

1 Addressing human dimensions in large carnivore conservation and management

Insights from environmental social science and social psychology

Tasos Hovardas

Introduction

The need to incorporate human dimensions in large carnivore conservation and management has long been acknowledged. Next to trends of population dynamics of large carnivore species worldwide, we can observe noticeable changes in attitudes towards these species (e.g., Ericsson et al., in this volume; Kutal et al., in this volume). In a very coarse and broad trajectory, we may distinguish a first period of research aiming at the examination of stakeholder attitudes towards large carnivores, and a subsequent period concentrating on stakeholder analysis, consultation, and engagement (e.g., Mishra et al., in this volume; Sandström et al., in this volume). All these records reflect the various initiatives taken at international, national, or regional and local levels in reaction to dynamics in large carnivore populations. These have stimulated social science research using quantitative, qualitative (see Jampel, in this volume), and mixed methods, have unravelled an increasing heterogeneity of stakeholder positions, and have highlighted implications for large carnivore conservation and management. Although the local context and stakeholder synthesis has always been decisive (see Ghosal, in this volume; Sjölander-Lindqvist et al., in this volume), some incidents and outcomes appear again and again, which indicates that they do not surface due to local circumstances only. Our intention in this chapter is to shed light on several aspects of that kind by taking into account insights from environmental social science and social psychology.

One first point to underline is that stakeholder perceptions are not formed just by their interaction with large carnivores, but by stakeholder interaction, as well. In this regard, tension and conflict among stakeholder groups as well as agreement and collaboration, whenever this may be possible, are anticipated to shape their positions. Stakeholder groups are constantly addressing one another formally or informally and at different venues: Stakeholder interaction is promoted through an interplay of arguments, where each stakeholder group is engaged in offensive (i.e., attempting to attack a point presented by another

stakeholder group) and defensive acts (i.e., intending to support its own argumentation against counter-arguments) (Davies and Harré, 1990). In this conceptualization, which we will call discursive positioning, discursive practices gain their meaning in the confrontation of social actors in antagonistic camps, where rival speech acts enable one's own positioning (see Hovardas, 2017, for a detailed theoretical and methodological approach to discursive positioning). Although discursive positioning may prove quite important in investigating stakeholder interaction, it has not received proper attention in social research targeting large carnivore issues.

Discursive positioning may be detected across many topics in large carnivore conservation and management, which address ongoing or future developments (e.g., Lipscombe et al., in this volume). Lethal control is such a topic (e.g., Lute and Gore, in this volume). It may be favoured in order to keep a large carnivore population within a range but also for legitimizing local knowledge and practices (e.g., Pohja-Mykrä, in this volume) and re-establishing a symbolic border between human settlements and wildlife, which large carnivores are assumed to have overridden (e.g., Lescureux et al., in this volume). However, lethal methods will not be readily endorsed by all engaged actors, for instance, due to ethical consideration of non-human animals (e.g., Santiago-Ávila et al., in this volume), but also because they may not be more effective than non-lethal methods in damage prevention (Treves et al., 2016). Moreover, human-caused mortality may have a substantial impact on population dynamics of large carnivore species. For instance, lethal control of wolf populations is usually equated to just removing individuals, but the consequences of that option may expand well beyond having a numerical effect. This may be due to a complex interplay among population, reproduction, and dispersal indices, e.g., when probability of finding mates is impacted at low densities during the dispersal phase, giving rise to an Allee effect (Hurford et al., 2006). Density-dependent mechanisms for brown bear populations (e.g., sexually selected infanticide or female reproductive suppression) may also initiate non-linear effects and may not allow for simple extrapolation of current trends to predict future population trajectories (Cano et al., 2016). This complexity may expand to transboundary issues of large carnivore conservation and management (e.g., see Bischof et al., 2016; see also Penteriani et al., in this volume).

There have been numerous episodes in large carnivore conservation and management which have set new challenges for environmental social science and social psychology. In most cases, it is acknowledged that natural data alone cannot suffice for decision making. This makes interdisciplinary perspectives indispensable. Examining how natural and social data may give rise to new place-based mappings is a demanding task. The problem here is not just to merge two different types of data and present their overlap, but to investigate how different inputs may produce new meanings and elicit new motivations and practices. All this novel information and knowledge is expected to fuel and refuel discursive positioning of stakeholders, which is increasingly transferred to inclusionary schemes for consultation and engagement (e.g., Hovardas, in

this volume; Hovardas and Marsden, in this volume). The experience available, in this regard, indicates that stakeholders need to recognize and respect other positions in order to be respected and recognized in the first place. And they have to do so, while disagreement and tension will most probably remain. Stakeholders need to interact in disagreement and explore possible points of convergence. They need to come to terms even if total consensus will never be achievable (e.g., Jacobsen and Linnell, 2016). In the following sections, we will concentrate on theoretical and methodological approaches to examine stakeholder perceptions and how these may inform their positioning and interaction.

“Risk” vs. “danger”

Damage caused to livestock has been an ongoing source of tension among stakeholder groups in large carnivore conservation and management. A closely associated topic is fear of large carnivores (e.g., Johansson et al., 2016), which may also relate to fear for human safety (Pohja-Mykrä and Kurki, 2014). When approaching stakeholder interaction on this matter from the vantage point of discursive positioning, we can observe how pro-carnivore groups have attempted to compare these emotions and fear with actual records of damage caused to livestock or attacks to humans. In the first case, claims for damage show that large carnivore numbers do not always correlate with damage caused (e.g., Bautista et al., 2017). In the latter case, comparisons of various types of threats to human safety indicate that actual attacks and threat stemming from large carnivores is almost absent (Hoffmann et al., 2017). The main point here is that local people may be taken to overestimate livestock loss or danger for human safety based on actual incidents. Therefore, local complaints are often dismissed by pro-carnivore groups as overreaction.

To take this discussion one step further, we need to concentrate on risk theory and how several important concepts have been elaborated upon within this theoretical frame. A crucial contribution of risk theory has been the definition of “risk” as opposed to “danger” (e.g., Luhmann, 1990; Beck, 1997). The main difference here is if actors are capable of anticipating the sequence of events that may expose them to a threat and if they can act proactively to confront that threat. If such an anticipation is possible and can be attempted, then actors are said to take a “risk” (i.e., take an informed decision after weighting the possibility of suffering any harm as compared to any benefit that may be derived). Therefore, taking action within the frame of risk perception rests upon a risk calculus given by a balance between perceived costs and benefits (e.g., Rasborg, 2012). However, if actors do not have the means to prepare themselves for the threat and can only deal with it retroactively – namely, if they can respond only after they have been harmed – then they are exposed to a “danger”.

How can we apply this distinction of risk theory between “risk” and “danger” in large carnivore conservation and management? For many local producers in

regions with large carnivores, the call for coexistence equates with a call for accepting a risk of damage caused by large carnivores. Such a tolerance has been frequently reported and has also been incorporated in formal agreements (see Hovardas, in this volume; Hovardas and Marsden, in this volume). Damage prevention methods like the use of electric fences and livestock guarding dogs may assist in achieving this balance. However, since no damage prevention method can provide absolute safety, some probability of damage remains. Indeed, some local people, who would not be ready to accept a compromise of this kind, will still perceive exposure to damage or threat by large carnivores as a “danger” and not a “risk”. For these local residents, illegal killing may be an eligible alternative (Rauset et al., 2016; see also Pohja-Mykrä, in this volume). Independent of the intent behind their introduction in stakeholder argumentation and counter-argumentation, actual records point towards this non-dismissible chance of damage to livestock or the possibility of attack to humans, no matter how unlikely it may be. These instances will always provide a justification for local people who would never accept the “risk” of coexisting with large carnivores.

Although compensation cannot guarantee easement of conflict (e.g., Fernández-Gil et al., 2016), there are suggestions to link compensation systems to damage prevention methods and consider the latter as a prerequisite for the former (see for instance Bautista et al., 2017). One problem among many in this direction is to align compensation systems with the real loss encountered by local producers, which does not really equate with the monetary equivalent of depredated livestock or other damage. For instance, livestock cannot be treated in the same way non-living assets are usually compensated, since producers will build on their current stock to schedule their future investment and production. This means that livestock cannot be conceptualized in a static fashion but needs to be approached within the dynamics inherent in their nature and one’s farming holding. In addition, there may be collateral damage, which is often not accounted for; for example, accumulative loss in the case of pregnant livestock and milk production, not to mention workload devoted for putting the damaged asset in place or restoring any part of the damage after it has occurred. What is more, many different socio-cultural characteristics of rural areas that are explicitly or implicitly linked to large carnivore conservation and management, such as pluriactivity (e.g., Giourga and Loumou, 2006), may remain unnoticed or be ignored. These additional aspects add to the reluctance of local people to accept an involuntary exposure to the threat of large carnivores and may also apply to instances such as illegal killing that are still observed (Tosi et al., 2015).

A substantial change in compensation of damage caused by large carnivores has been introduced with conservation performance payments in Sweden (Persson et al., 2015; Skonhofs, 2017; see also Hovardas and Marsden, in this volume). In contrast to *ex-post* compensation, where a fixed payment follows after a damage has been documented, *ex-ante* compensation rewards reproduction of large carnivores (e.g., wolverines in Sweden). Such an *ex-ante* compensation

system with conservation performance payments has been in place in the Sámi reindeer herding area in Sweden since 1996, where there is a considerable likelihood of reindeer loss due to vulnerability of reindeer to large carnivore attacks (reindeer are rarely confined in corrals) and dependence of large carnivores on reindeer as a main feeding source (especially during the winter). The monetary amount paid for each individual animal (SEK = 200,000; around 20,000 Euros or 23,000 USD) has been set to balance total estimated livestock damage caused by the animal in its lifetime. Payments are first directed to Sámi villages, and then each village is responsible for their allocation to individual reindeer herders or any other exploitation of the reward, e.g., if it will be invested for community expenses. This *ex-ante* compensation scheme triggers an incentive structure that re-organizes the risk calculus for reindeer herders so as to allow them to respond truly proactively. In that regard, it turns “danger” into a “risk”: Since beneficiaries have been rewarded a monetary sum for successful wolverine reproductions, they need to take additional action to protect their livestock and retain as much of the benefit as possible. Indeed, it has been underlined that conservation performance payments may provide more incentives for an optimal uptake of damage prevention methods (Zabel et al., 2011). Overall, there are multiple indications that *ex-ante* compensation may be more effective than *ex-post* compensation (Skonhoft, 2017).

Polyphasic representational fields

Cognitive polyphasia has been developed as a concept within the theory of social representations (Moscovici, 1961/2008)¹ to describe a state where different forms of knowledge, rationality, reasoning, or practice (e.g., scientific vs. non-scientific; expert vs. lay) may be voiced or performed by the same social group to address a certain social object and this will lead to what has been termed “polyphasic representational fields” (Jovchelovitch, 2008). Cognitive polyphasia has been often used as a term to describe a “state” of social representations; namely, a state of heterogeneity, drawing upon different and at times inconsistent or even contradictory modes of reasoning and acting. However, cognitive polyphasia has always implied a type of agency enacted by groups who resort to this multiplicity of forms of knowledge, reasoning, and practice. This means that apart from being a state denoting representational fields of diverse forms of reasoning and practice, cognitive polyphasia should also be seen as a process – and indeed, as a discursive one, since it would give social groups new opportunities for discursive positioning. Polyphasic representational fields are multivalent, meaning that they may allow for integrating or addressing a multiplicity of dimensions of social objects, or even for creating new dimensions of these objects, which would highlight a productive character for cognitive polyphasia. Since social groups with similar or dissimilar perspectives and representations of social objects may position themselves towards each other, cognitive polyphasia, inter-group relations, and dynamics of social representations need to be jointly observed (e.g., Jovchelovitch, 2008;

Marková, 2008; see also Batel et al., 2016). Cognitive polyphasia can be seen as the result of ongoing inter-group interaction, which drives dynamics of social representations.

Cognitive polyphasia is exemplified when social groups attempt to: (1) appropriate different types of knowledge or modes of thinking and acting, (2) strategically re-interpret them, and (3) integrate them in their argumentation in order to serve their own ends (e.g., Wagner, 2007). The social representation of a social object for a social group is configured according to what Bauer and Gaskell (2008) have termed the “project” of the group, meaning a central demand, quest, or mission to be pursued by group members. Aspects that may promote this project are highly likely to be elaborated upon by social groups and adapted to strengthen their argumentation lines. For instance, adopting some elements of the dominant environmentalist discourse² or recognizing the normative character of environmental law may be a prerequisite for local people before they voice their concern or formulate an alternative position (e.g., Krange and Skogen, 2007; Hovardas and Korfiatis, 2012; Mauro and Castro, 2012). In a similar vein, there were instances where large carnivores were presented by local people to threaten local biodiversity, redirecting a keyword of the environmentalist discourse against wolves and bears (López-Facal and Jiménez-Alexandre, 2009; Von Essen, 2017). In addition, hunters and rural breeders have been reported to claim selected connotations of the terms “ecology” and “ecological”, since they believed that their relationship with nature is truly authentic, especially when compared to some environmental non-governmental organizations which were criticized as “bureaucratic” and detached from the local context (e.g., Hovardas, 2005; Theodorakea, 2014).

Previous research in Greek protected areas has revealed how the wolf-reintroduction narrative, voiced by local interviewees, may present the same elements over different regions (Hovardas, 2010a, 2012, 2015, Hovardas and Korfiatis, 2008). The wolf-reintroduction narrative can provide an exemplary case of how a polyphasic representational field can be established along certain themata (e.g., overarching sets of concepts arranged in bipolar pairs; see Liu, 2004) with reference to which local residents represent the wolf and which they also employ to position themselves against environmental non-governmental organizations. According the wolf-reintroduction narrative, so-called “ecologists” (meaning members of environmental non-governmental organizations) were supposed to breed wolves in captivity and then release them secretly in the wild. To substantiate their claims, interviewees referred to instances when environmental organizations released large carnivores after recovery from injury or instances of relocation of “problem” animals, even if these referred to species other than the wolf. Interviewees also claimed that the supposed hybridization of wolves induced a significant alteration in wolf appearance and behaviour: They highlighted that hybrid wolves revealed intermediate characteristics between wild wolves and dogs. Moreover, they said that these hybrid wolves presented unexpected high levels of tolerance towards human presence, which had not been observed in past. This behavioural characteristic made

hybrid wolves more dangerous to rural life than wild wolves, since they did not fear humans and were much more likely to cause damage to livestock. Overall, the wolf-reintroduction narrative pictured “ecologists” as an out-group that promoted their interests at the expense of local communities. Knowledge from hybridization (relating to changes in animal populations) was integrated with ecologists’ perceived role to express rural resentment.

There were three different themata in this representational field (“wild vs. domesticated”, “fearful vs. fearless”, “harmless vs. dangerous”), which were used jointly to provide a sequence of premises and contrast wild wolves to hybrid wolves (Table 1.1): The wild wolf is fearful of humans and, therefore, almost harmless; the hybrid wolf is partly domesticated and, therefore, fearless of humans and dangerous; namely, capable of causing severe damage to livestock. The constructive potential of cognitive polyphasia here refers to appropriating hybridization and drawing on ecologists’ perceived role in order to produce a “hybrid wolf” with new characteristics that were not to be found neither in wild animals (which would fear humans) nor in domesticated animals (which would not constitute a threat).³ An interesting point to underline is that intermediate characteristics in the representational field of the hybrid wolf (i.e., a hybrid with phenotypic characteristics between wild wolves and dogs) were associated with extreme possibility of harm (i.e., the “hybrid wolf” was more dangerous than the “wild wolf”).

The themata of Table 1.1, or versions of them, have been reported in many different regions in the world (see, for instance, Buller, 2004; Skogen et al., 2008; Von Essen, 2017), while an analogous discursive scheme has been also been reported in some cases for bears (e.g., López-Facal and Jiménez-Alexandre, 2009). The implications for stakeholder interaction may be manifold. First, the narrative may be taken as an attempt by local residents in rural areas to gain justification for their resistance against large carnivore expansion, which is

Table 1.1 Themata in the representational field of “wild wolves” and “hybrid wolves”

<i>Themata</i>	<i>“Wild wolves”</i>	<i>“Hybrid wolves”</i>
“Wild vs. domesticated”	Wild wolves have some distinguishing features that allow for their recognition	Hybrid wolves have different characteristics from wild wolves in terms of appearance and behavior
“Fearful vs. fearless”	Wild wolves have a natural fear for humans	Hybrid wolves are not deterred by human presence since they have lost their natural fear for humans
“Harmless vs. dangerous”	Wild wolves would not risk coming close to humans for causing damage to livestock	Hybrid wolves are much more prone to causing damage to livestock as compared to wild wolves

Data sources: Hovardas, 2010a, 2012, 2015; Hovardas and Korfiatis, 2008.

thought to be imposed upon them by an urban pro-carnivore elite not belonging to the local context and not entitled to dominate in that context. Since “ecologists” are to be found behind the threat of hybrid wolves, “ecologists” are to blame for that threat, too. Second, the domesticated hybrid wolf may not deserve the protection usually granted to genuine wild species. In line with such an assumption, lethal control of wolf populations may be supported to retain the natural fear of humans (Von Essen, 2017). Within the frame of discursive positioning, the debate will be probably advanced and become more complicated, especially under the light of recent verification of wolf-dog hybridization (Pacheco et al., 2017; Torres et al., 2017).

Social influence mechanisms

Cognitive polyphasia and dynamics of social representations would indicate that inter-group relations leave their mark on stakeholder interaction and may also facilitate changes in stakeholder perspectives or action. But how do ideas and practices change? If all social influence was to be sought in majorities as a source, then all individuals within a society would have to conform to majority positions. Then, how could we explain social change? This was the challenge formulated by Moscovici (1976) in his work on minority influence (see also Martin and Hewstone, 2010). Minority influence describes the influence minorities may exert on majorities.⁴ This may occur at a latent level: Conversion of members of the majority to the position of the minority may proceed with a delay and may not be explicitly admitted by majority members. Conversion is promoted through a concentration of recipients on the content of the minority position, which may eventuate in a position change of the majority. Social influence is therefore different when the source is a majority or a minority: In the former case, the majority position may be adopted but this may happen due to identification with the source (majority) and without involving much processing of the content of the message. In the latter case, however, engagement in social comparison is not expected, since an identification with the source, in this case (minority), would not be desirable or favoured; instead, the target audience is highly likely to engage in an evaluation of the argumentation put forward by the minority.

Local communities which have to coexist with large carnivores are found within a complex web of social influence effects. Several social groups within these local communities – for instance, local producers engaged in primary sector activities and local hunters – seem to comprise a salient majority who are quite reluctant to celebrate the return of large carnivores and their increase in abundance and distribution. However, local communities also host a number of experts working in numerous projects concerning large carnivore conservation and management; for instance, scientists, wildlife conservation professionals, members of environmental non-governmental organizations, and people involved in ecotourism (see Ghosal, in this volume). Many of these scientists and professionals have a prolonged stay or even reside within local communities.

They comprise a local minority that largely endorses the comeback of large carnivores. This local minority is usually the recipient of harsh criticism for all initiatives that start outside local communities (e.g., state initiatives for nature or wildlife conservation, environmental legislation, etc.) and which are perceived by local people as being imposed upon them in a top-down fashion. In this larger scale, the local community is positioned as a minority (inferior position, having less power) against the state and central governments.

Overall, local communities in regions with large carnivores are integrated in a double system of social influence mechanisms, where they can be presented either as majorities opposed to local pro-carnivore minorities or as minorities, themselves, opposed to the state and central government (Figure 1.1). The complexity of social influence effects is augmented by the fact that majority influence at the large scale (i.e., majority influence exerted by the state and central government on the local community) is aligned to minority influence exerted at the local scale (i.e., minority influence exerted by the pro-carnivore local minority on the local community). This double system of social influence mechanisms has been previously proposed for protected areas and Natura 2000 sites (Hovardas, 2010b), and seems to have mediated many relevant developments in the last few decades; for example, the diffusion of the environmentalist discourse in rural communities (being mainly a result of minority influence exerted by local minorities on local communities; see also Mauro and Castro, 2012), and the need for inclusionary schemes for environmental and protected area governance (being mainly a result of minority influence exerted by local communities on the state and central government). The double system of social influence mechanisms may also explain the difficulty of administrative

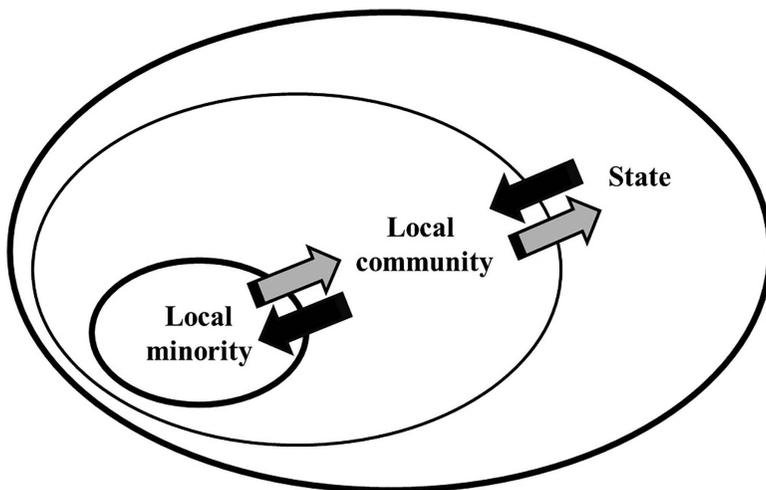


Figure 1.1 Double system of social influence mechanisms. Black arrows depict social influence exerted by majorities on minorities; grey arrows depict minority influence.

personnel of regional authorities working at the local level, who may be considered among the local minority, when they strive to strike a balance between advocating for local demands and their responsibility to enforce rules and regulations (Mauro and Castro, 2012; see also Sjölander et al., in this volume).

What are the implications of social influence effects for stakeholder consultation and engagement in large carnivore conservation and management? Social groups in local communities face a series of motives and counter-motives when offered the opportunity to take part in inclusionary schemes. On the one hand, participation is in itself an instance of recognition for local groups and an opportunity to voice their position and make an impact on future events. Previous research has shown that the negotiation style chosen by minorities will be decisive for their final impact (see for instance Mugny, 1975): Minorities will need to be both consistent (e.g., defending their position with certainty, confidence and commitment) and flexible (e.g., showing readiness to negotiate under certain conditions), since having a more rigid style that excludes compromise may stigmatize the minority position as unproductive and the minority message may remain largely unaccounted for.⁵ Timeline and scheduling of stakeholder meetings may also play a role. Recent research has shown that majority members were more receptive to the minority position when they expected interaction to go on in the future, increasing the odds and intensity of minority influence (San Martin et al., 2015).

On the other hand, stakeholder interaction in formal or informal governance schemes will necessarily advance in parallel with standard in-group relations and inter-group confrontation in society overall. This may create and maintain a tension between outcomes in decision-making schemes and wider stakeholder interaction. Spokespersons or representatives of local groups will need to position themselves in these schemes, but they will also be held accountable for that positioning from members of their own group. Any compromise, no matter how well articulated, prepared, and democratically supported, will first need to take a shape in negotiations and then be announced to the peer group. It is likely that spokespersons or representatives, in their attempt to reach a compromise, may need to deviate from expectations of other in-group members. If this is taken to be threatening to the image of the group, then these representatives may be isolated and stigmatized as in-group deviants to protect the identity of the group (Pérez and Mugny, 1987). The “black-sheep” stigma describes this derogation and rejection of deviant in-group members, which may be even stronger when compared to out-group members (Marques et al., 2001). Recent research has exemplified that the “black-sheep” effect may be triggered for elements in the central core of social presentations (Zouhri and Rateau, 2015). When core assumptions of a social group will be considered challenged by in-group members, then deviants will be stigmatized. All these effects may provide background and explanation for the slow and insubstantial diffusion of any positive results of decision-making and deliberation schemes among in-group members who have not taken part themselves in these processes.

Implications for science communication, science education, environmental education, and outreach

Social influence effects also need to be considered in contrast to calls for providing scientific knowledge to local groups and raising their environmental awareness. According to the “deficit” model of science communication (e.g., Castro and Batel, 2008; Brossard and Lewenstein, 2009; Wibeck, 2014), lay people would need additional scientific knowledge to grasp the full array of consequences and implications of their practices, and then they are expected to change their behaviour and align it with the new acquired knowledge. Many initiatives in science communication and science education, as well as environmental education and outreach, have been based on this “deficit” model, and still are. Such a conceptualization, however, retains a skewed role for the addressee or learner, generally, as a passive receptor of information or knowledge and fails to recognize the active role of all targeted audiences in deciphering and interpreting that information and knowledge as well as their various socio-cultural implications (see a relevant discussion by López-Facal and Jiménez-Alexandre, 2009). Polyphasic representational fields and social influence mechanisms may provide valuable insight in this regard: New information or knowledge will be integrated in representational fields of the social groups targeted and it will be fine-tuned so as to serve their own needs and desires. Such a provision will not necessarily lead to behaviour change or change towards the desired direction, since representational fields do not have “gaps” or “deficits”. Instead, they provide a fully-fledged and coherent representation of social groups for social objects, which guide inter-group interaction. Leaving the “deficit” model behind may add numerous challenges to stakeholder involvement, especially when approaching the latter as a co-creation process within a frame of social learning (see Hovardas, in this volume).

Notes

- 1 The theory of social representations has originated in contrast to experimental social psychology long practiced in North America, and has involved a strong refocusing from individual actors on social groups (e.g., Moscovici, 1972). A social representation is defined as a system of values, ideas, and practices that a social group employs to address a social object (Moscovici, 1973). The elements of a representation may be distinguished in central ones, which form a salient core that largely defines the social object under reference, and in peripheral elements, which function to adapt the representation to the context (Abric, 1996). Two basic procedures have been proposed for monitoring or reconstructing the genesis of a social representation: When a social group is confronted with a new, unfamiliar, or threatening development, phenomenon, or event, then it attempts to anchor this new development in a pre-existing system of meanings to render it familiar and less threatening (anchoring). Moreover, the social group may also portray the new phenomenon by means of an image that may add concrete visual content to account for its vagueness (objectification) (Jodelet, 2008). For an overview of the theory of social presentations in environmental social science, see Buijs et al. (2012).

- 2 With the term “environmentalist discourse”, we address the multifarious meanings and practices related to environmental and wildlife conservation and management as well as natural resource management, which surfaced in the 1970s and have gradually been applauded by large segments of most societies worldwide. Although denoting a heterogeneous field, all different versions of the environmentalist discourse include the necessity of a proper consideration of the relationship between society and nature. Of course, “proper” may have quite different connotations – and this is where all relevant discussions start.
- 3 The constructive character of cognitive polyphasia needs to be contrasted to responses expected due to cognitive dissonance (Festinger, 1957). In the latter case, “corrective” action taken at the individual level is anticipated to address an inconsistency between different attitudes or attitudes and behaviour. In the case of cognitive polyphasia, however, polyphasic representational fields are arranged so as to account for a social group’s “project” and promote inter-group interaction.
- 4 Minorities are defined with reference to a quantitative criterion of number (minorities having fewer members than majorities) and/or to a qualitative criterion of countering hegemony (minorities challenging established norms) (Gardikiotis, 2011).
- 5 The incorporation of aspects of the environmentalist discourse in the argumentation forwarded by local communities may establish a flexible negotiation style (when local communities are approached as minorities in opposition to states or central governments); see previous section on polyphasic representational fields.

References

- Abric, J.-C. (1996) ‘Nature and function of the core system of social representations’, *International Journal of Psychology*, vol 31, pp1443–1443.
- Batel, S., Castro, P., Devine-Wright, P., and Howarth, C. (2016) ‘Developing a critical agenda to understand pro-environmental actions: Contributions from social representations and social practices theories’, *WIREs Climate Change*, vol 7, no 5, pp727–745.
- Bauer, M. W., and Gaskell, G. (2008) ‘Social representations theory: A progressive research programme for social psychology’, *Journal for the Theory of Social Behavior*, vol 38, no 4, pp335–353.
- Bautista, C., Naves, J., Revilla, E., Fernández, N., Albrecht, J., Scharf, A. K., Rigg, R., Karamanlidis, A. A., Jerina, K., Huber, D., Palazón, S., Kont, R., Ciucci, P., Groff, C., Dutsov, A., Seijas, J., Quenette, P.-I., Olszańska, A., Shkvyria, M., Adamec, M., Ozolins, J., Jonozovič, M., and Selva, N. (2017) ‘Patterns and correlates of claims for brown bear damage on a continental scale’, *Journal of Applied Ecology*, vol 54, no 1, pp282–292.
- Beck, U. (1997) *The Reinvention of Politics: Towards a New Modernity*, Polity Press, Cambridge.
- Bischof, R., Brøseth, H., and Gimenez, O. (2016) ‘Wildlife in a politically divided world: Insularism inflates estimates of brown bear abundance’, *Conservation Letters*, vol 9, no 2, pp122–130.
- Brossard, D., and Lewenstein, B. (2009) ‘A critical appraisal of models of public understanding of science: Using practice to inform theory’, in L. Kahlor and P. Stout (eds) *Communicating Science: New Agendas in Communication*, Routledge, New York.
- Buijs, A., Hovardas, T., Figari, H., Castro, P., Devine-Wright, P., Fischer, A., Mouro, C., and Selge, S. (2012) ‘Understanding people’s ideas on natural resource management: Research on social representations of nature’, *Society & Natural Resources*, vol 25, no 11, pp1167–1181.
- Buller, H. (2004) ‘Where the wild things are: The evolving iconography of rural fauna’, *Journal of Rural Studies*, vol 20, pp131–141.

- Cano, I. M., Taboada, F. G., Naves, J., Fernández-Gil, A., and Wiegand, T. (2016) 'Decline and recovery of a large carnivore: Environmental change and long-term trends in an endangered brown bear population', *Proceedings of the Royal Society B*, vol 283, no 1843, 20161832.
- Castro, P., and Batel, S. (2008) 'Social representation, change and resistance: On the difficulties of generalizing new norms', *Culture & Psychology*, vol 14, pp475–497.
- Davies, B., and Harré, R. (1990) 'Positioning: The discursive production of selves', *Journal for the Theory of Social Behaviour*, vol 20, no 1, pp43–63.
- Ericsson, G., Sandström, C., and Riley, S. J. (in this volume) 'Rural-urban heterogeneity in attitudes towards large carnivores in Sweden, 1976–2014', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Fernández-Gil, A., Naves, J., Ordiz, A., Quevedo, M., Revilla, E., and Delibes, M. (2016) 'Conflict misleads large carnivore management and conservation: Brown bears and wolves in Spain', *PLoS ONE*, vol 11, no 3, ppe0151541.
- Festinger, L. (1957) *A Theory of Cognitive Dissonance*, Stanford University Press, Stanford, CA.
- Gardikiotis, A. (2011) 'Minority influence', *Social and Personality Compass*, vol 5, pp679–693.
- Ghosal, S. (in this volume) 'Heterogeneity in perceptions of large carnivores: Insights from Sanjay Gandhi National Park, Mumbai, and Ladakh', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Giourga, C., and Loumou, A. (2006) 'Assessing the impact of pluriactivity on sustainable agriculture: A case study in rural areas of Beotia in Greece', *Environmental Management*, vol 37, no 6, pp753–763.
- Hoffmann, C. F., Montgomery, R. A., and Jepson, P. R. (2017) 'Examining the effect of billboards in shaping the great wolf debate of the American West', *Human Dimensions of Wildlife*, vol 2, no 3, pp267–281.
- Hovardas, T. (2005) *Social Representations on Ecotourism: Scheduling Interventions in Protected Areas*, PhD thesis, Aristotle University of Thessaloniki.
- Hovardas, T. (2010a) *Stakeholder analysis*, LIFE EXTRA – Improving the conditions for large carnivore conservation – A transfer of best practices (LIFE07NAT/IT/000502), Report of Action A5.
- Hovardas, T. (2010b) 'The contribution of social science research to the management of the Dadia Forest Reserve: nature's face in society's mirror', in C. Catsadorakis and Käländer (eds) *The Dadia-Lefkimi-Soufli Forest National Park, Greece: Biodiversity, Management, and Conservation*, WWF-International, Athens, www.wwf.gr/images/pdfs/Hovardas.pdf, accessed 19 December 2017.
- Hovardas, T. (2012) *Follow up surveys of stakeholder attitudes*, LIFE EXTRA – Improving the conditions for large carnivore conservation – A transfer of best practices (LIFE07NAT/IT/000502), Report of Action E3.
- Hovardas, T. (2015) *Questionnaire development and administration*, Deliverable 2, Monitoring of knowledge and attitudes of stakeholders in national park management, Management Authority of Rodopi Mountain Range National Park (in Greek).
- Hovardas, T. (2017) "'Battlefields" of blue flags and sea horses: Acts of fencing and defencing place in a gold mining controversy', *Journal of Environmental Psychology*, vol 53, no pp100–111.
- Hovardas, T. (in this volume) 'A methodology for stakeholder analysis, consultation and engagement in large carnivore conservation and management', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Hovardas, T., and Korfiatis, K. (2008) Report of local environmental knowledge in the National Park of Northern Pindos. EU Community Initiative Programme INTERREG

- IIIB Archimed, East Mediterranean Network for the Sustainable Development of Protected Areas – East-Med-Net.
- Hovardas, T., and Korfiatis, K. J. (2012) ‘Adolescents’ beliefs about the wolf: Investigating the potential of human – Wolf coexistence in the European south’, *Society & Natural Resources*, vol 25, no 12, pp1277–1292.
- Hovardas, T., and Marsden, K. (in this volume) ‘Good practice in large carnivore conservation and management: Insights from the EU Platform on Coexistence between People and Large Carnivores’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Hurford, A., Hebblewhite, M., and Lewis, M. A. (2006) ‘A spatially explicit model for an Allee effect: Why wolves recolonize so slowly in Greater Yellowstone’, *Theoretical Population Biology*, vol 70, pp244–254.
- Jacobsen, K. S., and Linnell, J. D. C. (2016) ‘Perceptions of environmental justice and the conflict surrounding large carnivore management in Norway – Implications for conflict management’, *Biological Conservation*, vol 203, pp197–206.
- Jampel, C. (in this volume) ‘Situated, reflexive research in practice: Applying feminist methodology to a study of human–bear conflict’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Jodelet, D. (2008) ‘Social representations: The beautiful invention’, *Journal for the Theory of Social Behaviour*, vol 38, no 4, pp411–430.
- Johansson, M., Ferreira, I. A., Støen, O.-G., Frank, J., and Flykt, A. (2016) ‘Targeting human fear of large carnivores – Many ideas but few known effects’, *Biological Conservation*, vol 201, pp261–269.
- Jovchelovitch, S. (2008) ‘The rehabilitation of common sense: Social representations, science and cognitive polyphasia’, *Journal for the Theory of Social Behavior*, vol 38, no 4, pp431–448.
- Krange, O., and Skogen, K. (2007) ‘Reflexive tradition – Young working-class hunters between wolves and modernity’, *Young*, vol 15, no 3, pp215–233.
- Kutal, M., Kovařík, P., Kutalová, L., Bojda, M., and Dušková, M. (in this volume) ‘Attitudes towards large carnivore species in the West Carpathians: Shifts in public perception and media content after the return of the wolf and the bear’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Lescureux, N., Garde, L., and Meuret, M. (in this volume) ‘Considering wolves as active agents in understanding stakeholder perceptions and developing management strategies’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Lipscombe, S., White, C., Eagle, A., and van Maanen, E. (in this volume) ‘A community divided: Local perspectives on the reintroduction of Eurasian lynx (*Lynx lynx*) to the UK’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Liu, L. (2004) ‘Sensitising concept, themata and shareness: A dialogical perspective of social representations’, *Journal for the Theory of Social Behaviour*, vol 34, no 3, pp249–264.
- López-Facal, R., and Jiménez-Aleixandre, M. P. (2009) ‘Identities, social representations and critical thinking’, *Cultural Studies of Science Education*, vol 4, pp689–695.
- Luhmann, N. (1990) *Risiko und Gefahr: Soziologische Aufklärung 5. Konstruktivistische Perspektiven*, Westdeutscher Verlag, Opladen.
- Lute, M. L., and Gore, M. L. (in this volume) ‘Challenging the false dichotomy of Us vs Them: Heterogeneity in stakeholder identities regarding carnivores’, in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.

- Marková, I. (2008) 'The epistemological significance of the theory of social representations', *Journal for the Theory of Social Behavior*, vol 38, no 4, pp461–487.
- Marques, J. M., Abrams, D., Paez, D., and Hogg, M. A. (2001) 'Social categorization, social identification, and rejection of deviant group members', in M. A. Hogg and S. Tindale (eds) *Blackwell Handbook of Social Psychology: Group Processes*, Blackwell, Malden, MA.
- Martin, R., and Hewstone, M. (eds) (2010) *Minority Influence and Innovation – Antecedents, Processes and Consequences*, Psychology Press, Hove and New York.
- Mauro, C., and Castro, P. (2012) 'Cognitive polyphasia in the reception of legal innovations for biodiversity conservation', *Papers on Social Representations*, vol 21, pp3.1–3.21.
- Mishra, C., Alexander, J. S., Bhatnagar, Y. V., Johansson, O., Sharma, K., Suryawanshi, K., Nawaz, M. A., and Samelius, G. (in this volume) 'Science, society and snow leopards: Bridging the divides through collaborations and best practice convergence', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Moscovici, S. (1961/2008) *Psychoanalysis: Its Image and Its Public* (D. Macey, Trans.), Polity Press, Cambridge.
- Moscovici, S. (1972) 'Society and theory in social psychology', in J. Israel and H. Tajfel (eds) *The Context of Social Psychology: A Critical Assessment*, Academic Press, London.
- Moscovici, S. (1973) 'Introduction', in C. Herzlich (ed) *Health and Illness: A Social Psychological Analysis*, Academic Press, London.
- Moscovici, S. (1976) *Social Influence and Social Change*, Academic, London.
- Mugny, G. (1975) 'Negotiations, image of the other and the process of minority influence', *European Journal of Social Psychology*, vol 5, pp209–228.
- Pacheco, C., López-Bao, J. V., García, E. J., Lema, F. J., Llaneza, L., Palacios, V., and Godinho, R. (2017) 'Spatial assessment of wolf-dog hybridization in a single breeding period', *Scientific Reports*, vol 7, 42475.
- Penteriani, V., Huber, D., Jerina, K., Krofel, M., López-Bao, J. V., Ordiz, A., Zarzo-Arias, A., and Dalerum, F. (in this volume) 'Trans-boundary and trans-regional management of a large carnivore: Managing brown bears across national and regional borders in Europe', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Pérez, J. A., and Mugny, G. (1987) 'Paradoxical effects of categorization in minority influence: When being an outgroup is an advantage' *European Journal of Social Psychology*, vol 17, pp157–169.
- Persson, J., Rauset, G. R., and Chapron, G. (2015) 'Paying for an endangered predator leads to population recovery', *Conservation Letters*, vol 8, pp345–350.
- Pohja-Mykrä, M. (in this volume) 'Socio-political illegal acts as a challenge for wolf conservation and management: Implications for legitimizing traditional hunting practices', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Pohja-Mykrä, M., and Kurki, S. (2014) 'Strong community support for illegal killing challenges wolf management', *European Journal of Wildlife Research*, vol 60, no 5, pp759–770.
- Rasborg, K. (2012) "'(World) risk society" or "new rationalities of risk"? A critical discussion of Ulrich Beck's theory of reflexive modernity', *Thesis Eleven*, vol 108, no 1, pp3–25.
- Rauset, G. R., Andrén, H., Swenson, J. E., Samelius, G., Segerström, P., Zedrosser, A., Persson, J. (2016) 'National parks in Northern Sweden as refuges for illegal killing of large carnivores', *Conservation Letters*, vol 9, no 5, pp334–341.
- San Martin, A., Swaab, R. I., Sinaceur, M., Vasiljevic, D. (2015) 'The double-edged impact of future expectations in groups: Minority influence depends on minorities' and

- majorities' expectations to interact again', *Organizational Behavior and Human Decision Processes*, vol 128, pp49–60.
- Sandström, C., Sjölander-Lindqvist, A., Pellikka, J., Hiedanpää, J., Krange, O., and Skogen, K. (in this volume) 'Between politics and management: Governing large carnivores in Fennoscandia', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Santiago-Ávila, F. J., Lynn, W. S., and Treves, A. (in this volume) 'Inappropriate consideration of animal interests in predator management: Towards a comprehensive moral code', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Sjölander-Lindqvist, A., Bendz, A., Cinque, S., and Sandström, C. (in this volume) 'Research amidst the contentious issue of wolf presence: Exploration of reference frames and social, cultural, and political dimensions', in T. Hovardas (ed) *Large Carnivore Conservation and Management: Human Dimensions*, Routledge, London.
- Skogen, K., Mauz, I., and Krange, O. (2008) 'Cry wolf: Narratives of wolf recovery in France and Norway', *Rural Sociology*, vol 73, no 1, pp105–133.
- Skonhoft, A. (2017) 'The silence of the lambs: Payment for carnivore conservation and livestock farming under strategic behavior', *Environmental and Resource Economics*, vol 67, no 4, pp905–923.
- Theodorakea, I. (2014) *Who let the wolves out? Perceptions about the presence of the Wolf in Central Greece*, Master's thesis, Swedish University of Agricultural Sciences, Uppsala.
- Torres, R. T., Ferreira, E., Rocha, R. G., and Fonseca, C. (2017) 'Hybridization between wolf and domestic dog: First evidence from an endangered population in central Portugal', *Mammalian Biology*, vol 86, pp70–74.
- Tosi, G., Chirichella, R., Zibordi, F., Mustoni, A., Giovannini, R., Groff, C., Zanin, M., Apollonio, M. (2015) 'Brown bear reintroduction in the Southern Alps: To what extent are expectations being met?' *Journal for Nature Conservation*, vol 26, pp9–19.
- Treves, A., Krofel, M., and McManus, J. (2016) 'Predator control should not be a shot in the dark', *Frontiers in Ecology and the Environment*, vol 14, pp380–388.
- Von Essen, E. (2017) 'Whose discourse is it anyway? Understanding resistance through the rise of "barstool biology" in nature conservation', *Environmental Communication*, vol 11, no 4, pp470–489.
- Wagner, W. (2007) 'Vernacular science knowledge: Its role in everyday life communication', *Public Understanding of Science*, vol 16, no 1, pp7–22.
- Wibeck, V. (2014) 'Social representations of climate change in Swedish lay focus groups: Local or distant, gradual or catastrophic?', *Public Understanding of Science*, vol 23, no 2, pp204–219.
- Zabel, A., Pittel, K., Bostedt, G., and Engel, S. (2011) 'Comparing conventional and new policy approaches for carnivore conservation: Theoretical results and applications to tiger preservation' *Environmental and Resource Economics*, vol 48, no 2, pp287–311.
- Zouhri, B., and Rateau, P. (2015) 'Social representation and social identity in the black sheep effect', *European Journal of Social Psychology*, vol 45, no 6, pp669–677.