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The unknownness of biodiversity: Its value and ethical significance for conservation action

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There is a consensus among scientists, conservationists and policy-makers that the diversity of life is a value that should be preserved. However, conservation concerns are usually not reducible to the protection of diversity. This raises the question: What are the specific reasons to protect biodiversity as diversity (if any)? Classical answers to this question refer to the value of diversity as insurance, to its links with stability or other valuable properties of ecosystems. In this article, we introduce an additional way to answer this question on the basis of eco-phenomenological analysis. Eco-phenomenology is a field of philosophy that explores our lived experience of the natural world, and its epistemological and ethical implications. So far, this approach has not been integrated with debates in conservation biology. Our article develops an eco-phenomenological approach to biodiversity inspired by the work of Emmanuel Levinas and his ethics of Alterity. Alterity is a unique characteristic of the other (human or non-human other) that escapes our conceptualisations, and therefore can alter our worldview, values, and attitudes. Among the multiple facets of the notion of Alterity, we focus on *unknownness*. We show that unknownness is an important ethical source of the value of biological diversity. We illustrate how this approach can be applied to conservation action with a case study discussion of the Trézence Valley (south-west France).

Keywords: Biodiversity Phenomenology Ethics of otherness Alterity Unknownness Conservation action Levinas

1. Introduction

Despite philosophical discussions of the challenges involved in defining biodiversity (Sarkar, 2002; Sarkar, 2010; Van Dyke, 2008), there is a large consensus among scientists, conservationists, and to some extent policy-makers, that the diversity of life constitutes a value that should be preserved (e.g. Norton, 1987; Callicott et al., 1999; Wilson, 1992). This view has received several objections on various grounds. These objections can be roughly divided into two groups.

A first group questions the soundness of the concept of biodiversity as a conservation goal (e.g., Maier, 2012; Morar et al., 2015; Rawles, 2004). According to this line of argument, there are several theoretical and methodological problems

with using the concept of biodiversity as an objective for conservation action. In particular, [Morar et al. \(2015\)](#) argue that using biodiversity as an objective for conservation action can create ambiguities, because references to “biodiversity” often intimately mix factual claims and value judgments. Using this notion therefore obscures discussions on the value that should be assigned to different conservation projects. The second group of objections challenges the relevance of attributing a value to the diversity of life (e.g., [Santana, 2014, 2018](#)). [Santana \(2014\)](#) argues that most conservationist concerns are not about diversity at all: many valuable natural entities are not a matter of diversity (these natural entities are the individuals, populations, species and ecosystems whose value is explored in the bulk of the literature on environmental ethics), and diversity is sometimes a disvalue. For example, the diversity of influenza virus, which causes anti-influenza vaccines to be less effective, is arguably not a valuable aspect of the diversity of life. Similarly, if relatively species-rich but widespread species communities, or even invasive species communities, come to dominate a rare habitat originally dominated by a small number of native species, the corresponding increase in diversity is, arguably, not valuable. However, [Santana \(2014, 2018\)](#)’s arguments and similar ones are ambiguous. Indeed, in the cases mentioned, one might retort that diversity is valuable, but it is outweighed by other considerations. The important idea in Santana’s argument and similar ones is hence that diversity is not all there is to conservationist concerns. This in turn raises the following question: what, if any, are the specific reasons we may have to conserve diversity as diversity?

A classical response to this question, which can be found in the writings of founding fathers of conservation biology such as [Soulé \(1985\)](#), is that diversity is a fundamental source of evolutionary potential and processes. From an evolutionary perspective, uniformity and homogenization result in less resilience and hinder adaptation. Diversity is therefore valuable as a basic source of evolutionary processes. Other common answers refer to the links between biodiversity and stability of ecosystems ([Tilman et al., 2006](#)), biodiversity and productivity ([Liang et al., 2016](#)), and the benefits that humanity obtains from biodiverse resources ([UN, 1992](#)). Similarly, the economic literature explores the insurance value of biodiversity ([Baumgärtner, 2008](#)).

The above lines of reasoning have been amply discussed and challenged in the literature (for the limits of the biodiversity as value proxy paradigm, see [Morar et al. 2015](#), among others). This discussion falls beyond our scope. In this article, we provide an additional perspective on the question of what are the specific reasons we can have to value biodiversity as diversity. We thereby introduce an additional, ethical reason to value the diversity aspect of biodiversity—on a par with eco-evolutionary, ecological and economic arguments mentioned above. Specifically, we focus on the *unknownness* of biodiversity. We start from a simple point. All other things held equal, the more diverse an ecosystem is, the more avenues it opens for our attempts to improve our knowledge, the more questions it raises, and the more complexity and indeterminacy follows—in a word, the more unknownness there is in it. Translating such an idea in quantitative terms would undoubtedly be difficult, if not impossible, but this is not our ambition. For our purposes here, we simply posit that, generally speaking, it is reasonable to acknowledge that unknownness in ecosystems increases with their diversity. Based on this premise, we argue that unknownness is an important ethical source (albeit not the only one) providing us with reasons to protect biodiversity in its diversity aspect.

This idea might seem counterintuitive at the first sight, since it might seem to imply that the more knowledgeable one is about a given ecosystem or population or species, the less ethical reasons one has to value it. But this implication would follow only if the set of knowable things was finite (that is, in the philosophical jargon, if knowledge had a finite ontology). If this set is finite, then the more we know, the less unknownness there remains. By contrast, if this set is infinite, as one becomes more knowledgeable about a given ecosystem or population or species, one can become all the more aware of the depth of its unknownness. Because, in this article, we posit that the set of knowable things is infinite (and we believe that most conservation biologists and, more generally, most scientists, share this idea), the counterintuitive implication equating knowledge accumulation with lowering the value of unknownness does not follow from our premise.

Our reference to unknownness as a source of value bears some superficial resemblance with arguments on “option value” in the economic literature ([Faith, 2018](#)). The two approaches are, however, profoundly different. Option value attempts to compute the market and non-market possible future value that natural resources may have. In the biodiversity literature, option value is meant to capture situations in which we preserve systems because they will possibly create unknown ecological services or resources, and because we do not know how we will value these systems in the future. Besides, our interests and preferences change over time. The economic concept of option value of biodiversity hence rests upon the assumption that biodiversity is often correlated with ecosystem functions and associated services. Attributions of option value therefore fall back upon the ecosystem services paradigm mentioned above (for the limits of this paradigm, see [Morar et al. 2015](#), among others). Hence, on the option value

approach, unknownness is not a source of value on its own right. Although we do not deny that, just like approaches based on evolutionary potential, insurance value or the stability-diversity correlation, approaches based on option value can be useful, our aim in this article is to dig deeper into the idea that the unknownness of biodiversity can be an ethical source underlying conservation action.

To that end, our approach will be based on phenomenology. This term refers to an alternative way to tackle ethical issues, differing from the value-based or virtue-based approaches that dominate ethical discussions on environmental action and conservation. Value-based approaches posit axiology as basis for action: a natural object or entity is considered as valuable on its own (for a general overview of value-based approaches, see [Curry, 2011](#) or [O'Neill et al., 2008](#)). Virtue-based approaches, by contrast, focus on human virtues as bases for environmental actions and attitudes ([Cafaro and Sandler, 2011](#)). Phenomenology, a field in the continental philosophy tradition, is a third line of looking at ethical sources for action, distinctively linked with human experience and perception. Phenomenology can be broadly defined as a philosophical approach that focuses on the study of human consciousness and the lived experience of the world. This approach is concerned with human experience, the experiential basis of knowledge, and the ways in which we abstract the world that we experience. A phenomenological approach applied to environmental issues is called eco-phenomenology ([Brown and Toadvine, 2003](#), xii-xiii). Although debates on conservation ethics, framed in value- or virtue-based ways, abound in the conservation literature (e.g. [Maris and B  chet, 2010](#), [Robinson, 2011](#), [Sarkar and Montoya, 2011](#), [Vucetich et al. 2015](#), [Mathews, 2016](#), [Batavia and Nelson, 2017](#), [Hampton et al., 2019](#)), so far minimal research exists to interlink conservation biology and phenomenological insights. However, because the value of nature is related to our human experience of it and phenomenological methods open alternative ways of perceiving the world ([Brown and Toadvine, 2003](#), xii), a phenomenological perspective can be useful to understand the multiplicity of reasons for initiatives aimed to preserve nature.

In this article, we develop such a phenomenological perspective to argue that the value of biodiversity as diversity stems (in part) from the ethical importance of the unknownness of biodiversity. The reasoning we spell out for that purpose is inspired by a non-anthropocentric interpretation of Emmanuel Levinas's ideas, which we consider to be the major phenomenological source on the topic of the ethics of Otherness (when reading this article, the reader should practically take "Otherness" and "Alterity"—both capitalized to emphasize their importance—to be synonymous, though there is nuance that we explain below). We do not aspire to providing a Levinasian ethics of biodiversity—a task that falls beyond the scope of this manuscript. What we do, rather, is borrowing a couple of relevant insights from Levinas and some of his non-anthropocentric interpretators in order to construct an expanded account of some ethical reasons underlying conservation biologists' thinking and practices in relation to biodiversity management. In the literature, Levinasian thought has been mainly applied to environmental concerns in purely eco-phenomenological contributions, which are to our knowledge absent from conservation debates. We contribute to bridging this gap by articulating a phenomenological account of unknownness as an ethical source to preserve biodiversity, and by showing how a corresponding ethics can be applied in conservation contexts.

The remainder of the article is organized as follows. [Section 2](#) presents our phenomenological framework inspired by Levinasian ethics of Alterity and the ethical significance of Otherness. After a brief introduction to Levinas's views on Otherness, we explore the relevance of the notion of unknownness of biodiversity for management issues at a theoretical level. [Section 3](#) then discusses how our framework could be applied in practice, based on the Tr  zence Valley example.

2. The ethical significance of unknownness for biodiversity management

The applied field of conservation biology is inevitably entangled with questions of values and ethics underlying conservation action. There is nothing new in the claim that there is ethical significance to reasons to protect biodiversity. In this section we explore how a phenomenological approach to unknownness helps to flesh out the value of biodiversity as diversity. To that end, we draw on ideas of Emmanuel Levinas, who develops a phenomenological analysis of the ethical significance of unknownness as part of his broader inquiry into the ethics of Otherness. The writings of Emmanuel Levinas are notoriously challenging to interpret due to the inherent complexity of his terminology and the idiosyncratic use of some well-established words ([Edelglass et al., 2012](#), p. 6). Our relationship to, and use of Levinasian philosophy is based on inspiration and moving beyond his work, instead of following his exact footprints and pretending to extend his own ideas to the field of conservation biology.

We start by outlining some elements of Levinas's philosophy of Otherness (2.1), we then develop our own approach, specifically focused on the unknownness aspect of Otherness (2.2). We argue that this aspect of Otherness has an altering effect on our preexisting assumptions about others and the world, which in turn impacts on our attitudes and behaviors.

2.1. Levinas's ethics of otherness

The focus on Otherness as an ethical theme is the hallmark of Levinas's philosophy (1991[1961], 1978). Levinas found a fundamental interest in studying Otherness because, in his reasoning, through encountering other people, the subject (or the "Ego") lives the experience of an absolute, irredeemable separation between himself and this absolute Otherness. According to Levinas, this experience of irredeemable separation plays a crucial role in the subjects' ethical life because an encounter with the Other can have an altering effect on one's egoism, ways of thinking, and exclusive focus on one's own agendas. "Otherness" hence mostly refers, in Levinas's writing, to other *people*. In the majority of his writings, Levinas accordingly conceives the emergence of ethics as concomitant with the encounter with another human being with a face and a voice, capable of talking. Taken literally, his constant usage of the terms "face" and "talk" prevents a direct extension of an ethical relationship to the nonhuman world because the nonhuman world mostly lacks language and, arguably, has no face.

The apparent anthropocentrism of Levinasian ethics, and the venues for greening Levinasian thought, have been widely debated and challenged (for a general overview of the debates on Levinas and environmental philosophy, see Brown and Toadvine, 2003; Llewelyn, 1991; Edelglass et al., 2012). However, these contributions have not explored the question of the ethical value associated with diversity. We propose here to take advantage of some insights from Levinas's philosophy to address this question. Some aspects of Levinas's thoughts on the ethical significance of Alterity point to directions that are opposed to the anthropocentric and speciest features of his philosophy. We will selectively focus on these aspects in order to inspire new insights to valuing biodiversity as diversity. Our approach thereby takes its distances with the ambition to be strictly faithful to Levinas's philosophy, which puts us in a position to take advantage of relevant insights of his, without having to explore the numerous other aspects of his philosophy that are relevant to historians of philosophy but less to conservation biologists.

Levinas himself was neither clear nor consistent about the meaning and scope of "the face," and about an exclusion of non-human beings from face to face relations (Levinas, 2004; Wright et al., 1988). In his later work, he recognized that animals may have a moral standing and was reluctant to confirm earlier statements of his that an animal cannot "have the face" (meaning that animals do not fall under the ethical category of Otherness; see an interview with Levinas on that matter in Wright et al., 1988).

When trying to understand this ambiguity in Levinas's thought about the meaning of "the face" and the possibility of ethical obligations and responsibility towards non-human beings, one should keep in mind the post-war context in which Levinas, who was of Jewish origins, was writing (Peperzak 1993). Clark (1997, 168) points out that the reason behind Levinas's restriction of ethics to inter-human relations lies in his fear that ethics would disappear if humans were equated with animals. But, as Llewelyn argues, the animality that Levinas was wary of referred not to *animal beings* but to *a way of being of humans* that is neither cognizant of, nor responsive to, ethical calls (Llewelyn, 1991, 50).

A similar line of argument—according to which it is not the animal *per se* that Levinas is cautious about—has been developed by Davy (2007). The "animal" way of being is linked exclusively with "animal needs", not referring to animals in the biological sense of the term, but to the satisfaction and consummation of material needs. Such an "animal" way of being excludes the ways of being grounded in the desire and motivation to transcend basic, vital needs. Here, transcending our animality accordingly means constructing relationships through which we can develop an integral and responsible self. Dereniowska (2012) argued that a Levinasian approach to the problem of the instrumentalisation of reason in consumer society can help to build foundations for environmental ethics. It does so by shedding light on how transcending human desires, aka transcending the "animality" in the human, creates the attitude of ethical responsibility towards Otherness. It is this animality expressed in human behaviour and attitude that makes one indifferent and irresponsible *for* and *to* the Otherness. The notion of an integral and responsible self that transcends "animality" (expressed, for example, in the exclusive focus on fulfilling brute desires) is not linked with any specific conception of human nature, it is rather about being open to the possibility that one will engage in an ethical relationship with the Other (be it human or non-human) instead of limiting oneself to brute needs satisfaction.

Granting that Levinas's terminology of "face" and "talk" and his occasional rejection of "animality" are no dire obstacles to apply Levinas's ethics of alterity to non-humans, some authors have attempted such an extension by drawing on links between Otherness and suffering, which suggest an extension to sentient non-human beings (Atterton,

2012), or on links between Otherness and vulnerability, which can suggest extensions to all kinds of non-human beings, including plants and perhaps even ecosystems (Diehm, 2012). Here, we want to draw and expand on another aspect of Levinas's phenomenological inquiry: the link between Alterity

and unknownness, the latter being an important aspect of the former. The reason for this choice is that, as we shall argue, this extension can open avenues to explore ethical reasons to value diversity—in addition to valuing the sentient and vulnerable entities targeted by the above philosophies.

2.2. *An ethics of unknownness*

In the former subsection, we have seen that the ethical significance of Otherness, according to Levinas, comes from the fact that ethics emerges through an encounter with Otherness rather than merely from an internalization of moral theories. An ethics of Otherness, understood as an attitude of openness, caring, and readiness to respond in terms of ethical responsibility towards others, hence stems from the ethical significance of the encounter with Otherness. But why should we grant such an ethical significance to this encounter?

Levinas' own answer is articulated in terms of a critic of "ontology".

"Ontology" refers to philosophies devoted to understand the nature of being. The reference to ontology is central to Levinas' philosophy, which is largely devoted to criticize it. His prime target was Heidegger, a major phenomenologist, whose philosophy centered on the concept of ontology had a long-lasting and profound influence on continental philosophy (Heidegger, 1962). But beyond Heidegger, Levinas claimed to criticize the whole Western philosophical tradition. In his view, ontology underlies the bulk of Western philosophy. An important idea in the reasoning of Levinas is that by focusing on ontology, Western philosophy, and more generally the Western worldview, strives to encompass everything in a totalizing knowledge. In more pedestrian terms, this preeminence of ontology means that, as Westerners, we have a tendency to strive to integrate all our perceptions and ideas into a coherent conceptualization, and this is what is usually called "knowledge". This criticism of ontology understood as a dream of totalizing knowledge echoes the question of whether the set of knowable things is finite or not: the dream of a totalizing knowledge assumes that the set of knowable things is finite.

According to Levinas, this pervasive dream is not only ill-advised, it is also deeply ethically wrong. Indeed, when conducted as a totalizing enterprise, the Western quest for knowledge tends to negate the Otherness of the external world and the ethical call included in our encounter with it. The importance that Levinas grants to the encounter with Otherness therefore stems from the fact that encounters with Otherness have a disruptive effect on our cognitive attempts at totalizing knowledge. When encountering Alterity in a face-to-face meeting with another human being, our attempts at fully grasping, organizing, and managing the external world and at integrating all our perceptions and ideas into a coherent, totalized whole, as well as our egoistic life, are challenged. This is because the Alterity of the other human being we face always defeats our attempts at fully encompassing all characteristics of the Other in a totalizing representation. An encounter with Alterity is therefore a disruption in one's understanding and preconceptions about the world. And this disruptive effect of Alterity can lead to opening minds and hearts to new perspectives and worldviews. This altering potential can help to elevate ethical responses of responsibility towards others: *Alterity* is Otherness as it *alters* us.

This disrupting effect of Alterity is exemplified, in a conservation context, by Leopold's (1966) description of how his close encounter with a dying wolf whom he shot under the feet of a mountain challenged him and woke up a new relationship towards the wolf, and subsequently towards the species as a component of biodiversity: "there was something new to me in those eyes, something known only to her and to the mountain. I thought that because fewer wolves meant more deer, that no wolves would mean hunter's paradise. But after seeing the green fire die, I sensed that neither the wolf, nor the mountain agreed with such a view" (1966, 129–133). This example illustrates how an ethical call arose through Leopold's encounter with the wolf, challenging his ideas about a conservationist project that targeted a reduction of the wolf population in the United States, and ultimately leading him to develop a completely new approach to conservation action and thinking. By anchoring ethics in a disruption of ontology, which manifests itself as an irredeemable failure of attempts at totalizing knowledge, the aspect of Levinas' philosophy that we explore here provides a general rationale to understand the ethical significance of encounters with Alterity, exemplified but not theorized in its relation to knowledge and unknownness in Leopold's account.

In the part of Levinas' philosophy explored here, "unknownness" refers to all the aspects of the other that irredeemably escape knowledge totalizing attempts. According to the reading of Levinas' philosophy just spelled out, this unknownness is the ultimate source of ethical value that underlies the ethics of Otherness. It is, however, useful to take a broader view on unknownness and distinguish three kinds of unknownness. Levinas only talks about what might be called "irretrievable unknownness": an unknownness that will never be conquered by knowledge. But there are other kinds of unknownness. Certain things are unknown to some people but known to others. This is a part of unknownness that vanishes as knowledge is exchanged. Let us talk about "distributed unknownness."

Besides, because knowledge helps to identify knowledge gaps, another important type of unknownness is “known unknownness”: unknown aspects that are known to be unknown to anyone at a given time point. Levinas’s philosophy is concerned only with irretrievable unknownness, but the logic he follows to show the altering effect of unknownness also works for the other two types of unknownness. In the case of distributed unknownness, exchanging knowledge can help people to become aware of all they can learn. Distributed unknownness itself vanishes as knowledge is exchanged, but people’s awareness of their former unknownness and of their current ignorance is raised, with an accompanying altering effect. Similarly, even though advances of knowledge will ultimately conquer known unknownness, forming a vision of known unknownness, and becoming aware of new frontiers of unknownness as one works to conquer known unknownness, can have the altering effect pinpointed by Levinas.

As recalled above, beyond unknownness, other concepts, such as vulnerability and suffering, also play a very fundamental role in Levinas’s philosophy. By focusing on unknownness, our ambition is not to unveil the “true” core of his philosophy. We rather focus on one specific aspect of his philosophy—the thread he draws between unknownness, Otherness and ethics—because it is of peculiar significance to investigate ethical reasons to value biodiversity as diversity. Indeed, if the ethical significance of Otherness stems from its unknownness, then the “face of the Other” cannot refer only to human faces (a similar conclusion was reached in other contexts by Davy, 2007, Diehm, 2012, and Atterton 2012). Understanding Otherness as characterised by unknownness and restricting it to the human face would be unmotivated and, at least according to Atterton (2012), perhaps even contradictory. The unknownness aspect of Alterity, epitomized by the fact that Alterity escapes all attempts at achieving totalizing knowledge, can accordingly constitute the core idea of a phenomenological reading of the moral significance of biodiversity as diversity. Indeed, if one grants the premise articulated in our introduction—that the more diverse an ecosystem is, the more unknownness it contains—one should acknowledge that biodiversity can be seen as a reservoir of Otherness, challenging our knowledge totalizing attempts, and in that sense opening up our moral views.

3. Towards reinstating the importance of unknownness in conservation action

The relevance of the ethics of unknownness to think through our relation to biodiversity surfaces in more concrete terms when one examines the phenomenology of our attempts to know biodiversity around us. Naturalists all know that, as they spend time in the field struggling to improve their knowledge of biodiversity, their lived experience challenges their preconceptions, however informed, and forces them to admit that some biological entities or sets of entities either defeat the concepts they used or outreach their conceptual abilities (Meinard, 2011; Meinard and Quétier, 2014). This archetypical experience has to do with their attempts to use knowledge to grasp an external reality. According to our approach, this kind of experience is a central, albeit to some extent subterranean, ethical source that underlies our ethical obligations with respect to other human beings. According to the reasoning developed in the former section, it can be also seen as an important ethical source of obligations with respect to biodiversity. In this section, we explore the meaning of this idea for concrete conservation action, using the example of the Trézence valley as case study. In Section 3.1, after having briefly presented this case study, we show that current management practices, as they are exemplified in this case study, do not bestow much importance on the value of biodiversity as diversity. We then explain how our approach to the ethics of unknownness can materialize, and contribute to do justice to the value of biodiversity as diversity, in the case of the environmental management of the Trézence Valley (Section 3.2).

3.1. *The elusiveness of the value of biodiversity as diversity in conservation practice—the case of the Trézence Valley*

The Trézence Valley is a large site, nearly 12 km², mainly occupied by a large wetland, called the “marais de Lande”. This wetland is largely exploited for corn plantations. However, numerous plots are also used for extensive pasture. And there are also important patches of forests, which are unmistakably humid in the southern and central parts of the site, and somewhat more mesophilous in the northern part of the site. Surrounding the wetland, there are important areas occupied by dry grasslands and shrubs, developed on limestone clay soils, some of which are almost entirely dominated by *Brachypodium rupestre* (Host) Roem. & Schult., 1817, but other sheltering major populations of orchid species, that local botanists know quite well and study regularly. This site is owned by the local administration, which manages it according to a recently elaborated conservation action plan, aimed at preserving its biological richness (Lelièvre et al., 2018).

The literature on conservation biology, ecological economics, environmental ethics and environmental humanities is replete of typologies of “environmental values”—a phrase used to capture a wide array of ethically loaded attitudes that various people can have with respect to nature, biodiversity, the environment—whatever the term used to denote the non-human world (e.g. VanDeVeer and Pierce, 2003, Mugerauer and Manzo, 2008, O’Neill et al., 2008; White, 2013, Tardi et al., 2017, Plumecoq et al., 2018), with intrinsic and instrumental values as the prime examples. Conservation action plans, such as the one recently elaborated for the Trézence Valley (Lelièvre et al., 2018), are not structured along lines paralleling any of these standard, academic typologies of values. Following the classical model popularized by the literature on “structured decision making” (O’Donnell et al., 2017), the conservation action plan for the Trézence Valley is organized around conservation objectives that refer to values that can be classified in two broad categories: “patrimonial” and “socio-economic” values. The term “patrimonial”—used commonly in France—refers to the value of rare, emblematic, or protected species and habitats, and is based on pre-established lists of such species or habitats, such as Red Lists. “Socio-economic” value corresponds to the ecosystem services accruing from the conservation project, including various ways through which the site can be economically exploited: agricultural, sylvicultural, or touristic activities. This dichotomy carries some limited resemblance with the notions of intrinsic and instrumental values, commonly used in the environmental philosophy literature (Rolston, 1989; Afeissa, 2009). But these two distinctions are not synonymous: there is no reason to consider that common plant species have no intrinsic value just because they are not rare, emblematic or protected, and there are many rare, emblematic or protected species with major instrumental value, such as sturgeons. For all its crudeness, the patrimonial versus socio-economic value dichotomy captures a pattern of stances that often characterizes site-scale conservation projects (e.g. Dehais et al., 2016; Lelièvre et al., 2018). The stances of actors championing these two types of values are sometimes convergent, sometimes antagonistic, depending on the specifics of the conservation project at hand.

For example, in our Trézence Valley case study, there are antagonisms between patrimonial versus socio-economic values, illustrated by the opposition between the agricultural exploitation of the Valley for corn plantation, and the preservation of *Ranunculus ophioglossifolius* Vill., 1789, a plant species protected according to National legislation, growing on humid grasslands ploughed for corn plantation. Interestingly, the dichotomy of types of values underlying conservation action plans like the one exemplified by the Trézence Valley does not refer to a value of biodiversity as diversity. At best, one can conjecture that the value of biodiversity as diversity might play an indirect role in the value recognized to habitats that are typically diverse, such as dry grasslands. But such a reference to diversity is subterranean, highly conjectural, and it does not play any important role in the structure of the action plan.

3.2. *Reinstating the value of biodiversity as diversity based on the ethics of unknownness*

In this subsection, we explore how the ethics of unknownness can participate in reinstating the value of biodiversity as diversity in conservation practices, still based on the Trézence case study. This exploration will illustrate how our framework can expand and enrich conservationists’ ability to take unknownness into account in conservation actions, beyond precautionary thinking in Leopold’s vein (Leopold, 1972). Let us discuss in turn the three types of unknownness: distributed unknownness, irretrievable unknownness and known unknownness, and their respective implications for conservation action.

Distributed unknownness refers to the fact that certain things are unknown to some people but known to others. An obvious illustration, in a conservation context such as the one of the Trézence Valley, is that there are pieces of knowledge about local ecosystems that are known to conservationists, but not to local stakeholders. Symmetrically, local stakeholders often have knowledge that conservationists lack, among other things thanks to their intimate relationship with sites they live in and from—this is, in particular, the case of farmers living and working in the Trézence area. The sharing of knowledge that takes place when conservation action plans are collaboratively elaborated with local stakeholders, as it was in the case of the Trézence Valley (see Buchs et al., 2020), can hence play a crucial role in entrenching conservation actions by engaging local stakeholders and bolstering conservationists’ ambitions. Seen from the lenses of the ethics of unknownness, such catalyzing effects stem from the phenomenon mentioned above as one of the experiential bases of the ethics of unknownness: the fact that the confrontation with distributed unknownness opens our minds and hearts to new perspectives and worldviews. Taking seriously this aspect of unknownness in conservation action hence means fostering the sharing of knowledge among the actors involved, so as to make the most out of the ethical source unleashed by opening minds and hearts to new perspectives and worldviews. At the same time, the idea that conservation actions should be embedded in participatory processes involving such exchanges of

knowledge also has its dark sides, and can be motivated by many other reasons. Both aspects of the debate fall beyond our scope here (see Buchs et al., 2020). What we are concerned to point out is that the ethics of unknownness is an additional, so far neglected, reason to anchor conservation actions in dense exchanges of knowledge.

Distributed unknownness is a part of unknownness that vanishes as knowledge is exchanged. Even though the basic phenomenon underlying the ethics of unknownness applies to it, and accordingly this type of unknownness has an important ethical significance, this is not the kind of unknownness that Levinas-inspired approach is interested in. As explained above, the unknownness that is the focus of Levinas is an irretrievable unknownness—an unknownness that will never be conquered by knowledge. We claim that this second type of unknownness has an important role to play in conservation, too, as a fundamental ethical source forcing us to acknowledge the value of what we encounter in nature—just like we are forced to acknowledge the value of people we face. Because this ethical source is pervasive, it does not easily lend itself to clear-cut conservation applications, such as prioritizations among sites or populations to conserve. It is more of a general ethical source that should be recognized as an important ethical pillar for conservation.

The third type of unknownness, known unknownness, is the one that has the most prominent implications for conservation practice. This type of unknownness refers to unknown aspects that are known to be unknown at the time when conservation actions are to be devised and launched. To explain how the ethics of unknownness can inform conservation action in the case of this type of unknownness, we will focus on the case of an Orchid species, *Ophrys suboccidentalis* Ring, Quérre & Wilcox 2017, recently discovered in the Trézence Valley. *Ophrys suboccidentalis* grows on the semi-arid calcicolous grasslands located in the hillsides bordering the central wetland of the Trézence Valley. These grasslands are protected by the European legislation Natura 2000 and shelter numerous plant species protected from local to European levels, whose very existence and conservation require the maintenance of human interferences—typically: traditional extensive agricultural practices. Typologies of values like the “patrimonial” vs. “socio-economic” dichotomy mentioned above account for reasons to conserve these grasslands. They were valued in the past by farmers using these areas for extensive grazing. They have been valued for decades by amateur botanists due to their richness in known Orchid species. Now, with the discovery of the new Orchid species *Ophrys suboccidentalis*, we see a reason to value this area that we had *before this discovery*: the potential for a discovery of a new species. This example can, to some extent, be interpreted along the lines of a classical option value argument: given that some people value Orchid species, if grasslands are destroyed at time t , Orchid species yet to be discovered at time t will be lost, and people valuing Orchid species will lose an opportunity to enjoy an additional Orchid species at time $t + 1$. This argument could call for an application of the precautionary principle—assuming that some people value Orchid species and that their potential loss is worth the effort to preserve the grasslands. While this reading, which echoes Leopold’s call for precautionary thinking in conservation (Leopold,

1972), is undoubtedly sensible, and captures a convincing reason to preserve grasslands such the one found in the Trézence hillsides, our claim is that it does not capture the entire ethical significance of the potential for a discovery of a new species. To understand why, let us explore the case of *Ophrys suboccidentalis* more thoroughly. This species was discovered in 2008, in dry grasslands that were known and regularly explored by local botanists and Orchid specialists for many years. The reason why all these specialists had never noticed the species is that it comes into flower in early march, whereas most of the other Orchid species populating these kinds of habitats in this region are known to bloom in April or later on. Therefore, the hordes of botanists coming to the site every spring were simply always too late to see *Ophrys suboccidentalis*. For botanists, this discovery hence amounted to a shock, leading them to question their practices and what they used to see as their deep knowledge of the site. Whereas the option value argument or the precautionary principle variant refer to independently established values whose realization is unknown, what we see here is an example where unknownness in itself is a source of value, forcing people (in this case, botanists) to open up and rethink their perspectives. This value associated with unknownness is independent from the value (be it intrinsic or instrumental) that can be bestowed on the species once it is discovered. An environmental management strategy concerned with doing justice to the ethical importance of the unknownness of biodiversity would have acknowledged the unknownness of early species in dry grasslands, and would have protected them because of it.

It would be tempting to object to this idea that it cannot give us any guidance when deciding what conservation action to make. This is not the case. In concrete environmental management practice, it is established that there are some known unknowns: there are some systems about which we know that we don’t know much, and systems about which we have good reasons to believe that there is much more to be learnt than about other systems. For example, it is not implausible to claim that we

have more to learn about rare semi-arid grasslands than about enriched mesic pastures, simply because the former are rare and have not been studied as much as the widespread latter. In the current context in which the management plan for the Trézence Valley was elaborated, such an approach would have been highly unorthodox. Indeed, current practices in France in environmental management are orchestrated by official guidelines (AFB, 2018) which are supposed to be followed by all managers and consultants elaborating conservation strategies and action plans. These guidelines specify that actions devoted to acquire new knowledge on the managed site should be exclusively focused on measuring the value of indicators monitoring the conservation status of species and habitats targeted by the management strategy. In such an approach, the very idea that a knowledge acquisition strategy should be guided by our prior apprehension of what is unknown is excluded. Restated in the term of our reasoning, this means that current management strategies squarely ignore unknownness as an ethical source underlying conservation. A concrete implication of our rationale is hence that such a very reductive approach to management should be overcome. Our reasoning outlined above suggests that in conservation practice, in order to do justice to the ethical significance of the unknownness of biodiversity, we should pursue, among conservation objectives, also objectives that are entirely devoted to protecting entities or areas solely because we know that we don't know much about them. Trying to identify which entities are the most unknown will not be easy or even feasible in all the situations where conservation decisions have to be made. What we claim, more modestly, is that unknownness is one of the ethical sources underlying conservation actions, and that taking this ethical source into account can improve some conservation practices in certain cases.

4. Conclusions

In this article, we have argued that a phenomenological account of the unknownness of natural entities can be an important ethical source underlying conservation actions. Specifically, we have outlined an ethics of Otherness inspired by the philosophy of Emmanuel Levinas, focused on unknownness as a reason why we can value biodiversity in its diversity aspect. Our approach, affirming the ethical importance of the Otherness (in its unknownness dimension) of biodiversity, counteracts the totalization attempts (and arguably, the associated instrumentalization) of the dominant Western worldview, and points that attention to unknownness can open up discussions about the multitude of ethical reasons underlying conservation action.

According to our rationale, at least part of our ethical relation to biodiversity stems from the particular, embodied experiences of practitioners (or anyone for that matter) encountering natural entities. Our inquiry is hence anchored in an experiential approach to what underlies our possible ethical stances towards biodiversity, based on a phenomenological account of unknownness. Our approach can complement other existing approaches, such as value-based and virtue-based ones, that raise the importance of a clearer account of ethics and values in the theory and methods of conservation biology (Barry and Oelschlaeger, 1996, Roebuck and Phifer 1999), and point to the role of ethical reasoning in conservation practice (Shrader-Frechette and McCoy, 1994). Conservation psychology (Clayton and Myers, 2015), exploring through empirical rather than philosophical methods how people perceive and value the natural world, could possibly provide insights complementary to those from phenomenology. However, phenomenology and psychology are anchored in distinctive methods and different underlying philosophies of science (Engel, 2014). As a result, the relations between the two disciplines are complex and debated. Exploring how and to what extent insights from the two disciplines could be integrated therefore falls beyond our scope and calls for future dedicated studies.

The ethics of unknownness, as outlined here, focuses on the primacy of ethical relationships to ourselves and the world (preceding our knowledge of the world), and the experiential grounding of the attitude of responsibility towards others, including non-human beings. We have argued that the notions of unknownness, Otherness and Alterity contain a deeper rationale for locating the source of ethics in an experienced impossibility to encompass the Other in a totalizing knowledge. In our context, this means that biodiversity cannot be fully grasped by universalizing, objectifying conceptualizations; obtaining knowledge about the world is a process that is influenced by our lived experience of Alterity. Thereby we showed how an ethical source of conservation action is linked to human experience of the encounter with biodiversity as much as it is based on our knowledge about biodiversity and its rapid decline. We illustrated how this kind of reasoning can be applied in conservation settings.

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