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**New meanings for old habits? Representations of climate change in France and
Germany**

**De nouvelles significations pour d'anciennes habitudes? Représentations du change-
ment climatique en France et en Allemagne**

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Abstract

This paper aims to elucidate how global ecological problems (such as climate change) affect everyday knowledge and practices in different sociocultural contexts. A qualitative research design based on interviews and focus groups was applied in France and in Germany. Results show that 1) causes and consequences of climate change remain unfamiliar in both countries because of identity stakes (changes in nature will affect our culture) even if 2) in Germany risks are represented with a higher proximity. 3) Climate change and ecological practices are anchored in different categories in each country: moral categories in Germany, linked to a global interpretation of climate change; political categories in France, associated with a local interpretation of climate change. Finally, ecological practices embody the very tension between nature and culture and are a way to link past relationships to nature and a possible future society.

Key-words

Climate change, social representations, practices, anchoring, culture

Résumé

Cet article vise à comprendre comment les problèmes écologiques globaux (tels que le changement climatique) affectent notre savoir quotidien et nos pratiques dans différents contextes socioculturels. Une recherche qualitative menée à partir d'entretiens et de focus groupes a été réalisée en France et en Allemagne. Les résultats montrent que 1) en raison d'enjeux identitaires, les causes et les conséquences du changement climatique demeurent étranges dans les deux pays (les changements dans l'environnement naturel vont affecter notre culture) même si 2) en Allemagne, les risques sont représentés comme plus proches. 3) En fonction du contexte, le changement climatique et les pratiques écologiques viennent s'ancrer dans des catégories de pensée différentes: des catégories morales en Allemagne, à mettre en lien avec une lecture globale du changement climatique, et des catégories politiques en France, à mettre en lien avec une lecture plus localisée du changement climatique. Enfin, les pratiques écologiques incarnent la tension nature-culture et font le lien entre des rapports ancestraux à la nature et une possible future société.

Mots-Clefs

Changement climatique, représentations sociales, pratiques, ancrage, culture

Talking about the weather is as common as asking "how are you?". To qualify the weather as *strange for the season* became common too, since scientific experts proclaim climate change as being a major issue of our century. Therefore, when saying "*what a sunny day today*" we often add: "*it is unseasonably hot, isn't it*"? But does climate change elicit deeper reorganizations of our everyday life, our knowledge and our practices? In fact, science itself is *astonished* by the "discovery" of the role of human activity on climate changes. For example, Chakrabarty (2009) shows how the anthropogenic explanations of climate change alter the well-established dichotomy between "human history" and "natural history". The human becoming a geologic agent, human History is now concerned with nature. Also historical science must develop new thought categories able to support this relationship. But what are the consequences of climate change for everyday knowledge and practices? In this article we will analyze how everyday knowledge and practices face the idea of a global ecological problem in two sociocultural contexts, France and Germany.

Science, common sense and social representations approach

Weber and Stern (2011) suggest a number of explanations why there is no convergence in scientists' and nonscientists' understanding of climate change: it is intrinsically difficult to understand, personal experience can easily mislead, judgments are influenced by associative and affective processes, etc. Kempton (1997) highlighted various misconceptions in the way public views climate change. He concluded (p. 20): "human beings do not just passively receive new information. On the contrary, they actively fit that information into preexisting cultural models and concepts ... when it comes to new and complex problems such as global climate change, people often applies inappropriate models and thus draws invalid conclusions."

These brief quotes echo some old but current epistemological considerations. On one hand, psychologists are describing cognitive biases which determine individuals' reasoning. On the other, psychologists tend to take into account the cultural context and they describe how individuals "acquire" cultural models underpinning their knowledge. This reveals the difficulty in bringing together cognitive and social dimensions of knowledge, without considering culture as "an overlay on biologically determined human nature" (Bruner, 1990, p. 20). The difficulty to overcome this conception is often related to an individualistic approach of social psychology (Faucheux, 1976; Bruner, 1990; Greenwood, 2000). The social representations approach can overcome this problem and therefore offers new possibilities for considering public's understanding of climate change.

Since the very beginning (Moscovici, 1969), social representations approach is concerned with the way scientific knowledge is incorporated into everyday knowledge and practices (Nascimento-Schulze, 1999; Castro & Lima, 2001; Wagner & Kronberger, 2001; Green & Clémence, 2008; Jesuino, 2008). Social representations can be defined as a "form of knowledge, socially constructed and shared, which has practical aims. This form of knowledge constructs a common reality for a social group" (Jodelet, 1989, p. 53, our translation). They give rise to individual everyday knowledge (Flick, 1998). Social representations are produced by members of a group through social practices and during formal and informal communication processes. In our modern society, the media play an important role, which was highlighted since the first development of the social representations approach (Moscovici, 1969). Even if the content of the media is not necessarily equivalent to

that of the thoughts of individuals (Joffe & Haarhof, 2002), their role in the formation and transformation of social representations should not be neglected. For example, Bauer (2005) shows how the red/green dichotomy that structures media discourse around genetically modified organisms reappears not only in the discourse of those who read the press but also in the discourse of non-readers, illustrating the importance of media discourse. However, media discourse is also manufactured and modeled by the socio-cultural context. Additionally, social representations are also constructed through informal communications (for example group interactions; Huguet, Latané, & Bourgeois, 1998) and therefore depend, to a large extent, on the context in which they emerge.

Finally, when people act, they reconstruct their reality and represent it *in the same way* as when they talk, because their actions result from intentions (Moscovici, 2001). Intention can be defined as the meaning people attribute to their action and the aims they follow for the future (Cranach, Kalbermatte, Indermühle, & Gugler, 1982). However, it is not an individual psychological state. On the contrary, intention should be defined as a "social understanding of the human being" (Kozakaï, 2008, p. 137, our translation).

Also, the theory of social representations is not about folk thinkers but about folk thinking (Moscovici, 2001). These representations neither depend on the individual alone nor are they prescribed to them. They are constructed in a dialogical way in the ego-alter-object triad (Markova, 2008) in various processes of social influence. In sum, representations are seen both as articulated to the local conditions of their production and as global meaning systems. So "the concept is well positioned for entering a discussion that is becoming more central in the environmental field—the articulation of the global and the local" (Castro, 2006, p. 257).

A function of social representations is to familiarize with novelty (for example new scientific concepts relevant to society). Two major processes intervene in tandem in the construction of social representation: anchoring and objectification. Both refer at the same time to cognitive and social processes. Anchoring means that parental relations are weaved between the new object and the already existing knowledge that is culturally shared (Kalampalikis & Haas, 2008). The new phenomenon is integrated in pre-existing categories. Objectification is "to turn something abstract into something almost concrete, to transfer what is in the mind to something existing in the physical world" (Moscovici, 1984b, p. 29). For example, biotechnology is anchored in illness categories and is objectified through the image of AIDS (Castro & Gomes, 2005).

To summarize, everyday knowledge is different from scientific knowledge. It is governed by its own logics, by criteria of social efficiency and evidence (Wagner, 2007). So "explaining the birth and communication of representations as an instance of information processing would leave the essential points out ... because society is not a source of information but of meaning, and also because factuality is never at the core of the exchanges between members of society" (Moscovici, 1984a, p. 963). This makes a huge difference to risks perception models which focus on individualistic responses to risks and consider the gap between scientific and common sense knowledge as an evidence of cognitive biases (Joffe, 1999).

The French/German comparison

Social representations are produced, shared and transformed by social groups through both cognitive and social processes. Hence, the sociocultural context should be considered as a relevant variable. The national comparison can be used to highlight these aspects. France and Germany were selected for this study because they share a number of similarities: they are both modern European industrial and capitalist countries and they have comparable populations and economic structures. However, recent studies show quantitative differences between French and German attitudes and environmental behaviors (see Eurobarometer, 2002, Special Eurobarometer, 2005). More specifically, they show important differences regarding their interpretation of environmental issues.

Concerning climate change, international studies (Leiserowitz, 2007; Special Eurobarometer, 2011) outline similarities in the perceived seriousness of global warming in both countries. Moreover, in 1999, only 50% of French and German respondents were convinced that climate change is caused by human activities. Despite some similarities, differences should be noticed, for example, in the way German and French participants attribute responsibilities: Germany is the European country where most respondents emphasize that industries and companies are responsible to adapt to climate change. German people most consider that citizens are doing enough against climate change (Kuckartz, 2009). French people feel more concerned by human health impacts due to climate change whereas Germans are more concerned by the combination of all consequences of climate change (for humans, loss of species, sea level rise...). Important differences concerning behaviors and intentions emerge in these surveys, too. In 2008, on each ecological behavior, German people obtain a better score than the global European average (Kuckartz, 2009). According to Leiserowitz (2007), the willingness to pay 10% more for fuel to protect the environment is more than 75% in Germany and less than 50% in France. In the same way, 63% of German respondents said that they had acted against climate change during the last 6 months, whereas only 51% of French did. The type of ecological practices also varied between the two countries. Finally, the Special Eurobarometer (2011) highlights that numerous respondents do not know if they act against climate change. Also, they do not link their daily ecological practices to climate change issues.

It is useful to turn to the history of each country and to distinguish the philosophical ideas associated with the *age of enlightenment* in France and the *romantics* of Germany, which led to the development of different relationships to nature. Despite seemingly stereotypical, this perspective is relevant because it brings to light elements of the past that are likely to be objects of multiple uses in the present (Haas & Jodelet, 1999). For example, Eder (2000) considers that environmental issues could constitute a federating objective for post-war Germany.

Beyond the stereotypical yet nonetheless relevant differences, French and German environmental organizations also have had different historical development (Chibret, 1991). In Germany, organizations that defend local interests (*Bürgerinitiativen*) were established around a common and federating ideological discourse (Jacquiot, 2007) centered on ethical reflections. In France, by contrast, environmental organizations were drawn together by the May 1968 movement of political dissent. However, the green movement in France is divided as some members think that environmental debates should remain outside all political arenas

and actions should be based on science only. Moreover sociological studies have also highlighted important differences, both in the way eco-counselors perceive their role (Rudolf, 1998) and in the heart of public and political discourse on certain environmental questions such as waste (Keller, 1998).

Finally, the distinctive ways of how the Chernobyl accident was perceived in each country are relevant. For the first time, an ecological disaster had global consequences and highlighted that we all share the same planet. Indeed, this accident can be considered as one of the main event structuring green movements and contributed to ensure the widespread of their ideas. However, reactions in the two countries were different (Jacquemin, 1998; Dersee, 2003): whereas the French government reassured the population by claiming that the cloud did not reach France, in West-Germany protection measures were adopted by the government (vegetables should not be eaten, children should not play in the sand, etc). In East-Germany, the socialist government did not allow any communication about this accident and only a few lines were published in daily papers. Consequently, most of the population did not know about Chernobyl (Pflugbeil, 2003).

In terms of the social representations of the environment, mass communication holds a particularly important place. Individuals are often aware of environmental problems only through the media and are not directly confronted with global problems such as climate change (Hansen, 1991). In a previous paper (Caillaud, Kalampalakis, & Flick, 2012), we have analyzed the way in which the most widely-read daily papers in France and in Germany report on a single event: the United Nations climate conference held in Bali in 2007. Results outlined an important political discourse in Germany and a socioeconomic one in France. However, only a few of these articles refer to causes and/or consequences of climate change (19% in French and 20% in Germany). The daily papers present the consequences as examples for the “*lotto of global warming*” (11/12, *Le Monde*). Fear is evoked, too: “*humanity on the verge of precipice*” (12/12, *Frankfurter Rundschau*). But no causal explanations are given. Nevertheless, results highlighted that risks appear closer in Germany than in France: in Germany, media refers to past and future consequences of climate change in the country and evoke cultural changes due to climate change (way of life, dressing...).

These differences led us to investigate how climate change is represented in two overall quite similar countries and how ecological practices become meaningful. The present paper aims to understand how, in both contexts, causes and consequences of climate change are explained by groups and individuals, how the global aspects of climate change echo in each country and how ecological practices in general are considered. More specifically, we will focus on anchoring and objectification processes. The content of the discourse principally will inform us about objectification whereas the categories used to talk about climate change and the organization of discourse (type of knowledge, causal explanations...) will inform us about anchoring.

Numerous studies focused on the public's views of climate change in different countries (Lorenzoni, Leiserowitz, De Franca, Poortinga, & Pidgeon, 2006; Leiserowitz, 2007; Battaglini, Barbeau, Bindi, & Badeck, 2009; Reynolds, Bostrom, Read, & Morgan 2010) and some of them were realized in France and/or in Germany. However, as far as we know, this study is a first attempt to understand the sociocultural dimensions underpinning public understanding of climate change by focusing on meaning production rather than on information exchange.

Method

We conducted a broader study in France and Germany about the social representations of ecological problems and practices based on a triangulated qualitative research design which included media analysis, interviews and focus groups. Climate change was used as a cross-example because it is a typical global ecological problem that has local causes and consequences. In this article, we are concerned with results from interviews and focus groups. First, we present each method used and the sampling strategies. In a second part, we present an overview of our methodological design by explaining the triangulation perspective and the analyses conducted.

Accessing everyday knowledge about climate change

Eighteen episodic interviews (Flick, 2009) were conducted in France and 23 in Germany (with half of the Germans having grown up in East-Germany and the other half in West-Germany). These interviews “seek to obtain descriptions of the interviewees’ lived world (i.e., their everyday knowledge and practices) with respect to interpretation of the meaning of the described phenomena” (Kvale, 2008, p. 11). The general theme of these interviews was “ecological problems” but here we will report only the results related to climate change and to everyday practices.

Concerning climate change, at the beginning, interviewees were asked to explain what they see as causes and consequences of climate change. One of the last questions was a narrative question: they were asked to tell how they think climate change will evolve. The answers to this question are therefore imaginations about the future (what they imagine the future will be like). These questions deal with two different forms of everyday knowledge, a semantic one and a narrative one, and they were included to improve the diversity of data (Flick, 2007a).

Accessing informal discussions about climate change

Ten Focus groups with 4 to 5 participants each were conducted in France and Germany. Different tasks were submitted to the participants. Once the group finished discussing about nature, we asked participants to discuss the green-house gas production. To do this, a world map with the countries producing the most green-house gas was presented. Different questions were used to lead and moderate the group discussion: *what do you feel astonished about? and why? What did you expect? In your opinion, what are the reasons for the differences between countries? According to you, what are the causes of climate change? What are the consequences? What are the solutions?*

Discourse about everyday practices

Both in the episodic interviews and in the focus groups, interviewees were invited to talk about their everyday practices. Our attention focuses not in effective behaviors but on the meaning people attribute to their practices, on the intentions their actions result from. This structured the way people were invited to talk about everyday practices.

First, during the interviews, French and Germans were asked if they have ecological practices and they were invited to describe them. Moreover they were asked to tell how they

began to act pro-environmentally. These narratives are a reconstruction of the past. Therefore, we combined different questions to enhance our understanding of everyday practices.

In the focus groups, after the group discussed the map a task related to everyday practices was proposed. Participants were asked to list their ecological practices and to debate about their efficiency. This method and the analyses proposed lead to relevant results to understand the social processes that underpin the meaning attributed to ecological practices (see Caillaud & Kalampalikis, 2013). However, in this article, we will focus more on the content than on the processes related to this meaning-making.

Sampling strategies

Purposive sampling was applied for selecting interview and focus group participants. Its logic and power “lie in selecting information-rich cases for in depth study” (Patton, 2002, p. 230). This is quite different from a random sampling aiming at statistical generalization. We included cases with a maximum variation, applying the logic that “any common patterns that emerge from great variation are of particular interest and value in capturing the core experiences and central, shared dimensions” of a phenomenon (Patton, 2002, p. 235). Age (Schuster, 2003) and professional area of potential participants (De Haan & Kuckartz, 1996) were relevant dimensions for our sampling. For example, people from the medical field are expected to be more aware of health consequences related to the environment. Moreover, we included participants aged between 28 and 40. Indeed, studies have shown that, within this age range relations to nature (and to protecting nature) are heterogeneous and that the gap between attitudes and behaviors is the widest (Schuster, 2003). Our aim was not to test hypotheses related to these variables but to ensure enough diversity in opinions related to environmental protection (Ritchie, Lewis, & Elan, 2003). None of the participants was actively engaged in an ecological group as we wanted to exclude exceptional cases. Only a few of them had children. For the Germans, we took into account where they had been raised (half in East Germany and half in West Germany).

The focus groups were composed of participants who previously took part in an interview (17 participants) and by participants who did not. However, focus group participants were not asked to take part in an interview after the group discussion, as we wanted to avoid that during the interview they talk about the previous group discussion. Finally, the codes used for quoting participants are presented in Table 1.

Table 1 around here

Triangulation and analyses of the different data

Social representations are both the product of social influence and of individual experiences. Consequently, they are a form of knowledge that should be accessed by taking into account the context and by analyzing their different aspects. The methods used in the present study refer to these different aspects: everyday knowledge, social interactions and everyday practices. Figure 1 summarizes the different aspects of social reality under study, and recalls the methods used. However, we have to keep in mind that social reality is more complex than this figure unfortunately evokes. The different aspects under study are highly

interrelated. However, in a first step, we planned different methods to put to light these different aspects. Then, in a second step the results of each method are brought together.

Figure 1 around here

Also, triangulation of methods was not used as a strategy of validity but as a strategy of quality (Flick, 1992, 2007b) by employing an extended range of methods and perspectives on the issue under study. By developing different contexts of data production, triangulation can highlight these different aspects of social representations. So, the aim of triangulation is not to confirm the results from one method by comparing them to the results of another. Results should be interpreted in light of the context of data production: if data diverge, then the differences should be explained by referring to the context. Moreover results from one method are not more “right” than those from another, both outlining different aspects in the social representations. In this sense, triangulation is used to improve the quality of the research.

Interviews and focus groups were audio-recorded and transcribed. The analysis was conducted by following the procedure initially proposed by Strauss (1987) and adapted by Flick (1996) to social representations. First, a stage of intensive reading allowed us to develop codes (by using themes, but also lexical forms, syntax) for each case (an interview or a focus group). Then, we compare the different cases, i.e., compare the codes, to obtain more general categories, and we finally cross these categories to obtain patterns of answers by taking into account the nationhood. Despite this general principle, focus groups were coded in an iterative process, by combining the content and the interactions into a dialogical unit (Caillaud & Kalampaliki, 2013). This allows exploiting the full potentials of focus groups (Kitzinger, 1994).

The results presentation will follow the methodological design proposed: we will first present the data about everyday knowledge (both semantic knowledge and narratives). Then we will turn to social interactions and analyse the way groups debate about climate change. In the last section of the results, we will present the data referring to everyday practices (from interviews and from focus groups). Finally, in the discussion, we will cross the results from the different aspects of social representations to benefit from the triangulation perspective.

Results

Everyday knowledge about causes and consequences

Semantic knowledge

When interviewees are asked for causes and consequences of climate change, they first say that they lack knowledge:

Madame F7: and now there is the point where we are reaching the limit of my reasoning, I am not able to give causes but I suppose that they are plural

However, after this first reaction, interviewees mentioned a large variety of causes and consequences. Table 2 presents an overview of the notions as they are used by interviewees themselves. Causes of climate change are of two kinds: some clearly refer to biological

knowledge (e.g. CO₂, natural climate variability, air pollution) whereas others refer to socioeconomic discourse (e.g. consumer society, economic reasons). Other explanations could be linked to both kinds of discourse (e.g. demographic increase, industry, farming). For the consequences, interviewees often refer to “global warming”, “rising sea levels” and “decrease in snow cover and sea ice”. French interviewees also refer to consequences for the ecosystem. However, this category is present in the German narratives to the same degrees. As a conclusion, no important differences are observed in the categories used by the interviewees themselves when they talk about climate change. However, we can move to the specific forms of logic and knowledge used to link causes and consequences (see Table 3). Some differences emerge between both countries. In fact, the German interviewees used more biological forms of causal explanations (sometimes linked to technology):

Herr O18 : well causes are simply the burning of fossil fuels. Coal oil gas etc. And so CO₂ arrives in the atmosphere or more exactly the CO₂ concentration grows, and hmm this, causes a decrease of the sun light reflection, it absorbs the heat on earth and therefore the earth is becoming warmer.

Tables 2 and 3 around here

In opposition among the French, interviewees employ more often a political or economic related reasoning:

Monsieur F4: yeah causes are human activity. In fact it is the dev the economic growth the cause. ... We are going to talk about economic decline (he is laughing). The cause is because inevitably when there is a human activity hmm so as it is imagined presently hmm... well it gives CO₂ out.

As a conclusion, interviewees in both countries refer to similar and well-known notions when talking about causes and consequences of climate change. But the level of explanation they choose to articulate these notions depends on the country. Some naïve explanation of climate change (category "contact") was found too in both countries:

Herr O19: because people always switch the heating on 5 everywhere, here in the house corridor; just near the door they switch it on. They are going through the corridor maybe 3 seconds and want it absolutely to be warm. This I don't know I think it is not necessary and I switch it off everywhere (...) I just think about, when we imagine what is going out... in the fresh air, we open the door and then air becomes warmer too, again climate change.

Here, climate change is a consequence of the contact between warm air produced by the heating and cold natural air. This refers to a kind of magic thought (Moscovici, 1992) which was sometimes associated to biological or economic reasoning. In the same way, 14 interviewees confused climate change and the ozone hole with the idea that CO₂ attacks the ozone layer (Herr O23).

Table 4 around here

Narratives

Results are shown in Table 4, 7 interviewees indicated they could not answer the question about the future of climate change. The French interviewees talked more than the German about society or mentalities changes. Moreover, only French people imagine a dictatorship as a possible issue:

Monsieur F5: will the actual system explode hmm... and a new civilization will emerge, an alternative one I hope so, but I have doubts... will the actual system explode on a political level so dramatically that we won't be able to ask ourselves about because they will be a lot of problems with totalitarian, that will probably occur.

Another relevant difference is the tense of the narratives. In fact, German interviewees more often use the present to speak about the future:

Herr W9: I have the feeling that it is already warmer. Most of the people I know have the same feeling yeah. So it is really the fact. [and why do you have this feeling ?] We have less snow, less snow in winter. That's real. It's not so long ago, I am not so old, I really feel it.

The present tense is used because interviewees already perceive a change in their environment. This is not the case in France.

Beyond these differences, when interviewees were asked to say how they imagine climate change will evolve, they describe changes in the environment: a different climate, spaces which disappear because of rising sea levels, climatic disasters, etc. However, the transformation of the environment was perceived as a shifting of climatic zones:

Herr O21: a global warming of the environment which causes a shifting of climate zones

This shifting has concrete consequences on the fauna and flora, and on our local environment:

Monsieur F5: they predict an Algerian climate in 40 years in Lyon. Can you imagine that?... 40 years it is tomorrow ... Algerian climate, all the city must be planned anew, all has to be reconstructed ... Even the Tsetse fly is coming in the Alps

Also, the changes described by interviewees in their narratives refer to a threatening *Other* coming to us.

Social interactions about climate change

Concerning the consequences of climate change, it became very clear in the focus groups, although it was implicit in the interviews, that climate change brings cultural identity stakes into play. In a French focus group (FG F2), participants imagined what will happen with wine:

Madame F22: I heard that in the South of England they begin to cultivate wine

Madame F12: at the present time?

Madame F22: yes, of course they are happy they can do English wine

Monsieur F14: Ohlalala beware

Madame F3: wine with mint (she is laughing)

Monsieur F14: (he is laughing) I had the same idea (they are all laughing)

Madame F22: they will put us mint in it

Madame F₃: green peas mint

We should note that references to French wine being produced elsewhere were abundant in our data, even in the German corpus. It outlines its symbolic aspect of French culture. This image, wine with mint and green peas, outlines some stakes of climate change that are quite important: this natural product (wine) will become impure, unnatural by being produced in another culture.

The same folk conceptions about climate change and air pollution were found in the focus groups: causes and consequences evoked are quite similar. So, we will focus now on the elements that are new or different from the interview results (see Table 5).

Table 5 around here

First, it is interesting to note that in France half of the groups outlined explicitly their lack of knowledge whereas in Germany most of the groups criticized the document and therefore present themselves as “experts”:

FGD5 HerrW₂₄: yes but Brazil should probably appear here. Because they are no more far away from France or England.

HerrW₂₅: yes it's possible well,

HerrW₂₄: I don't know why they are missing here now, they are not far away with their greenhouse gas production.

HerrW₂₆: indeed in South-America and in Africa we should have an indication too, even if they are not in the Top 10 but only to have a reference such information will be necessary only because it is a global problem.

In the same way, it appears that Germans felt more implicated by the discussion: they more often used the term “we” to refer to Germany or to Europe. This identification (see Table 5) with relevant actors of climate change also echoes how groups explain the evolution of greenhouse gas production of their country. Concrete explanations are given in German groups in contrast to more abstract explanations in France. By explaining the German percentage, sometimes they refer to the decline of URSS, sometimes they refer to practices that have changed:

FGD4: Frau W₁₁: Then we are very good with our minus 18%

Frau O₁₃: we really lost I mean we are doing a lot for

Frau W₁₁: yes and how no, but it is nice to see a result

Moderator: What do you mean with „doing a lot for“?

Frau O₁₃: yes all these zones, in the city without car for example and then

Herr W₂₈: Wind energy

Frau W₂₇: Solar energy

Frau O₁₃: yes we have a gas car

Despite these national differences, one pattern emerges from the way the groups compared the greenhouse gas production in different countries. In fact the groups went through the same process.¹ When they discovered the map, they first compared the greenhouse gas production by referring to the surface of the country. This first explanation

¹ some German groups did not go through the first step (see Table 5)

was then abandoned and the group turned to a possible explanation referring to the number of inhabitants. Then, they observed that this explanation did not fit well with the map and turned to an explanation based on the country's development level: the more a country is developed, the more it produces greenhouse gases. The excerpt below illustrates this pattern:

*FG F1 Monsieur F₁: You see when you compare the surface, when you compare Russia and the United States, when you do a ratio with the surface hmm, which represents
Monsieur F₂₁: I think it has nothing to do with the surface, it is especially the number of inhabitants I suppose... yeah I think, it's not because of three persons at Vladivostok...
Madame F₇: yeah but it is also factories isn't it
Monsieur F₂₁: yeah but factories you could have in Japan for example the country is very little, and there are not very far away from Russia, and I don't know, the surface is a hundred times smaller. I think we have to compare by taking into account the inhabitants*

However this explanation (level of development) is abandoned too, when the groups observe that it does not fit well and another hypothesis is imagined:

*FG D6 Frau W₂₉: We hear that in the news too, that the USA contributes a lot with their important greenhouse gas production
Frau O₃₀: I think they don't really consider the environment
Frau O₃₁: we can see that also by the packaging they have*

Therefore, all the groups went through this process and arrived to the conclusion that greenhouse gas production in each country can be explained by the “mentality” attached to nationality. This pattern (from the surface to the mentality) outlines that nationhood still is a relevant category to think about climate change, even if it is a global problem. However, at this stage, some differences appear in the way French and German groups debated. In fact, we could observe that the majority of the German groups refer to the idea that greenhouse gas production is often relocated:

*FGD2: Herr W₃₂: You see the problem is also that China is producing more and more what is consumed in other countries therefore it is too easy to say, the Chinese are bad because they produce greenhouse gas, and anywhere it's always occidental firms who construct their factories there and who are responsible for constructing environmental friendly factories or not
Herr W₈: and it is also very sad well labor laws are bad and so on and so forth*

In the same way, half of German groups went beyond this national approach of climate change and proposed to consider the global evolution of greenhouse gas production:

FGD6: Frau W₃₃: It's very interesting that only a few countries succeed to reduce their CO₂, but if we compare now, if you put together what was reduced and what is produced more, this is all, for nothing (she is laughing) well you can say with some pride we did it here Germany minus we did it yeah very nice but, China produced more, it's a matter I mean it outlines very good that it is a global problem and therefore the solution could only be global.

Thus for these groups, national categories were not relevant anymore when discussing causes of climate change. This global vision opens the debate on a moral issue related to climate change: the difference between poor and rich countries and egalitarian aspects.

FGD2: HerrW32: so you are saying that Chinese should now have the same right to produce pro individual CO2 as much as in Germany, maybe ok, look at that ... we have to reduce our greenhouse gas production, the greenhouse gas effect exist, the ozone hole, etc.

Table 6 summarizes the main results related to causes and consequences of climate change in both countries.

Table 6 around here

Everyday practices

Discourse about practices

First of all, we can notice that practices reported by the French and the Germans during the interview are different (see Table 7). French reported more often than Germans to recycle their waste, to reduce their water consumption, and their consumption in general and to eat organic. On the contrary, German interviewees reported more often to reduce their energy consumption and to use alternative transports.

Table 7 around here

The practices reported and described by the individuals and the groups were not only related to climate change. But most ecological practices share the same characteristic: they are useful only if a lot of people act in the same way. As climate change, they embody the very paradox between the local and the global. The interviewees (during interviews and focus groups) were aware about this paradox:

Madame F10 : Well to take the public transportation, it's sure that individually... finally whom I am in the streetcar or in my car, if I am alone finally it makes no real difference, later it is collectively that this activity makes sense, whether it is the streetcar whether or sort out the garbage.

Nevertheless, people are attached to their practices. Which role do they have then?

Despite differences in reported practices, the narratives about practices (how people began to act pro-environmentally) are similar in both countries (second part of Table 7). In fact, most interviewees refer to the obviousness of these practices (Frau O₁₇: *it's like doing the housework*). In Germany, interviewees often tell that they are inherited from their parents. In France, they result from a continuous reflection or from a child's word. New practices are then integrated in their everyday life when new information arrives.

Frau W₆: I learned that from my parents. Deposit bottles, paper this is all my parents, there are not things I do consciously but when you hear something new, when you learn that something can be dangerous ok you do that also but, in fact hum this concept recycling my parents knew that already from their parents.

Question: Do you think that your practices are efficient?

Monsieur F₄: No but they are intelligent. I mean... I don't know if they are efficient, I suppose they are but I don't know. And hum... why I think they are intelligent... yeah

because they are like reflexes from home 20 years ago, reflexes linked to practices which were century-old

Therefore, the habits of the past function as a guarantee for the legitimacy of ecological practices.

Evaluation of the efficiency of ecological practices

A detailed analysis of the discourse about practices in focus groups was proposed in a previous paper (Caillaud & Kalampalikis, 2013). However, it seems important to recall here the main results. First of all, the analysis lets appear that the group (a simple majority) plays an important role when the efficiency of practices are called into question. No scientific answer is relevant for the participants, and they turn to another kind of legitimacy: that of the actual group.

Despite this general dynamic, the meaning French and Germans attribute to their practices is different. In Germany, ecological practices take signification in the opposition between egoistic versus altruistic motives and practices are evaluated on a moral level. German groups developed the idea that ecological practices are better for the *others* but have negative consequences for themselves (less comfort for example).

FG D1 Frau W33: because when I go shopping I can't carry it all easy, theoretically we don't need a car, first there is public transport, and then there is the question do we need it or do we not, or is it actually, I know that for me, in the end, it's only more comfortable
Frau O34: I wouldn't have a car if I didn't have children
FrauO35: that's what I wanted to say

In France, the opposition liberty/obligation structures the discourse. Ecological practices embody *liberty* because they are a way to resist to the socio-economical system perceived as a constraint. Also, becoming aware about the limit of ecological practices, interviewees anchor them in moral or socio-economical categories and give them another meaning than protecting nature.

FG F2Madame F2: so it's what we also said about guilt when you use how do you live then, and how do you do to say ok if I have to fly for my job because I must go to Finland for example, yeah I go ok I know that I'm doing something wrong but we must live too we can't cut ourselves off from the rest of the world I don't really want to go back 150 years earlier so that I stay at home and take care of the children
Madame F22: so we turn back to a society that must change as you said

Discussion

We can now bring together the results from the different contexts of data production and draw some general conclusions. First, our analysis highlights that the same concepts and notions are used in both countries to talk about climate change. Thus, climate change is objectified in the same way (by the use of images like industry pollution for example). Lorenzoni et al. (2006) showed too that British and American publics used many of the same concepts regarding climate change. However, French and German interviewees used them to serve different kinds of explanations and of logics, referring to different categories of anchoring. In Germany, participants link causes and consequences by using biological knowledge and describe actual changes in their environment. In contrast, French participants

use more economic and political explanations of climate change and refer more to future changes in mentalities. Moreover, the analysis of narratives showed that climate change is perceived as a closer threat in Germany than in France.

In face-to-face interviews, the Germans outline their lack of knowledge as often as in France. But when they are with others (in focus groups) they do not; they identify themselves with greenhouse gas producers, and refer to more concrete reasons to explain the variability of CO₂ than in France. So climate change is a theme Germans think they have to know how to discuss; whereas in France it is more acceptable not to know about this phenomenon.

The focus groups outline that despite the global aspect of climate change, discussions about greenhouse gas production still refer to national categories. Of course, the map enforced this categorization, but it stems from a newspaper participants potentially read. In addition, thinking about climate change in national boundaries echoes other social representations of global ecological issues (Selge & Fischer, 2011). However, interviewees feel that these categories are not sufficient anymore for understanding the problems. German groups adopt a more global reading of the map and use the rich vs. poor categorization for anchoring the discussion. This was associated to a moral evaluation of climate change.

The history of green movements can explain some of the reported differences. The greater perceived proximity of risks in Germany can be related to the way each country coped with Chernobyl, probably the most important moment in the green movement. The link between global and local aspects of climate change in Germany also echoes the way environmental organizations evolved and anchored their discourse in ethical reflection. In France, the political discourse about climate change echoes also the history of green movement (drawn together by the May 1968 movement). It is quite surprising that we did not observe a greater concern with climate change in France. Indeed, the heat wave 2003 had huge consequences specifically in France (with 150% excess deaths in Paris for example). But it seems that attenuation of risks still predominates in the French context (Poumadère, Mays, , Le Mer, & Blong, 2005).

In both countries different mechanisms (like the ozone hole and climate change) are still confused (Kempton, 1997; Reynolds et al., 2010; Weber & Stern, 2011) and our results furnish evidence that magic thinking underpinned the way people represent climate change. Causes of climate change appear obvious; quite often interviewees rely on naïve conceptions for explaining them. On the contrary, consequences are presented as whimsical and our future environment remains strange. Is this a paradox for social representations whose aim is to familiarize with novel objects? This result confirms the proposition that sometimes processes of social representations guarantee the non-familiar and ascertain that it remains strange (Kalampalakis & Haas, 2008). This very paradox – to familiarize with novelty by ascertaining strangeness – makes sense when considering society as a source of meaning and not of information (Moscovici, 1984a). In fact, identity stakes that are involved with climate change became explicit in our data. Therefore, climate change remains strange because it is a change in the natural environment which will cause reorganizations in the culture (new buildings, new species, new farming etc.) and consequently in the identity. Different studies support that pollution calls identity stakes into play (Bonaiuto, Breakwell, & Cano, 1996; Gervais, 1997). Moreover, if our (cultural) identity can be threaten by a change in nature this means that climate change calls into question the dualism nature vs. culture.

In this specific context, the results about everyday practices can further be interpreted. First of all, interviewees and participants of focus groups noticed the very paradox of ecological practices: they are only efficient if everybody acts in the same way. To face this uncertainty of their efficiency, participants in focus groups use the legitimacy of the majority group. Ecological practices are then discussed in France on a sociopolitical level and in Germany on a moral level, echoing results evoked on media coverage of the climate conference. It also furnished more evidence that ecological practices follow different aims (Milfont, Duckitt, & Cameron, 2006; Lindenberg & Steg, 2007). In interviews, ecological practices were presented as self-evident. As they are linked to the past or to common sense, they have legitimacy per se. Despite the different attributed meanings depending on the country, the practices have different functions according to the temporal perspective adopted: they are a way to maintain *past* relationships with nature and, at the same time, they seek to change the society into a better one for the *future*. It seems that when the group can furnish legitimacy to these practices (during focus groups), a projection in the future is possible. In interviews, when the group is absent, interviewees turn to another temporal perspective and the practices are attached to the past. Also, in some way, ecological practices embody the tension between nature and culture by linking past and future perspectives, by linking old habits to a future society.

Of course, this research has some limitations. For instance, our results are not exhaustive. Moreover, this study did not seek generalization of the results relying on statistical evidence. The aim of this paper was to outline some processes of the social representations of climate change and to highlight the role of culture. It offers insights into the complex processes related to public understanding of climate change and how it affects everyday knowledge and practices.

Nevertheless, these results outline some promising areas for further research concerning our relationship to nature and how it is transformed when everyday knowledge familiarizes with global ecological problems like climate change. Traditional categories of knowledge are called into question (national boundaries, nature vs. culture) and identity stakes come into play. Moreover, ecological practices appear as quite complex and play probably a bigger role than attitude-behaviour studies let us suppose. The tension between past relation to nature and a possible future society is embodied in everyday practices, and old habits acquire new meanings. The analysis of social thinking – more than the analysis of social thinkers – enhances the understanding of deeper transformations of everyday knowledge and practices. The very differences between France and Germany outline the role of the sociocultural context and should invite social psychologists to develop a historical perspective on its objects to improve the analysis of the challenges science and technology represents for the future.

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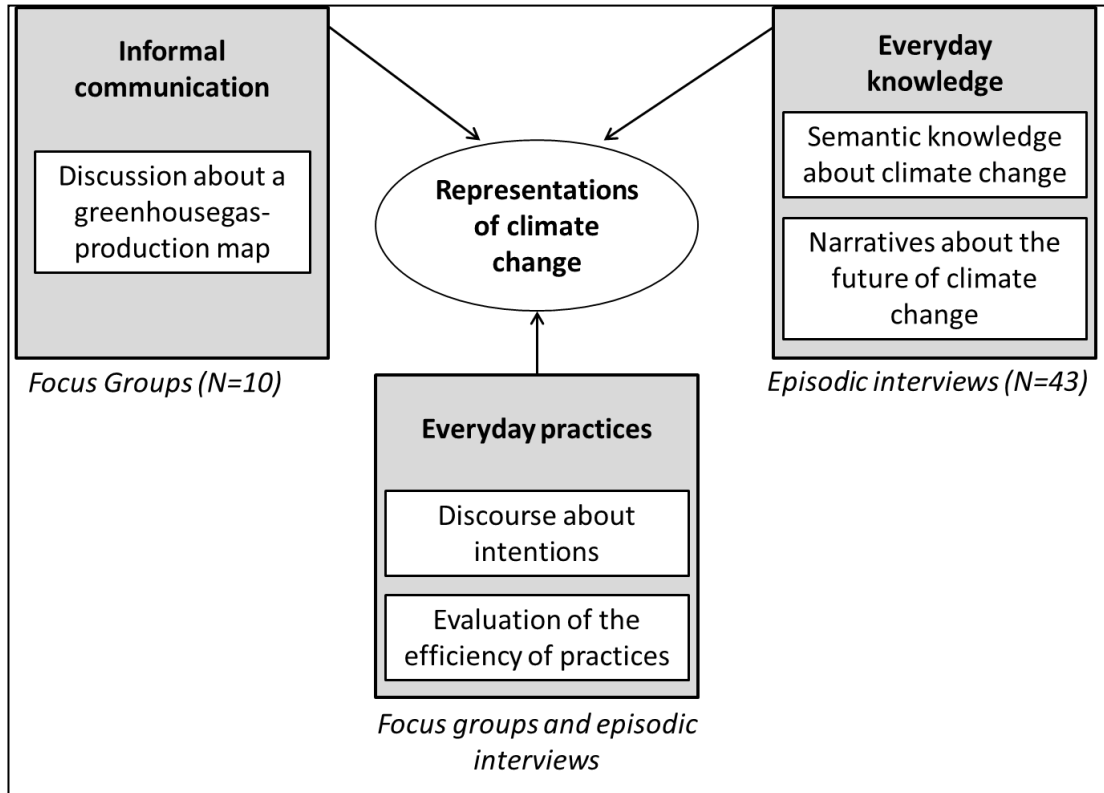


Figure 1:
Methodological design

Table 1:

Codes used for quoting participants

	Man	Woman
French participants	<i>Monsieur F</i>	<i>Madame F</i>
German participants (raised in east-Germany)	<i>Herr O</i>	<i>Frau O</i>
German participants (raised in west-Germany)	<i>Herr W</i>	<i>Frau W</i>

Note. The code is followed by a number so that each participant has a specific code.

Table 2:

Causes and consequences of climate change in interviews: "in-vivo coding"

	France (N=18)	Germany (N=23)
Causes		
ozone	1	6
industry	6	8
greenhouse gas	4	9
transport	5	9
farming	1	3
air pollution	4	4
a natural phenomenon	5	6
humans/their activity	4	4
energy production	3	4
economic reasons	3	2
consumer society	4	2
increase of inhabitants	2	1
Consequences		
global warming	6	10
less snow	1	2
melting ice	9	8
sea level	10	4
climate refugees	4	0
changes in farming	1	1
dry/desert	4	2
disaster	4	3
current in sea	2	1
shifting in climate zone	2	1
stratospheric ozone depletion	1	2
consequences for ecosystems	6	1
adaptation	3	1
health	1	4

Table 3:

Level of explanations of climate change in interviews

	France (N=18)	Germany (N=23)
"contact"	4	6
natural causes	2	2
biological	3	14
politic/economic	11	0
folk psychology	3	2
other	0	2

Table 4:

Themes and tense of French and German narratives

		France (N=18)	Germany (N=23)
Themes	climate change will hurt human	3	2
	climate will be different	2	12
	social costs	6	7
	space will disappear	1	7
	climatic disasters	3	6
	attitudes will change	11	8
	dictatorship	3	0
cannot imagine		4	3
tense of narratives	present	4	9
	future	10	11

Table 5:

Index of themes in French and German focus groups

		France (N=4)	Germany (N=6)
country comparisons	surface	4	4
	number of inhabitants	4	5
	level of development	4	6
	mentality	2	6
	a global problem	0	3
causes	industry	2	5
	lobbies	2	3
	way of life	4	4
	politic/laws	1	3
lack of knowledge		2	0
other relevant themes	relocation of pollution	1	4
	identification with the country	2	5
	identification with Europe	2	6

Table 6:

Summary for causes and consequences of climate change

		Everyday knowledge	Informal communication
France	causes	difficulty to explain, mainly socio-economical explanations, risks are distant	difficulty to explain, and to rely on concrete examples; nationhood used as the explanation category
	consequences		cultural identity is threatened
Germany	causes	difficulty to explain, mainly biological explanations, risks are close	concrete and linked to individual and national actions; global thinking with rich/poor categories
	consequences		cultural identity is threatened

Table 7:

Discourse about practices in interviews

	France (N=18)	Germany (N=23)
<i>reported practices</i>		
water economy	9	6
energy economy	5	14
bus/trolley	7	13
bicycle	6	11
reducing consumption	7	6
recycle waste	14	12
eating organic	9	4
using natural cleaning products	2	1
<i>narratives about practices</i>		
obvious	2	9
inherited from parents	4	9
since it is possible (to recycle...)	6	9
continuous reflection	6	6
contact with nature	1	5
specific event (pollution, illness...)	5	2
become aware because of their children	4	0
economy	1	2
engagement, values	1	2
to have a clear conscience	1	2
other	0	2

