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6.2 A Dynamic View of Local Knowledge and Epistemic Bonds to Place: Implications for Senses of Place and the Governance of Biodiversity Conservation

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It is evident today that people's relations to place are crucially relevant for their engagement with, or resistance to, measures adopted in view of climate change adaptation or biodiversity conservation (Nicolosi and Corbett, 2018; Raymond et al., 2017; Castro and Mouro, 2016; Adger et al., 2012). In biodiversity conservation, a considerable share of such measures today are legal ones. Many have supranational origins but are then transposed into national legal frameworks, where they become laws to be implemented at the local level. In this chapter I focus on one such supranational legal order: the one that created and now governs the European Union's (EU) 'Natura 2000' network of protected sites, designed to assure the long-term survival of habitats and species that represent European biodiversity (European Commission, 2009).

Supranational legal orders, negotiated among many countries at the same time, express a 'view from nowhere' (Williams, 2014) with respect to the issues they regulate; it is when they are brought into local implementation that they encounter the 'views from somewhere' of local communities. It is at the local level that these new laws become fully relevant for people-place relations: the new understandings of place that they carry affect such relations and are pertinent to how communities interpret the laws (Castro and Mouro, 2016).

This chapter explores these relational dynamics – where laws affect people-place relations, and those relations affect the reception of the laws – by focusing on two groups whose professional activities involving species and habitats are directly impacted by the Natura laws: farmers and artisanal fishers. In the last ten years I have spent many hours interviewing them and walking with them the land and the coast. The extent and complexity of their accounts of knowledge have inspired me to reflect on how local knowledge intertwines with both sense of place and responses to supranational legal innovations governing biodiversity. I will argue that to better understand these responses it is crucial

to reconceptualise people-place relations in a way that is more attentive to the *epistemic dimension*, i.e. to local knowledge and the weaving of *epistemic bonds* to place. I will argue that the epistemic dimension should be added to the two dimensions that have been the focus of enquiry into senses of place: place attachment and place meaning (Raymond et al., 2017; Benages-Albert et al., 2015; Williams, 2014). The former is conceptualised as the emotional bonds linking people to places (Hidalgo and Hernandez, 2001), the second as the bonds woven through meaning-making and identification processes (Raymond et al., 2017). Neither concept is thus directly oriented towards the theorisation and study of how knowledge of/in a local weaves bonds to place – i.e. epistemic bonds – and their consequences.

In order to theorise people-place relations in a way that offers specific attention to local knowledge and epistemic bonds, a theoretical view of the nature of (local) knowledge is necessary. I will present a dynamic view in which *epistemic labour* – i.e. knowledge as process, not just content (Maranta et al., 2003) – takes a central role. This position also posits that meaning and knowledge, although interdependent, are not the same. In turn, this reconceptualisation informs a plural view of senses of place: one that encompasses the three processes of attachment, meaning-making and knowing, all of which are themselves inherently plural.

In what follows, I first briefly characterise Natura and its laws. Afterwards I present an integrated theoretical view of the division of epistemic labour and (local) knowledge, illustrating it with examples of how fishers and farmers living in Natura 2000 sites discuss their places, knowledges and laws.

6.2.1 Creating an EU Supranational Legal Order for Governing Biodiversity

The Natura 2000 network of protected sites, a major example of today's supranational legislative orders, covers about eighteen per cent of EU land, both private and state-owned (Blicharska et al., 2016), and was launched based on the 1992 European Commission Habitats Directive. With the transposition of this directive into national legal frameworks, each member state had to identify a set of areas where the conservation of species and habitats would be a priority. In those areas, several new laws now define the suitable practices of production and uses of natural resources. The laws forbid certain agricultural practices (intensive farming), encouraging others through subsidies (e.g. direct sowing); they also establish mandatory closed periods when species in peril cannot be fished or hunted.

The Natura laws, like most laws, incorporate and express two types of assumption: epistemic and normative (Castro and Mouro, 2016; Ferranti et al., 2014). The former makes knowledge claims, describing 'how things are' (e.g. certain fish are threatened with extinction). The latter asserts 'how

things should be', expressing choices of norms and values, and linking them to specific actions (e.g. threatened species should be protected from hunting/fishing during closed periods). The formulation of the Natura laws was supported by conservation experts and initially involved little local consultation, preventing the knowledge of fishers and farmers from having a role (Blicharska et al., 2016; Ferranti et al., 2014; Stoll-Kleemann, 2001). The laws' implementation called on a complex network of local actors to readjust their own normative and epistemic views – and relations to place – in line with the (expert-led) assumptions that had travelled down from the EU level (Castro and Mouro, 2016). This illustrates well what Maranta et al. (2003) call 'the epistemic asymmetry' conferring all authority to experts in the division of epistemic labour. I now turn to this division.

6.2.2 The Division of Epistemic Labour

Although all humans are equipped to do epistemic labour, it is – like other types of work – subjected to a social division (Maranta et al., 2003; Wynne, 1996). Supported by formal institutions and the roles these create (Castro and Santos, 2020), this division prescribes who can (rights) and should (duties) do the work of knowledge, and importantly also defines those whose work does not count as such even if it is done (exclusions) (Foucault, 1982). A complex institutional scaffolding supports this division, establishing scientists as those entitled to produce *proper* knowledge (Latour, 2004; Scott, 1998; Wynne, 1996), deciding what can or cannot be integrated within the dominant regimes of evidence, assuring the reproduction and circulation of scientific knowledge beyond the local of production (e.g. laboratories, universities) (Klenk et al. 2017; Welsh and Wynne, 2013). Even when knowledge systems on the 'other side' of this division (e.g. indigenous knowledge) are recognised, or indeed brought into decision-making, they are frequently regarded as being of a lesser nature (Nazarea, 2006; Scott, 1998) – for example, as being rigid and repetitive, 'shaped by pragmatic criteria, and heavily leaning towards concrete instead of abstract information' (Wagner, 2007, p. 9).

This generalised attitude of epistemic asymmetry defining *proper* versus *lesser* knowledges is entrenched in the way many international ecological supranational legal orders are formulated, and/or it resurfaces in their national/local implementation, even when other laws attempt to equalise these systems (Castro and Mouro, 2016; Welsh and Wynne, 2013). The processes of Natura 2000's formulation and implementation initially followed this binary logic (Ferranti et al., 2014; Stoll-Kleemann, 2001). Through this logic, local residents are 'imagined' as devoid of both knowledge and meaning/norms, and as ready to embrace new laws once they have been informed about the veracity and normative relevance of those laws' assumptions (Castro and Mouro, 2016; Welsh and Wynne, 2013; Latour, 2004). Yet this version of how new laws (might) be accepted is not supported by evidence gathered about the reception of Natura (Castro and Santos, 2020; Blicharska et al., 2016) or other laws (Castro, 2012; Devine-Wright, 2009). It is also contrary to constructionist and interpretative social-psychological theorising (Bruner, 1990; for an overview, see Batel and Castro,

2018). To be sustained, action needs to have meaning, and legal innovations are never received in a vacuum, but rather through the work of interpretation, which is linked to people's cultural worlds (Castro and Santos, 2020; Castro, 2012; Devine-Wright, 2009).

Within the literature on senses of place, place meanings are seen as part of local cultural worlds, offering the lens through which environmental measures are interpreted (Raymond et al., 2017; Williams, 2014). However, this literature does not necessarily see such cultural words as including knowledge. For instance, important pleas for environmental policy to more explicitly incorporate cultural dimensions closely tied to place may define culture as including 'the symbols that express meaning, including beliefs, rituals, art and stories' (Adger et al., 2012, p. 112), but not knowledge. Similarly, important systematisations of aspects that may affect the acceptance of biodiversity conservation at the community level include 'social and cultural norms and social identities' (Bennet et al., 2016, p. 60), but not local knowledge.

In other words, the literature that highlights the importance of the cultural dimensions of place frequently forgets knowledge, and/or conflates meaning with knowledge – thus paying less attention to the role of knowledge and people's epistemic bonds to place. Yet fully understanding sense of place requires a consideration not only of values, norms and identities as sociocultural and identity-expressive layers of place meanings, but also (local) knowledge (e.g. of where, when, how, what for) and local practices (Williams, 2014). In other words, cultural worlds are meaning *and* knowledge worlds, and thus the full conflation of meaning with knowledge is generally problematic. It is even more problematic when it comes to groups engaged in resource-related professions, such as fishers or farmers, since humans' ability to attain complex, resource-related knowledge that can evolve and travel to other places is a foundation of our life on earth. This is evidenced in the spread of agriculture from the fertile crescent to the Atlantic shores (Diamond, 1997), or the travelling of knowledge about medicinal plants in the Caribbean world (Schiebinger, 2004).

Recently, the many local conflicts around biodiversity conservation policies that confer epistemic authority only – or mostly – to science have led several scholars to reopen the issue of local knowledge. These scholars have argued that the management of ecosystems needs contributions from local knowledge (Raymond et al., 2010; Berkes, 2004), refusing to draw sharp distinctions between local, traditional and scientific knowledge (Raymond et al., 2010) and calling for collaboration among these systems (Tengo et al., 2017). They join other approaches across the social sciences that reject binary oppositions regarding epistemic labour and share the view that all knowledges result from 'going around in an environment' (Ingold, 2011), being exposed to *both* the relational dynamics between perception-action processes *and* processes of interpretation conducted by the shared, socially

constructed meaning categories of a community, whether that community be scientific or otherwise (Klenk et al., 2017; Raymond et al., 2017; Wynne, 1996).

Some of these non-binary positions regarding epistemic work – bringing attention to knowledge as process, not just content – are helpful for devising a conceptualisation of (local) knowledge as not fully overlapping with meaning (norms, values). Drawing from these positions, I will now propose a dynamic model of local knowledge that argues that this overlap is indeed imperfect. I will illustrate two dimensions of this proposal – (1) knowledge as intertwining process and product, and (2) knowledge as learning and hybridisation through relation – with examples from farmers and fishers in studies conducted in Natura 2000 sites in Portugal (see methodological details in Castro and Santos, 2020; Mouro et al., 2018; Castro and Mouro, 2016). Together, the conceptual proposal and the examples will help to clarify the relevance of local knowledge and epistemic bonds for people-place relations, illustrating how, when mobilised to interpret Natura laws, these bonds are consequential for both resisting and integrating them.

6.2.3 Local Knowledge and Epistemic Bonds to Place: A Conceptual Proposal and Examples

The initial tenet of this dynamic proposal is that the epistemic realm comprises and intertwines process (epistemic work) and product (concepts, knowledge systems) for all types of knowledge (Raymond et al., 2017; Ingold, 2011; Scott, 1998). Process refers to learning by means of a continuous engagement with the constituents of an environment (Raymond et al., 2017; Ingold, 2011; Scott, 1998). In scientific knowledge, the *process* dimension is captured by the notion of research, an open-ended process that inherently contains indeterminacy and involves using, transforming and proposing collectively elaborated knowledge systems: the *product* (Welsh and Wynne, 2013; Maranta et al., 2003; Latour, 2004).

Knowledge as process integrates action, perception and interpretation. Gibsonian affordance theory (see Raymond et al., 2017) calls attention to the importance of *both* the perception of place features *and* how these are interpreted. Perception is linked to the affordances available in place (Raymond et al., 2017) – e.g. water currents seen travelling to the right, not the left; sandy, not rocky, soils observed in a patch of land – which constrain the when, how or why of knowledge. Regarding interpretation, my proposal contends that both knowledge systems and meaning systems (e.g. values) shared in a community (whether a local community of fishers or a transnational scientific community) are mobilised to select and attribute sense to place affordances. Such shared knowledge systems – the products – are learned with others, and also transformed with them (Batel and Castro, 2018). Thus, knowledge, in this view, is the product of perception, action and being with others (Ingold, 2011, p. 159), not the result of a solipsistic activity that relies exclusively upon direct and individual

perception of the features of the world, although those features do play a role in guiding it (Raymond et al., 2017; Ingold, 2011; Devine-Wright, 2009).

Extracts 1 to 4 all illustrate how action-in-place, perception and interpretation are integrated in local knowledge, and how local knowledge is used to interpret the Natura laws. Extract 1 is from a focus group of fishers; Extract 2 is from a focus group of farmers on a site where bustards are a priority protection species. Both extracts exemplify local knowledge being used to interpret some laws and draw negative conclusions. Thereafter, Extracts 3 and 4 will exemplify local knowledge being used for a positive appraisal of other laws.

Extract 1

F: About four, five years ago this legislation started, these licences. [...] At first it was the tools, our old tools.... We were not allowed to use them [to catch bivalves]. *But they are not going to damage the soil*, it is even good to stir the oysters.

C: It's good, if the sand is not stirred, they do not develop.

X: Yes, a lot of people do not know this, but they develop if the soil, the mud or the sand, is stirred. [...] *Sometimes those who do the laws, they are not in the know.*

F: [...] Clam, razor shell, cockle, they all have to be stirred, to bring the microorganisms up.

C: ...I don't know where they do the studies, or why sometimes so many studies are needed. I'll give you an example: from that bridge down, our river is a salt marsh. *And now we cannot even so much as step on the mud of the marsh* [due to the laws]. [However,] the mud, if not mixed, it becomes sludge, and sludge, it rots and supports no life. (Focus group, fishers, 2015)

Extract 2

P6: So, for instance, we are harvesting, and we find a [bustard] nest. And [the law says] we need to leave a circle of 5 meters of un-harvested land around the nest ... very nice, we do that! We go on, find another nest, do the same. Then we bring the sheep to the harvested land, and the sheep, where do they start eating? Where the un-harvested stalks are, and then! there go the nests!

P3- they go straight for the stalks and destroy everything

P6- *we follow the rule, just as the experts tell us*, but then ...

P4- ... *but then what happens is that the birds end up dying, because the experts do not know the reality of the land.* (Focus group, farmers (reproduced from Castro and Mouro, 2016))

In Extracts 1 and 2, the contestation of the laws is presented through the lens of knowledge developed in the context of the speakers' immersion and action in a specific place, which grants them the

authority to draw conclusions. It also appears as the result of ongoing processes of engagement in a sociocultural context, not as a solipsistic activity. In Extract 1, the knowledge is local in the sense that it comes from engagement with local salt marshes and soils; however, it is not only local but general. In both extracts, the focus groups make the relational side of epistemic work particularly visible as the interlocutors complete each other's ideas and sentences. Also in both extracts, the laws are criticised through the lens of this knowledge.

However, local knowledge can be used to interpret the legal recommendations as valid and to accept them. Extracts 3 and 4 – which discuss catching barnacles and direct sowing respectively – illustrate this.

Extract 3

V: I like to catch barnacles, I go everywhere around here for that. I used to catch a lot at the [locally famous] Galé rock. Only now I don't, because now... well, it's not like before, when a person would arrive at the rock and – what a beauty! Today we look at the rock, and what do we see? Nothing. I used to see that rock all dressed in red, what a sight, how beautiful [...]. Now [due to the laws] barnacles cannot be caught during a three-month [closed] period, but I told them [fellow catchers] 'you could even *catch only during the summer*, or on weekends, and you would still do good money, then you could choose only the big ones, because if you kill the small ones, still developing, then it's the end'. (Interview, fisher, 2014)

Extract 4

FR: This was a very rainy year. My neighbour, I saw he worked the land the old way, then those big rains came, and there his soil went... gone into the Atlantic Ocean.... I saw that, and also that his production was not nil, and mine was nil, but at least my soil stayed put [...]. Direct sowing is complicated in our region, not easy to make a profit from it, *but [Natura 2000] compensations [for direct sowing] can help a little*. But mostly, the preservation of nature, of the property itself, for me, that is a reason for pride. I did not produce anything, but the soil is here, it did not go away. (Focus group, farmer, 2012)

In these extracts, the acceptance of the laws again comes in accounts that intertwine action ('I go everywhere'), perception (absent barnacles, abundant rain) and knowledge ('if you kill the small ones, still developing, then it's the end'). In both extracts it is also clear that in addition to knowledge, meaning systems – the values that are relevant for the self (e.g. conserving barnacles, preventing soil erosion), the values of others in place, the values and assumptions of the Natura legislation – are all considered together in a reflexive appraisal of self and others.

In Extract 3 in particular, the depiction of a (current) situation of resource depletion, which is reliant on a vocabulary of direct perception (what one sees now, what one saw before), supports knowledge claims. These claims then warrant the next step: persuading colleagues towards conservation. This is done by arguing that they should do more than just respect the closed period the laws impose: the interviewee reports himself talking to a fellow catcher, arguing through knowledge for more conservation efforts. In other words, knowledge and meaning/values are both mobilised here to interpret the laws in a relational context, as a done-together achievement.

In all four extracts there is a vocabulary that foregrounds love of place and profession intertwined with knowledge – i.e. epistemic bonds. In the farmers' case, it is pride intertwined with knowledge of the land; in the case of the barnacle catcher, it is love intertwined with knowledge about what experts might call 'resources', but which catchers call by their name: barnacles. Thus epistemic bonds intermingle knowledge with aesthetic pleasure in the beauty of barnacles' colours (some barnacles have a vivid red rim), and with pride in the land that was not washed away by the rain.

6.2.4 Knowledge as Learning and Hybridisation Through Relation

This conceptualisation of knowledge as process also sees learning as happening in and through relations, intermingling with interpretation and sociality: we see, and others guide us on how to interpret what we see through shared and collectively sustained knowledge and meaning systems, with which we 'catch' experience – as well as fish, as Extract 5 illustrates. Learning here is also seen as perpetually 'under construction' through the person's action and encounters with others.

Extract 5

We are friends, and they know – 'eh, look, fish are in that zone', and we go to that zone. And we talk. [...] I learned by seeing the others fishing, and they taught, isn't it? I was with them, and they 'do like this, put the bait there'. [...] Because fishing is difficult, there are places where the fish do not go, we need to know the zone. (Interview, fisher, 2014)

Yet the processes of knowledge-learning and construction can be relational without being enclosed within one community, or even requiring co-presence: individuals and communities are in contact with others in different ways, and they can learn new interpretations, borrow from other knowledge systems, and be transformed by them (Nazarea, 2006; Scott, 1998). This can make local knowledge plastic, changeable and hybrid, unlike some of its depictions (Wagner, 2007). Laws – which bring with them the power of the state to impose its epistemic and normative assumptions on local communities (Castro and Santos, 2020) – can be integrated and change previous knowledge, as Extracts 3 and 4 showed. But other knowledge sources and systems can be used as well. Extracts 6, 7 and 8 eloquently show how complex and varied the meaning and knowledge systems brought to the

local can be, testifying to knowledge processes that are not static or rigid but in motion, incorporating new elements and voices – from the past, other places, different types of knowledge. Yet they also show that the knowledge being constructed, while not *only* local, is still strongly anchored in the local.

Extract 6

F: We, the fishers from this place, we know where things are, where the oysters are in the river, or the mussels, or the barnacles in the sea [...]. And if we do not catch everything, only small amounts, letting the rest develop... for instance, let's say in 20 m² of mussels, we only pull 5 m², and *why*? For the ova of the mussel to be able to go to the rock already cleaned. These are *small studies through the years*, isn't it, that these *older people*... for me *they are my teachers*, with the *knowledge that comes from their elders*, isn't it? We take it, we go and internalise it in our thoughts and *implement it in the youngsters*, isn't it? And I have also been talking to them here, *the university people*. They come here, the young ones, to collect samples and do the analysis [...], and I help, well, in what I, in what we know we help each other. And *I learned with them too*. (Focus group, fisher, 2015)

Extract 7

How do I find the fish? Well, it's many years, and with *the probes and the GPS* that we have today. The probes know where the barriers are, the bottom of the sea, it is just like here, the earth, right? It has valleys, mountains, it has rivers, just like here, right? And *with our eyes, the knowledge, the probes*, with this, we have, we know where the barriers are, we research all that. (Interview, fisher, 2015).

Extract 8

FR: With direct sowing we can work the same plot every year, the more we work it, the more productive it becomes – and *who is inside the property is who best knows what is the better plot*, what is the most productive one [...]. [But keeping in mind also], *as my great-grandfather used to tell me*, that the land is female, so one has to work it at the right time, if we do not do it in the right period, we are lost [...]. Actually, I started [doing direct sowing] by myself, then *I went to Spain to see other farms* that were ten years ahead of us, and *I read Brazilian articles*. (Focus group, farmer, 2012)

The organisation of these last three extracts is similar: knowledge of the place is strongly claimed, and is linked to a reflexive integration of various voices and sources, and to the shared knowledge and meaning systems with which they operate. Some of these voices come from the past, some from direct experience, some from the experience of others, some from the young university people that

biodiversity protection projects bring into the community, and some from new technologies. This is clear testimony that local knowledge does not have to be rigid, static or even strictly local, but it is still kept alive and meaningful in the local – thus evidencing the dynamism of epistemic bonds to place.

6.2.5 Discussion

The previous sections have presented and illustrated a dynamic theorisation of knowledge. The proposal presented (1) views knowledge as not fully overlapping with meaning, assuming that (local) knowledge participates together with meaning in the constantly ongoing process of turning spaces into places. It also (2) views knowledge as more than a product: knowledge is also a process integrating action, perception and interpretation, happening with others, and in the context of a social division of epistemic labour that frequently establishes a simplistic binary contrast between proper (scientific) knowledge and lesser knowledges. Read through this theorisation, the extracts presented above suggest three main conclusions.

First, they vividly reveal that local sociocultural worlds are both meaning *and* knowledge worlds. Second, they show that local knowledge provides a relevant lens through which supranational legal innovations for biodiversity governance (often based on scientific knowledge) are locally assessed, a process that sometimes leads to their contestation and sometimes to their integration into local worlds. Third, they illustrate that learning and the weaving of epistemic bonds are plastic processes that are done together not only with present local others but also with experts, friends, visiting scientists and even voices from the past. They thus also illustrate the connectivity of local knowledge, and how it can be metamorphosed by many voices and sources (Nazarea, 2006; Scott, 1998).

All of this demonstrates the extent to which local knowledge matters for the reception of biodiversity conservation measures regulated by supranational legal orders. This in turn calls for these legal innovations to be formulated in ways that do not exclusively rely on top-down, expert ‘views from nowhere’ (Williams, 2014), which lead to implementation processes that are detached from the ways that people live and act in place. It also demands that we take seriously local knowledge and the epistemic bonds to place it weaves. Incorporating local inputs – through more public participation in legal decision-making and implementation – can offer more complex and nuanced responses to conservation, since the knowers are multiplied, and more knowledges are put at the centre of action-in-place. This pluralisation of knowledges can perhaps – and hopefully – lead to less narrow and less standardised imaginings of what our places, and our present and future together as (many) species, may look like.

6.2.6 Conclusion

I have argued in this chapter that a better understanding of how today's supranational environmental legal orders are locally contested or accepted requires the addition of the epistemic dimension to the dimensions that are already at the centre of the literature on senses of place, i.e. place attachment and place meaning. This involves paying more attention to local knowledge, which I have theorised as interdependent but not overlapping with meaning, and as a process and product that is constructed with others and weaves epistemic bonds to place.

By including the epistemic dimension, the conceptualisation of senses of place can become more relational, plural and dynamic, allowing us to understand people's engagement with place through three dimensions: engagement through meaning, resulting in belonging and identity bonds; engagement through affection, resulting in attachment; and engagement through knowledge, resulting in epistemic bonds. These need further study regarding biodiversity conservation, and indeed climate change.

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