interpretative frames	Transformation of identities, legitimacies and social asymmetries Changes in values and systems of interest
Stimulate individual and collective reflexive consciousness	Build a shared understanding of the situation

These statements put forth the social role intermediation plays in the course of transformational change. In all our cases, intermediation supports the enrollment of stakeholders into a collective action. To create space and time for new meaning to emerge (Snowden, 2002), intermediation means to spend time to convince, reduce social fears and contestations, gain adhesion and constantly contribute to frame the deliberative process and to contain

overwhelming processes. In some way, being aware of the complexity of the context within which collective action deploys, intermediary workers develop the capabilities to 'hold together' the various and numerous components involved in collective action. In so doing, by taking care of the social process and by stimulating individual and collective reflexive consciousness, they help transform social identities and legitimacies. In CS 2 for example, despite changes in political frameworks leading to more coercive ways of action, the intermediary worker is at the core of farmers' willingness to follow-up and deepen the work undertaken over years and to expand their ideas, findings and change proposals to other groups of farmers.

Intermediary activities' properties

Some intermediary workers are designated as such by their profession (like advisors), but it does not mean that this profession conveys systematically a position of intermediary work performing functional achievements within objectification and inter-subjectivation processes. To reach this position they have to gain legitimacy through a biographical individualization process and to signify, by their commitment, their attachment to a certain community of practices in inter-organizational settings. The relevance of their actions towards sustainability transition is based on their capacity to enact a certain regime of dialogical intersubjectivty, meaning some pedagogical skills as already shown by Lemery (1991). But some others do not have a professional commitment to be intermediary actors, such as scientist or consultants, and can also perform intermediary practices in relation to goal achievement in a situation they are involved in. Their practices of intermediation often emerge in a specific momentum within this situation. Their background plays then a role in the way legitimacy is gained while developing a transformative stance. Such legitimacy relays also on their capacities to develop a new regime of action in which goals and means are both questioned to reassemble differently existing heterogeneous practices.

Our case studies have illustrated how such capacities are built by intermediary actors. In our view theses capacities can be described and understood to contribute to a theory of intermediation, which can encompass the diversity of intermediary activities in sustainability transitions. In this conclusive section we would like to propose three interlinked constitutive properties of intermediation, with the view to contribute to a strong research program on intermediation: performativity, contextualization and reflexivity.

As shown in our case studies reports and in the crosscutting analysis of the previous section, intermediation activities in sustainability transitions have the purpose to transform a state of reality and views about the future. The concept of performativity has been developed earlier by Austin (1962) in the field of philosophy reflecting on the meaning and consequences of speech acts.

The performativity of speech act indicates that the enunciation of utterances is already the realization of an action, which effects are to linger in the future. The effectiveness of discourses and performativity analysis have become a common practice in many fields like economic sociology, critical management studies, science and technology studies, rural sociology (Michael, 2000; Mol 2002; MacKenzie et al. 2007; Busch 2007; Callon 2010; Strati, 2007; Law 2008; Loconto 2010). This vision of achieving performance through the enunciation of discourses "focuses attention not only on the rhetoric and narrative of the performance itself but also on the way performance expresses – and is embedded in – modes of information control" (Hilgartner 2000). In this perspective, many scholars have paid more attention to downstream enrolments of both material devices and their users into collectives and to the meaning that these collectives produce beyond the initial interaction (Callon, Méadel, and Rabeharisoa, 2002). They do not pay much attention to the way a given regime of action gains a legitimacy, which in turn gives strength to an utterance and supports its performativity. We propose to consider that such a legitimacy is built on the articulation of objectification and inter-subjectivation processes at the core of the functions which intermediation activities fulfil to perform transformative change in sustainability transitions. We thus recognize performativity as a property of intermediation.

The second property we would like to stress is contextualization. In our case studies, we showed that intermediary work is deeply related to a problematic situation, but also acts as a translator between various discursive arenas in which the problem at stake and desired futures are framed. Contextualization refers here to this ability to elaborate a transformative purpose, which is sustained in an argumentative discourse. The latter is established in order to support and to frame a promising and deliberative setting within a web of interests and social positions as given by institutional arrangements. This approach relays on a semiotic perspective as the one developed by Latour (1990) and Akrich & Latour (1992) to give account of scientific work and script of innovation. The construction of successive utterances in deliberative arenas can be taken analogically as a text with a transformative purpose. The translations achieved by the intermediary work maintain the consistency of utterances in deliberative arenas through time and thus creates a context. The production of a text and of a context expresses the meaning and the practicability of the transformative purpose at work; it shapes a promising future and reframes collective action concomitantly. This is what we labeled as "contextualization".

The third property we would like to mention is reflexivity, and it has to deal with learning in process of change. Much has been said about reflexive practitioner in the area of social learning, following C. Argyris famous pragmatic intuition: "*we know we learnt something when we are able to realize what we assert we know*" (Argyris, 1995: 17). The reflexive consciousness

(Giddens, 1984) of intermediary actors about their own position in reflexive modernization setting (see Bos and Grin, 2008) is based on a sense of caring about the (un)intentional effects of their practices in a process of change, which is key to sustain intermediary activities but also to accommodate their own legitimacy in deliberative arenas. The ability to develop this attitude has also been labeled as 'second order reflexivity' (Voß and Kemp, 2006). We shall not develop furthermore what is intended here since an earlier contribution has established (Elzen, et al., 2012) that various misfits within an existing sociotechnical regime require reflexivity meant to question both the taken for granted characteristics of the regime and the beliefs of stakeholders. This reflexive stance is clearly at work within our four case studies.

To conclude we advocate for the development of a strong research program on intermediation as practice and process. In our view, such a program should at least address the three following issues. The first one refers to the way intermediation work acquires its legitimacy. To which extent does it depends upon an intentional long-term engagement of intermediary workers with their own vision of transformative change to address wicked problems within institutional arrangements? How such legitimacy rests on their ability to develop a regime of action in which goals and means are questioned concomitantly in order to reassemble differently existing heterogeneous practices in the field? The second issue is to develop in-depth analysis of the objectification and inter-subjectivation processes and the way they are articulated through the different functions at play in the intermediation work in order to achieve transformational change. The third issue is to produce detailed analysis of how the interlinked constitutive properties of intermediation (performativity, contextualization and reflexivity) are actualized in the delivery of these functions. We hope that our contribution enables to go further to address intermediation at play in sustainability transitions.

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APPENDIX 1: SAMPLE OF THE USE OF THE ANALYTICAL GRID

Critical incidents leading to reorient goals and means of action	**Heavy contestation about the limits of the nature preservation area.**	**Get round institutional contestation by diversifying deliberative arenas**	**Struggle between local actors involved in collective action and administrative agents**
Interdependencies	Unexplored and limited to a "descriptive" approach of nature	Increases by the integration of social preoccupations linked to human activities (livestock farming, hunting, fishing, water management, invasive species, etc.)	Between the local (collective action and what it produced) and the global (political framework and its translation by administrative services)
Complexity	Reduced to the description of nature and land use focusing on area delimitation	Diversification of components and interactions. Shift from marshlands' description to marshlands' functioning	Reduced to political and administrative aspects (validation, funding)
Uncertainties	Socio-political about the consequences of nature protection policies and their future development on human activities	Techno scientific: cause-effect relationships between human activities and ecological functioning of the marshes are unknown	Political about the acceptance of the action plan and its funding through a set of administrative and political frameworks
Controversy	Quality of biological inventories is contested in order to exclude crop land from the area	Specific around management stakes and related technical objects emerging from deliberations (e.g. hunting areas, water levels, etc.)	Related to how public action is conceived and implemented (deliberative *vs* prescriptive)

Objectivation	Extensive use of descriptive knowledge: habitats' presence and richness. Agricultural data (typologies, maps)	Validation of land use maps and new map's legend. Use of a new concept to qualify different marshland areas	A shared and collective action plan defining stakes, management goals and a set of means for achievement
Intersubjectiva-tion	Confrontation of conflicting social interests.	Technical debate develops leading to build a shared understanding of stakes and to restore a so called "marshland integrity"	Confrontation of values around top-down and bottom-up approaches of public action

APPENDIX 2: CASE STUDIES SYNTHETIC REPORTS

Case study n°1: developing low-input cropping systems in arable farming in the Parisian Basin

Presentation

This case study accounts for a long-term dynamic which started during the 90's in one arable crop (wheat, rape seed and barley) area, in which intensive use of inputs (nitrogen, pesticides) is still very common also local public authorities have stigmatized the nitrogen pollution of the aquifer under new public management concerns with environmental objectives. At that time, a new public instrument was institutionalized (named PDD for "*Plan de Développement Durable"*), enabling a contract between the State and the farmer in which the latter expressed some means and goals to achieve sustainability goals at the farm place with local objective for environmental achievement. The farmers' board and the managers of the Chamber of Agriculture proposed to a new hired advisor (B.O) to provide advice to farmers who will contract for diminishing the use of inputs. In this paper, based on a longitudinal approach of advisors as practitioners of change (Maxime et al., 2002; Cerf et al, 2011) within the framework of cultural and historical activity theory, this case study reports on the specific role of B.O. in networking various activity systems at both local and national levels in order to support the search and development of on farm pathways towards sustainability.

Intermediation as practice and process

When the PDD were proposed, few farmers really got involved in such contracts, but a group was nevertheless built, which constitutes a socio-technical arena in which low-input practices were discussed between the farmers and the advisor. B.O. bridge this local socio-technical arena to two others: the administrative and political one involved in the follow-up of the contract process at national level, and a techno-scientific arena called "hardy wheat network" in which experiments were developed for arable crop areas, in order to assess integrated production methods. In these arenas, a systemic approach at the field level was promoted, and B.O. proposes to the group to ground the design low-input practices in such an approach and invited some of the people of these networks, to feed the discussions among farmers. Managing the nitrogen pollution problem was in the background, but was not addressed as such by the group also B.O. invited it to keep an eye on the proposals of a national scientific committee delivering recommendations to reduce nitrogen pollution.

In 2001, the State stopped its support to PDD, and at that time, the "hardy wheat network" also faced some legitimacy and financial problems as a supported techno-scientific arena. At the local level, farmers were nevertheless keen to still explore low-input cropping systems and asked the board of the Chamber of Agriculture to support the process by dedicating B.O. part-time to their experiential initiative. It was quite an issue as the practices explored were seen as more political than technical in a local context of intensive farming systems. One farmer of the group was part of the board of the Chamber, and clearly acted as a broker and promoted the opening of the group to new comers willing to also develop environmental-friendly practices. Indeed the group expanded, and new comers started to develop low-input practices. B.O sought for a renewed techno-scientific network in order to feed the group with a broader systemic approach, e.g. at the landscape level and with a larger time span (crop rotation). This was particularly helpful when, in 2005, the group identified that farmers were facing a problem of weed invasion, which resulted paradoxically to a rather high level of herbicide use. B.O. offered to the group to start a process of redesigning their cropping systems and he introduced a methodology, which he just had the opportunity to build within a new techno-scientific network in which he had chosen by himself to get involved in. This network (called "RMT SdCi" for Mixed Technological Network towards Innovative Crop System) was mainly composed of agronomists belonging to various organizations of the French agricultural knowledge and innovation system, and was meant to develop innovative and sustainable cropping systems and mainly methods to design and assess them. B.O. adapted these methods and the group started a process of co-designing and co-assessing new cropping systems for each farmer within the group. More time was allocated by the collective to support each farmer in his pathway towards his targeted cropping system, e.g. in identifying weak and strong features of each cropping system, to in designing monitoring/assessing indicators, and in suggesting alternative solutions whenever failures were pointed out. Such a deliberative arena was viewed by B.O. and the group as a "safe" space in which debates about the professional norms of farmers could take place. As well, farmers started to discuss initiatives taken by some of them such as one's involvement in a network claiming for the recognition of the role of pesticide in the development of professional diseases, or one's exploration of agroforestry solutions. Therefore, discussions about their shared values took place as the practices developed by farmers became more and more controversial among the local farmers and were glazed suspiciously by farmers involved in the board of the Chamber.

Indeed, the *Grenelle de l'Environnement*, (a national political process to frame sustainability objectives to many sectors, which took place in 2007), created a new political agenda under which intensive use of pesticides was addressed if not discarded. This resulted in tensions among different professional norms

and values within the agricultural world both at national and local levels, but mainly on the pathways of sustainable development in terms of pace and depth. In the follow-up of this *Grenelle*, but mainly as a consequence of a the Pesticide European Directive, a national action plan (named Ecophyto 2018) was designed by the Ministry of Agriculture to reduce by 50% the use of pesticide between 2008 and 2018. Ecophyto Plan was composed of 115 actions to support a transition to reach this 50% reduction. One action, labelled FERMECOPHYTO, was setup to create a large network of farmers' groups (a total amount of 2 000 farmers) in which farmers would experiment pathways of pesticide use reduction with the support of an advisor (mid-time paid for this work). In a first stage, the design of this network was supported by the knowledge produced within the national techno-scientific arena in which B.O. was involved (the "RMT SdCi"). But the national organizations of the French agricultural knowledge and innovation system contested the target as well as the framing chosen to develop the FERMECOPHYTO network. As part of those involved in the first stage, B.O., had to face this controversy arou but his position was clearly reinforced in the next stages, thanks to the work he undertook in between 2008 and 2011. Indeed, at that time, he took part to various R&D projects in which arenas were built to invite advisors to discuss and reflect upon their advisory practices in facilitating change of agricultural practices. He played a role of facilitator in these arenas and developed his ability to support advisors in becoming reflexive on their own practice. Right from the beginning, he was hired to join the national facility point, which was designed to support the FERMECOPHYTO network and kept this role even after the controversy took place. His legitimacy was two sided: firstly the group of farmers was involved in the national FERMECOPHYTO network, and their practices were involved and discussed as credible solutions towards the target. Secondly he was seen as a person who had the ability to support the work of the other advisors who were supporting group of farmers within the network. This new position as well as the dynamic of his group resulted in putting more emphasis on supporting farmers in copying with uncertainties: those which take place in monitoring change at a systemic level (cropping and farming system) those which appears while assessing the impacts of the change on environmental issues, those which remains on the target and the professional identity they wish to assume. This case highlight how local and national intermediation appear more and more intertwined over time.

Case study n°2 : implementing Natura 2000 Directive in the Rocherfort Marshland

Presentation

This case study deals with a Territorial Collective Action Device implemented under the *Natura 2000* political framework (Steyaert, 2006). Its aim was to build an action plan in order to preserve wildlife biodiversity into the marshland area of Rochefort (13.500 ha), in the West of France. It brought together a set of various institutional stakeholders and land users deliberating into formal and more informal arenas to identify goals and means of action. Two people have coordinated the design of this action plan: one was member of an environmental protection association, the other one was appointed by a Chamber of Agriculture. In this paper, we analyze their joined activity as "intermediary workers" playing a significant role in the deliberative process that has successfully issued the local *Natura 2000* action plan. Both were mandated by the regional public services for environment protection of the Poitou-Charentes region. The device involved a set of "deliberative arenas" (Dodier, 2003) with the view to reach several objectives: to inform and enroll citizens into the working process thanks to public meetings (arena 1); to design practical proposals in thematic working groups (arena 2) in order to elaborate the items of the action plan; follow the process and validate its outcomes within the steering committee (arena 3).

Intermediation as practice and process

Information meetings and the first steering committee put forth a general contestation of the Natura 2000 policy framework, mainly supported by crop farmers and land owners who addressed the problem of area delimitation. With the help of a national Depute who became their spokesperson, they created a landowners association to block the whole process with legal argument. They mainly contested the inclusion of cropping land into the protected area because these parts of land could not correspond to nature conservation specifications used by environmentalists for area delimitation (i.e. CORINE biotopes classification). This first stage of the process led to an unexpected result. Although the environmentalist coordinator had been designated to play a main role in coordinating the process, their extensive use of biological knowledge to convince people of the relevance of the Natura 2000 policy had reinforced claims and contestation. In this way, by coining the problem as it is defined within the policy (to preserve natural habitats and their biological richness), the coordinator turned himself into a spokesperson of nature. His local legitimacy thus decreased in favour of the other coordinator, the member of the Chamber of Agriculture, who took the main responsibilities and initiatives in what will be described hereafter.

To reduce fears and contestations, coordinators decided to adapt a deliberative design. While the work in thematic groups started, they implemented so called "cartographic" and "open marshland" meetings. Organized at municipality level and involving all land owners and farmers holding a plot into the area, The goal of the first ones was to integrate into the

map's legend some agricultural categories like permanent and natural grasslands, cultivated grasslands and fallow land. In doing so, they corrected some errors in land affectation, but more importantly created the pedagogical conditions to open up the whole process to deliberative practices. They reduced fears, provided more precise and adapted information to all, and invited individually everyone to take part to working groups. Afterwards, many of the people they met decided to be involved, which led to change social configuration of those arenas by increasing the number of land users in regard of institutional stakeholders. The second meetings were consecutive to the statement that most of the marshlands' users did not know what ecologists were speaking about when they were speaking about nature. These meetings have consisted in visiting some interesting parts of the marshland with an ecological point of view, asking ecologists to explain to participants what an habitat is, why they consider some species are important to preserve, how to recognize biological richness, what a biological inventory is, and so on. This led to share the scientific knowledge held by ecologists with other people: what was considered initially as "bizarre" or unimportant became mundane and was mutualized. This has clearly helped to build a common understanding of the ecological dimension of wetlands.

Being reinforced in their facilitators' position and having gained confidence from all parties, coordinators were mainly involved in facilitating deliberative processes during those meetings. The focus done here is not to develop an analysis of the whole process but juts to extract some key statements from that part of their work. Rather than focusing exclusively on nature protection goals, they opened space and time to take account of the diversity of social preoccupations mainly linked to the development of human activities and water management. In some way, they left out the public framework to be involved in stake-holding processes (Steyaert & Jiggins, 2007). Each of those stakes was discussed and gave rise to action proposals and rules, which progressively constituted the content of the action plan. When heavy controversies arise, like for example concerning allowance and management of hunting areas, they helped people to explore the potential of those controversies rather than closing them. When knowledge was available, for instance spatial distribution of hunting ponds, owners and users, hunting pressure, etc., they created the conditions to make this knowledge public and shared. Finally, they built a progressive compliance of the diversity of actors involved in the working process.

But all this was allowed because of the social structure of deliberative arenas made of institutional stakeholders mixed with diverse and heterogeneous land users. Indeed, despite the progresses made in establishing an action plan, contestation around the area delimitation was still alive during the steering committee meetings where power relations were perennial and fierce. To go over that blocking strategy, the coordinators made use of a

concept proposed by a researcher leading to qualify the area in a different way from how administrative services were used to do it up to then (Steyaert, 2008). The use of that concept in several arenas, especially in the land owners association, and its feeding with available knowledge, led to the total dissolution of social contestation into deliberations oriented toward the appropriation of the action plan. Moreover, the national Depute, stating the work done and the trust of all people in its outcomes became the spokesperson of the process, playing an intermediary role between collective action and administrative services. He asked for an integral validation of the action plan without any modification, except those, which would be further discussed and negotiated with people involved.

Case study n°3: Preventing alga bloom in the Brittany

Presentation

Coastal eutrophication phenomenon, which affects large parts of coastal areas in Europe or China, are mainly due to massive fertilization and may cause in certain conditions algal blooms. In West of France, in Brittany, green tides appeared in the 60s', concomitantly to the rise of agriculture intensive livestock farming and to major disruption within social organization of rural communities (Canevet, 1992; Bourblanc, 2007). "Green tides" have hence been part of local life in some bays for two generations. The amplification of public policies dedicated to the reduction of blooms and agricultural nutrients leaks challenges the effects of agricultural modernization on public good like water resources. Based upon a three years ethnographic field-research in rural communities of coastal watersheds severely affected by algal blooms, this case study concerns one of the spots of algal bloom,of Brittany: the Lannion bay. The empirical work has specifically shed light on the reduction of dissonance in situations of change for sustainable transition (Levain, 2014), and therefore has particularly paid attention to public management settings and collective action at the level of watersheds. Within the scope of this paper a focus is put on the functions that intermediary actors have endorsed in settings that were dedicated to reduce dissonances in between a cult of agricultural modernization on one hand and sustainability goals in policy-making processes on the other hand.

Intermediation as practice and process

In the Lannion Bay, algal bloom has been particularly massive in the late 5 years, though ulva proliferation had been known as "green tides" for two decades by local communities and thus recognized as a matter of local agri-environmental policy definition. As a spot of bloom, this Bay also received the attention of scientists and experts, who pointed the responsibility of nitrogen

and phosphor release at the level of watershed or urban wastewater. Thus, in 1995, the local representative of the Farmers Trade-Union (FDSEA) and one elected politician representing the municipalities of the watershed have initiated and institutionalised an Agricultural Professional Committee (Comité Professionnel Agricole, later on labelled CPA). This committee has been intentionally shaped as a professional arena with the view to organize and concretized the contribution of farmers to "fight" against algal bloom. The setting up of this committee was a clear signal that something was - at least - lacking in incumbent farmers' contributions to coastal management. It also paradoxically meant - as a kind of derivative shunt- that conventional farming organisations had not directly to be involved. The setting up of this committee also opened two controversial "fronts": one within the professional world of farmers (the pro and the cons "green agriculture"), the other one between environmental stake-holders and the committee itself considered by the former as "too agricultural". This committee then initiated a "Watershed Programme" based on voluntary contribution and aimed at articulating public action, environmental mobilization and farmers' efforts with the view to negotiate change and enhance collective action. A situated regime of search for coordinated actions and intersubjectivity has thus been established between various intermediaries acting at the level of the Lannion Bay: the local representative of the Farmers Trade-Union (FDSEA) and one elected politician representing the municipalities (president of the CPA), but also farmers advisors, watershed management facilitators, and representatives of water resource agency.

After 10 years of this search regime, it was noticed that all the undertaken actions were ineffective, since algal blooms were becoming even more significant. This led to strengthen more radical change of farming systems, basically under the technical prescriptions of using grazing resources for livestock. Though this technological promise promoted by the CPA was consensual, it triggered many professional debates within the farmers' community, but differently oriented. The issue was much more on techno-economical risk of shifting from maize to grass than on the acceptation of changes under environmental pressure. But this issue also contains a radical uncertainty about the effectiveness of grazing system towards the installation on algal bloom. The legitimacy of the CPA changed and the activities of intermediaries had then to shift from a regime of search and negotiation based on "soft schemes" to a regime of conviction and changes. The instauration of this regime opened a stronger contribution of researchers that were convened by the CPA to "measure" risk and uncertainty, at the level of farms. Therefore, researchers joined the setting as knowledge brokers, through expertise parties or dedicated research-action projects with a network of pilot farms accompanied and monitored by agricultural advisors. Suddenly a disruptive event challenged the process of objectivating the pathways for a sustainability transition.

On one of the Lannion beach the emanations of sulphuric gas produced by beached alga killed a horse and injured its horseman in July 2009. This event has been covered by local and national media, and became a proof that algal bloom could be extremely dangerous. Some weeks later, a bunch of wild pigs were discovered dead on a beach. Algal bloom became suddenly a matter of national health security and the Prime Minister ordered a Regional Plan to fight against "green algae". This event very directly questioned the local consensus established by the CPA, but mainly challenged the goals of the transformative setting: the Lannion bay became a "pilot bay" and the regime of conviction and changes was turned into a regime of public evidence making with objectives and subsidies established by this new "Green Algae Plan". The process of voluntary engagement of farmers shifted to a forced process of taking part to change, before a regulation would be taken by public authorities. Under this pressure, farmers felt stigmatized ("we did not signed for that at the beginning") and intermediary actors bounded to a different type of rationalized action, reinforcing evidence-based public action. Actors involved found themselves trapped in an operational plan, with external assessment. The network of pilot farms was de-legitimated in its role of actionable knowledge production. The CPA was also affected and the President himself considered that the relation of the setting towards a new external objective was a fundamental change, since the participants are conveyed to orient differently their collective action. Intermediary actors have been thus trapped in a very different situation of boundary-work, since their function became to interface the Lannion pilot-bay with the regional "Green algae Plan", but also to preserve the local partnership, a fruit of 10 years of negotiations. Their aim and function became to sustain the initial programme despite its exposition, and to keep farmers in. Thanks to the very meticulous intermediary work of advisors, crossing the maintenance of local commitment and the technical support to pilot farms, the local programme was signed as "Territorial project" to answer the public authorities objective. But after difficult discussion, the CPA decided also to stop its collaboration with researchers, as a meaningful way to clearly put the "public knowledge" at a distance.

Case study n°4: "Intermediating the good certifier for sustainable standards supported by ISEAL"

Presentation

The context of the problem of defining the 'good certifier' is situated within debates that occurred in the 'sustainability field' (Dingwerth and Pattberg 2009; Loconto and Fouilleux 2013) over the legitimacy of private instruments of governance of sustainability standards to be use in value chains. Specifically, there are debates over the legitimacy of different models of

certification as a means to both create trust in private standards systems and to enforce the compliance of producers (mostly agricultural) with the values and practices encoded in the standards (McDermott 2012; Hatanaka 2010). These debates began in the 1990s when a number of social and environmental standards became formalized with certification systems (e.g., Fairtrade International, Marine Stewardship Council, Forest Stewardship Council, Rainforest Alliance and national Organic regulations). During this period, each scheme developed its own standards and its own verification system and trained their own auditors. This first period was then marked by severe competition between schemes and accusations of 'greenwashing' based on the methods that some standards development organizations (SDOs) used to verify compliance with their standards. Beginning in 2000, but really only catching on around 2005, the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) began to encourage its SDO members to work together to find solutions to common problems such as certification. This was possible because most of the SDOs at the time were relying upon the same sets of certifiers to carry out audits for each individual standard. It was during this period that the collaboration and collective action began to take place within the sustainability field and it is where we find the specific intermediation activity exemplified in this case.

Intermediation as practice and process

Within this context, the principle arena is a standards-setting activity that took place over about a two years period between 2010 and 2012. In this arena, multiple stakeholders (SDOs, certifiers, accreditation bodies, consultants, researchers, retailors and NGOs) came together to create a standard for conformity assessment systems. This means that the actors in this situation were discussing technical requirements for how to set up verification, audits and oversight for enforcing voluntary standards. The context is specific to those organizations, which are working with social and environmental standards. This specificity is important to the intermediation process for two core reasons. First, the actors are mission-driven. This means that how they frame their problems are within the context of trying to influence change towards a more sustainable society. Second, they assume that there is something unique about the type of work that they do that separates them from mainstream practices. Therefore, they are looking to make their systems of control different from the dominant paradigm that relies upon multiple levels of third-party certification and accreditation (Loconto and Busch 2010).

Within the group, the SDOs were dissatisfied with some of the results of third-party certification, meaning relying on an external appointed certifier. The main complaints refer to concerns on conflicts of interest between certifiers and farmers that can influence certification decisions. Actors also accused some certifiers of outright fraud and others of incompetence. Actors

were quick to insist on oversight (including accreditation and market surveillance of labelled products) to combat fraud. They developed a nuanced understanding of conflicts of interest that recognized that also such conflicts were a risk they could hardly be always avoided.

Therefore, the core problem that the actors needed to solve was that of the auditor competency. The results of initial scoping showed that: "auditor competence has been the top challenge". Therefore, the challenge posed to the group was to create criteria within the broader standard for conformity assessment systems for the 'good certifier' who would be able to competently and efficiently deliver credible audit results and thereby testify to the credibility of farmers. The starting point for intermediation was the current practices of certification bodies and the existing International Organization for Standardization (ISO) standards for conformity assessment systems and auditor competence (17 065 and 1 9021 respectively) with a key question about who could endorse the responsibility for ensuring that auditors are capable of conducting credible audits? The SDO who hires the certification body, the certification body who hires its audit staff or the auditors themselves? How can one judge whether an auditor will be competent and how can you measure if the auditor has been competent? The actors in the discussion argued that they have a system focus and therefore there may be a need for refocusing the attention of SDOs between certification body competence and personnel competence. The ISO 17065 and 19021 require a competencies approach, but the SDOs took a qualification's approach based on the experience and education of the auditor rather than on their actual performance. An accreditor argued that: "*ISO did not give us enough guidance, so we became more prescriptive. The new standard (17065) is better in auditor competency. But we trained auditors when we started our system because no one else was doing it!*"

The focus on performance was the conviction of the group that somehow auditors must be able to 'audit to the intent' of the standard and not just to the criteria on audit checklists. This links the problem to their mission of influencing societal change towards a sustainable future. The idea is that even the auditors who are part of these standards systems must buy into the missions. This poses a problem to the practice of auditing, as many of the auditors are hired on an ad hoc basis and therefore conduct audits for numerous standards systems, not just one standard. Traditionally, the SDOs have dealt with this, as the above quote notes, through auditor training. Indeed, the main criterion for training for each standard was undisputed and was reinforced through the idea that SDOs should put a system of 'auditor calibration' into place. Thus, like machines, auditor's knowledge and competence should be tinkered with until they are calibrated to produce consistent results over time (Loconto and Barbier, 2014).

The intermediary actor in this activity was actually not the designated facilitator for the code development. Rather, a certifier stepped up to influence the direction of the debate. He was a director of a certification company that is mission-driven. This "capture" was possible because the nature of the arena was promoting reflexive rather than defensive discussions. The other actors in the room argued their positions in a very passive manner, such as "*well we do this and we want this…*". Therefore, when one contrarian view was voiced, the intermediary actor was able to push everyone in the desired direction. This occurred particularly on the issue of defining a 'good certifier'. The 'good certifier', according to this intermediary actor, is a person who has first-hand experience in the region; one who can speak the local language. A young person, it doesn't matter what education or qualification, but one who is a critical thinker. The important competencies of the 'good certifier' therefore are based on an inquisitive personality and a desire to 'learn-by-doing'. The implication of this 'good certifier' is that responsibility is heavily placed on a moral character of the auditor him/herself and on the certification body who invests in developing the human capacity of the individual in a mentor-mentee relationship.

By advocating this approach, the intermediary actor argued that the responsibility lay with an organized certification body, which could properly train an auditor in both the intent of the standard and the practicalities of audits. This resulted in an annex to the standard that explains in detail the types of personality traits and qualitative competencies (interviewing, report writing) that auditors should have and is based on the justifications provided by the intermediary. The required criteria switched the responsibility from being solely held by SDOs to a division of responsibilities for different aspects of the certification process between SDOs and certifiers.

In this case, the intermediation process took place between the standard that was being developed and the localized practices of conducting certification audits definition. Here certifiers were seen as taking on the role of interpreting/translating the standard in the face of real agricultural and agro-forestry practices. This represents a change in these systems as the increased accountability of more actors in the network, beyond just the SDO, puts these standards systems on a path to institutionalize this tool as a means to effect change in the direction of practising and governing sustainability standards.

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