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Rethinking the Environmental Virtue of Ecological Justice from the Interdependencies of Non-Human Capabilities and Synergetic Flourishing

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Abstract: The capabilities approach has largely addressed individual capabilities via a liberal framework common in its literature. However, a growing number of scholars concerned with sustainable human development are analyzing theories and methodologies that are both suitable for human flourishing and display a respect for nature. This paper explores several forms of considering the value of non-animal and non-individual natural entities, such as ecosystems. I first expose some instrumental reasons why we may care about the flourishing of ecosystems and then other reasons based on the assumption that they have integrity and their own capabilities and, therefore, deserve moral consideration. I argue that despite the possible moral conflicts that may emerge between human and ecosystemic autonomy, they could be avoided by adopting an ecological justice virtue. I present this ecological justice characterized by some contributions of decolonial thought and environmental virtue ethics. I propose that if the capabilities approach was not anchored only in an individualistic ontology, it could better assume a multi-level axiology from which the inherent and instrumental value of ecosystems would be interconnected. And, to this end, I find the concept of synergetic flourishing helpful to accept an interdependent and non-human-centered recognition of the capabilities.

Keywords: ecological justice; ecosystem capabilities; integrity; synergetic flourishing; interdependence; environmental virtue ethics; capabilities approach; decolonial thought; non-humans

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1. Introduction

We currently live in an emerging context marked by ecosystem decline, biodiversity loss, accelerated climate change, and resource depletion [1–3]. Neoliberal philosophy and market capitalism have caused huge social inequalities and led to a definition of "wellbeing" that bears little connection with caring for non-human nature [4]. Satisfying basic human needs has been hegemonically propped up by unfair conditions and an anthropocentric bias that prioritizes human over non-human development [5]. Here, I pose the question of whether the capabilities approach advocated by some authors might not be following a similar bias.

This is relevant here because the capabilities literature has largely attempted to guarantee an equal wellbeing for everyone. However, who is "everyone" and to what extent should the non-human world be a concern for justice? Such a question calls for justice not only in terms of distribution but also in terms of recognition and may be helpful in articulating new approaches to environmental virtue ethics.

Although Sen and Nussbaum's particular theories aspire to be liberal, because individualism, freedom, and capability to choose are considered substantial goods, it is possible to construct capability theories that are less so [6] (p. 196). According to Robeyns, the concept of human capabilities has long been acknowledged as an approach, rather than a theory, that addresses a broad philosophical framework; this lends it the qualities of being open to different outcomes and not being overly specific [6] (pp. 29–30). However, arguments

justifying an instrumental use of non-human nature to enhance human development have become habitual in the capabilities literature driven by Sen and Nussbaum [7–10], considering that the world of nature forms an important capability for human flourishing. From this view, the natural environment would only matter insofar as it ensures a threshold of human capabilities and ecosystem management is mainly guided by human interests. However, some other scholars call for a shift in our valuations of non-human nature [11].

Hence, this paper examines the relationship between human and non-human capabilities, focusing on the urgent need to link the two because it is a matter of environmental virtue ethics [12]. I think that including an approach that considers non-human capabilities in a non-anthropocentric and non-instrumentalist way may contribute to a "flourishing planet", a guiding concept that helps on a theoretical level to respect the self-realization of living beings and the natural entities that make up the Earth [13].

I argue for including the non-sensocentric and non-individualistic contributions of ecological justice in the environmental virtue ethics framework. To this end, I will consider how the notion of flourishing can apply to non-human nature. By flourishing we may understand the meaning provided by Sen's and Nussbaum's framework: it is the end of all political, social, and economic activity, and it arises when the capabilities (that are, the opportunities for individuals to live the life they choose and have reason to value given their personal and social circumstances) are granted [14,15]. Aristotle coined the term and defined it as the way we are supposed to be as human beings. For him, the cultivation of virtue and good character would lead to flourishing.

Ecological justice views non-sentient nature as capable of flourishing in its own way [16–18]. This acceptance might be justified by identifying that an ecosystem as a whole has integrity, to which it tends naturally if it does not encounter obstacles [19]. Despite integrity being recognized by some scholars as an elastic concept with no clear definitions [20] and even inconsistent meanings [21], many others concur that integrity is defined by three elements: naturalness, wholeness, and continuity through time [19,21].

These issues will be revisited in the following pages which are structured as follows. In the next Section 2, I outline and discuss the way human development and capabilities theories can include the non-human world in their moral frameworks and political procedures: instrumentally or virtuously?

Section 3 attempts to understand some causes of conflicts between capabilities, those of sentient beings (such as humans and nonhuman animals) or those of non-sentient living beings (such as plants and fungi), or those of individual beings or those of collective entities (such as ecosystems). To this end, it explores the biases of domination that might exist in the interaction with non-human nature, offering some of the contributions of decolonial thought and environmental virtue ethics. The trade-offs of advocating for a sort of ecocentrism instead of only anthropocentrism is not a new debate within the capabilitarian rhetoric [22]. Within a capabilitarian framework, the premises would be to reimagine and deconstruct the minimum thresholds of capability needed for sustainable and environmental human development.

Finally, in Section 4, I propose the term "synergetic flourishing", as a flourishing concept beyond an individualistic and anthropocentric standpoint. The purpose of suggesting such a concept is to highlight how to overcome anthropocentrism on the one hand and methodological and ontological individualism on the other when providing arguments from capabilitarian ethics. The idea of synergetic flourishing reinforces the assumption of interdependent capabilities among species and beyond a single generational time scale.

Hence, one of the central tenets of this article is to rethink the virtue of ecological justice by considering the non-animal capabilities and integrity of non-sentient entities, and to reason how they might lead to recognizing a synergetic flourishing.

2. The Value of Ecosystems from a Green Capabilities Approach

2.1. The Instrumental Value of Non-Human Nature for Enhancing Human Capabilities

Capabilities are the conditions that make it possible for people to do various things that make up a flourishing human life [23]. They are necessary for flourishing. However, what capabilities are necessary and for whose flourishing?

There are several reasons to justify an ethical commitment to non-human nature from an instrumentalism perspective concerned mainly with human capabilities. Regarding moral respect for non-human animals there are anthropocentric reasons to defend it, in addition to the arguments that Nussbaum and others already provide in defense of their value and the need to include the recognition of their capabilities within the boundaries of justice [23,24]. Interacting with pets or liminal animals can easily enhance the capability of emotions, listed by Nussbaum [25] (pp. 33–34). Whether we establish a symmetrical emotional correspondence with the non-human animal or an asymmetric correspondence where we feel something totally different from the internal state of that animal, the case in both is that we are emotionally involved. There is a connection between the capability of emotions and the capability for affiliation, suggesting a link with other basic capabilities on Nussbaum's list, such as the capability to play or the capability to experience concern for and in relation to nature (other species). In addition to the psychological and emotional benefits of caring for and not devastating the non-human animals living in our environment, there are clearly demonstrated benefits on a more physical level. Protecting the health of animals with whom we have some (more or less direct) interaction usually reduces the risk of human diseases. The COVID-19 pandemic of zoonotic origin is an excellent example of this interrelationship and of this instrumental interest that we can be respectful of other species [26]. Hence, there are crucial connections between the capabilities threshold safeguard of the non-human animals and the human capability of bodily health.

In short, strong motivations exist to defend anthropocentric and non-anthropocentric management of non-human animals. Beyond the benefits we may self-interestedly extract from our relationship with them, the recognition of their capabilities as sentient beings facilitates the acceptance of their flourishing and value. But, the treatment of non-animal and non-sentient nature, insofar as it lacks sentience, tends to be based more on instrumental moral reasons. If ecosystems or species as a whole are ethically valuable, it is because their care generates advantages for the sentient individuals that make them up.

There is another basic capability that comes into play and gets fostered through our relationship with non-human nature, regardless of whether it is with another animal or with another natural entity, such as a river or a mountain: the capability of the senses, imagination, and thought [25]. Such capability is fostered best when we interact with wild nature, whether discreetly or otherwise. And, if the focus of our appreciation is not only an individual but a whole ecosystem, with all its interdependencies and dynamic processes, then our basic capability is boosted. This is because our "Self", that is, our personal and atomized identity (due in part to the neoliberal values that Western culture has instilled in us during the last decades), is silenced [27]. Thus, our cognitive inertia of anthropomorphization and instrumentalization is weakened when we respectfully admire an ecosystem environment and learn from it [28].

And, this is not merely a reaction to something. Rather, we enter into a living and changing correspondence. We do not interact with wild nature through verbal dialogue, as we commonly do with other people. We interact through an exchange of smells, sounds, chemical flows, and various sensations [29]. It may be a quieter but, in some senses, more intense relationship, given the differences where our subject is involved. We enter a network in which the evolution and movement of each thread conditions the rest and intertwines new links [30]. When interacting with natural ecosystems, we are truly faced with what is most different from us, because they are full of non-human beings and processes and also have a strong systemic identity forged by numerous symbiotic relationships [31]. Although we are also nature and also made up of tiny systems and networks of nature [30], we have organized and developed our lives outside nature without recognizing ecodependencies

by instrumentalizing non-human nature and prioritizing an atomized autonomy, self-realization, and personal identity [5,32].

The aesthetic approach to nature [33] does not have to consist only in visually contemplating a forest, a watershed, or a swamp; rather, the cognitive journey is deeper and more interesting when we also pay attention to the multiple sounds and the fusion of different aromas, breathe the lightness of the air, and touch the different textures. Making use of our aesthetic senses in environments little exploited by humans and surrounded by beings other than those we already know could empower our senses and our imagination [34]. In addition to literacy and the core mathematical and scientific education that Nussbaum comments on in relation to how to (re)create the capability of senses and imagination [25], ecological literacy is also required. An ecological education can turn us to sharpen our physical senses and discover new ways of being or functioning of which we were previously unaware. In fact, the recognition of dynamic life forms and processes we are not accustomed to opens the door to broadening our (bio)ethical and moral circle, stimulating the elasticity of our moral sense [35].

Beyond these psychological and emotional benefits, there are further reasons why the environment should be considered a baseline for all human capabilities. The ecosocial collapse and climatic chaos we are currently experiencing [2] endangers all basic capabilities, starting with the capability of life and being bodily healthy. Awareness of the links between the environment status and human health [3,36] is fundamental because being healthy may be the basis for ensuring that capability thresholds are protected. Therefore, being healthy could itself be considered a "meta-capability" [37] (pp. 143–169). The ecosocial collapse jeopardizes our opportunities to live healthy lives, as well as threatening our ecological resilience to adverse weather conditions and our social resilience to cultural changes in our lifestyle [32]. Accelerated climate change and deforestation dramatically affect our opportunities to be healthy, and this has become particularly visible through the COVID-19 pandemics. Scientific evidence of its emergence is tightly linked to deforestation, industrial animal farming, wildlife trade, and biodiversity loss [36].

This also holds for our right to be well-nourished, because accelerated climate change and deforestation wear down the crop fields, increase temperatures, capture less CO_2, and increase pollution, among other devastating effects. Hence, if the environment is key in protecting the main human capability of being healthy, we may then state that the environment should be also understood instrumentally as a meta-capability [8]. A meta-capability could be defined as "an overarching capability to achieve a cluster of basic capabilities to be and do things that make up a minimally good human life in the contemporary world", according to Venkatapuram's view of health [37], or as "a broader capability that enables all the capabilities worthy of protection as constitutional entitlements", according to Holland's view of environment [8]. In short, meta-capability could be understood as an umbrella from which other capabilities may develop.

It should be pointed out that just because there are instrumental reasons to carefully manage ecosystems does not mean that these reasons are strictly anthropocentric nor that they will necessarily cause more harm to nature than a non-anthropocentric choice made without human-centered interventionism. First, non-human animals also have instrumental interests in benefiting from healthy ecosystems. Second, if an ecosystem wants to change from a rainforest to a savannah, the implications for human and non-human animals probably would be worse, at least from a utilitarian balance, than if an instrumental and human-centered approach tries to stop that because of its implications for human and non-human capabilities. In short, managing ecosystems under instrumental criteria to safeguard the capability thresholds of sentient beings need not be ethically reprehensible.

2.2. The Intigrity and Flourishing of Non-Sentient and Non-Individual Nature

As noted above, there are several instrumental moral reasons for managing ecosystems in ways that facilitate animal (including human) flourishing. However, moral hesitation arises when it is argued that such management mediated by instrumental interests does

not take into consideration the autonomy or free flourishing of the ecosystems themselves. That is, when ecosystems are not recognized for their integrity and value. For this conflict of interests to emerge, between what a sentient being needs for its individual flourishing and what an ecosystem as a whole needs for its own collective flourishing, it must first be recognized that both parties possess capabilities. Thereby, first focus on this assumption.

The capabilities extension to ecosystems has already been discussed within the academic literature [22]. One of the main claims often put forward in defense of ecosystem autonomy is that ecosystems have an integrity towards which they tend to evolve [19,38]. To pursue this propensity of natural oneness, they would manifest systemic capabilities such as homeostasis, autopoiesis, or resilience [1]. The basis of the argument is not that ecosystems have value because they have rational capabilities like ours or sentient capabilities like other animals but that they can also flourish in their own way and, to do so, perform their own capabilities. And, just as it might be unjust to force how a human or non-human animal should flourish, ignoring its agency, the same kind of injustice might be claimed of an ecosystem that is permanently disrupted in a way such that it cannot return to its original functions [41]. For both cases there could be an oppression of capabilities and integrity would be overshadowed. According to a biocentric or ecocentric deontological approach, ecological injustice would occur because the flourishing of some entities is not being recognized [42,43].

On this argumentative point, the discussion remains open as to whether there is such a thing as integrity as a value for conservation biology and with a normative meaning. Authors such as Rohwer and Marris [21] have elaborated a number of critiques of the concept of ecological integrity. As they explain, ecosystems are simply too dynamic in space and time, their complex interconnections, including coevolved relationships, are ultimately ephemeral at the geological scale. Any impression of wholeness would be an artifact of the brevity of human lives and the shallowness of our historical records. However, understanding integrity flexibly and not as an immutable whole is something that other authors have already pointed out [19,20]. Moreover, for non-human beings, the idea of integrity can make sense insofar as most animals and plants feel or flourish as part of a territory, community, or ecosystem. They have a certain multidimensional, not strictly individual, identity.

Nonetheless, even if integrity was accepted as a core condition for ecosystems, the conclusion that this is the basis of moral value and, therefore, we must deontologically respect it remains troublesome. The change from ecosystem A to ecosystem B is usually understood to be a bad thing because we believe that the integrity of ecosystem A has been lost. But, this reasoning seems odd: the integrity of ecosystem A does not necessarily have to be better than that of ecosystem B. If we think of a savannah that, due to the disappearance of large mammals and other processes, is surprisingly transformed into a rainforest, we could assert that there has been a loss of value but that this loss of value may be explained by reference to integrity seems problematic. Integrity might be a rough proxy for complexity, diversity, and preferred historic states [21], which have an implicit value. In terms of complexity and diversity, a rainforest outperforms a savannah. However, arguing that the former has a more valuable integrity than the latter seems as unreasonable as arguing that the latter has more than the former. We could agree that both ecosystems, with or without integrity, are equally valuable. But, we still perceive moral problems when the transition from one ecosystem to another occurs.

The moral concern comes when such a transition is produced by a deliberate domination over ecosystems, by specific attitudes and behaviors, or reduces the value of ecosystems and non-human nature to mere ecosystem services or mechanical functions useful for our flourishing. Rather, we can understand their value in relation to their own dynamic flourishing and not subject only to our interests.

To excuse domination by arguing that this will better protect an ecosystem does not seem entirely acceptable. With instrumental management, it is easy to recognize that non-human processes and beings have different states and qualities, and several

expressions of their development. But, it is again we human beings who select which of these we want to prioritize over others. We leave no room for non-human nature to develop in its own way, because no capability to flourish is recognized. In this way, we stand as her owners, guardians, or tutors, as we usually do with children, those with severe intellectual disabilities, or even pets [15] (pp. 370–380). This is the moral weakness of paternalism: omitting the possible autonomy of those we care for or protect. It is not only important to respect the value of non-human nature because it is a duty, but because in doing so we do cultivate a kinder ethical attitude towards the non-human realm; we develop environmental virtues.

Assuming we recognize the integrity and a certain autonomy of systemic entities, then it remains to be discussed on what moral criteria we would decide when to prioritize the autonomy of an ecosystem and when that of a human being. In sum, whose capabilities matter more and why? However, who's or what autonomy to flourish should be prioritized is a necessary but secondary question with much debate ahead. First, it is relevant to discern what are the factors that have pushed one ecosystem to shift to another and whether these were really inevitable to safeguard the capability thresholds of other beings. Otherwise, a biased moral dilemma may be perpetuated.

3. Addressing the Moral Conflicts between Human and Ecosystem Flourishing from Environmental Decolonial Thoughts and Virtue Ethics

Environmental justice tends to claim a deontological approach where the demands of justice consist of how to distribute non-human nature among humans, while ecological justice is usually a call for a virtuous attitude through which non-human nature is not only instrumentally valued. In Western moral political tradition, philosophers like Aristotle, Hume, and Rawls have agreed that justice may be considered the most important virtue of social relations and political institutions and the greatest of all virtues [44]. Hence, environmental justice can be understood as the major environmental virtue. Environmental justice has been mainly conceived as a framework to fairly allocate environmental resources and impacts among unequal people [18]. However, only human beings are part of the community of justice, while non-human nature is somehow reified. Ecological justice, on the other hand, includes non-humans within the community of justice and recognizes that they do not matter only because of what benefits or harms human beings but that they matter in themselves [18,43]. Changing our attitude towards the non-human realm is not only a deontological but also a virtuous call: it might help us all to flourish better. While some authors have used the concepts of environmental justice and ecological justice interchangeably [45], others have made the effort to see their different nuances [16,46]. Other contemporary authors, like Dobson [47], have followed this claim for justice as the first virtue of "ecological citizenship" and argued that the other virtues of care or compassion are related to individuals instead of social and institutional, and for this reason they are less important than justice.

Some have discussed Dobson's particular prioritization of virtues and try to accurate his ecological citizenship contribution to environmental virtue ethics, for example, by suggesting a new virtue which can be called "resourcefulness", as a countervailing virtue of the profligate use of resources [48]. Others have advocated for non-distributive demands of justice and emphasizing changing the private and citizen behaviors, beyond social or institutional claims, and, thus, have suggested environmental virtues like mindfulness [49] or cheerfulness [50]. And yet, ecological justice should bear more than new individual attitudes and should be more than following distributive norms of how to allocate the environmental resources and also be concerned about who is being recognized as critical to the decision-making process of understanding justice and virtue is being developed.

It is not possible to completely dissipate the cognitive limits that separate our first-person experience from those of other beings, but we can enable other beings to express themselves and try to listen to them. This should be one of the main goals of ecological justice because it is necessary to trigger reflexivity and global meta-consensus that represent

both human and non-human communities [51]. According to Dryzek and Pickering, ecological reflexivity can be considered an environmental virtue crucial for governance in the Anthropocene [51,52]. This virtue is defined as a democratic virtue that attempts to listen to an active system such as Earth through interdisciplinary means, seeking, receiving, and responding to early warning signs about potential changes in the ecological state [51]. Advocating for a governance committed within non-human realm and ecological justice virtues does not necessarily mean claiming a hermetical ecocentric morality. Following Section 2, we might agree that an ecosystem has autonomy and integrity. This means that ecosystems enter the moral balance on an equal footing with other valuable beings capable of flourishing but not that they are the most valuable entities. What ecological justice does imply is adopting a holistic, rather than just individualistic, ontology when evaluating the trade-offs of a choice. These evaluations would be made by human beings, insofar as I am claiming here for human-cultivated environmental virtues. But, this does not mean that the analysis of the trade-offs of a choice must be anthropocentric. Precisely, it may be a non-anthropocentric analysis, evaluation, and decision-making process because democratic commitment to ecological reflexivity could lead us, on the one hand, to the recognition of the capabilities and flourishing of non-humans and, on the other hand, to the recognition that we are a non-atomized ecological self and interdependent and eco-dependent agents.

For example, from a holistic view, in understanding why a rainforest tends to become a savanna, we may realize that it is partly due to external human pressures and less to "free choice". Our epistemological limitations [53] (pp. 435–450) inhibit us from knowing all the reasons behind why a forest would become a savanna or why a savanna would become a forest. If we do not rely on scientific knowledge and adopt an environmentally virtuous attitude that allows us to leave space for nature's expression without constant human pressures, it becomes necessary to understand how ecosystems flourish and maintain their integrity, and to distinguish when they transition healthily or are altered by disturbances. Some scholars are researching ways of appreciating non-human capabilities [54]. Using ancient oriental philosophies [55], they highlight the existence of strategies that could help with this exercise of recognition. And, in the realms of fieldwork-based science, an increasing number of studies are being conducted on the knowledge of ecosystems and non-human beings from an interconnectivity paradigm, where the human and non-human interfaces as well as the individuals and their surrounding environment are considered intertwined [56,57].

Moreover, despite epistemological limitations of what the non-human entities experiences consist of, what we can attempt to discover is how our lifestyles constrain and affect ecosystemic transitions. Precisely, the limitations of knowing what is most different from us can be an opportunity to focus more on understanding the scope of our actions. This also invites us to acquire another environmental virtue: humility, whereby we are open to change our behaviors in order to award biophysical space for non-human and non-sentient entities' self-expression [58,59].

Questioning our lifestyles as well as our capability thresholds, so sustained on an instrumental use or even exploitation of the environment, is also one of the tasks of decolonial thought. Similarly, imagining new forms of life and behaving with lower energivorous metabolisms (which, for example, do not require building a dam in a river to generate energy) could be one of the tasks of the environmental virtue ethics [60].

While virtue ethics depends on agent-centered development of human excellences, decolonial thought might be understood as an educational and political program which could encourage virtue ethics. Thus, although they are not the same because their origins differ, they could benefit from each other. The global decision requirements to live sustainably with a serious respect for nature might not be achieved by cultivating environmental virtues and, similarly, cultivating human excellence might not be achieved without political programs and adequate educational support. Here, I understand decolonialism as a political philosophy complementary to environmental virtue ethics.

Focusing on decolonial thought, in particular, the degrowth movement appears as a complement to change the instrumental meaning of justice and human development laid out by some. The agenda and philosophical language used in environmental sustainability often refers to utilitarianism and distributive justice, rather than recognitional forms of justice [16]. The mainstream notions of sustainable development have been criticized for perpetuating present conditions of inequality, growth dependency, neoliberal accumulation, and a utilitarian relationship with living beings [32,61]. However, the degrowth movement could be considered as an alternative to adaptation or mitigation policies based on a sustainable development agenda. Part of the emphasis of degrowth lies in reducing production and consumption in the Global North, hence slowing down energy and raw material flows [62,63]. While it might not seem to differ much from orthodox proposals around the Green New Deal across the globe, degrowth scholarship argues for a radical and qualitative change, affecting our activities, relationships, and values, directed towards liberating human beings and the non-human world from the capital accumulation imperative [62,64].

While many sustainable human development advocates promote technologies and the global economy within the scope of green capitalism, degrowth advocacy takes a different tack [2]. It focuses on a decolonizing imaginary instead of perpetual economic growth narratives [61–64]. As a movement, it first emerged in Europe heavily criticizing Western capitalist lifestyles and complementing political ecology. The decolonization that degrowth aims at favors the reception of new narratives and worldviews that rightly support to weaken the dominant anthropocentrism, a goal shared by ecological justice. Thus, for instance, the Quechua concept "sumak kawsay" or "buen vivir" in Latin American philosophy is based on a deep change of the cosmovision, where interculturality and plurinationality unite and nature is awarded greater consideration [65]. "Ubuntu" or the "Gandhian Economy of Permanence" are other examples of complementary narratives that move away from a strong moral anthropocentrism [61]. Recognition of these movements and philosophies that bring different understandings of socio-ecological systems and other starting points of interacting with non-human nature becomes an important step towards non-anthropocentric management. In contrast to individualistic and atomized approaches, many indigenous cosmovisions have advocated a non-anthropocentric, relational and holistic way of life, in which humans and non-humans live with their own agency and develop in interconnectedness [9,66].

This is a further advantage of the degrowth movement: it is open to establishing networks with allied philosophies and practices from other cultures that try to topple the common hegemonic imaginary in different ways. In fact, a common criticism of degrowth consists in arguing that it can only be applied to rich economies in the Global North, while developing countries still have to satisfy their basic needs. However, developed countries should adhere to degrowth not so that the Global South follows the same example of ecosystems exploitation and economic growth fetishization but rather to free up a "conceptual" space where other countries can build their own paths towards a fairer and more sustainable conception of life [32]. This would represent a substantial step towards participation and recognition policies that respect the development of the most oppressed beings and the disturbed ecosystems, and where the cost–benefits relationship becomes multidirectional. Degrowth aims to be critical to those domination cultures that inhibit agent-centered virtue because embracing interculturality and non-colonial imaginaries of economic growth leads us to wonder what our environment is and who forms that "our", instead of being concerned only about deontological and distributive issues.

When analyzing the moral conflicts derived from broadening conceptions of the subject of justice, it is also fundamental to deconstructing the hegemony of liberal political discourse. In Nussbaum's or Holland's political liberalism there is an overcoming of anthropocentric prejudice due to the recognition of non-human animal capabilities [23,24]. However, much work remains to be done in order not to be anchored in individualistic ontologies. Some authors have claimed the recognition of a dynamic and relational flourishing instead of an individualistic one [67] and recognize the value of nature's in-

terconnectivity. The multi-species justice proposed by Celermajer and others [67] goes precisely in this direction of starting from a more relational and dynamic ontology than simple individualism.

Bendik-Keymer's approach of multi-species fields [68] shows similar reasoning to Celermajer's and leads him to criticize Nussbaum's biocentric individualism. His notion of multi-species fields starts from a holistic perspective by considering that the autonomy of living beings is relational with respect to other beings, to collective communities, and to ecosystems. This idea contributes to thinking of a multi-level axiology, where there is not a single biospheric integrity or different individual integrities; instead, the integrity of each being or natural entity is relative because it depends on the relational point of view adopted. Here, the concept of integrity might be expanded by adopting another environmental virtue, which may be called a "wonder": wonder at the evolution and flourishing of what or who we do not perceive as an instrumental materialistic interest; wonder at relational integrity [68,69]. Rachel Carson was one of the pioneers of understanding wonder as a radical state of mind helpful for environmental ethics. In some of her books, she encouraged her readers to consciously cultivate habits of awe, to pay careful attention to the often-overlooked 'beauties and mysterious rhythms of the natural world' [70]. More recently and similarly, other authors have echoed the ethical potential of adopting wonder behavior to facilitate human and non-human flourishing [71].

Aesthetic wonder helps to sustain the multi-level axiology mentioned by Bendik-Keymer, but other more reflective virtues are also needed to rethink the thresholds and ceilings [8] of our capabilities and to reduce anthropocentric conceptions of nature's value. Here, the ecological reflexivity virtue proposed by Dryzek and Pickering [52] and mentioned above may help to incorporate a broad flexibility and resilience when it comes to changing our behaviors and activities if we gain a profound understanding of the value of integrity to non-sentient entities in the near future.

Integrating holistic ideas into a discussion on justice, where some capabilities are supposedly prioritized over others, helps to generate depth in the debate. On the one hand, this is because not only the sum of individual interests enters into the assessment but also the result of diverse synergistic interactions. So, when an ecosystem is transitioning to another one, we should probably focus on the new conditions generated by the convergence of factors. On the other hand, the debate becomes richer and more reflective because the thresholds of (e.g., human) capabilities are no longer understood as atomized needs and come to be understood as relational and, in most cases, eco-dependent historical needs.

4. Towards a Synergetic flourishing Based on Ecological Justice

So far, I have stressed the importance of decolonizing our lifestyles and expanding our epistemologies in order to rethink from a holistic point of view the conditions that influence ecosystem changes and disruptions. I have also emphasized the need to review to what extent the "conversion factors" (using Sen's words) that we usually demand to guarantee a minimum threshold of capability are necessary or, on the contrary, there could be other (lower energivorous and materialistic) means to satisfy our human flourishing. The virtue of ecological justice can bring a decolonial and more humble attitude as it questions relations of domination over the non-human beings and non-sentient entities. Thanks to environmental virtues such as this, we can recognize the capabilities and integrity of some natural entities and strive to flourish synergistically and not just blindly to foster individual and atomized development.

"Synergetic flourishing" is an original concept proposed here to define the positive feedback between human flourishing and non-human flourishing as a way of empowering different capabilities without creating tensions between them. Some academics have rethought similar meanings for concepts such as "planetary flourishing", which consists of aligning pathways of both flourishings and adopting an integral identity, in which individuals see themselves in relation to their wider environment [13]. The essential idea may be the same, but the "synergetic" adjective appeals to revalue the hypothetical emerging

benefits derived from multi-level relations between individuals and embodied ecosystemic entities [56,72]. The capabilities approach could contribute to such concepts introducing the distinction between functions and capabilities and proposing that flourishing should be based on protection of the latter [14]. Likewise, accepting the ecosystem capabilities could expand the Sen and Nussbaum frameworks towards new environmental ethics approaches.

Fostering synergetic flourishing through ecological justice virtue entails adopting philosophical thinking with epistemological, moral, and political dimensions, in which the rational understanding that non-human life has its own development is imbued with personal motivation to respect that development. As for the understanding that non-human nature is capable of self-realization, a starting point would consist in shifting the weight on which a large part of the literature on capabilities approach is based upon. For Nussbaum, self-realization is closely associated with the notion of dignity [15,73], which is fundamentally defined by the opportunity to have autonomy and freedom, a particular feature of humanity. However, if that origin (with Aristotelian roots) on which the concept of flourishing rests is extended to include the notion of "integrity" [38,46] (pp. 136–147), then other ways of non-sentient life have a place in human development theories or the capabilities approach.

Why embrace the concept of integrity and not just rely on dignity, as Nussbaum does? We could expand the meaning of dignity and attribute it to non-animal entities as well. On the one hand, the problem in expanding it is that there is the risk of misunderstanding why a non-rational, non-sentient, and non-individual entity has dignity. The theoretical frameworks that have accompanied the capabilitarian discourses in defense of dignity have rightly based their arguments on the premise that beings have dignity because they are rational, sentient, or individually autonomous [74]. Yet, there are exceptions, such as Katy Fulfer, who has offered a relational description of dignity linked to interdependence and neediness, which also includes non-animal entities in the community of justice [75]. But, to what extent dignity can be a concept with a malleable meaning is a question that some authors have already discussed [76].

On the other hand, the concept of integrity makes it easier to start from a multi-level axiology than solely dignity. Recognizing the integrity of ecosystems can help to understand their instrumental value in a way that is neither reified nor highlighted by a dichotomous otherness. The notion of integrity refers to understanding ourselves, human beings, as ecodependent individuals who are at the same time systems for other smaller components. This means proceeding from a notion of identity shaped by limit concepts [77] (pp. 959–961). From this relational point of view, the "Self" and the "Other" are both integral parts of a broader and more complex life reality that encompasses us all (including other individuals). Therefore, it would be inconsistent and a fallacy of fuzzy logic [78] to defend the integrity of an individual but not of a broader being like systems, because indeed each individual is composed of other smaller individuals. From this perspective, our development should be considered internally and externally systemic.

The commitment of the ecological justice virtue to synergetic flourishing would consist in assuming that for humans it is not possible to flourish without integrating non-human life into the equation and recognizing their integrity, as done in many indigenous cosmovisions across the globe [61]. The symbolic identification that human societies have expressed with the non-human world in ways that cannot be reduced to simply instrumentalism has been common in different religions, in the literature, and ultimately in the culture of our species over time. When thinking about the instrumental benefits of ecosystems for humans from a multi-level axiology and from the recognition of an embodied integrity at several scales, it may leave behind the rigid separation between anthropocentric and non-anthropocentric viewpoints. That would also be the contribution of the idea of synergetic flourishing: reframing human and non-human capabilities in a context of dynamic interdependence.

However, there are challenges for the virtue of ecological justice to try to adapt human behaviors to a non-anthropocentric and non-individualistic flourishing. Probably the first moral obstacle for human reason and main objection to synergetic flourishing concerns

the acceptance of ecosystem capabilities. As noted above, even if we do shift our morals from dignity to integrity, some kind of autonomy or freedom for non-human nature must still be acknowledged. Otherwise, accepting an environmental meta-capability for human beings, and only functions rather than capabilities in ecosystems, might suffice. Many advocates of ecocentrism have been criticized, given that there are examples of various non-human biotic communities that have neither a conscience nor desires and, therefore, no moral agency can be attributed to them [79]. It is possible to be ecologically responsible without the need for deep assumptions such as the capabilities of ecosystems. Human survival itself depends on preserving the health and integrity of ecosystems [80], so few "intellectual gymnastics" are actually required. A prompt response could be that the value of non-human nature may be justified by considering it a moral patient [81] or because it contains its own potentialities. A deeper counter-argument could be that the notion of integrity does not comprise moral agency as in the concept of dignity defended by Western tradition based on Aristotle or Kant. Using concepts such as striving or integrity [38,74], they appeal to a meaning of agency not based exclusively on pursuing rational or sensible interests but on flourishing according to one's systemic identity. An identity that may be dynamic and diverse but struggles to remain stable in the face of possible disruptions through capabilities for homeostasis and resilience [40].

A second and related challenge concerns the way we discern the basic capabilities required for ecosystems to flourish. Would it be possible to understand the whole meaning of integrity for those biotic communities most different from humans? Any rational explanation of this will be more anthropogenically mediated if theoretical research consists of using our human senses to define and list non-human capabilities. There is an epistemological risk of projecting our own values here [82]. Recognizing capabilities in non-human nature could ultimately involve some human being expressing the voice of nature, which would be an illusion provoked by anthropocentrism and by epistemological biases, as pointed out in Sections 2 and 3. Again, the risk of paternalism could come up here. Consequently, this result might limit the philosophical exercise of assuming the virtue of ecological justice.

To reduce the risk that this utilitarian paternalism of human societies may emerge, there are political projects, guided by decolonial thinking, that can help. For example, Schlosberg has proposed a "politics of sight", based on expressing and making visible what is invisible in our societies and cultures, such as anthropogenic impacts on non-human nature [83] (pp. 193–208). Awarding space to non-human nature, to make other living beings and ecosystem rhythms and processes more perceptible, could also be fostered by "rewilding" policies. specifically if rewilding embraces a passive management of nature where there is minimal interventionism [84].

Next, if rewilding policies and politics of sight are put in practice, a third challenge or concern emerges, this time in relation to ethics and politics: is there any moral hierarchy among capabilities in a supposed ecocentric egalitarianism? From the individualistic anthropocentrism standpoint, it is reasonable to defend a healthy environment as being a meta-capability for human development, but from holistic non-anthropocentrism it is not so clear. A non-anthropocentric approach may agree with "green" anthropocentrism or sustainable human development theories in constraining some human capabilities in common situations (always above a minimum threshold), through mitigation policies for instance. But, the form of management would definitely change in a tragic scenario where a choice had to be made between protecting human or ecosystem capabilities (in the event they are even accepted). Non-human capabilities are not recognized from the perspective of anthropocentric flourishing, which legitimizes privilege being granted to human capabilities. Nevertheless, from a synergetic flourishing approach guided by a virtue of ecological justice, which capabilities would be viewed as a priority in a tragic scenario and based on what criteria? This is a pragmatic point requiring further research.

The outlined challenges articulate reasonable objections that can, nevertheless, be addressed if the capabilities of ecosystems are accepted. Although the concept of synergetic flourishing is not immune to criticism, it may entail another way of communicating the

need to evade moral centrisms, especially atomized ones, and bring to the capabilities framework based on political liberalism an open dialogue with non-individualistic or rationalistic axiologies. It allows different indigenous worldviews that recognize the values inherent in the environment to be easily incorporated [9,61,65] and, therefore, expands the common sense of human development. The biological integrity of each living being requires ecological integrity in their habitat, so the loss of ecosystem capabilities could result in morbidity, altered function or loss of individual capabilities [19]. Hence, synergetic flourishing guided by ecological justice could also provide a better protection of the thresholds associated with human capabilities over time. In addition, it encourages our sensibility and empathy for what is different, on the one hand, and a rational support for strong mitigation-oriented political decisions and humble ecosystem management, on the other. It may, therefore, be fruitful to advocate this environmental virtue.

5. Closing Remarks

The main goal of this paper revolves around exploring the non-animal capabilities by acknowledging the underlaid integrity in ecosystems and some contributions of ecological justice virtue to the moral conflicts among different axiologies and flourishings. One first take-away message here is that "centrisms" could be abandoned in favor of a moral ontology that is not exclusively individualistic or holistic but rather navigates between the two options. These abstractions make it harder to connect capabilities that are in fact intergenerational, interspecific, and interdependent. Likewise, anthropocentrism and ecocentrism should negotiate a common deal wherein both philosophical perspectives give up a small part of their moral norms. The capabilities approach may benefit from concepts like synergetic flourishing because it collects ideas provided by decolonial thought and environmental virtue ethics which help to understand flourishing from a relational and non-domination viewpoint.

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Notes

1 According to Maturana and Varela, autopoiesis or self-production is the capacity of living cells or systems to reproduce and organize themselves, while homeostasis is the capacity of a complex system to constantly maintain its identity while adapting to changes in its internal and external environment [39]. For them, resilience is closely related, because it may be understood as the capacity to safeguard the availability of molecules necessary for self-maintenance, whatever the problem that may threaten self-maintenance. Kortetmäki provides a similar meaning when studying ecosystem capabilities, defining resilience as maintaining characteristic functioning in disruptive circumstances [40].

2 One might ask how to convince aspirational citizens and ambitious politicians to consider or adopt such a program, insofar as they might prefer to produce and sell as much as possible to keep the machine alive. If people actually valued being virtuous they would not commit so many harmful acts. However, I would answer here that environmental virtue ethics is not a substitute for a normative approach. It is a necessary condition for developing more ethical awareness. The basic issue is not to "change people" and "convince citizens and politicians" but to change oneself rather than to be forced to change by external laws. "Adopting virtues" is sufficient to stop only those who do not want to behave badly.

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