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Guest Editorial

Welcoming different perspectives in IPBES: "Nature's contributions to people" and "Ecosystem services"

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INTRODUCTION

A recent paper by Díaz et al. (2018*a*) presented "nature's contributions to people," a conceptual framework developed within the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The authors wrote that it could nurture a paradigm shift from the concept of ecosystem services. The paper has sparked quick reactions including a critical editorial response in the journal *Ecosystem Services* (Braat 2018) and several *Science* eLetters responses. Díaz et al. (2018*a*) and the responses generally disagree on whether the paradigm shift suggested by the original contribution is justified and whether the nature's contributions to people framework represents a scientific advance that is broadly useful in contexts other than IPBES.

In this contribution, we call for a recognition of pluralism and the need for a richer process of articulation, translation, and discussion among many different perspectives on people's relationship with nature. We argue that there are apparent benefits and limitations in the proposed nature's contributions to people framework; however, we hope that these can be discussed in a way that accepts many different approaches to the way relationships between nature and people are useful, and that they do not have to be all integrated within a single framework. We hope that the multiple, diverse, and overlapping extended peer communities that exist around biodiversity and ecosystem services can engage with IPBES processes and that IPBES will further embed multiple ways of bridging different knowledge systems in its operations and practices. We suggest that IPBES could enhance its role as a platform by strategically acting with other actors, processes, and institutions to mobilize, translate, negotiate, and synthesize knowledge across multiple research-practice interfaces and to translate among a diversity of perspectives, actors, methods, and values.

ADVANCES OF THE NATURE'S CONTRIBUTIONS TO PEOPLE FRAMEWORK

The nature's contributions to people concept makes a valuable contribution in emphasizing the importance of cultural context as a cross-cutting factor shaping human perception of nature and good quality of life. This context-specific perspective highlights how diversely ecosystem services are framed across different communities and places around the world. Furthermore, it highlights the importance of including diverse and less-represented knowledge systems in assessments and syntheses such as those conducted by IPBES.

Another major advance of the Díaz et al. (2018*a*) paper is related to the notion of the "maintenance of options" type of nature's contributions to people (NCP 18; Díaz et al. 2018*a*), enhancing "the capacity of ecosystems to keep options open in order to support a good quality of life" (Díaz et al. 2018*a*:SM). This category of nature's contributions to people connects nature to people's capacity to navigate the future, providing a better fit to planning processes, which deal with variation and surprise more than the relative static concept of ecosystem services. It represents a welcome place for cross-fertilization between the ecosystem services related research and the fields of resilience, adaptive capacity, transformation, and vulnerability.

SHORTFALLS OF THE NATURE'S CONTRIBUTIONS TO PEOPLE FRAMEWORK

By replacing the term "ecosystems" with "nature," we argue that the nature's contributions to people approach underemphasizes the extent to which social-ecological processes are shaping the world's ecosystems (Steffen et al. 2015). The world is now in the Anthropocene, an era in which the entire Earth System is being shaped by human action. Furthermore, most of the world's people live in urban ecosystems, and people have converted the majority of the world's ice-free surface into agro-ecosystems (Ellis and Ramankutty 2008). However, neither urban nor agro-ecosystems are typically considered or classified as "nature." A focus on "nature," therefore de-emphasizes the ecosystems that are home to and provide the necessities of life to most of the world's population.

Another important limitation of the nature's contributions to people framework is that while promoting particular aspects of human-nature relations, e.g., the importance of a cultural-context lens, it leaves out other crucial aspects of human-nature relations that have also been identified as frontiers of ecosystem services research (Table 1). These frontiers include the dynamic character of and feedbacks between ecosystems and the derivation of their benefits, the cocreation of ecosystem services and nature's contributions to people by ecosystems and societies, the embeddedness of human-nature relationships across temporal

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Table 1. Published key frontiers for ecosystem services research.

Key frontiers for ecosystem services research	
Temporal and spatial dynamics	Nonlinearities and thresholds of ecosystem services change (Carpenter et al. 2009)
	The evolution of ecosystem services development and distribution over time and the effect of direct and indirect drivers on shaping multiple ecosystem services (Carpenter et al. 2009, Vihervaara et al. 2010, Bennett et al. 2015, Fischer et al. 2015)
	The role of history, legacy effects, and path dependency in shaping the development and evolution of landscapes and their ecosystem services (Carpenter et al. 2009, Bennett et al. 2015, Bennett 2017)
	The interactions between ecosystem services and how these are spatially expressed; inversely, the effect of landscape and seascape heterogeneity on ecosystem services (Carpenter et al. 2009, Bennett et al. 2015)
	Interconnectedness of ecosystem services across space; governing telecoupled social-ecological interactions (Fischer et al. 2015, Liu et al. 2016, Rieb et al. 2017)
	The development of future scenarios and pathways centered on human-nature relationships (Rosa et al. 2017)
Ecosystem services distribution	The role of institutions and socio-political processes in shaping the provision and distribution of multiple ecosystem services (Carpenter et al. 2009, Vihervaara et al. 2010, Bennett et al. 2015)
	The distribution of ecosystem services to diverse beneficiaries and their perceptions of benefits derived from ecosystem services (Bennett et al. 2015, Kremer et al. 2015)
	The role of power, equity, and justice in the distribution of ecosystem services (Bennett et al. 2015, Fischer et al. 2015)
Coproduction of ecosystem services	The coproduction of ecosystem services as a result of social-ecological feedbacks (Comberti et al. 2015, Kremer et al. 2015)
	The learning potential from the application of ecosystem services frameworks in environmental policy and planning practices (Carpenter et al. 2009, Kremer et al. 2015)
	The role of design and technology in substituting or enhancing ecosystem services (Kremer et al. 2015, Rieb et al. 2017)
	The role of biodiversity in supporting the development of multiple ecosystem services and human well-being (Carpenter et al. 2009, Bennett et al. 2015, Rieb et al. 2017)
Research design	Enhancing research designs based on stakeholder knowledge; strengthening the integration of science and society (Fischer et al. 2015, Bennett 2017)
	Key methodological advances in a variety of ecosystem services-related disciplines including economics, environmental monitoring, and modeling (Carpenter et al. 2009, Daily et al. 2009, Costanza et al. 2017)

and spatial scales (e.g., Carpenter et al. 2009, Bennett et al. 2015), and the central role of infrastructure and technology in shaping the production and access to ecosystem services (McPhearson et al. 2016). Although the role of multiple feedbacks and scales is recognized in the IPBES conceptual framework (Díaz et al. 2015), which Díaz et al. (2018*a*) builds on, the nature's contributions to people approach emphasizes a one-directional flow from "nature" to "people." Thus, this newly introduced concept de-emphasizes the complex character of the coproduction of nature's contributions to people, which includes long distance connections, conflict, and nonlinearity (Crona et al. 2015, Moser and Hart 2015, Rocha et al. 2015, Friis et al. 2016).

CLAIMS AND CONFLICTS

The Díaz et al. (2018*a*) paper and the flow of responses it has provoked have generated tension among ecosystem services researchers. In our opinion, such a situation risks dividing the extended peer community around ecosystem services, potentially reducing their engagement with IPBES, and confusing the operationalization and implementation of ecosystem service-based sustainability initiatives.

First, Díaz et al. (2018*a*) propose that the nature's contributions to people concept has a higher potential for involving stakeholders and policy makers than the ecosystem services concept. Although we recognize that the ecosystem services concept does not fully reflect the diversity of world views (e.g., Chan et al. 2012), Díaz and coauthors' claim neglects the achievements of the ecosystem services approach in translating and communicating the value of ecosystems to people in many different countries and organizations (Nahlik et al. 2012, Albert et al. 2014, Guerry et al. 2015, Reyers et al. 2015, Beery et al. 2016). For instance, a large number of national and international policies are already actively integrating ecosystem services generation and interactions into planning and management, which is a crucial achievement for reaching sustainability goals (e.g., Bai et al. 2016, Beery et al. 2016). In the same way, multiple values are already being included in ecosystem services assessments (Jacobs et al. 2016, Arias-Arévalo et al. 2017). Secondly, as pointed out by Braat (2018), the Díaz et al. (2018*a*) paper proposes but does not provide substantial evidence that the nature's contributions to people framework will prove to be more useful that the ecosystem services concept.

On the other hand, the editorial by Braat (2018) ends with the unsubstantiated claim that perceived flaws in Díaz et al. (2018*a*) are sufficient reason to question the scientific credibility of the entire IPBES process. IPBES has produced multiple assessments, each of which has involved hundreds of scientists, addressed various aspects of human-nature interactions, and was subjected to an extensive and transparent peer-review process. These assessments address many topics, such as drivers of biodiversity loss and strategies for linking models of people and nature, that are only weakly connected to nature's contributions to people. Suggesting that concerns related to a single paper undermine the credibility of such a broad, diverse, and still ongoing process is not constructive critique.

Nevertheless, from the concerns raised by Braat (2018) it is clear that there is confusion between specific IPBES related concepts

(and their communication) and the entire IPBES process. This suggests that IPBES scholars should carefully consider how to present IPBES related outcomes. The Díaz et al. (2018*a*) paper can be read as if IPBES proposes that ecosystem service researchers replace ecosystem services with nature's contributions to people, which was not its intention (Díaz et al. 2018*b*). A clearer differentiation of how the concept of nature's contributions to people is being used within IPBES, and how it could be adopted beyond IPBES would help communicate the concept more clearly to avoid misunderstandings among ecosystem services researchers and practitioner groups.

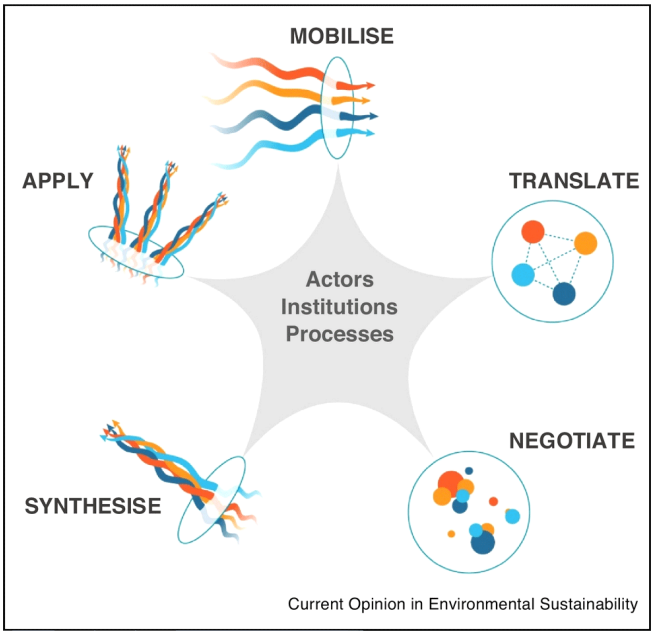
Although scientific debate is vital for testing ideas, polarization within scientific communities often impedes science and practice because it can lead to the silencing of less powerful voices and reducing the diversity of perspectives in divisive and unproductive discussion. Furthermore, in this particular case, such divisions threaten to undermine the challenging process of securing the international commitment for IPBES, at a time when it requires greater capacities and financial support (Balvanera et al. 2017).

BUILDING BRIDGES

Building practical knowledge for sustainability in a diverse world requires approaches that can cope with pluralism and bridge different ways of thinking (Cash et al. 2003, Cornell et al. 2013, Clark et al. 2016). This is one of the goals of IPBES, but we believe that IPBES would benefit from more widely applying such approaches. Knowledge systems can be defined as networks of agents, practices, and institutions that organize the production, transfer, and use of knowledge (Cornell et al. 2013, Löfmarck and Lidskog 2017). Knowledge systems, such as those that exist around practices such as transport engineering, ornithology, and permaculture, as well as around Indigenous and Local Knowledge, vary in the degree to which they are mutually understandable and comparable, as well as in the resources of the actors, institutions, and processes that support them. This means that synthesis, although a useful approach, should not be the only or even the dominant approach to bridging knowledge systems. Weaving together knowledge systems requires enabling collaborations that respect the integrity of each knowledge system, thus avoiding division. IPBES has already used the multiple evidence base approach (Tengö et al. 2014, 2017) to engage with Indigenous and Local Knowledge (Tengö et al. 2017); however, we argue that this and similar approaches should be more widely applied in IPBES, and that this science-policy platform should reconsider its focus on overarching frameworks and large scale assessments.

Although the multiple evidence base approach proposes that work to bridge knowledge systems should include, but not be limited to, synthesis (Fig. 1), bridging knowledge systems also requires knowledge mobilization, translation, negotiation, and application. The mobilization of multiple types of knowledge is required to share knowledge in forms that others can understand; translation between knowledge systems is often required to enable mutual comprehension of shared knowledge; negotiation enables a joint assessment of convergence, divergence, and conflicts across knowledge contributions; and the application of use of knowledge enables the creation of outputs that are designed to be useful for different actors working in different types of decision contexts (Acosta et al. 2016).

Fig. 1. Five mutually supportive tasks for bridging knowledge systems. The colored strands represent contributions from different knowledge systems to a topic, such as how ecosystems benefit urban residents. The interactions and support of different actors, institutions, and processes are the people, platforms, that connect these tasks and ensure that they occur. The open circles represent a specific issue or activity. Source: Tengö et al. (2017) under Creative Commons License.



IPBES was created as a science-policy platform for biodiversity and ecosystem services, and as such it has substantial potential to support and enable these different types of bridging processes. This includes bridging the diversity of approaches in ecosystem services research, as well as bridging the deeper diversity among disciplines, e.g., ethnography, civil engineering, and international relations, in their approaches to nature and people, as well as in other communities of practice, e.g., finance, building construction, and product design. This diversity is vital when addressing fundamental questions such as the dependence of people on the biosphere and the ability of human societies to adapt and transform to current complex global challenges. In order to achieve that, IPBES could connect with other actors, institutions, and processes to promote and produce products that support the mobilization, translation, negotiation, and application of knowledge

IPBES could benefit from and contribute to multiple global and regional processes and institutions working within similar areas. It has engaged with researchers related to multiple scientific networks and other environmental assessments; however, this engagement could be broadened and deepened, for instance by links to Future Earth (Future Earth 2013), which represents a global network of scientific programs, many of which directly connect to issues important to IPBES. Similarly, it could enhance its engagement with ongoing initiatives such as the Natural Capital Project and processes such as UNEP's GEO assessment

(UNEP 2012), TEEB (TEEB 2010), or SEEA (UN 2014). Furthermore, IPBES could more deeply engage with networks around related concepts such as Ecosystem Services Partnership, nature-based solutions, green infrastructure, urban ecology, eco-psychology, public health, green economy, and the Sustainable Development Solutions Network. All these initiatives have the potential to generate a wide range of pathways for achieving sustainability, and we argue that these programs have much to gain from weaving their knowledge together.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/issues/responses.php/10134

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