Part I
Conceptualizing Human-Nature Interactions

Chapter 1
Conceptualizing Human–Nature Interactions – An Overview

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Significance Statement The threats posed by climate change and global biodiversity loss are increasingly seen as a major problem for the future of nature and humanity. Significant improvements in the understanding of how human and nature interact are thus required to address both challenges comprehensively. Over the past decade, different nature-based approaches, such as Ecosystem-based Adaptation (EbA), Green Infrastructure (GI), and Nature's Contributions to People (NCP), have enriched the scientific discourse and gained prominence in policy- and decision-making. However, the underlying concepts are vaguely defined, and their systematic uptake is hampered by a lack of clarity over the relationships and overlaps between different nature-based approaches. Here, we discuss recent advances in conceptualizing human–nature interactions with the aim of making these concepts more tangible and applicable for a broader audience.

Keywords Ecosystem-based adaptation · Green infrastructure · Nature's contributions to people · Nature-based solutions · Ecosystem services

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1 Introduction

We live in a time when there is an urgent need to respond to two interrelated global environmental challenges – climate change and biodiversity loss – which are both closely linked to human activities (IPBES, 2019; IPCC, 2021). This requires new ways of thinking about the multiple interdependencies between people and nature, and about how to address them simultaneously (Díaz et al., 2015).

Over the course of the last decade, within the broader field of socio-ecological research, new concepts aimed at addressing environmental challenges, as well as at improving the ecological and socio-economic balance and human well-being, have gained importance (IUCN, 2016). These concepts have been typically framed within socio-ecological systems and often rely on transdisciplinary approaches to bridge differences in perspectives and methodologies for addressing human–nature relationships (Ostrom, 2009). The scientific literature has gradually moved from narrow, reductionist viewpoints towards more comprehensive types of environmental questioning, valuing, and problem-solving (Pascual et al., 2017; Díaz et al., 2018). While such novel paradigms may open new ways to conceptualize human–nature interactions and may be useful to advance scientific ideas in general, they may also easily lead to uncertainties. This may raise questions about their "usefulness" and "representativeness" or about whether they are "complicating things", especially within broader practitioner and stakeholder groups.

In this chapter we selected three concepts for review, namely Ecosystem-based Adaptation (EbA), Green Infrastructure (GI), and Nature's Contribution to People (NCP). We believe these concepts have left a lasting mark on socio-ecological research over recent years and, thus, maybe of interest to a broad readership in approaching this field of study (IUCN, 2016; Díaz et al., 2018). They all have emerged relatively recently under the overarching framework of Nature-based Solutions (NbS) and are often closely interrelated and complementary. However, the three notions propose different views and emphasize distinct approaches to conceptualize human–nature interactions. The intent of this chapter is not to exhaustively discuss each concept in detail, but rather to provide a brief overview of recent advances in the field of socio-ecological research and of the different approaches upon which nature-based concepts are based and, thus, to contribute to making the interactions between humans and nature more tangible for a broader audience.

2 Nature-Based Solutions as the Overarching Framework

Nature-based Solutions play a central role in understanding the nexus between the natural environment, society, and human well-being, and they are often considered as an umbrella term for a broader set of ecosystem-based approaches (Welden et al., 2021). Nature-based Solutions were introduced in the early 2000s as an important step towards a paradigm change that saw people move from being beneficiaries of

nature. It can be said that people belong to a place and must behave virtuously – with relational behavior such as reciprocity, care, custodianship, or stewardship of places celebrated as duties and responsibilities. These can be collective histories, perhaps perpetuating a particular culture of kinship and shared journey. Relational values are often locatable, tangible, place-based and both contextually-dependent and situationally-constructed (Rawluk et al., 2018). Their loss can be of great injustice and inequity, perhaps reflective of larger hegemonic or imperial power and status. Tadaki et al. (2017), therefore, emphasise methodologies such as deliberative workshops, public participation GIS, participatory action research (PAR), and other qualitative approaches "as 'technologies of participation' [that] can highlight normative concerns about equity and power in environmental decision-making" (p. 7).

7 Plural Valuation: A Great Challenge But Pressing Need

The challenge of incorporating socio-cultural, relational, intrinsic, ecological and monetary valuation into decision-making has proven quite intractable, for several reasons. As Chan and Satterfield (2020, p. 1030) point out, even with an increase in non-economic assessments of environmental value, from both the broad social sciences and humanities, there is still a general belief that research will be most effective if it can "distil the value of nature into a number" (p. 1030). However, since no single method that can capture all values, the decision as to how to measure values is a normative one (Lliso et al., 2020). By acknowledging and amplifying particular values, different methods not only elicit already-existing values but also bring new values into discussions and deliberations. In effect, the values take on greater standing as a result of their evaluation (Arias-Arévalo et al., 2018). And while some values need to be socially constructed in this way, they resist accumulation and aggregation (Wegner & Pascual, 2011). Indeed, the process of maximizing benefits, given costs, does not necessarily yield collective preferences and well-being.

Relational values, and many cultural values, do not sit easily within broad ecosystem services assessments and may not be substitutable nor replaceable. A memorial tree, for instance, represents more than the shade, habitat, and CO_2 capture that it provides and should be evaluated accordingly. Such a tree is not so much a stock of the benefits that flow from it but a unique and complex association of meanings and heritage. Separating the tree into separate benefits and contributions would not fully capture its significance. Maximizing benefits is further complicated by the fact that individuals and communities may hold seemingly conflicting views on the same resource and when values are deeply held and embedded in culture, the repudiation of such values is a denial of those who hold them. Qualitative and humanities approaches are often absent in ecological services assessments, leaving out insights from fields such as ethnography, cultural studies, phenomenology, human ecology, and human-environment geography (Abson et al., 2014; McDonough et al., 2017).

Valuation itself does not automatically lead to greater inclusivity, consensus, nor shared understanding. Just as the choice of evaluation method dictates outcomes of

that evaluation (Jacobs et al., 2020), so, too, the expectations of the process of discussion and decision-making can determine outcomes. In particular, some values (and valuers) don't work well with others and may struggle to integrate with singular, perhaps hegemonic, approaches. Some values follow different expectations of epistemology (such as what is considered knowable, by whom, and for what purpose) and it may not be appropriate to measure and express particular values, perhaps because they are sacred or culturally significant. To point to an object may be rude or insulting, just as naming part of nature can change its status and make it more visible, accessible, and vulnerable. In sum, evaluation itself is not value-neutral and a shared, mutually acceptable approach or process that allows full and fair consideration of all values hasn't emerged.

If the purpose of valuation is to give voice to different values and to build collective awareness and acknowledgement, then the gaining of trust and legitimacy can be expected to take time and many resources. Indeed, leveraging the strengths and weaknesses of different evaluation methods is a monumental task, as it requires overcoming disciplinary boundaries (and associated practical components such as competition for funding), navigating inexperience with transdisciplinary research, as well as facilitation, process and leadership abilities well beyond specific disciplinary and bureaucratic expertise. However, some progress has been made with methods such as participatory rural appraisal, deliberative valuation, scenario and futures mapping, and narrative analyses, which all aim for iterative learning, knowledge co-construction, and enagement of the perspectives of different peoples.

In a call for greater transparency and acknowledgment of differences, a comprehensive mapping of the five different approaches to environmental values would, we suggest, define the normative assumptions of:

(a) what can be evaluated (i.e., what can be known and preferred),
(b) the particular purposes of evaluation (i.e., for what end goal or objective),
(c) how values and preferences can be expressed and documented (i.e., how, when, where, and by whom),
(d) the positionality for those who recognise and give voice to different values (i.e., in terms of access to the process, power, and status within society, as well as to available resources and funding), and.
(e) how prioritization of values is to be considered (i.e. choice of criteria such as efficiency, effectiveness, equity, precautionary principles, etc.).

Such a comprehensive mapping would expose commonalities, potential incommensurabilities (inabilities to consider data and outcomes across different methodologies), and identify strengths, weaknesses and specific insights of each approach.

8 Conclusion

Throughout our discussion, environmental values have been defined, examined and documented in different ways within different disciplines. While there may be some overlap between the five approaches discussed, there is not one, universal value

foundation. Indeed, any single approach to valuation is too narrow to fully and fairly capture the whole range of worldviews, knowledge systems, and stakeholders (Kadykalo et al., 2019). Instead, there is need of a more pluralistic foundation, one that is less focused on arguments about definitions, conceptual distinctions, and all-encompassing frameworks and methodologies. Constructive consideration and deliberation of the broad diversity of environmental values will require acceptance of each of the five approaches and their tools and methods, as well as communication and learning about the different approaches across disciplinary and practitioner boundaries.

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