A new valuation school: Integrating diverse values of nature in resource and land use decisions


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ABSTRACT

We are increasingly confronted with severe social and economic impacts of environmental degradation all over the world. From a valuation perspective, environmental problems and conflicts originate from trade-offs...
1. Introduction: why value nature?

We, as human species, are pushing the earth’s system and biosphere beyond several planetary boundaries, underlining the long-term conditions for our own survival (Rockström et al., 2009; Steffen et al., 2015). As a direct result, we are increasingly confronted with severe social and economic impacts of environmental degradation that lead to ecological conflicts all over the world (Armerio and Sedrez, 2014; Martinez-Alier et al., 2016). From a valuation perspective, environmental problems and conflicts are the consequence of trade-offs between values held by different groups of stakeholders, which in many cases are not well represented in the decision making process (see Iniesta-Aranda et al., 2014; Phelan and Jacobs, in this issue; Villegas Palacio et al., in this issue).

The urgency and importance to integrate nature’s diverse values in our land management decisions and actions stand out more than ever. Fuelled by public indignation and NGO pressure concerning climate change, mining disasters, and ever-faster destruction and degradation of nature, several governments and private companies have started to recognize sustainability challenges and are looking for solutions. Although there are economic interests to maintain status quo or even fasten unsustainable natural resource use, the popular outcry for socially fair and long term sustainable strategies is clear, from the very beginning. The urgency and importance to integrate nature’s diverse values in our land management decisions and actions stand out more than ever.

Valuation of our environment is nothing new. As a current scientific field, it has emerged from traditions as well as from environmental economics (Gómez-Baggethun et al., 2010; Baveye et al., 2013), environmental justice (e.g. Martinez-Alier, 2002) and ecosystem service assessment practice. Valuation of nature and its services has become central to an increasing amount of academic literature (Fisher et al., 2009; Seppelt et al., 2011). This proliferation has been stimulated by policy initiatives such as the European Biodiversity Strategy to 2020, the Aichi targets, the Sustainable Development Goals and the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Under these umbrella, national and local ecosystem service assessments and valuations are thriving (e.g. UK NEA, 2011; Santos-Martín et al., 2014; Jacobs et al., 2015, 2016).

Valuation of nature, in its broad sense of ‘assigning importance’ (Boeraeve et al., 2015, Dendoncker et al., 2013), forms part of many if not all decisions on natural resource and land use. Different value dimensions (ecological, cultural, economic, self-interest, electoral, or ethical) are implicitly or explicitly part of decision making and its justification (Kelemen et al., 2015). Here, the key challenge is to represent the diversity of values of nature, such as intrinsic, relational and instrumental values (Díaz et al., 2015). Uncovering and eliciting these diverse values necessarily requires integrating diverse valuation approaches (Martín-López et al., 2014; IPBES, 2015).

2. The dust is settling on the nature valuation debate

After over 50 years of fierce scientific debate between ‘end development of thought within different schools of valuation (e.g. Martinez-Alier, 1998; Baveye et al., 2013; Beder, 2011), the dust seems to be settling. From an applied perspective, the need for combining multiple disciplines and methods to represent the diverse set of values of nature is increasingly recognized. In fact, a growing number of scientists and practitioners subscribe the ambition to further explore how combining ecological, socio-cultural and economic valuation tools can support resource and land use decision-making. The applied school of “integrated valuation” is building on earlier traditions in sustainability science. However, integrated valuation explicitly aims at including the multiple values and worldviews in a coherent and operational framework aiming at societal rather than (only) academic impact (Gomez-Baggethun et al., 2014, 2016; Kelemen et al., 2015, Barton et al., 2016, see Fig. 1.). (IPBES 2015) What started as a small informal working group within a monetary valuation dominated network, has grown into research project working packages and deliverables, and percolated in the valuation guidelines of the largest assessment of biodiversity and ecosystem services to date (IPBES 2015). Researchers from different disciplines, fuelled by the urgency of addressing sustainability challenges, are working to operationalize integrated valuation approaches at different levels, i.e. from place-based research (e.g. Martin-Lopez et al., 2014; Cabral et al., in this issue; Phelan and Jacobs, in this issue) to regional and global assessments (IPBES, 2015).

Mainstreaming a new culture of valuation can only be achieved by moving the scientific field beyond heuristic interdisciplinary debate, by learning from real world applications, sharing successes and failures, and explicitly choosing for transformative research for sustainability. To this end, the present special issue and this paper aim to bring together experiences on integrated valuation from multiple pioneer case studies and research papers. This synthesis paper is the editorial closing piece of the special issue ‘Integrative Valuation of Ecosystem Services’ which aims to synthesize the main challenges of this emerging applied field and set out priorities for the years to come.

1 http://es-partnership.org/community/workings-groups/thematic-working-groups/twg-6-valuation-of-es/
2 http://www.openness-project.eu/about/work-packages
3. New challenges for valuation of nature

The difficulty of the valuation debate and the complexity of real life application defy hopes for a methodological silver bullet. Challenges for the new field sometimes seem insurmountable, especially because the inter-, transdisciplinary and real-life oriented mission of integrated valuation goes beyond the comfort zone of single disciplinary skills or strictly scientific endeavours, single knowledge system or single episodic community (Gómez-Baggethun and Martin-López, 2015).

Moreover, the valuation debate affects all of us, entailing the need to consider multiple social actors who articulate different values and use different value languages, as well as different levels of societal organization, from individuals, to communities, to larger societies (Gómez-Baggethun et al., 2014; Gómez-Baggethun and Martin-López, 2015).

Valuation is not-as often depicted-a last and optional step in assessment of ecosystems and ecosystem services (La Notte et al., 2015; Martin-López et al., 2014; Potschin and Haines-Young, 2011, 2016). Indeed, valuation decisions span over the multiple steps that entail the assessment of ecosystem services. The choice of the types of values to elicit or the value language to use, the selection of social actors to engage in the process, the decision of which methodological tools and measurement units to use, or even the choice of which ecosystem services or benefits to include, are steps of the assessment that determine the construction of values and, therefore, the outcome of assessment (Vatn, 2009). In fact, to broaden the action of valuation beyond the mere act of estimating values has severe implications for the conceptualization of valuation, the valuation practice itself, and the role taken by scholars who perform the valuation. Although the importance of questioning our role as researchers in the research process has been increasingly acknowledged in sustainability science (Popa et al., 2015; Buizer et al., 2016), political ecology (Blakie, 2012; Jarosz, 2004), feminist geography, ecofeminist research (e.g. Kobayashi, 1994, 2003; Faria and Mollett, 2014) and gender research in global environmental change (Iniesta-Aranda et al., in press), reflexivity is still one of the missing cornerstones in ecosystem services valuation. Reflexivity allows researchers to locate oneself in the research process in order to track down how knowledge is constructed, situated and shared, how power relations determine the research process and especially its outcomes. Integrated valuation encourages self-critical reflection, which is strongly required to raise our own (researcher) awareness about our background assumptions and normative orientations that shape our decisions regarding selection of value-types, social actors to engage, ecosystem services to value, or methodological tools to apply. These choices also determine our power to influence how knowledge is produced, legitimated and consumed (Limb and Dwyer, 2001).

Scientists engaged in ecosystem services valuation can no longer claim that their daily decisions do not influence the valuation output and that the multiples choices for conducting valuation do not deserve thoroughly reflection.

The following challenges for the integrated valuation research field, synthesised from the authors experiences and the papers in this special issue, demonstrate this broader relevance for ecosystem services valuation, applied (social-)ecological research, and by extent all research claiming to provide decision support on land and resource use:

1. The scientific fields which study the different values keep operating in disciplinary silos. Methods, languages, quality criteria and even publication formats differ substantially between scientific fields, such as ecology, economy, geography, political ecology, or environmental anthropology. Dialogue-if existent- is often lost in translation and engagement is hampered by scientific patriotism, lack of interdisciplinary experience or funding.

2. Combining methodologies is difficult as every valuation method has its own complexity, shortcomings, and on-going debates. Also, some valuation approaches rely on different pre-analytical frameworks (axioms) that can be difficult to conciliate.

3. There is a lack of reflexivity practice in the research of ecosystem services valuation. Assessing real societal/policy impact of valuation studies, and of the methodological decisions on the resulted ‘research outcomes, is hard and rarely done.

4. The policy and governance fields to target are diverse and fragmented. Improvement towards sustainability is hampered by different or opposed stakes between different topical policies, but also by the lack of communication between different governance levels and by their diverse functioning.

5. It is hard to communicate value complexity and uncertainty in a comprehensive and compact way that can be easily digested for use by practitioners and decision-makers.

6. Application of one single method affects the outcomes of valuation, while important values outside the method reach are left unaccounted for. Selecting an appropriate set of methods is difficult.

7. It is hard to account for equity issues, especially in the context of power imbalances. Some social actors get more power in the decision-making because their interests are represented by the valuation output (which is linked to the method used), while others remain unheard. The choice of whose values need to be included for a purposeful yet realistic valuation is a daunting one.

8. Integrated valuation appears to be more costly in time, resources and data needed, and seems therefore less efficient.

Rather than avoiding or ignoring these problems when engaging in applied research, we aim at stressing them as conditional requirements to address and resolve. Many of these problems risk to have a paralyzing effect when regarded from within the single discipline, but current practice attests that transdisciplinary approaches hold the key to their solution.
4. From global to local methodological advances

Signs of a changing valuation culture are apparent at different levels. At the global policy level, IPBES is conducting the first global, government-legitimated assessment on values of nature. IPBES implements a conceptual framework which includes a global diversity of worldviews and takes into account both the knowledge from occidental science and the indigenous and local knowledge (Diaz et al., 2015). Further, its valuation framework explicitly recognizes different ways of perceiving the importance of nature and distinguishes the value of nature itself (‘intrinsic’ values), the importance of nature to foster desirable relationships between people and nature (relational values) and the importance of nature’s benefits to humans (instrumental values) (Diaz et al., 2015; Chan et al., 2016; IPBES, 2015). For its regional and thematic assessments, IPBES puts forward integrated valuation as the center-piece of its valuation guidelines. The weight of these guidelines is not to be underestimated, as the document represents a global political agreement between a large number of states and representatives of indigenous peoples on how to cope with Nature’s values.

Simultaneously, and perhaps even more encouraging is the increasing number of local cases all over the world that apply self-conceived integrated valuation frameworks to a diversity of contexts, driven by the pragmatic need to effectively impact decision-making, and the autodidactic observation that simplifying valuations lack credibility and acceptability. Table 1 depicts the sample of research projects that contributed directly to this paper. This sample is far from exhaustive and the ideas are inspired by many more publications and cases, while also the number of known cases applying an integrated valuation approach seems to be growing fast.

5. Lessons drawn from pioneer integrated valuation work

The set of studies depicted in Table 1 demonstrates the relevance of integrated valuation for a broad diversity of contexts, such as landscape planning, urban planning, river basin management, environmental conflict resolution, support for social struggles in environmental conflicts or strategic impact assessments. Several promising pathways to tackle integrated valuation challenges are suggested, such as inclusion of established strands in institutional economics (Hansjürgens et al., in this issue) and environmental justice (Aragão et al., in this issue; Villegas Palacio et al., in this issue) in the disciplinary mix. Also, tools for integrated valuation, communication and evaluation of policy impacts are proposed (e.g. De Vreese et al., in this issue).

An essential lesson drawn from this practice-oriented perspective is that integrated valuation seems to be the natural thing to do, whereas single-valuation approaches are often disputed, discarded or simply ignored in real life practice. This is a direct consequence from the equity challenge explained earlier: single-valuation approaches often mask voices of particular actors because their valuation language is not captured by the specific tool used. For example, conventional stated

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preference methods risk to be blind for the importance of nature given by indigenous communities as these might not be able to trade nature by money. Nonetheless, these same communities can express their values of nature by other means, such as the willingness to spend time in conservation or restoration projects (e.g. Higuera et al., 2013; García-Llorente et al., 2016), their sense of place or sacredness associated with particular places (Klain et al., 2014; Bieling et al., 2014), or the diverse activities developed in community in a natural setting (Bieling et al., 2014; Chan et al., 2016).

Consequently, methodological progress has to target comparison and selection of valuation methods and guidelines for local cases. Within the OpenNESS project, a broad suite of valuation methods (biophysical, monetary and sociocultural) were applied in local case studies all over Europe. Based on feedback from these applications, guidelines are being continuously refined and adapted (Kelemen et al., 2015). The potential which resided in connecting the levels of governance, the theorizing science, and the proofing in practical projects is being unlocked to leap forward in the field of valuation. However, there is much left to be done beyond academic progress. Establishing a culture, a common good practice of valuation is essential for an effective and widespread application. Building on ideas from the special session and special issue, and taking stock from the discussions and recent experiences in several networks (e.g. Ecosystem Service Partnership ESP), initiatives (e.g. IPBES) and projects (e.g. OpenNESS), we have derived three priority avenues for the years to come. These priorities were extracted as a long-list from all contributions, which was then synthesised, validated and amended by the involved co-authors.

5.1. Priority 1. (How to) Achieve inclusion of stakeholders and decision makers in research design and knowledge production, to include hidden values, deal with power asymmetries and improve societal relevance of the valuation results

Integrated valuation demands co-operation between scientists, decision-makers, practitioners and policy-makers, hereby fulfilling a firm condition for real world application (Fisher et al., 2009; Liu et al., 2010; Bellet, 2015). To take into account multiple worldviews and interests, local stakeholders could be engaged by using tools as ‘open spaces for dialogue’ or ‘common languages’ (e.g. maps (Cabral et al., in this issue); photos (Berbés-Blázquez, 2012; García-Llorente et al., 2012; Míku et al., 2014); or other artistic expressions (Heras and Tábara, 2016; Heras et al., 2016). However, because integrated valuation truly relies on transdisciplinary approaches, it necessarily depends on building trustful relationships between stakeholders and researchers. In doing so, knowledge brokers -i.e. intermediary or liaison persons between scientists and stakeholders (Turnhout et al., 2013)- will be needed to appropriately include the diverse values (e.g. Mueller et al., in this issue). Stakeholder engagement goes beyond application in data-scarce areas or the requirement to validate weights attributed in multi-criteria decision tools (e.g. Wam et al. this issue, Kopperoinen et al., 2015). Participation also increases efficiency and local relevance of actionable knowledge, will increase policy support (Pandeya et al. this issue, Jerico-Daminello et al., 2015; Rincon Ruiz et al., 2015), and can reduce the incidence of trade-offs and perceived disservices (Baral et al., in this issue). Conclusively, more research is needed on tools and methodological approaches for inclusion and engagement of multiple social actors and their multiple values, and lessons should be learned about the effects of these different approaches on the research output and outcomes.

5.2. Priority 2. (How to) Combine a set of appropriate methods, disciplines and new approaches to obtain more comprehensive, acceptable and credible valuation results

This requires researchers working in interdisciplinary teams (Bark et al., in this issue), and especially better inclusion of social valuation methods (Peh et al., in this issue; Dias Carrilho and Almeida, 2015). Integrated valuation has to provide guidance on when to apply which method (van Zanten et al., in this issue; Hansjürgens et al., in this issue) and integrate ecological, social and economic criteria in decisions and policies (Liquete et al., this issue; Mederly et al., 2015), in order to obtain broader acceptance of results (Wam et al., this issue; McGrath and Carrasco, 2015; Pipart et al., 2015). Research is needed on limitations and potential of different methods, their resource and data requirements and their modes of application, up till how this influences the results and integration of outputs.

5.3. Priority 3. (How to) aim for and evaluate societal impact of integrated valuation studies, to advance effective contribution of science to societal challenges

Integrated valuation avoids overemphasizing epistemological debates on how a context should be framed or “reality” analysed, by focusing on practical outcomes using multiple methods. By providing multiple values it helps to increase transparency of trade-offs based on values (Schroder et al., in this issue), while diminishing the possibility of critique and personal interest behaviour. Consequently, any decision based on integrated valuation is likely to be more fair, sustainable, credible, legitimate and effective then a decision informed by single-value methods. The integration level of each study depends on the policy question or study context (Berg et al., in this issue). We need to understand the socio-political setting of the decision-making mechanism (Pandeya et al., in this issue) to determine the appropriate level of integration (Sevecke and Geissendorf, 2015). Considerations to evaluate this appropriateness could be legal frameworks (Bark et al., in this issue; Aragão et al., in this issue), the contribution to redressing inequities in benefits and rights (Peh et al., in this issue) or multiple aspects of justice (Aragão et al., in this issue). On the other hand, more instrumental criteria of credibility and legitimacy, which are absent from e.g. single-metric cost-benefit analyses (e.g. Bark et al., in this issue) can also be essential to evaluate studies and determine effectiveness (Saarikoski et al., in this issue). To achieve this, research is needed on the diverse purposes of valuation, ethical grounds and motivations of researchers, social and ecological justice issues, and on how the position of the researcher influences the purposeful societal impact of the study.

6. Conclusion – a new valuation school

From global policy to local practice, from studies in natural science, social science and environmental justice research, we observe the rise of a more integrated valuation culture. Taking stock of theories on value pluralism, this new school of valuation explicitly applies a diversity of valuation methods to real-life human-nature issues, and aims to account for normative (what should be) and cognitive (what is) complexities and uncertainties of values. It offers a way to articulate between the different value domains (e.g. non-anthropocentric, relational, instrumental) and is inclusive per definition by involving the broad set of stakeholders concerned with and affected by the outcomes. Integrated valuation explicitly addresses and highlights the gaps in knowledge, methods and concepts, especially when these affect the outcomes of applied valuation studies.

The current sustainability challenges and the ineffectiveness of single-value approaches to offer relief demonstrate that continuing along a single path is no option. We advocate for the adherence of a plural valuation culture, by establishing a common practice, by contesting, rejecting and complementing ineffective, discriminatory and counterproductive single-value approaches. We argue for thorough reflexivity in valuation, as the conceptualization of the research, its fieldwork, its analysis and communication is a political process. Consciousness on moral assumptions and regular self-reflection should
frame the practice of integrated valuation. To achieve this new culture, multilevel communication and education of individuals in the relevant public and private institutions is needed, as is continued comparative research between and within real life case studies in diverse contexts. In policy contexts with a willingness to improve decision making, integrated valuation approaches can be blended in existing stakeholder processes, whereas in contexts of power asymmetries and environmental conflicts, integrated valuation can offer sound methodologies to include diverse values in action research, to support the struggle for social and environmental justice.

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