Papers on Social Representations
Volume 25, Issue 1, pages 6.1-6.30 (2016)
Peer Reviewed Online Journal
ISSN 1021-5573

[http://www.psych.lse.ac.uk/psr/]

Social Representations Theory: A Dialogical Approach to the Ecological Crisis

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ABSTRACT

This article seeks to illustrate *why* and *how* social representations theory (SRT) based in its dialogical epistemology can be used as a critical approach to analyse the ecological crisis. We first present the shortcomings of some models used in social psychology – that they are rather individual and cognitivist, discrediting common sense knowledge, adopting a nature/culture dualist approach. To overcome those limitations, we then draw some parallels between the concept of the "human history of nature" (Moscovici, 1968) and SRT by referring to the wind rose model (Bauer & Gaskell, 2008) and by outlining the dialogical epistemology underpinning Moscovici's work. This epistemological turn offers theoretical advances in order to study the ecological crisis and call for methods operationalising dialogicality. By referring to a previous study, that compared social representations in France and Germany, we illustrate how a comparative research design can endorse the different assumptions of the wind rose model and support a dialogical approach of the ecological crisis. Our results suggest that the ecological crisis refers to different competitive realities in France and in Germany and that these representations serve identity stakes in the French/German relationship. Finally, we discuss how the ecological crisis can challenge back theoretical developments in SRT.

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Keywords*: human history of nature, dialogicality, comparative research design, ecology, social representations*

On 6 July 2015, NASA published a picture that captured the entire earth. Such photographs are rare as most pictures are reconstituted. The previous and first shot was taken in 1972. The White House asked Neil de Grasse Tyson, a famous American astrophysicist, to comment on this picture on its Facebook account. He wrote: "Occasions such as this offer renewed confidence that we may ultimately become responsible shepherds of our own fate, and the fate of that fragile home we call Earth." Despite a high consensus that it is urgent to protect *our home* (Dunlap, Galup & Galup, 1993; Bertoldo, Castro & Bousfield, 2013), at an individual level the "fabled gap" between attitudes and behaviours still persists (Gifford, 2011, p. 290) and agreements at an international level, when they occur, are unadventurous (Schüssler, Rüling & Wittneben, 2014). But what is really behind the large consensus that our planet should be preserved? Is it understood in the same way in different groups? Or does it have different meanings? In a case study following an oil spill on a little island in Shetland, Gervais (1997) had already outline that social representations (SRs) of nature contain paradoxical and ambivalent elements which serve different identity functions. In this article, we provide some epistemological reflections in order to discuss the critical potential of social representations theory (SRT) when examining the relationships between people and their environment in a highly normative and apparently consensual context. According to Adams (2014), in the environmental field, a critical approach should:

1- emphasise the social embeddedness of experience, which supposes a social constructionist and interactionist epistemology;

2- question the existing understanding of reality and normative ways of producing this reality;

3- engage in a form of social change that promotes social justice.

In the first part, we argue *why* SRT can be used as a critical approach when considering the ecological crisis. To do this, we begin by presenting some models from mainstream psychology in order to outline which shortcomings a critical approach should overcome. Then we refer to the "human history of nature" (Moscovici, 1968) and its similarities with the wind rose model in order to explain how SRT can, in fact, offer a critical approach to ecological issues. This relies on its dialogical approach, i.e. the ability of human mind (Ego) to create and to communicate on social realities in terms of Alter, where Ego and Alter are inseparable and transform each other mutually (Markova, 2003). Thus, SRT enables us to question anew the apparent consensus that we should *be shepherds of our own fate* and these new questions help to suggest new answers.

In the second part, we illustrate *how* SRT can endorse a critical approach. One of the challenges for SRT is to develop methods that endorse its specific epistemological claims. Thus, we describe the comparative research design from a previous study in order to illustrate how SRT can empirically support a critical approach.

WHY? THE CIRITICAL POTENTIAL OF SOCIAL REPRESNETATIONS THEORY

Strengths and Limitations of Some Mainstream Social Psychological Models

Psychology has made notable contributions to the environmental field (Clayton et al., 2016) by exploring the knowledge about natural processes and the perceptions of risks or by promoting ecological behaviours. In order to understand which factors contribute to ecological behaviour, two models have mainly been used. The Theory of Planned Behaviour (TPB) considers that ecological behaviours result from individual reasoned choices (Ajzen, 1985). On the contrary, the norm activation model considers that ecological behaviours follow the activation of a personal norm and reflect the feelings of a moral obligation (Steg & Vlek, 2009; Steg & Nordlung, 2013). Both models were developed further: the norm activation model was extended to the value-belief-norm theory (Stern, 2000) and some variables were added to the TPB (see for example: Knussen, Yulle, MacKenzie & Wells, 2004). A meta-analysis provided some support for combining both models and thus ecological behaviours appear as a mixture of self-interest, pro-social motives, and perceived constraints (Bamberg & Möser, 2007). Emotions (Kals & Maes, 2002, for a review) and more recently collective emotions (Harth, Leach & Kessler, 2013) are also considered predictors of ecological behaviours. Finally, the goal-frame theory proposes an integrated model of these different approaches in which ecological behaviours are conceptualised as the result of a tension between different motives to act (Lindenberg & Steg, 2007). Despite these recent developments, these models still offer a rather individual and static (attitudes and values are relatively stable constructs) explanation of ecological behaviours, considering that "psychological processes can be abstracted from their specific context and that research findings can be generalised across contexts or situations" (Clayton et al., 2016, p. 214;

see also Uzzell & Räthzel, 2009). Attempts to take into account the social dimension often reduce it to a variable that influences or frames individual attitudes (Howarth, 2006a). For example, Fuhrer, Kaiser, Seiler & Maggi (1995) outline that individualism is rather at the heart of most socio-psychological models and they proposed to integrate SRs as a predictor of individual concern for the environment. However, this reduces the social role to a linear influence on the individual and interactions between the individual and the social are not considered. Thus, such approaches do not provide an understanding of how and why attitudes are developed and shared, and how they relate to one another (Howarth, 2006a) in a specific context. They do not enable a holistic approach to the phenomenon.

Another limitation of these models is their difficulty in defining what an ecological behaviour is, as people are often inconsistent in their environmental behaviour (Steg & Vlek, 2009) causing, at the least, a problem of measurement (Kaiser, 1998). De Haan & Kuckartz (1996) note two main theoretical problems: first, researchers and participants may have different conceptions of what an ecological behaviour is; second, according to scales generally used to measure ecological behaviours, the person who appears to be the most ecological is probably a person living in a small apartment, having not enough money to take a flight for a holiday or to own a car, who always switches off the light and tries to reduce her water consumption, etc. But should these behaviours really be considered ecological? The problem here is that researchers impose their own interpretative references and categories (De Haan et al., 1996).

The way psychologists approach risk perception and people's understanding of natural processes is also rather individualist and cognitivist, and it too imposes its own references and categories. Callaghan & Augoustinos (2013) consider that the traditional model of science communication focuses on deficiencies of the public and they adopt the point of view that

scientists relay information to the ignorant public (i.e. the information-deficit model): the public's information is right or wrong, absent or present, compared to the scientific information. This model, they argue, has some limitations: it does not consider the complex social dynamics involved in the communication of science, the dichotomy between “scientists” and “the public” is difficult to assume when scientific issues become a political matter and, last but not least, it considers that lay people are like empty bottles and therefore provides few explanations about the way the public's understanding of science is influenced by political or ideological values. Breakwell (2010), in a review of the models of risk construction, outlines the limitations of models that do not pay attention to the initial belief system in which new information will find its place. This leads to interpretations in terms of cognitive biases and misconceptions. For example, environmental problems are perceived to be more important the farther away they are (Uzzell, 2000); this is called environmental hyperopia (or spatial bias). It is the equivalent of the comparative optimism bias for health (Gifford et al., 2009). However, empirical evidence indicates that the environmental hyperopia bias is not purely cognitive and that it is specific to particular views of nature (Lima & Castro, 2005). Thus, when risk perceptions are analysed with regard to previous belief systems, these misconceptions become meaningful. Moreover, an analysis in terms of cognitive biases fails to understand the social and identity issues that are at stake when representing risk (Joffe, 1999).

To sum up, despite significant advances in the state of the art, the above-mentioned approaches have some shortcomings: they are rather individual and cognitivist (considering that the social frame the individual) and they ignore the interactions between the social and the individual (Adams, 2014, Batel, Castro, Devine-Wright & Howarth, 2016). Therefore, they are not well-suited to explain change. Moreover, they delegitimise the public's point of view and

impose their own categories of analysis (for the definition of risk or of ecological behaviours). This goes hand in hand with the use of some methods (surveys, experimentations and statistical analysis) or, to be more precise, with a specific (i.e. positivist) use of these methods.

Lastly, a dualist perspective (human-nature) underlies these approaches (Caillaud, Kalampalikis & Flick, 2010; Adams, 2014) and this becomes explicit at different levels: environmental problems (nature) call for behavioural solutions (human), risk is an external reality perceived by humans, attitudes are conceived as an internal reality causing behaviours (with consequences for nature). Despite the call for a transactional approach, even the research field still seems structured in a dualist perspective: studies are concerned, on one hand, with the consequences of human behaviour for the environment; on the other hand, with environmental consequences for human well-being or perceptions (Clayton et al., 2016).

Hence, different practical questions must be answered such as: what kind of practices should be considered ecological? For example, is recycling plastic bottles an ecological behaviour when we consider that it is possible to drink tap water? Are glass bottles better? More generally, what should be considered the nature to be protected? What does common sense mean with assertions like we are "shepherds of the fate of our fragile home"? Thus, instead of practical answers, these practical questions open the way for epistemological considerations about nature as an *object* for social sciences, and finally it is the human-nature relationship that should be questioned.

The Concept of the Human History of Nature

Moscovici was not only the author of the SRT (1961) and of minority influence, he also developed impressive anthropological work about the human-nature relationship. According to

Moscovici (1968, p. 36), "nature refers to humans with matter". Thus, we should distinguish between *nature* – all kinds of objects considered by humans and having significance for them – and *matter* – all the things that are not considered by humans. This distinction between *nature* and *matter* echoes the difference between an object of social representations and a "something" that has a physical existence but is not relevant (for the moment) to groups (Wagner, 1998). *Nature* is the product of a historically and culturally situated process with *matter*. For example, electricity existed as an abstract natural force before becoming a productive force, and just before it was nothingness. However, human activity consists not only in discovering matter but also in reorganising matter, creating specific states of nature. Moscovici describes different states of nature in human history, i.e. different ways to represent nature, to organise our relationship with matter. The past states of nature are still present today: they are inscribed in social memory (Gervais, 1997). Moreover, this construction of *nature*, its "essentialisation", can be used as a strategy to serve identity or political projects (as, for example, the preservation of landscapes, Batel et al., 2015).

The main relevance of this "human history of nature" is that it becomes possible to study how groups and societies construct their specific relationship to *matter*, how they develop a specific state of nature and transform it (Eder, 1988). Nature thus results from incessant interactions between humans and matter, and this perspective enables us to turn away from the human/nature dualism.

It also has consequences for the way relationships between humans are considered. Moscovici demonstrated how categories interpreted as "natural" (e.g. men/women) are socially constructed by humans through interactions with matter. For example, it is not *natural* that men dominate women (Moscovici, 1994). However, this also means that our economic system is not

more *natural* than another one, nor is it *natural* that cultivators are responsible for pollution; these so-called *natural* categories are the result of a specific social categorisation (Eder, 1988). Authors like Lenoble (1969), Latour (1999) and Descola (2005), by adopting a historical or an anthropological approach, also help us to understand that our *nature* is socially constructed and results from a historically and culturally situated process.

Scientific answers to what kind of nature we should protect are historically situated too. For example, Larrère and Larrère (2007) explain how the traditional objectives of protecting nature have evolved in ecology (the science) when humans are considered a part of nature itself: it is no longer a question of preserving *wild nature* (a stable nature from which humans are absent) but of maintaining the regime of disturbances that has produced the present state of nature (humans being an actor in an evolving system). Thus, practical questions (such as: What practices are ecological? Which nature should be protected? etc.) are transformed into other questions: How do groups choose what to protect in nature? What does it mean for them to be ecological? Which practices do they consider ecological and why? Scientific knowledge, being historically situated, is no longer considered the unique reference to which everyday knowledge should be compared, nor should everyday knowledge be evaluated in terms of right or wrong on a scientific level (as scientific answers vary over time).

Finally, the human relationship with nature reveals a great deal about relationships between humans. In fact, nature is the product of an interaction between humans in relation to matter (Moscovici, 1968, 1994). We will give just one example that illustrates this. Two tribes of Jivaros live in two very different environmental conditions (one being luxurious and the other not). Despite this, the two tribes exploit their environment in exactly the same way. This can be explained by their willingness to reduce inequity between groups (Erikson, 1988). Thus, the

relationship of humans to nature is linked to the relationship between humans. This also echoes our previous point: it is not *natural* for humans to maximise their benefit by exploiting their resources. As a consequence, attention should also be paid to the relationship between humans in order to answer the above-mentioned questions: How do groups in interaction with others choose what to protect in nature? How do they decide which practices are ecological? How do they define, through interactions, what it means to be ecological? Thus, the "human history of nature" invites to adopt a theoretical framework allowing for a dialogical approach of the human-nature relationships.

Bringing Together the Human History of Nature and Social Representations Theory

In the wind rose model (Bauer & Gaskell, 1999, 2008), SRs are defined as the product of an interaction between two social groups (or between two subjects) in relation to an object, which can be represented by a triangle (ego-alter-object). Thus, it is never an individual alone who becomes familiar with an object. This interaction takes place during a specific time and refers to a specific project being followed by the group (Why are they engaged with this object? What are their objectives? etc.). Thus SRs “have to be seen as alive and dynamic, they exist only in the in-between space we create in dialogue and negotiation with others” (Howarth, 2006b, p. 68). At this stage, SRs can be represented by a Toblerone; a section through the Toblerone at any time corresponds to the SRs of this object at that time. Thus, representations are inscribed in a temporality and can bear old and new ideas about the object (Jodelet, 1989; Castro & Lima, 2001).

This is well illustrated by the study of Brondi et al. (2012) who analysed different dimensions of the SRs (images, emotions and practices) of the Chiampo river (Italy) at three

different periods of time. Their study outlines how inhabitants moved from a negative representation (images of death, negative emotions, avoiding using water for animals) of the river during the first period to a more ambivalent representation (both positive and negative aspects were found for all dimensions) during the second period. In the third period, only the dimension of practices still outlines negative representations of the river through strategies of avoiding water (e.g. more than a half of the citizens do not drink tap water), while the other two dimensions refer mainly to scientific and neutral explanations (use of technical terms, fewer emotional experiences). These results show how the representations of the river have evolved over time and that the adoption of a scientific discourse about the river does not imply that old elements of the representations (not drinking tap water because it is poisoned) disappear. Although images and emotions have evolved, practices are still consistent with old representations of the water as noxious. As old representations are not simply replaced by new ones, SRT is concerned with both stability and change, and more precisely with the relationship between stability and change (Batel & Devine-Wright, 2015). According to scientific rationality, the attitude-behaviour gap is a paradox; however, the discrepancy between what people do and what they say is not necessarily perceived by themselves as an inconsistency (Wagner, 1994). Moreover, this discrepancy can be used as a strategy to both accept and resist change (Castro & Batel, 2008; Castro, 2012). Discourse and practices are both components of SRs; they are the two sides of the same coin.

As SRs are elaborated in a context of intergroup relationships, they bear the traces of us/them intergroup behaviour (Bauer & Gaskell, 1999, 2008). For example, Jodelet (2008, 2015) shows in a study about SRs of the environment in French ministries how high-ranking civil servants from the different ministries delegitimise the creation of a specific ministry for the

environment, which threatens their own ministry and their power: ecological issues are represented as one element among others that should be taken into account, and which they had taken into account long before the creation of the environment ministry and which should not be examined without considering other issues (such as political or economic). It is not an issue in itself. These SRs of ecological issues bear the traces of the contentious relationships between old and new ministries. Identity stakes are at play when constructing SRs (Jodelet, 1989; Markova, 2007). Thus, SRT is not concerned with information-processing but with processes of meaning-making (Moscovici, 1984). Consequently, SRs have a symbolic function: "they are a medium for investing the world with *meaning*" (Jovchelovitch, 2001, p. 176) and they are more than a reproduction of reality (Moscovici, 1998; Jovchelovitch, 2001; Howarth, 2006b). This symbolic function explains why the same object can have different meanings for different peoples in different times and contexts (Jovchelovitch, 2001). It also underlines its holistic dimension, as the meaning of the part depends on the meaning of the whole (Moscovici, 1984, 2001).

Moreover, individuals belong to different groups following different projects at the same time. So, SRs are best represented by different triangles (ego-alter-object), or by different Toblerones, which can overlap (some discourses are shared by different groups), bump into each other and influence each other, forming a kind of wind rose. Thus, SRs are produced in a context in which different groups have different world views, different kinds of rationalities, and follow different projects. Consequently, SRs themselves feed on these different types of rationalities and knowledge and their simultaneous use refers to cognitive polyphasia (Provencher, 2011). SRs can therefore be analysed by considering their specific function and the specific context in which they emerged, instead of comparing them to scientific knowledge in the "right or wrong"

modus (Flick, 1998; Jesuino, 2008). Acknowledging their specific rationality consolidates the critical stance of SRT (Jovchelovitch, 2001, 2006).

In the model proposed by Bauer & Gaskell (2008), these different triangles are held together by a linking pin, the common reference to which all refer, and they form something like a wind rose. This linking pin is described as the constraint of reality (Bauer & Gaskell, 2008); we are tempted to compare it to *matter*. By representing, groups reconstruct this reality, reorganise matter, transform it and act in accordance with this social reality (e.g. in a previous example: by not drinking tap water). Thus, SRs constitute the reality (Moscovici, 1998; Jovchelovitch, 2001; Howarth, 2006b) and, as SRs can change, the constraint of reality evolves too.

This wind rose model (Figure 1) matches quite well the concept of the human history of nature. We can consider that nature is the result of, at least, two people concerned with *matter* and engaged in a project (time dimension). A section through this Toblerone at any time refers to a specific state of nature. However, this relationship with nature is also dependent on intergroup contexts and SRs have an identity function: they are created by a group in order to delimit the boundaries of the group (Markova, 2007). For example, Descola (2005) describes how groups tend to construct a relationship to nature that is as different as possible from that of their direct neighbour. Thus, their representations of nature distinguish them from each other, fulfilling an identity function. We illustrate this in Figure 1, adapted from Bauer and Gaskell (2008). We have added in italics the transposition of their model to the human history of nature.

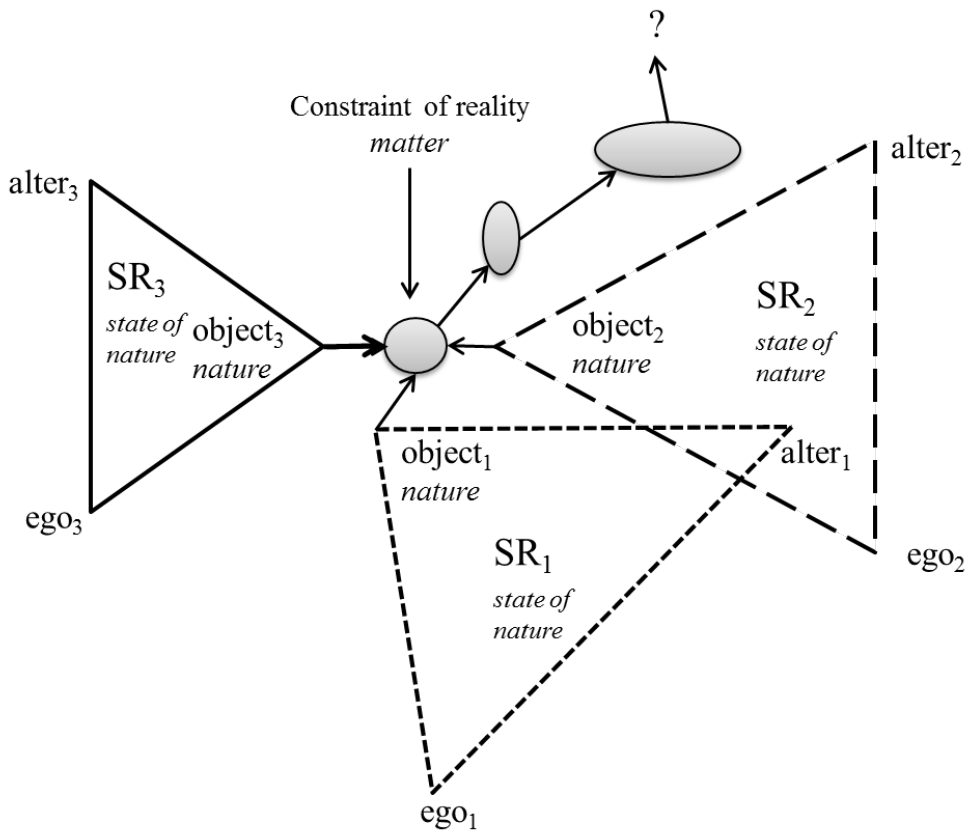

Figure 1 The wind rose model (Bauer & Gaskell, 2008) and its transposition to the human history of nature.

By bringing together SRT and the concept of the human history of nature, we have put forward the dialogical dimension (Markova, 2000, 2003, 2008) of both these concepts: our relationship to nature and SRs are the product of an ego-alter-object triad. The similarities between these notions give insight into the critical potential (Adams, 2014) of SRT when studying the ecological crisis. First, individuals are thinking and acting during interactions in a specific social context in which they create SRs. Thus, SRT overcomes the causal linearity in which social issues influence the individual and emphasises the social embeddedness of experience (Gervais & Jovchelovitch, 1999). Secondly, it invites the researcher to consider that social reality is constructed and transformed during these specific interactions, and that different

social groups following different projects construct different and competitive realities (Howarth, 2006b). It invites us to consider the categories that are meaning-making for common sense rather than imposing scientific categories to interpret this knowledge (e.g. Selge & Fischer, 2011). Thus, the nature to be protected can be different depending on time, social groups, and specific stakes. It enables to question through a holistic approach the existing understandings of reality and the apparent consensus that we are *shepherds* of Earth. Finally, SRs are created in a context in which identity stakes are at play and always involve conflict and cooperation. Objects of SRs are by essence under tension (Kalampalikis & Apostolidis, in press). Thus it allows an analysis of the forms of power and inequalities that are involved (Howarth, 2006b), in order to understand the relationship between change and stability (Batel & Devine-Wright, 2015).

HOW? OPERATIONALISING DIALOGICALITY THROUGH COMPARISON

Different methods can endorse this dialogical approach of SRT. However, comparisons are particularly thought-provoking and some consider that the specific features of SRs can only come to light in comparative research (Bauer, 2015). We will illustrate how comparison can operationalize the wind rose model (and its dialogical assumptions).

Comparing can be considered one basic principle of reasoning in social sciences and it played a central role for the founding fathers of sociology (Durkheim, Weber, Tocqueville, and Simmel). However, comparison can have different motives (De Verdale, Vigour & Le Bianic, 2012). It can be used as a strategy to promote a sense of sociological astonishment or in order to *denaturalise* the answer of one group (Vigour, 2005) i.e. to approach the human-nature relationship not as "natural" but as socially constructed. Through comparison, what seems

natural is questioned anew. The study by Moloney et al. (2014) compares the SRs of climate change from scientists, government employees and community members. Their results demonstrate that each group has different SRs of climate change, which represent the different projects in which the group is engaged: for example, government employees appear to be more concerned with the financial consequences. Castro (2015) develops the idea that the dialogical approach of SRT situates the meaning-making process in a culture (which invites us to consider the time dimension and the role of institutions) and in an interactional context (which invites the study of conflict and communication). Consequently, comparing different cultural contexts can highlight some of the processes of meaning-making that underpin SRs.

In order to illustrate how comparison can operationalise the wind rose model (i.e. the critical potential of SRT), we present the main results of a comparative study conducted in France and in Germany. These two countries share some similarities (they both are modern European industrial and capitalist democracies with comparable populations and economic structures). Nationhood was used as a variable in order to understand how different groups (with their specific history, culture, etc.) familiarize with the ecological crisis and how they give meaning to their ecological practices. The SRs were investigated through a research design combining different methods and applying the principles of triangulation (Flick, Foster & Caillaud, 2015): historical documents and analysis, a press analysis (N=250 articles published during the UN climate conference 2007 in daily newspapers), 10 focus groups and 41 individual interviews. The presentation of this research will follow the construction of the wind rose model (Bauer & Gaskell, 2008): i.e. starting from the ego-alter-object triad, passing through the Toblerone and ending on the more complex wind rose.

To begin, the comparative research design can be represented by two "ego-alter-object" triads, a French one and a German one. A press analysis illustrates how the UN conference about climate change is anchored in political and economic issues in France (with war metaphors) and in moral issues (associated with religious metaphors) in Germany (Caillaud, Kalampalikis & Flick, 2012). Similar differences are found in everyday knowledge about climate change (Caillaud & Flick, 2013) and in the way the French and Germans give meaning to their daily practices during focus groups (i.e. political engagement versus altruism, Caillaud & Kalampalikis, 2013). Thus ecological issues are anchored in quite different categories in both triads. None of these results is *natural*; it shows that the same phenomenon is represented in very different ways in two rather similar countries and that the same ecological practices refer to different motives.

However, in order to overcome a terse conclusion sounding like: "there are differences between these two countries", SRT invites us to consider that meaning-making takes place in a specific context and it does not make a clean break with previous representations. Thus, comparing the actual content of SRs in both countries (i.e. a synchronic approach) should be completed by a comparison of the processes France and Germany have been through (i.e. a diachronic analysis). This brings us to the Toblerone. Environmental organisations have flourished in both France and West Germany since the 1960s (in East Germany, such organisations were State-controlled until 1989). In Germany, organisations that defend local interests (*Bürgerinitiativen*) were grouped together around a federating ideological discourse (Jacquiot, 2007) centred on ethical reflections (Chibret, 1991). In France, by contrast, environmental organisations were drawn together by the May 1968 movement of political dissent. This difference in the destiny of environmental organisations in France and Germany

can be explained in various ways. Some theories lean towards an ancient heritage (Ferry, 1992): each country's relationship with nature is marked by quite different philosophical currents. In France, the Enlightenment opposed obscurantism and desacralised nature. Nature became measurable, understandable, etc. Opposed to this movement, the Romantics developed the idea that nature addresses human hearts, with the natural elements having symbolic meanings. Undoubtedly, these are two different ways of considering nature, which have left traces in the present (the French-style gardens or the wild public gardens in Germany). Thus, the differences obtained in the press analysis (a political anchoring in France and a moral one in Germany) become meaningful by adopting a diachronic perspective.

We now move from the Toblerone to the wind rose: the histories of France and Germany are not independent; they are not two parallel histories ignoring each other. On the contrary, they have a common history and are especially related to ecological issues. Identity stakes between the two countries have been in the foreground in conflicts about waste management (e.g. in the 1990s, Germany sent recycling waste to France, which appeared to be medical infected waste; the French media condemned Germany's hypocrisy as they advocate recycling and send dangerous waste to France), nuclear power, or in relation to nature generally (Eder, 2000; Keller, 1998). However, they are also engaged in common projects as European countries in climate change issues. Thus, France and Germany interact together on ecological topics. This is illustrated in the wind rose model by overlaps of triangles. Thus, the construction of SRs of ecological issues is the result of both a specific national history and different international interactions in which identity stakes are specifically at play. A comparison should therefore develop a diachronic approach encompassing interactions between the groups under study (see Werner & Zimmerman, 2006, for a similar proposal in comparative history). It supports some of

the main principles of SRT, operationalising the wind rose model: two triads with a temporal dimension, French and German, which can interact and cross each other, thus contributing to SRs. It also operationalises the idea that our relationship to nature depends on the relationship our neighbour has with nature. Ecological issues clearly played a significant role in constructing a positive national identity after World War 2 in Germany and in differentiating it from its European neighbours, specifically France (Eder, 2000; Rudolf, 1998). It is also noteworthy that the German Romantics were ignored for a long time and were rediscovered later (during international conflicts) to be used as an example of "pure German art" (Moisy, 1949).

This enables a better understanding of the way the French and Germans talk about each other in relation to ecological issues. In the French press, for example, the fight against climate change is interpreted in terms of a crusade when describing the German position (Caillaud, 2010), bringing together the war metaphor and the religious metaphor. Not only is climate change anchored differently in both countries, the discourse about the neighbour (associating war and religion) illustrates that these differences are conscious. Thus, by representing an ecological issue as climate change, France and Germany also differentiate themselves from each other and follow identity stakes. This became evident when analysing the French stereotype that "Germans are green" in French interviews (Caillaud, 2010). One French interviewee explained:

> "You can see that all the Northern countries are foremost, concerning citizenship, citizen civilisation. Collectivism is working … The obvious reason is ancestral, euh it is, the coldness constrains people to be together, and the further North you go, the colder it is and the more used they are, the more it is in their culture to act together. … If not we die. In the countries where it is warmer, this is not the case

and therefore euh, the more you go in Latin cultures the more relaxed, quiet it is, but the there are fewer civic aspects."

This stereotype of "green Germans" is explained by a north/south dichotomy maintaining a distance between both countries. This kind of stereotype also informs us about SRs of ecological issues: they appear as something boring, which necessitates rigour and forbids enjoying life. Thus, the French-German comparison was supplemented by analysing how the French and Germans talk about their neighbour in relation to ecology. This type of procedure was proposed by Gillespie (2008) under the terminology "alternative representations". In a comparative study, this procedure enables the researcher to provoke and analyse the interactions between both groups under comparison. Such tools are useful to understand the identity stakes that are at play in environmental issues and to identify the symbolic function of SRs. A similar result concerns the way the Scots and the English familiarise themselves with electricity network technologies (Devine-Wright & Devine-Wright, 2009). The electricity networks are represented as transgressing group boundaries and the Scots perceive as unjust that electricity produced in Scotland is exported to England. Thus, identity stakes between Scotland and England explain how both groups represent electricity networks.

DISCUSSION

In this article, we first outlined the shortcomings of some models usually referred to in the environmental field in social psychology. These models initiate practical questions, which lead to an epistemological change. The concept of the "human history of nature" overcomes the

human-nature dualism, and this epistemological change leads to new questions. Then, by outlining epistemological similarities between the human history of nature (Moscovici, 1968) and the wind rose model (Bauer & Gaskell, 2008; Bauer, 2015), SRT appears as a relevant theoretical proposition in order to embody a dialogical approach of the human/nature relationship and thus a critical approach (Adams, 2014). These epistemological and theoretical changes then need a coherent methodological approach. We chose to describe one: a comparative research design that endorses the different assumptions of the wind rose model. Our example indicates that the ecological crisis refers to different SRs in two groups (France and Germany). By outlining the identity stakes that are at play between both groups, it is possible to underline the symbolic function of these SRs and they appear as competitive realities (Howarth, 2006b). Thus, we confirm that SRT has the conceptual tools to engage in a critical approach (Jovchelovitch, 2001; Howarth, 2006b) and we propose a comparative research strategy that can provide empirical evidence.

Despite promising accounts, comparisons have some limitations and present some difficulties (Wagner, Hansen & Kronberger, 2014). For example, how can one be sure that the level of comparison (e.g. the national level) is relevant with regard to the object of representations, i.e. that the group is a social group with regard to the object (Markova, 2007)? Moreover, by adopting one level of comparison, we may overlook more relevant intergroup issues at play. Thus, comparison should be planned carefully by considering the groups being compared in their history and by leaving the door open for other intergroup issues. Finally, concerning cultural approaches, in their more radical versions, they endorse social determinism (and thus underestimate the role of individuals) and focus on stability rather than on social change. Sarrica, Brondi, Cottone & Mazzara (2016) underline that SRT can overcome these

limitations, by emphasising the role of communication and the meaning-making process as situated. Such a cultural approach not only enables a better understanding of the social construction of meaning, it also plays "a crucial role in governing the transition for the future" (Sarrica et al., 2016).

While comparisons can play a major role in operationalising the dialogicality of SRT, some other methodological strategies offer thought-provoking solutions. For example, focus groups seems particularly adapted to the study of SRs (Kalampalikis, 2004, 2011; Caillaud & Kalampalikis, 2013) as they allow observation of the ego-alter communicating together about an object (the focus of the discussion). They enable both the content and the processes of SRs to be approached (Barbour, 2008; Kidd & Parshall, 2000; Kitizinger, 1994). When it comes to the ecological crisis, focus groups are of benefit as individuals talk easily about it. However, one of the main contributions of this method is to highlight the group dynamics that underpin the construction and transformation of social representations. In this way, focus groups allow the study of how people give meaning to ecological issues (Wibeck, 2012), or how they collectively cope with threat (Caillaud, Bonnot, Ratiu, Krauth-Gruber, 2015). Markova et al. (2007) show how different levels of interactions can be analysed through focus groups. Themata are another relevant tool in order to embody the dialogicality of SRT (Liu, 2004; Smith & Joffe, 2012). This paper is also a first attempt to identify commonalities between SRT and the human history of nature, two fields of Moscovici's work rarely discussed together. Gervais (1997) is the only one (as far as we know) to refer to both concepts. However, a reflection about epistemological similarities remained to be developed. This reflection enlightens both SRT and human-nature relationships. The paper focuses on how the ecological crisis can be critically approached by SRT. However, SRT can also be developed through the study of human-nature relationships. As

proposed by Batel & Devine-Wright (2015), ecological issues can further our understanding of social change and resistance to change. Recent research (Mouro & Castro, 2010; Castro, 2012) has been concerned with legal innovations in the environmental field and the way they transform (or not) SRs. This programme of research outlines the relevance of SRT in understanding not only how scientific knowledge but also how legal innovations influence everyday knowledge and practices. It also challenges SRT by considering different sources of knowledge and different processes of social change (impelled by the state). It thus reinforces the idea that SRT enables an integrative approach by looking at the different kinds and sources of knowledge that constitute the different dimensions of SRs. The concept of the "human history of nature" also invites SRT to take seriously the fact that an outside, material world exists (Batel et al, 2016). Even if we transform it, we compose with matter (Jovchelovitch, 2001). This constraint of reality reinforces the tensions characterising the object of SRs (Kalampalikis & Apostolidis, in press): it adds a further point to the ego-alter-object triad. The ecological crisis also challenges the holistic dimension of SRT: if the meaning-making process is situated in a culture and an interactional context (Castro, 2015), we should adopt a holistic approach in order to understand the symbolic function of SRs. This, however, can appear quite daunting when confronting objects as diffuse as nature or the ecological crisis (e.g. the comparison between France and Germany reached back to the Enlightenment). SRT also has to develop propositions to face the complexity of objects. The role of themata as a patterned structure that generate SRs (Markova, 2003; Moscovici, 2001; Moscovici & Vignaux, 1994) probably constitutes a good solution in order to balance complexity with economy of explanation, and invariants with specificities, without opposing universalism and culturalism. Some parallels are worth outlining with the anthropological proposition of Descola (2005) when discussing how to overcome the nature/culture dualism.

Uzzell and Räthzel (2009) propose a *transformative psychology* to overcome the limitations of focusing on ahistorical- and individual-level variables explaining ecological behaviour. Indeed, these authors suggest tackling the social and cultural structures that support individual practices: e.g. if individuals have to take their car to go shopping in supermarkets because inner city shops are much more expensive or no longer exist, it is not relevant to change individuals' attitudes toward the impact of cars on the environment. Thus, it is important to examine how consumption processes are created and shaped by production processes and in political relationships. By supporting the idea that the relationship to nature is the result of a specific and historically situated process of human interactions with matter, we consider that SRT offers a theoretical framework to analyse production, consumption and political relationships. Combining these macro- and micro-levels of analysis is theoretically possible for SRT and constitutes an empirical challenge (Abreu Lopes & Gaskell, 2015).

To conclude, by adopting a dialogical approach, SRT questions the different meanings masked by a large consensus such as *we all are shepherds of our fate and of earth's fate.* This approach enables the researcher to ask new questions, turning away from the traditional attitude-behaviour gap, or from questions such as who is the most ecological? Who knows better? It invites us to ask how social groups decide what to protect in nature. What it means for them to protect nature. And why nature should be protected. This implies abandoning the reference to "scientific truth" (which changes too, as we have explained concerning ecology). This absence of a "truth" to which the researcher can refer implies that s/he adopts an "attitude towards the object of study which could be characterised as "live and let live": a disengaged observation of mentalities" (Bauer, 2015, p. 61). This posture may have something to do with melancholia, as the researcher is methodically disengaged, adopting a disinterested analysis. However, this kind

of melancholia does not suggest that our studies are without "relevance". On the contrary, this disengaged attitude can serve its audience (Bauer, 2015). For example, if two rather similar countries, like France and Germany, represent the same event in such different ways, it becomes understandable that international agreements are difficult to reach and it posits the necessity of engaging in a comprehensible dialogue. This disengaged attitude can seem paradoxical to the idea that SRT can endorse a critical approach and transform the social order (Howarth, 2006b). However, social representation is definitively "not a quiet thing" (Moscovici & Markova, 1998 in Howarth, 2006b): the "live and let live" attitude is probably a required condition to understand the different and competitive realities that are at play in order to engage in a critical approach.

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