

# Integrating Environmental Value Systems: A Proposal for Synthesis

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## 1. Introduction

There is no lack of approaches to the valuation of natural and semi-natural entities in the context of environmental protection issues, especially with regard to biodiversity on the different levels of genomes, populations, species, and ecosystems. With reference to valuations, arguments are made for and against conservation, restoration, sustainable utilization, access and benefit sharing, and other ways of dealing with natural entities. Different, sometimes competing value systems are used, which are based on different presuppositions, but nevertheless can overlap. In the following chapter, some typologies of values (=schematized orderings of types of values) will be subjected to a philosophical analysis, since the lack of systematic unification is a deficit, and an analysis can contribute to a well-founded choice of a value system. A systematic theoretical step towards conceptual unity may open the view to more urgent political questions in an age of unprecedented environmental crisis. This chapter is dedicated to an analysis of existing approaches to evaluation typologies and it identifies avenues for possible synthesis. Another typology of environmental values has been given by Tadaki et al. (2017), distinguishing values (a) as the magnitude of preferences, (b) contributions to goals, (c) individual priorities, and (d) relations. With Tadaki et al. (2017), we share a basic idea: schematic value systems are important tools for the evaluative classification of complex issues. Multi-criteria decision making and environmental impact analysis also rest on value schemes, often implicitly. Value schemes are also part of a scientific ideal of operationalizing concepts and often quantify values in terms of money (monetization). Philosophical considerations, however, must be reflective upon value systems in order to keep touch with underlying questions. In particular, philosophical reflections about the role of values in argumentation, judgement and decision making, about different types of values and their relation to norms and motivation can provide information about which functions value systems must be able to fulfil and which criteria they should fulfil. This chapter analyses approaches to environmental evaluation and presents a discussion of their strengths and weaknesses. It argues

that a comprehensive and integrated synthesis of existing approaches is within reach if solutions to philosophical problems related to valuation issues are considered.

The efforts to elaborate such value systems and incorporate them into decision making are also demanded by the Sustainable Development Goals (SDGs), especially SDG 15 (“Life on Land”). For example, sub-target 15.9 calls for the integration of “ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts”. Thus, SDG 15 implicitly recognizes the need for evaluation processes. The same holds true for Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). There has been dispute within IPBES for years about limits of and presumptive alternatives to the ecosystem service approach. The conceptual framework of IPBES wishes to include non-Western frameworks into the broad concept of “nature’s contribution to people”. The value-laden concept of “good quality of life” also refers to evaluations. Other concepts, such as “Mother Earth”, “Systems of Life”, “Intrinsic Values” and “Living in Harmony with Nature”, refer to debates in environmental ethics. Neither SDG 15 nor IPBES, however, reach deeper ethical grounds. This deficit shall be addressed in the chapter in the spirit of IPBES. An ethical synthesis of value systems can and should help the integration of the ‘diverse conceptualization of multiple values of nature and its contributions, including biodiversity and ecosystem functions and services’ (objective 4, IPBES work programme). The following chapter wishes to contribute to improved evaluations within SDG 15 and IPBES by a robust theoretical groundwork.

This chapter is structured as follows. In the first part, we discuss the axiological concept of value and highlight the role of value systems in valuations and evaluations (Section 2). We then analyse various value systems that have been proposed in the humanities and social sciences for mapping environmental values. There is the Total Economic Value (TEV) scheme, the Ecosystem Service (ESS) approach and various value systems designed in environmental ethics (Rolston 1988; Krebs 1999; Ott 2010; Muraca 2011; Ott et al. 2016). TEV and ESS are often seen as economic schemes, which gives them the general suspicion of “neoliberal thinking” and the repugnant commercialisation of nature on the part of some environmentalists. We will see under which conditions such accusations are justified. While the TEV is clearly economic in scope and method (Section 3), the case is more complex with regard to the ESS (Section 4). Both TEV and ESS are anthropocentric, while all value systems in environmental ethics pay attention to the demarcation problem, considering inherent moral value for natural beings (Section 5). The idea of a uniform (“synthesised”) valuation scheme does not require a final and perfect solution to the demarcation

problem, but such scheme should not be limited to anthropocentrism. In Section 6, we argue that the categories within TEV and ESS can and should be integrated into the essential patterns of environmental ethics discourse. As we shall see in the next section, valuation schemes can either obscure or reveal underlying philosophical and ethical problems. Our strategy is to use such schemes for revealing.

## **2. Value Systems and Evaluations**

Since ancient times, philosophy has reflected on the status on categories named “values”. The philosophy of values has been termed “axiology” since then. Sociology, psychology, history, and economics affirm subject-based axiologies since the beginning of the 20th century. Values are treated as social facts (Durkheim, Weber) from the perspective of observers. The many differences in between values can and should be explained by history, psychology and sociology, while philosophers quest for validity and the (ultimate) grounding of values. Differences between values can take different axiological correlations: peaceful coexistence, indifference, mutual support, respectful tolerance, contrariness, conflict, clash, contradiction. Conflicts over supreme values (nation, religion, socialism, purity of race) may lead to rebellions, civil wars, and revolutions. In Germany, values of natural heritage, unspoiled landscapes, endangered indigenous species, wilderness areas, etc., have enriched the spectrum of societal values since the Romantic movement (Ott 2016).

Nobody doubts that values of environmentalists conflict with those of a liberal consumer culture. According to our modern lifestyles, values of both spheres can be combined. Clearly, beautiful valleys, sparkling waterfalls and a sunset on the beach can be valued as being “good” for naturalists. One can, however, also value a robust car by which one can reach remote sites and can also enjoy a comfortable hotel room with ocean view at the coastline. Most of us value a high-tech camera for spots and sceneries. Economists argue that reasonable utility-functions would combine preferences to different goods and commodity as to maximize the individual good. High-end tourism often combines natural sceneries with luxury accommodation. Such high-end eco-luxury lifestyles, however, look morally repugnant, because not all people can realize them. In such cases, values come under moral attacks. Is it unjust to enjoy a holiday season in the outdoors as long as not all working class people on planet Earth can enjoy paid holidays? It seems fair to say that egalitarian social movements have specialized on grounding such attacks on “privileged” values, even environmental ones. Thus, appreciating values of natural entities does not escape moral critique against unjust privileges. The chapter, however, does not tackle issues of distributive justice.

## 2.1. *Philosophical Axiology*

Most contemporary philosophers see individual humans as the grounding “locus” of values. Human agency is intrinsically value oriented. If an agent wishes to reach a goal, she puts a value upon it. To agents, it seems impossible not to value. We will focus on self-conscious agents making value judgements on a daily base. If so, valuing is nothing special, but it belongs, as a mundane practice, to everyday life. Humans enjoy values and they dislike disvalues. Values are perceived, experienced, and expressed from the first-person perspective and such first-person expressions are articulated within cultures via language. Therefore, any ordinary language must include phrases and attributes expressing (dis)values. Such expressions are used in value-judgements. Value-judgements can refer to commodities, artefacts, works of art, aesthetic performances, dishes, hobbies, parties, and so on.

In general, evaluations are carried out in order to establish or determine the (relative) goodness, value, quality, virtue, or correctness of the object of evaluation we call “*evaluandum*”. An evaluation should provide correctly substantiated, checkable and (at best) acceptable evaluation statements or value judgements. In the literature, evaluations are assigned various functions (Döring and Bortz 2016; Lumer 1990; von der Pfordten 1993; Scriven 1999). In practice, an evaluation should fulfil cognitive, learning and dialogue, optimisation, decision making and legitimisation functions. One central function of evaluation is to express a value judgment and to show by evaluative reasoning that the value judgement is acceptable (and should be shared). One tries to rationally convince an addressee that the value judgement is acceptable to move the addressee (latently) to act accordingly (Lumer 1990). An evaluation often implies a commitment of how (not) to behave.

Different types of evaluations can be distinguished. The corresponding classifications can be based on the occasions for evaluations, the methods used, the ways in which the results are formulated, the openness to adaptations, etc. It is to be considered that different evaluation types fulfil different functions and can therefore serve different purposes. Sometimes evaluation results are formulated qualitatively and sometimes quantitatively. Thus, marks or points can be assigned, the price can be indicated, or the evaluation result can be formulated with evaluative terms. Often, scales or ranking grades are used. Depending on the scale type, different arithmetic operations and comparisons are permitted. Paradigmatic examples of axiological terms are “good”, “bad”, “evil”, “super”, “successful”, “un-/just”, “suitable”, “reasonable”, and so on. The term “good” represents a language game of attributions, such as “admirable”, “nice”, “awful”, “tasty”, “sexy”, “fancy”, “gorgeous”, etc. Axiological expressions differ from deontic operators which prescribe

or forbid different kind of actions. Deontic expressions and operators are, for example, “required”, “ought”, “forbidden” and “permitted” as well as “duty to”, “right to”, “in-/correct”, “right” and “wrong”.

Axiology becomes analysis of value judgements and asks how cultural debates about value judgements are to be performed and substantiated (=justified). All values are in a basic sense “relational” to mindsets, lifestyles, cultures, goods, and rules. Communities endorse shared values as they specify them to rules, rights, and commitments. Peace, liberty, health, safety, wealth, democracy, and decent environments are instances of “our” commonly shared moral values. It can be argued that normative statements (e.g., rules and prescriptions) are often formulated in order to summarise diverse evaluations. If X is good for us, we should act as to protect X. Prescriptive statements mediate between evaluations and rules (norms). According to such an understanding, prescriptions play a central role because they act as a bridge between the axiological evaluations and normative evaluations (Baurmann et al. 2010). Prescriptions (“Let us do something about it!”) are formulated because otherwise it is not clear which instructions for action are to be obtained from axiological statements. Prescriptions summarize the efforts of an axiological evaluation—they formulate what should be done in view of the axiological considerations or prescribe the actions to be performed in view of the axiological considerations (or allow and forbid others). A prescription could state that there should be a legal regulation on the matter X (as oil spills, bycatch in fisheries, trophy hunting), but may remain silent on the specific deontic content of such environmental regulation. Grounded and shared values can constitute agreements that regulation is mandatory. Via such reasoning, the realms of axiology and deontology can be bridged discursively. Values span a broad range, starting by simple desires, wishes, and preferences and ending up with moral values such as honesty, peace, democracy, and justice. Moral values require a generic betterness relationship between two oppositional concepts: To all reasonable agents (*prima facie* and *ceteris paribus*), peace is better than war, arguing is better than violence, health is better than maladies, wealth is better than poverty, etc. A non-polluted environment is better than a highly toxic one. In environmental valuation, however, such betterness relations are full of vague qualifiers such as “spoiled”, “decent”, “degraded”, “rich and diverse”, “impoverished”, “original” etc. These qualifiers indicate that a broad and unspecific betterness relation in favour of decent environmental conditions might be of moral value, while specifications remain culturally bounded (Section 6). By moralizing values (“This was a dirty trick!”), we take a turn from the expression of values to deontological validity claims. In his seminal *“Philosophie und Sprache”* (Hönigswald [1937] 1970), philosopher Richard

Hönigswald argued that such a shift can be justified by means of discursive axiological language (see Ott and Surau-Ott 2017). Following Hönigswald, a discourse ethical axiology must distinguish between *attribution* and *grounding*. Attribution means that agents attribute positive and negative values to entities and events. Grounding means that agents present and exchange *axiological reasons* why they attribute values as they do. This implies the distinction between expressive lingual articulation (*attribution*) and well-considered reflective value judgements (*grounding*). Articulation is sincere, while grounding is considered reasoning. In the following, we are concerned with reflected evaluations (as opposed to spontaneous evaluations) or well-considered reflective value judgements (*grounding*).

Depending on the type of evaluation and the reason for the evaluation, different forms of grounding can be distinguished. Accordingly, different rules of reasoning and quality standards may be relevant and different reasons may be legitimately put forward. Making claims for axiological validity supposes that values can be shared. Grounding values provides chances of values being shared. Shared values constitute particular cultural communities. In axiological grounding, reasoning may refer to substantial cultural traditions (as nature conservation), eudemonic experiences, phenomenological descriptions, psychoanalysis, narratives, history, and even literature and poetry. Axiological grounding does not necessarily have to refer to morals. It can be “deep” without touching morals. To the Neokantian background of Hönigswald, grounding values was a transcendental enterprise (“Wertgeltung”). As we shall see with respect to environmental evaluation, axiological grounding differs from transcendental justification (Section 5). It remains mundane. The phenomenology of nature (Böhme 2016) is helpful in grounding evaluations with respect to nature, because it reveals the perceptions and experiences on which evaluations rest. Sensual mediated bodily perceptions are turned into meaningful experiences with nature. Meaningful experiences are evaluative, and the values can be made explicit. Thus, phenomenology can ground values in a specific way of life. Quite often, a reflective articulation of past experiences presents sufficient grounding. If I say: “I strongly dislike this smell since it reminds me of vomiting in childhood”, no further grounding is required (*ceteris paribus*). The bad memory counts as sufficient reason. We will return to the problem of axiological grounding throughout the following sections. In any case, axiology operates within a range having a contested border zone to deontology (rightness). This borderline region between evaluations, moral values, ideals, obligations, and principles is highly contested even among ethicists. To sum up the point we wish to make: *From an*

*axiological perspective, valuation schemes should be conceived as to fulfil the requirement of allowing for both articulation and grounding.*

## 2.2. Economic Evaluation

Economics assumes that individuals make rational choices according to their preferences. Economic approaches being grounded in a concept of preference are paradigmatic to liberal individualism. A preference is a binary value-judgement (“To me, x is (ceteris paribus) better/worse than y”). An individual agent prefers a state of the world X over Y according to her mental states. Reaching X gives utility (welfare) to the agent. The degree of preference is intensity. Behaviour reveals actual values people really hold. Many, but not all values materialize in commodities (cars, mansions, books, carpets, jewellery, gardens, etc.) which are relatively scarce and have an exchange value signalled by prices. One realizes values via consumption. Economic axiology is liberal, individualistic, flexible, etc. Economists show respect for the many ways in which persons may value commodities, cultural events, and social affairs. Preferences are to count. Economics, however, is disinterested in grounding. Economists assume that people themselves know their real preference best, since they have privileged access to their mental states. Ontogenetic origins, manipulation, advertisement, self-deceit, and indoctrination are abstracted away from economic models. Economics assume authenticity of all or most preferences and they ground their models on such heroic assumptions. To ethics, however, authenticity of evaluations is an ideal, not a given. On a second-order layer, we all should wish that our important values are actually “ours” (Frankfurt 1971). Disregarding such shortcomings, economists apply this general axiological approach to nature, resulting in environmental economics and the TEV-scheme (Section 3) and even the ESS-scheme (Section 4).

After clarifying what is to be understood by the complex term “evaluation”, the role of values in relation to *evaluations* can now be analysed. Values play a dual role in evaluations. First of all, they are central to all evaluations, as they guide the selection of criteria and standards and thus also the design and formulation of criteria. In order to fulfil the function of criteria design, one must be clear about one’s own values and their strength (or intensity). If nature conservation is important to you and you attach a high value to biodiversity, then you will use appropriate criteria to evaluate interventions in nature. In view of the evaluation functions, in particular enabling decision making, formulating evaluation results is often attempted not only in evaluative terms, but to use “objective” numerical values for the supply of decision bases. Since various aspects of situations can be evaluated in different

ways using different criteria, but clear decisions have to be made (e.g., laws have to be given), this way attempts to minimize complexity and to abstract away difficult questions. Many scholars wish to operationalize evaluations. The evaluation *that* X is of value to P remains vague if it is not specified to the question *how much value* does X have to P in relation to many other valuable entities and events. Such specification must homogenize, and, in economics, there is no better homogenizer than money, as specified by willingness to pay (WTP). If a person P values X positively, her WTP should be greater than zero. The epistemic idea to operationalize values numerically in monetary terms deserves reflective scrutiny: May such operationalization open our eyes or may \$-numbers blind us against the actual substances of values? How is numerical economic operationalization related to attributing and grounding? What axiological lessons can be drawn from contingent value studies of virtual WTP for nature conservation?

The second function of values is precisely to formulate evaluation results. Since we are talking about reflected evaluations here, one can assume that value statements are the result of well-founded evaluations. One can demand and give reasons for certain valuations and value systems. One can point to missing transparency of evaluations and doubtful consequences. Arguing about values and evaluations is possible. Values and valuations are related to philosophical underpinnings and frameworks. Valuations are associated with varieties of values and major philosophical questions. A philosophically informed analysis can help answer the question, which value systems can fulfil the purposes and deliver appropriate evaluations. As stated above, axiological discourse should give credit to the plurality of value encounters with respect to both attribution and grounding.

The result of this section implies, that all environmental value-schemes should be aware about the deep axiological background within they operate. Environmental value schemes should be able to integrate axiological reflections on the ontology and epistemology of values, such as perception and experience, the status of preferences, clashes of values, second-order preferences, the contested zone of moral values, the many axiological correlations, the role of prescriptions within evaluations, and the distinction between grounding and attribution. Schemes of values as such navigate on a surface over deep water. Such topics kept closely in mind, we turn to the evaluation of nature.

### **3. Total Economic Value**

In environmental economics, the Total Economic Value of Nature (TEV) approach was proposed (see Randall 1987; Pearce and Moran 1994; Plottu and Plottu 2007;

see also contributions in Pushpam 2010). It is based on a preference-based axiology and embedded in micro-economic theory of rational choice. The intensity of the preferences is reflected in the willingness to pay (WTP) for nature conservation or in the willingness to accept (WTA) compensation for a loss of preferred nature. Interestingly, the concept of intensity forms an interface between economics, phenomenology and even morality (Ott 2013). Nature can be a source of both values and disvalues such as earthquakes, pests, infectious diseases, etc. It is trivial to state that nature is not just good for humans. For the rest of the chapter, we keep the dimension of disvalues and disservices closely in mind but focus the benign and beneficial dimension of nature. Nature is conceived being a broad source of utility for humans and “utility” is a generic term for all kinds of benefits, welfare and pleasures that result from it. One can use natural systems as a source of resources and as sinks for pollutants. The “source-and-sink” perspective is common in environmental economics.

This anthropocentric and preference-based TEV approach also distinguishes between use values and non-use values. Use values include, among others, yields (direct use) and tourist areas (indirect use), which can be measured in monetary terms by travel cost analysis.

Option value, bequest value and existence value are categories of non-use values within the TEV and refer to preferences in favour of nature conservation and protection. *Option values* refer to a preference to make decisions from a number of actual future options whose details are uncertain or unknown in the present. If tropical forests and the deep sea are regarded as natural “laboratories” in which many types of biochemical compounds are “tested” by the forces of evolution, humanity has prudential reasons to preserve such environments for future food production, medical, pharmaceutical, or chemical research being grounded in the value of human health. Since humans are omnivores, option values are important for future food security. Perhaps an ecological civilization will shift cultural barriers against certain edible plants and insects. Algae also can have many options that are still unknown. Whatever that may be, members of current generations should keep promising options open. Nature destruction can exclude options before they are identified. Option values of nature are dispositional ones. As such, they are hard to monetize. There are many ways by which nature can be “optional” to humans. Genes, species, and even landscapes are full of options many yet unrealized. Restoring nature should also count as an option. Grounding option values oscillates between generic and specific options. The option value of the sea floor is highly generic, while the option value of some algae species can be specified in terms of food processing. Grounding option values present specific dispositions of how the non-human world

might become significant for human intentions. Ironically, there might be economic analogies between option values of nature and the speculative future value of a start-up company at the stock markets. In principle, stock markets value the future, not the present. If this principle is applied to option values of natural assets, value may increase. Licences for exploring some areas (prospecting) may also indicate option values.

Another axiologically interesting category within the TEV is *existence value*. A beloved person is a paradigm case for existence value. The existence value applies to natural entities when an agent evaluates the mere existence of a natural being  $N$  without further interest to utilize  $N$ . It is perfectly reasonable to say, "It is good to know that there are snow lizards in remote parts of Central Asia." The existence of  $X$  is preferred over the non-existence of  $X$ :  $X > \neg X$ . This preference may clash with the opposite evaluation of another person:  $\neg X > X$ . To some people it would be better if there were no wolves around, while some other people prefer the existence of wolves in a given area. Conflicts over the existence of natural beings will prolong in conflicting prescriptions (regulations), such as licences for hunting wolves. It might be an instance of inconsistency if a person  $P$  gives positive existence value to an old tree but gives negative existence value to its leaves in fall. Can  $P$  wish to have the tree without its leaves?

As many contingent value studies strongly indicate, the existence value is, to many persons, at odds with the ongoing extinction of many species. It does not even seem inappropriate to place an existence value even onto biodiversity as such. If the WTA or WTP for the protection of an endangered species were US\$ 1 per month, however, the existence value of biodiversity could devour all income and wealth ("embedding effect"). Despite this strange effect, it is perfectly reasonable to greatly appreciate a diverse natural world.

Nature's existence values cannot be neglected in monetary terms either. Since affluent people in the North are putting high WTA values to the existence of tropical nature, including crocodiles, tigers, rhinos, etc., the progressive destruction looks repulsive from an economic point of view. WTA, however, remains a virtual payment and does not mobilize real financial assets for protecting nature. There are many ideas regarding how to make real incentives to protect nature out of virtual WTA.

Values of existence are often associated with the slogan "Use it or lose it". The organization of high-end tourism to present the "Big 5" is much more rational than the deforestation of forests to produce charcoal. Tourism is an industry that has specialized in bringing wealthy people to places where they can realize existence values ("I really have seen a lion in the wild!"). When wealthy people accept high

travel costs to experience X, X is economically very valuable. In the next section, we will review the parallels with the cultural services of ecosystems.

Existence values can be grounded in many reasonable ways. If a person would mourn over the loss of X and might miss X deeply in her life, she implicitly has given existence value to X. These ways of groundings indicate that WTA is a better measure for existence value than WTP. Grounding existence values touches the problem of *missing* something or missing somebody (dearly). The scheme “P missing X” gives grounding for existence value. Who, however, misses species that have gone extinct? Does anybody miss virtual species which might have existed but have gone extinct before they have been identified by taxonomists?

For many people, a garden with birds, butterflies, bees, spiders, dragonflies and bats is better than a garden with only a few abundant lawn species. Lawn people, however, prefer the non-existence of most plant species in their gardens and act accordingly. Thus, existence value in TEV is just about factual evaluation according to given preferences. On methodical grounds, TEV must be silent on the “goodness” of evaluation or the quality of the grounding. In economics, any person is free to say: “I do not miss anything, if X does not exist anymore”. In environmental ethics, however, existence value is more about what environmentally well-informed persons *should* miss and what *should* count as loss (Section 5). TEV restricts itself to social facts, while environmental ethics must go beyond, if the entire ways we value natural beings should be transformed.

Option and existence values become *bequest values* when people want to preserve options and existence for future generations. In economics, bequest values rest upon contingent altruistic preferences. Any person remains free to argue that he has no preference with respect to future affairs which may occur after his maximum life expectancy. The figure of “homo oeconomicus” will support such ignorance because death eliminates all preferences. We will show in Section 5 that TEV does not lay an adequate moral foundation for questions of intergenerational justice.

#### **4. Ecosystem Service Approach**

The Millennium Ecosystem Assessment Report introduced the concept of ecosystem services (ESS). It was adopted by the TEEB study (The Economics of Ecosystems and Biodiversity). This anthropocentric concept aims to bridge the gap between nature and human well-being and make the values of nature visible to decision makers and the wider public. Prominent references are Costanza (2008); Daily et al. (2009); Norgaard (2010); Sagoff (2011); Kandziora et al. (2013); Davidson (2013); Chan et al. (2012); Jax et al. (2013); Spangenberg et al. (2014).

ESS takes the form of a cascade ranging from nature to natural capital to a flow of services that offers benefits to people relative to the underlying values. ESS distinguishes between services and disservices of nature, but most ESS studies abstract disservices away. Disservices are, for example, pests, earthquakes, thunderstorms, heavy snow, but also sharks that kill people. Rain (although it is not produced by ecosystems) can be seen as a disservice for tourists, but as an important support service for farmers.

ESS wants to close the gap between nature and man. The ESS scheme mediates between the two abstract poles of nature and culture, overcoming a mere divide (dichotomy). The ESS cascade begins with a concept in which nature is gradually transformed by human action. Nature is not just wilderness. Many managed ecosystems produce ecosystem services. Prudent management can increase the flow of some services, but such an increase often comes at the expense of other services. Thus, many ecosystem services originate from mediations between nature and human labour. The provision services of yields often require agriculture and gardening, even if there are some berries and mushrooms out in the wild.

One should distinguish between stocks and funds of natural capitals. Stocks, such as fossil fuels, can only be consumed away. Consumption diminishes the stock over time. Funds, however, have intrinsic properties to self-increase by proliferation and growth. There are non-living funds (as freshwater cycles) and living funds, such as organisms, species, populations, and ecosystems. Funds equal “renewable resources”. The distinction between stocks and funds explains why it is false (non-sustainable) to treat funds as stocks. If funds are treated as being stocks, they are over-utilized. Both stocks and funds yield flows, but details of this fund-flow correlation remain puzzling. A tree stores carbon (regulating service), it produces oxygen, timber and, perhaps, eatable fruits (provisioning service). If, however, the tree is appreciated as being beautiful, is there a series of pictures flowing from the tree to the eye of the beholder? Rather not. If oak trees symbolise my home county, what kind of flow might this be? Both examples indicate that the fund-flow model does not work well with respect to the domain of cultural services. Cultural values are not flows stimulating preferences, but are constituted by axiological-cultural perceptions, by attribution and grounding (Section 2). Here, it must suffice to state that the stock-flow model must undergo modifications to be acceptable to philosophical axiology. We return to this point in the final section.

Moving further along the cascade, it is further assumed that humans are benefitted by such “flows”. A service benefits some beneficiaries somehow. Without such benefit, some humans would be worse off. Thus, a service counts as “good”. If

so, it has positive value (benefit) to someone. To destroy such values implies a loss or a damage being done to somebody else. This value is never isolated from other values but embedded in the entire horizon of values coming in multiple constellations and retreating into a deep background. Thus, the ESS cascade finally immerses into the entirety of cultural values being connected to evaluations, cultural frames, prescriptions and, at least sometimes, to deontic terms.

When using value systems, such as ESS, one should point out that one uses the term “service” as a purely technical term that is established in the sense of “ways in which nature can be useful to humans”. Regretfully, the term “services” conveys misleading connotations. Nature does not offer services like a company does. We should not perceive nature in analogy to the service industries, but in its ecological naturalness and its fertility, resilience, diversity and abundance. The “service” terminology has become common parlance worldwide. Even if there are good reasons against such terminology, we should not discard the terminology completely, but integrate the ESS-approach in a broader ethical framework.

The ESS approach distinguishes between *supporting*, *provisioning*, *regulating* and *cultural* services. Each category includes several subcategories. The category of supporting services is controversial. They are basic environmental requirements for services, but not services themselves. They are necessary preconditions for services without being services. Such supportive “services” are ecological functions and structures that sustain the totality of a particular ecosystem (sometimes referred to as “natural integrity”). Supporting services are “primary values”, such as exergy, the emergence of productivity and resilience, and fertility as generic disposition of living beings. Since supporting services may include double counting, some scientists abstract them away from the realm of real services. However, some important ecosystem services, such as pollination, are neither provisioning nor regulating or cultural services. If they belong to the category of supporting services, this category should not be fully abstracted away. We may place a high existence value on top predators, but we should remind ourselves that ecological systems are running via the invisible support of small organisms. Supporting services are systemic underpinnings of actual services. As such, they are more basic, but often remain invisible. In economic terms, they are primary values which cannot be monetized. The concept of “ecological integrity” makes good sense if it points to the cluster of supporting services (soil formation, trophic levels, emergent traits, self-organization) which can be studied by scientific ecology.

*Provisioning* services refer to all species used by humans, including spices, cosmetics, pharmaceuticals and medicines. Provisioning services run parallel to the

TEV use values. These are mainly yields that can be measured both physically and in monetary terms. *Regulatory* services also belong, albeit rather indirectly, to the category of TEV use values. They can also be measured in physical terms and by economic replacement costs. A famous example from the Catskill Mountains close to New York city showed that the investment and supply costs for the purification of fresh water using technology were far higher than letting the mountain range do the job. Thus, the mountain range was preserved for its regulatory services on economic grounds. If reed can filter toxic substances from wastewater, it also performs a regulatory service. If the reed will be used to stow walls to secure heating energy, it also provides a supply service. Pollination by bees is far cheaper than by human labour. In this way, the ESS approach can open our eyes to innovative bioeconomic strategies for the multiplication of ecosystem services.

*Cultural* services are often underrepresented in ESS studies because they are difficult to quantify and monetise. The domain of cultural values encompasses aesthetic values, leisure and recreation, local design and natural heritage, meditation and transformation, and not least the spiritual and symbolic significance of nature. It is widely recognized in the literature that cultural services are highly important to many people but are underrated in many ESS studies. This is an axiological mismatch within ESS. As mentioned above, the stock-flow model misrepresents the axiology of cultural services. Both mismatch and misrepresentation indicate that cultural values stand in need for a better ethical framework (Section 5).

The ESS approach points to the many compromises and trade-offs between provisioning and cultural services in land use. There is a trade-off (conflict) between aquaculture and recreation in coastal zones, a trade-off between blooming meadows and intensive biomass production, a trade-off between rewetting bogs or peat extraction, a trade-off between habitats for endangered species and tourist destinations.

The ESS approach as such is silent on how such trade-offs are to be decided. ESS as such does not include a theory of decision making, conflict resolution, or weighing goods. ESS can, however, identify cases, in which trade-offs are decided against the demands for nature conservation. There are reasons to believe that societal demand for nature conservation has, meanwhile, become higher in developed countries than its supply.

ESS, however, does not provide specific solutions to the interrelated problems of discounting, substitution and compensation. The problem of the marginal destruction of nature also remains unsolved in ESS. It is silent on whether ecosystem services are equitably distributed among different social groups. The distributive justice

of ecosystem services opens up a broad field that goes beyond the scope of this chapter. ESS enables the functional substitution of ecosystem services. If a “service” is removed, such loss can be substituted by another service. Substitution of services faces limits in the domain of cultural services. Therefore, ESS requires some additional ideas for the uniqueness of some natural sites (“de re” protection).

To sum up, ESS is not a comprehensive theory of nature conservation. It is rather a schematic tool than a theory. With some caveats (“flow”, “service”, “monetization”), it fulfils the requirement to allow for attribution and grounding. ESS has one crucial common feature with TEV: it is about factual evaluation only. If people prefer to maximize provision services at the expense of cultural ones, no ESS-experts can reject such a choice as being “wrong”. Used in proper ways, however, ESS may be catalytic for environmental axiological discourse, because it stimulates contest over factual evaluations and motivates reflections on the ways we evaluate.

## **5. Value Systems in Environmental Ethics**

Environmental ethics established classifying maps of values and ethical frameworks. After decades of discourse in environmental ethics, some essential (constitutive) ethical frameworks and value types can be identified and differentiated. These generic frameworks and value types have been mapped several times (Rolston 1988; Krebs 1999; Ott 2010; Muraca 2011; Ott et al. 2016). This section is based on these studies and pursues two concerns: It aims to distinguish five major value types and frameworks and to highlight the parallels between these patterns and categories of TEV and ESS. This opens many doors for further reflection on these categories.

### *5.1. Metabolic and Reliance Values*

Human systems depend on and are embedded in natural systems that provide many different resources, goods and services. The direct use of nature for food and shelter is “metabolic” because, as Marx notes, all human societies depend on a continuous metabolism with nature. This general truth about man’s dependence on nature is independent of technology and property rights. The categories “metabolic values” or “reliant values” are intended to cover this fundamental dependence. Dependence on nature differs depending on the spatial scale and degree of substitutability. Metabolism should be understood broadly. The metabolic values of nature have been mediated by human work, in particular by agriculture, animal husbandry, mining, forestry and fishing, including aquaculture. The extraction of oil, natural gas and coal provides fuels that are of instrumental value for many

purposes. Breeding is a strategy to increase the instrumental values of cows, sheep, rice, and apple trees. The regular supply of fresh water, heating and cooking facilities to almost all members of society has taken many decades even in technologically advanced countries. In (post-)industrial and urbanized societies, such dependence is often overlooked. Full supermarkets are simply a matter of course to many people. Environmental ethics is critical against such forgetfulness and ignorance which rest on Locke's statement that only 1% of economic value directly stems from nature.

Humans have no alternative but to organise metabolism with nature. Social metabolism was intensified from the Neolithic to the great acceleration of the present age. Fundamental Neolithic achievements have paved a long way to the full-grown Anthropocene. Such achievements were permanent settlements, agriculture, ploughs, networks, domestication and breeding techniques, storage, crafts and medicine. Modernity can be understood as a shift from qualitative services to increasing quantities ("more of the same"). It is a clever idea to catch fish via nets, but now the nets have become miles long and deep, catching the marine food web and influencing the development of fish species. As many narratives and figures indicate, the increased metabolism collapses into systematic plundering of our planet's resources. The large-scale industrial metabolism with nature is exaggerated in many respects and for centuries has led to a huge raw material stock and a consumer culture (see Trentmann 2016).

Metabolic and dependency values are conceptually close to "utilization values" within TEV and close to provisioning and regulating services within ESS. The problem with TEV is that only factual preferences of individuals are recorded, regardless of whether these preferences are well informed or not, which can lead to the underestimation of some ecosystem services. The entire cluster of reliance values, direct utility values, provisioning services, etc., apparently just requires simple grounding in terms of (basic) needs, preferences, and demand. Utilization values can be conceived as being demand driven. Such a conception, however, may block a critical reflection upon current consumption patterns (in the Global North) and aspiration levels (in the Global South). The line of reasoning ("reliance values") has been linked to the environmentalism of the poor through concepts of decent livelihoods, especially in the Global South (Martinez-Alier 2002). Many people are reliant upon access to natural resources which might be blocked by property right regimes (as in cases of large-scale land acquisitions, see Voget-Kleschin (2013)). Reliant values open a broad range of questions over environmental distributive justice which are beyond the scope of this chapter (see Ott 2020).

TEV and ESS do not ask for proper attitudes with respect to the many “gifts” of nature supporting metabolism, such as the attitudes of gratitude, frugality, and humility. Environmental ethics should stimulate the idea that grounding such metabolic reliance values should not be demand driven but should become rather virtue based (see end of this section).

The perspective of mainstream microeconomics can underestimate basic dependency values for methodological reasons, too. Economists can admit that primary goods such as oxygen, freshwater, fertile soil, photosynthesis, etc., are, as such, beyond price. The price of planet Earth is infinite, but the economic cost–benefit analysis evaluates local or regional changes at the margin. Thus, it is the method of marginal assessment itself which underrates nature. Therefore, metabolic values are dialectical as they shift between basic dependence on nature, marginal degradation, and substitution processes. Freshwater and fertile soils are paradigm examples for this peculiar dialectic. At the heart of this dialectics is the recognition that humans basically remain reliant upon nature even under recent conditions of almost perfect mastery of nature. Environmental ethics turns the economic perspective of primary values upside down. Each and any part of nature counts as being a parcel of primary values. The flip side of a marginal increase in utility is the marginal loss of primary values. Such dialectics turns into the political economy of strong sustainability (Daly 1996).

## 5.2. *Eudemonic Values*

There is now widespread consensus that the distinction between instrumental and inherent value is not a dichotomy if instrumental values are embedded in a certain understanding of a mean–end relation. The recent debate on relational values (Chan et al. 2016) is about overcoming such dichotomy. All values, however, are relational (Section 2). Instrumental values are relational to demands and needs, eudemonic values are relational to ideas about a good human life and to virtues, inherent moral values are relational to criteria of moral considerability. If so, the concepts of values and evaluations imply relatedness. Unrelated values would be “absolute” ones, but we see absolute values as an oxymoron. If so, the term “relation values” is either an analytical truism or it must point to a specific kind of values beyond the instrumental-inherent divide. As Chan et al. (2016) rightly argue, relational values are embedded in practices and traditions, they shape collective cultural belongings (“identities”) and they are grounding particular concerns against environmental degradation and the loss of unique sites. If so, we see relational values close to cultural services and overlapping widely with eudemonic values.

Since it is beyond the scope of this chapter to judge all articles on “relational values” (see Knippenberg et al. 2018), we restrict ourselves to the option being opened by Chan et al. (2016) and Himes and Muraca (2018) to conceive specific relatedness in terms of eudemonic values (see also Ott 2016).

Eudemonic values can be seen as a third broad category of values that includes aesthetic, locational, restful, transformative, and spiritual encounters with nature. Reconciliation between man and nature within the paradigm of instrumental rationality will not succeed. Clever animals have only instrumental and at best prudential reasons to protect natural resources. Environmental ethics emphasizes the many ways in which humans are bestowed by nature with types of pleasure, joy, wonder, connectedness, and even bliss and reverence. Eudemonic values give a new perspective on how different people might, could and should shape their lives with and in nature. They refer to outdoor activities that people perform for their own sake, such as hiking, sailing, diving, climbing and even hunting. If you go on a hiking trail for the sake of hiking, you give this activity eudemonic value. Other examples of so-called “eudemonic” values include the beauty of nature, a (deeper) sense of home (“Heimat”), relaxation, joyful physical exercises, biophilic sensations and spiritual encounters with nature. Here, nature reveals itself as an essential dimension of a good, flourishing and meaningful human life. Eugene Hargrove, Allen Holland, Angelika Krebs, and Roger Scruton have also argued along these lines.

The area of eudemonic values resembles the category of cultural services within ESS and it includes the existential value of TEV. It should become clear that some eudemonic values (aesthetic, spiritual, symbolic) would not be sufficiently taken into account by existence values or cultural services. In any case, it is unclear how a spiritual understanding of nature as being “sacred” can be captured by the usual definition of existence value (“value to the mere existence of a natural being N without any further interest to utilize N”). This is also true for biophilic attitudes. With some likeliness, hegemonic concepts of modernity have oppressed biophilic dispositions, while an ecological civilization will liberate them anew. Eudemonic values also make it clear that one could and should restore nature as a joyful focal practice.

### *5.3. Future Ethics*

In connection with questions of distributive justice and the necessary conditions for a good life, responsibility towards future generations with regard to metabolic and eudemonic values is important. Future ethics is about fair legacies at different levels. Most approaches are critical to the promise of a growth-oriented economy that future generations will be far better off than previous generations, as scarcity of

commodities is reduced by GDP growth and technological innovation. Overabundance of commodities may coexist with increasing scarcity of nature's values. It seems uncertain whether future humans will simply conform to such situation. They might also deeply mourn the losses, some of which might be irreversible.

Ethical approaches face different problems with future generations. A utilitarian approach to posterity must face the abhorrent conclusion that it would be better to increase the mere number of sentient beings as long as the worst beings still prefer to be alive rather than non-existent. A contractarian approach does not capture the convictions that we owe something to posterity, since we cannot yet make contracts with future persons. If all obligations come from real contracts and contracts are concluded for rational self-interest, contractarian ethics cannot justify binding obligations between generations. Paradoxes of future ethics consist in bringing individuals into existence and controlling population size.

For questions of future ethics, the option value and the bequest value of TEV as well as all service categories of ESS are taken into account. Within TEV, however, the bequest value is nothing more than an altruistic preference that one may or may not feel for one's descendants or for distant future human beings. To economists, saving something for others is a kind of sacrifice. Bequest values are comparable to those of donorship. From natural inclination, the bequest values are mainly dedicated to the offspring, while morality also requires concern for distant and remote future human beings. Within a preference-based approach, it must be accepted that the bequest values decrease with increasing distance in time and space (as is often the case). TEV-scheme cannot see the moral difference between contingent altruistic preferences and mandatory obligations to future generations. Being morally obliged to do x is different from doing x out of an altruistic preference. The resulting action may be the same, but the reasons are different. Ethicists will not like to base future ethics solely on altruistic preferences. If so, TEV is not a suitable framework for intergenerational justice. If so, we need to transform the category of bequest value into a more refined and comprehensive ethical framework, recognizing rights of future persons against present persons.

The moral beliefs behind the "bequest value" of TEV require a deontological interpretation of future ethics. In principle, nobody should live at the expense of others. This principle also holds for distances in space and time. If so, current generations must not live at the expense of posterity in terms of environmental values. If the chain of generations implies a fundamental egalitarianism between generations (no generation is "better" than any other), then one can assume that future generations should have approximately the same living conditions as today's

generations. If all people were equal in the present, the standard of comparison would be easy to determine. Since humans are, at present, highly unequal in many respects (salaries, wealth, education), it is almost impossible to apply a comparative standard on a global scale. At the global level, one should rather adopt an absolute standard, which is a moral threshold for a worthy human life; however, it is specified in terms of needs, welfare, or capabilities. Such an absolute standard should be quite demanding in terms of capabilities (Nussbaum 2011). Within an ongoing chain of generation, no generation should come in a situation in which a substantial fraction of humans fall below a demanding threshold line defining a decent human life also with respect to environmental resources. Thus, current generations are obliged to prevent such a situation. This obligation demands cautious foresight independent from contingent degrees of risk aversion.

At a particular level, however, political communities (states, nations) can and should pursue the strategy of bequeathing legacies to future members of a particular state on a comparative basis. They should protect the nature capitals and the natural heritage on their national territory. The conservation, preservation and restoration of nature is never entirely “universal” or “global” but must remain a special and “located” enterprise. Grounding nature’s values touches the problem of specific territories which are inhabited by specific people. Inhabitation is full of values (“place making”, “coiling the land”) which might be shared by particular communities but cannot be as universal as moral rules. Grounding values in specific territories reveals that territories are not just neutral space. Inhabitation values, if grounded, may conflict with cosmopolitan values.

A conflict-laden dialectic takes place here. If intergenerational justice to an absolute standard cannot be limited to future people and should not be ignorant against current poverty and misery, and if some states can ensure a high comparative environmental standard exclusively for their own present and future populations, then the demands of morality and global justice will inevitably exert high pressure on such comparative standards as being “privileges”. From the moral point of view, the universal absolute standard seems to override certain comparative standards being enjoyed by some, but not all people. The future world might be highly patchy in terms of nature conservation. Some people will enjoy the results of success stories in nature conservation, while other people have to face results of environmental destruction. On which grounds are the few happy wealthy Norwegians and Canadians entitled to enjoy their sublime landscapes in a world full of slums? Such moral dialectic also points to immigration policy, for wealthy states that pursue ambitious environmental (and social) policies will become attractive destinations for migrants.

The moral tension between absolute and comparative standards makes a brief meta-ethical reflection on the problem of overridingness and a presumed hierarchy of reasons mandatory. Should specific moral reasons to help poor people always “trump” all other kinds of reasons, be they based in values, traditions, loyalties, role obligations, prescriptions, cost estimates, nature conservation objectives, etc.? Are moral reasons to be embedded in other kinds of practical reasons or are moral reasons always to be placed at the very top of a hierarchy of reasons? Embedding moral reasons, however, will bring different results with respect to nature conservation than a supremacy of moral reasons. Just think of curtailing human entitlements in order to save species from extinction, restrict access to protected areas, or enhance local biodiversity via reforestation at the expense of agriculture. Both TEV and ESS are too schematic to address such peculiar and highly political casuistry.

#### *5.4. Inherent Moral Value*

The problem of demarcation concerns the question of how to draw the line between morally considerable beings (“moral community”) and other entities, or, to put it otherwise, which entities have inherent (or intrinsic) moral value and which have not, even if they may have considerable instrumental (functional, economic) or eudemonic value. Even if one supposes a broad spectrum of values, discussions about inherent moral values as attributed to natural beings are and shall remain highly important (see Ott 2008).

Moral problems must be solved as well as other problems. If a problem is a real problem at all, solutions must be within reach—and this also holds for moral problems as the demarcation problem. After decades of debate, the demarcation problem seems to be somewhat paradoxical—an essentially controversial search for a “true” solution.

The extent of the solutions to the problem of demarcation put forward so far can be determined as follows: (a) sentimentality, (b) zoo-centrism, (c) biocentrism, (d) eco-centrism, (e) gene-based approaches, (f) (pluralistic) holism. As Ott (2008) has argued, the demarcation problem requires the identification of morally relevant characteristics (properties) attributed to natural beings. In this way, one will not fall victim to the naturalistic fallacy.

Candidates for morally relevant traits are sentience, communication skills (Ott 2015) and openness to a world “outside”. The (gradual) ability to communicate deserves special attention (Hendlin and Ott 2016). Western culture has long underestimated the ability to communicate within nature, and it has wrongly silenced nature (Friskics 2001). In nature, however, there is both noise and voice. If animals

can give a voice to their mental state, we can and should interpret such voices and translate them, as advocates, into human discourse.

Most scholars would attribute inherent moral values to sentient creatures. If inherent moral values are based on morally relevant attributes (such as sentience or teleonomic structure) and if the most relevant attributes (sensation, communication) are gradual, then it might be permissible to graduate inherent moral values. We should better not homogenize morally relevant traits. The concept of equality could trigger the errors of homogenization of natural beings with morally relevant traits. The principle of equal consideration of each individual sentient member of the moral community makes grading possible. The survival strategies of mice, frogs, turtles, etc., as such (r-strategies) place hardly any value to the individual. This is of some relevance to how we should value such r-species individuals. The moral standpoint does not require all small wild sentient animals to be protected from suffering and premature death. Egalitarian animal welfare activism and the idea of "policing" wild food webs exaggerate sentientism in an absurd way. The egalitarian animal rights movement is completely reversing the way humans have treated animals since the Neolithic Revolution. It is an absurd demand that man should strive to reduce the pain of prey in terrestrial and even marine systems and ideally transform wild nature into a gigantic zoo. An egalitarian sentientism loses contact with human practices such as domestication, animal husbandry, gardening and hunting. Policing wild nature, granting political rights to pets, and the abolition of hunting and domestication present a somewhat weird result of animal rights theory. The result looks strange because it runs counter to how humans interacted with animals since they left the stage of hunters and gatherers. Egalitarians may reply that historical reasons (reasons from traditions) are generally invalid from a right-based moral point of view. Here, we reach the deep question of how morality and history might be correlated within an ethical theory. How much moral content beside transcendental commitments of arguing can and should be safeguarded from the winds of historical change?

Whatever the answer, *equity* is a gradual alternative to equality. Equity means adequacy to the degree to which morally relevant abilities are actually present in a natural being. The faculty to sentience should be coupled with the ability to communicate under the principle of equity. Plants do not communicate with each other, but they transmit signals that are decoded by other plants in the environment. This differs from the gestures with which dogs interact, and such interactions differ from a linguistic interaction between a chimpanzee and a human being. A discursive being would therefore not be equated with a capacity to exchange information on

biochemical signals. A principle of equity, coupled with the combined criteria of sensitivity, communication and biological strategies, can provide a solid basis for gradually overcoming anthropocentrism, which is in reflective equilibrium with common intuitions about what we owe non-human beings.

This entire pattern of reasoning about inherent moral value goes beyond TEV and ESS. However, most TEV and ESS scholars acknowledge that the Inherent Value Problem should be taken seriously. Within the TEV, however, it holds that if all people believe that *Anopheles* mosquitoes are worthless, there is no reason to protect them. If WTP is zero or less than zero, there are reasons to remove such parts of nature. Only if people want to see penguins or observe whales is there a reason to protect these animals. In the case of whaling, however, economists would try to maximize the net present value of whale watching tourism and whale hunting for trade. Rich Norwegians may sometimes like to watch whales, but they also enjoy whale meat in some expensive Oslo restaurants—and they will pay for both. The efficient solution would be to protect the whale populations that live near tourist destinations and kill whales in remote parts of the ocean for luxury food with a fancy smell of decadence. This solution seems clearly cynical to conservationists who may give inherent moral values to whales. To sum up, the problem of inherent moral value in nature cannot be properly addressed within TEV and ESS. Since it should count as real moral problem, environmental ethics cannot be reduced to TEV and ESS. The criteria of sentience and ability to communicate constitute a gradual scale of moral considerability with some leeway to cultural variances (as in case of husbandry and hunting).

##### *5.5. Conceptions of and Attitudes towards Nature*

The considerations so far in this section illustrate how diversely nature is valued and how reluctant one should be in view of one's own ignorance to make conclusive and unambiguous evaluations. This is the reason for the fifth set of issues concerning conceptions of and attitudes towards nature. Within environmental ethics we find approaches based on a *non-scientific concept of nature*. Here, nature is conceived as something other than a collection of mere objects that fall under general natural laws. Many thought patterns within contemporary environmental ethics take a critical attitude towards a "purely scientific" interpretation of nature. In this interpretation, nature is nothing more than (a) the subject of scientific description and explanation, (b) a warehouse of resources that can serve as an entrance into industrial production, and (c) a hostile force against human longing for safety, health, and comfort. Within environmental virtue ethics, it is accepted that certain

attitudes to and perceptions of nature are morally more appropriate than others. A general attitude of dominance, mastery and control can be rejected for moral reasons. The idea of deep ecology, as conceived by Arne Naess, was to sidestep modern ontology and replace it with “ecosophies”. Ecosophies are not in direct competition with science. Ecosophies only assume that nature can show itself in its naturalness in modes and ways beyond scientific observation, data mining, and causal explanation. These ecosophies may have one thing in common: nature reveals itself in different forms in different places for open-minded people. Nature shows up (eventfully) as “physis”, “creation”, “kosmos”, “dao”, “wild” or “pacha”. ESS can address such revealing of nature within the category of spiritual values, being a sub-category of cultural values. ESS must hold contact with religious studies. Here, monetization clashes with the logic of the sacred. This logic is not just about the strict protection of sacred sites and sacred groves, but goes beyond if entire ways of lives are seen in perpetual spiritual encounter with ancestors, spirits and deities of land and sea. Seen from the category of spiritual cultural values, the entire ESS and TEV schemes look “Western”. The ongoing conceptual debate within IPBES is about Western biases within ESS and TEV. And rightly so. Jetzkowitz et al. (2017) have argued that humanities are necessary for an in-depth understanding of the underlying cultural and religious traditions of non-Western approaches to the “more than human world”. In philosophical terms, cultural traditions have always shaped habits and attitudes. Non-western moral systems are often closer to virtue ethics than liberal Western universalism. In environmental ethics, one should take the bonds between worldviews and virtues seriously. This holds true for debates over SDG 15 and within IPBES.

*Environmental virtue ethics* requires an appropriate attitude towards oneself, others, time, and natural beings. Environmental virtues ethics evaluates arbitrary characteristics of individual character and bases environmental virtues on moral arguments. The virtue of sufficiency is based on resistance to the consumerist excessiveness of human metabolism. Many (biophilic) virtues are based on eudemonic values. Eudemonic values can have a transformative force, as Bryan Norton argued (Norton 1988). Environmental virtue ethics demands with a future ethical impact the prudential virtues of restraint and care, foresight and precaution. It also means being aware of finiteness and mortality, since the earth belongs to the living in usufruct (Thomas Jefferson). It can also justify the existential attitude of reverence for life, located at the interface between biophilia and biocentrism. Values, virtues, and moral obligations are often expressed in narratives, nature essays, proverbs, chants, and consultative citizen juries. There are valid meta-ethical arguments

why not only voices in environmental discourse should be considered that meet Western standards of logical thinking. Eye-opening modes of linguistic articulation, including “thick” phenomenological descriptions, can change attitudes towards natural beings, including landscapes, and sensitize one to the many values of nature. After all, environmental virtues can trigger new maxims such as “leave no trace”. Eudemonic-cultural values, strong sustainability and the gradual overcoming of anthropocentrism should shape one’s own set of environmental virtues. The spiral-shaped combination of eudemonic-cultural values, strong sustainability, environmental virtue ethics and the recognition of unscientific, spiritual encounters with nature could be described as “deep anthropocentrism”, being augmented by some reasonable solution of the demarcation problem. Both TEV and ESS abstract away the problem of virtues, but grounding existence value, cultural services, and bequest value has to remove such abstraction. If so, environmental virtue ethics stays alive in SDG 15 debates.

## **6. Synthesis of Approaches**

In this final section, we will not present a quick “take home message” but remain rigid theoretical grounds. In particular, we will highlight the strengths and weaknesses of the ESS and TEV with respect to axiological discourse about environmental evaluations. We also will correlate ESS and TEV to environmental ethics. Such correlation takes two opposite routes into (1) decision making and economy, and (2) ethics and philosophy. The first route presumes to be of practical relevance for SDG 15 processes, while the second route is about theoretical synthesis.

On the first route, TEV and ESS open eyes for values and services of nature which are hard to ignore by policymakers. ESS values can be combined with TEV values. The combination of provisioning services (ESS) with option value (TEV) gives reason to conserve genes “in situ” (or as second-best solution in seed banks). TEV and ESS can determine through opinion polls how groups of people actually benefit from natural capital, and they can say this in the language of preferences, interests, trade-offs and opportunity costs. Such economic parlance is “lingua Franca” in our commercialized world. One does not conform to this parlance if one makes use of it at some occasions with a “caveat”. TEV and ESS can and should give voice to disadvantaged groups in a commercialized word in ways that also can become critical against commercialized mindsets.

TEV and ESS can also point to the many trade-offs in human–nature interactions. Both TEV and ESS can be useful schematic tools designed to make the values of nature visible to people with economic mindsets and decision makers being confronted

with economic models (cost–benefit-analysis). TEV and ESS reveal serious trade-offs, while cost–benefit analysis shows simplified solutions in terms of efficiency. Thus, decision makers must become aware that they make “real” decisions, sometimes rigid, harsh, and uncomfortable.

ESS and TEV make the values of nature visible, but they do so for different eyes. The quantification and monetarisation of instrumental values not only highlights the ecological value of nature to policy makers, but also provides information for market-oriented companies. Economic visibility is dialectical in itself. ESS and TEV can make people aware that nature has become scarce in many respects. Recognition of the scarcity of nature, however, also provokes clever strategies in the real economy, including investment brokers, portfolio designers, developers and business consortia, to acquire scarce natural resources through property rights (“assets”) and mobilize the return on investments and payments accordingly. Recognition of the scarcity of nature can draw attention either to issues of conservation, restoration and distributive justice (however specified) or to rational, interest-based private strategies to acquire scarce natural resources (land, water rights, concessions, quotas). The business perspective implicitly recognizes the collective scarcity of valuable nature but wants to use ESS privately.

The economic perspectives on the scarcity of nature often become an entrepreneurial perspective: How can an entrepreneur profit from ecological services? How can business models be designed accordingly? How can payments be initiated and managed? Once you have made the scarcity of nature visible, it is difficult to avoid such selfish business prospects for natural values. The large-scale acquisition of land (“land grabbing”) is a paradigm case, but one can also think of the acquisition of concessions for timber and fishing, the acquisition of CO<sub>2</sub> credits, the acquisition of beautiful places as travel destinations, and the like. Such acquisition strategies can affect local livelihoods, as a broad NGO discourse shows. They can distribute the benefits of ESS according to the given unequal patterns of purchasing power. Not surprisingly, egalitarian concepts of distributive environmental justice often reject TEV or ESS because of associated business models. Many people dislike the ideas that one may make a profit out of the conservation of nature or that nature’s values are traded on markets. Market-based solutions and business-models count as corruption of the “spirit” of nature conservation. Market-based acquisition of ESS is either unfair or corrupt (or both). Thus, there are many warnings that ESS must be safeguarded against neo-liberalism. Warnings against “neoliberal commodification” may, however, also obscure the potential for transitions within environmental entrepreneurship, “green” investments and corporate restructuring.

TEV and ESS are tools and measures that make the values of nature visible. It is inevitable that they will do so for business models, but one should not be afraid of new coalitions between “green” bio-economy and entrepreneurship.

There might be many morally decent ways to make some money with TEV or ESS. Beautiful campsites on Swedish lakes can mobilise the willingness of stressed-out Germans to pay to relax in such an open-air hut. Farmers might specialize in producing agroecological services beyond yields. The same holds for forestry. Why not pay some entrance fee for a land art park presenting sculptures in landscapes? Why not get payments for natural climate solutions with respect to carbon dioxide removal? Why not shift agrarian subsidies to the production of cultural services and existence values? What is wrong with market gardening? Why not support green entrepreneurship politically? Why not stimulate restoration via monetary incentives? If production of ESS would be profitable, ESS might become less scarce in the future. If so, there might be democratising pro-poor “trickle down” effects of ESS. A mere denial of business models may underrate the prospects for innovation (Ziegler 2020).

In view of its internal dialectic of monetarisation of TEV or ESS, the economy can and should take the plunge into critical political environmental economy. To do this, economists would have to think about the scarcity of nature in close connection with environmental ethics, distributive justice and sustainability science. Debates at the interfaces of ethics and economics are about discounting, compensation, replacement costs, the replacement of functions and (“de re”) the uniqueness of some special natural monuments (such as the Grand Canyon, Wadden Sea, Great Barrier Reef, and many others). The economic visibility of the scarcity of nature requires economic-ethical disputes over property rights over stocks of natural capital, commons, open access, types of acquisition, kinds of payments, fair benefit sharing, fair burden sharing, and promising business models. On the first route, we reach the basin of attraction called “political economy of nature”. SDG 15 and IPBES are committed to inquire this basin of attraction, being full of sharks.

Schemes should not be taken for granted but should be seen as tools and devices for navigating over deep ethical waters. Limits of monetization open the second route of philosophical reflection upon value schemes and upon single categories within. The search for monetization is based on the ideal of operationalization and on the desire to homogenize the multitude of heterogeneous environmental values. Monetization is reductive to one unified measure. Numbers simplify, but both ESS and TEV have intrinsic reasons to withstand its own tendency towards simplification. Environmental ethics wishes to appreciate the heterogeneity of natural values. Appreciating heterogeneity might be an important step on the road

of transforming environmental evaluations in the spirit of environmental ethics, as to be found prominently in the work of Holmes Rolston (1988) and Arne Naess (1989).

As we have argued in Section 2, evaluations can be argued with respect both to attribution and grounding. Grounding evaluations of natural entities is at the core of environmental axiology. TEV and ESS are not well suited for grounding as far as they are preference based. It is sufficient for evaluation to state or reveal a preference and declare some WTP or WTA. Such preference-based approaches may disconnect us from a deeper sense of valuing nature—and sharing such grounded values. Both TEV and ESS only point to values which are held by people as matters of facts (actual preferences), but do not allow for a prescriptive approach about values and commitments which peoples *should* hold (Section 5). Preference-based approaches obscure the profoundness of axiological life being connected to the more-than-human world. The following remarks also wish to explain why cultural ecosystem services are not “flows” from stocks of natural capital.

Cultural values overlap strongly with the so-called eudemonic values in environmental ethics. From an economic perspective, the economic value of such cultural services must be measured through travel cost analysis, combined tourism analysis or contingent valuation. Studies can provide useful information to stakeholders and policy makers. If a contingent valuation study shows that most tourists do not like noise on the beach, a destination becomes financially more valuable if noisy vehicles are banned by local authorities. Such useful methods, however, remain at the surface of cultural values. In relation to deeper layers of cultural services, other approaches such as cultural history, literary narratives, landscape painting, poetry, conservation history, cultural anthropology, religious studies, etc., can contribute to a deeper understanding of cultural services being grounded in eudemonic values. Non-Western modes of expression, as in songs, chanting, rituals, and proverbs, or practices such as pilgrimage and feasting should be taken into account. Eudemonic values remain embedded in the particularities of narratives, traditions, and practices (MacIntyre 1984). On reflection, we stand in need to reconcile the universal with the particular within environmental ethics. Universal commitments, as opposition against environmental victimization, obligations against future generations, and protection of sentient beings must be reconciled with particular traditions, cultures and even spiritual ecosophies being embedded in particular worldviews. A spirit of transformation in an age of crisis may not rest solely on universal commitments, but may need stronger bonds of place making, focal practices of conservation, beloved unique landscape, and cultural heritage. An integrated value system is a precondition for such reconciliation.

The TEV categories “option value” and “existence value” can and should be implemented in the ethical argumentation patterns. The existence value falls into the category of eudemonic values and also touches on the virtue-ethical question of what kind of person one wants to be. On a first stage of reflection, a preference for the existence of natural beings opens a path of deep questioning (*sensu* Naess) about being human in a natural world. On a second stage of reflection, one may also cast doubts on the idea that mere existence as such can be of value. If a person wishes to ground an attribution of existence value to a natural entity, such grounding must go beyond the statement “X exists”. Grounding existence values must refer to cultural heritage, beauty, transformative value, widening identification, inherent moral value, etc. If so, “existence value” functions as a turn-table: it is an outer frontier to economics but also an entrance doorway to environmental philosophy, asking what kind of preferences we should have with respect to the existence of natural entities. The problem of the intrinsic value of biodiversity, as stipulated in the preamble of the Convention Biological Diversity, has to be grounded at this point. If biodiversity is both about different entities and variability amongst them, the existence value becomes far more profound than a willingness to pay for endangered crocodiles. Which attitudes are appropriate to the many ways by which organisms are capable of existing? Existence is about the “more” within the more-than-human world.

Even the category of option value reveals profoundness on reflection. How can one act in order to preserve and increase good options in the future? Should we create options by interventions or by omissions? Nature can be “optional” in many respects, as in eudemonic options and options for new spiritual encounters with the more-than-human world. Options should not only refer to future resources, but also include future options for people who want to liberate their biophilic dispositions and live as naturalists. A further stage of reflection may reflect upon options as dispositions within a “world”. Why do we believe that the natural world we live in is full of options? An (onto)logical analysis of modes of dispositions in nature is still missing. Such analysis might be a common focal research point for logicians, ontologists, and ethicists. Lie (2016) has presented an ontology of dispositions and relational realism which may ground the concept of options values also with respect to long-term responsibility.

The spiritual values of sacred sites as such remain obscure and opaque to scientific and economic methods. Perhaps only phenomenological expressions, such as atmospheres, auras and sacred sites, can be perceived by sensitive embodied spirits and how they form specific moods that come close to such spiritual encounters with nature. When people become radically open to special places (“genius loci”,

“sacred sites”), it becomes pointless to ask for opportunity costs to replace them with shopping centres. Within ESS, the category of “spirituality” is at the outer edge of cultural services, but it opens a vast array of encounters with nature which are, in fact, alive in many cultures, but should not be downplayed by Western values schemes. There is broad agreement that this category should find a proper place in SDG 15 and IPBES. Environmental philosophy cannot abstain from a philosophy of religion (see for overview Jenkins et al. 2017).

Finally, the two functions of value systems (Section 2) are to be considered in their fulfilment. While value systems such as TEV or ESS can be useful for establishing evaluation standards, values play an important role in specific, complex, grounded evaluations. The axiological grounding of goodness in nature is different from truth claims, moral claims, and sincere expressions of sentiments. As our examples of “eudemonic”, “existence”, “option”, and “spiritual” indicate, rounding value judgements is an immersion into the cultural lifeworld, not just making explicit a contingent mental state. Grounding values means to adopt a commitment to care for something being shared as being “good”. Can TEV and ESS be transformed toward such grounding? Yes, in principle, they can. As we argued at the end of Section 4, TEV and ESS can become catalytic for environmental ethical discourse, as presented in Section 5. The identification of factual values may serve as a solid entry point for environmental ethical discourse.

Ethical beliefs are an integral part of our ways of life and judgements should be in a reflective equilibrium with our other beliefs. In order for value systems to perform their functions, they must help set the standards that we want to use—where we arrive at evaluation results that are consistent with our intuitions and where we know that we are valuing something for the best reasons. Well-reasoned evaluations about nature and about man–nature interaction can result if we synthesize ESS, TEV, and the patterns of reasoning within environmental ethics. The result of this chapter indicates that synthesis is within reach. Such synthesis is of high significance to both SDG 15 and IPBES, even if it had been reached on an independent route. To support the implementation of SDG 15 and the IPBS process in the longer run, we wish to have grounded a comprehensive value system being designed for specific evaluations in diverse settings. The reflective route being taken may nourish the spirit of substantial transformation in human interaction with the more-than-human world more than moral postulates. On this reflective route, one may become astonishingly aware that there is so much goodness within nature. Such astonishment looms at the end of the second route and, as always, at the beginning of philosophy (Plato, *Theaitetos*, 155d).

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