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Governing cities reflexively—The biocultural diversity concept as an alternative to ecosystem services

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ABSTRACT

With the aim to embed ecology more forcefully into decision-making, the concept of Ecosystems Services (ES) has gained significant ground among policy-makers and researchers. The increasing recognition of the importance of urban green areas for the quality of life in growing cities has led proponents of ES approaches to argue for an uptake of the approach in urban environmental decision-making. However, the ES approach has been criticized for standing too much at a distance from local communities and their day-to-day practices and for insufficiently taking into account the potential trade-offs between different qualities or preferences. In this paper we argue that other concepts, doing other work, need to be added to the debate about futures of urban governance and research. Biocultural diversity is suggested as one such alternative concept. By its emphasis on diversity, biocultural diversity can account for the many ways in which people live with green areas in the urban landscape, acknowledges the different knowledges this involves, and can reveal conflicts and ambivalence that may be at stake. This sets up for a reflexive, transdisciplinary research process that questions and contextualizes knowledge and worldviews including those of researchers. A reflexive, transdisciplinary research, then, is a productive catalyst for forms of reflexive urban governance that recognise and respond to this diversity and provide platforms for contestation.

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1. Introduction

More than 50% of the world's population is living in cities, and the United Nations have projected this percentage to grow to 66% in 2050 (United Nations, 2014). Cities in Africa and Asia are expected to grow the most, especially middle-sized cities (of more than 1 million inhabitants). Many of these cities are located in the vicinity of global biodiversity hotspots (Seto et al., 2013). This poses challenges to the governance of cities, to keep them attractive for people and nature and to limit their ecological footprint.

In order to embed ecology more forcefully into decision-making, a variety of ecological concepts has been introduced and elaborated, the concept of Ecosystems Services (ES) probably being the most prevalent one at this point in time. Having its roots in conservation biology and ecological economics, ES has broadly gained attention among scientists, professionals and policy-makers after the Millennium Ecosystem Service Assessment and The Economics of Ecosystems and Biodiversity processes (MA,

2005; TEEB, 2010). Although originally focused mainly on rural and relatively untouched nature areas, a growing number of authors emphasize the potential role of the ES concept for cities and urban governance (e.g. Niemelä et al., 2010; Krasny et al., 2014; McPhearson et al., 2015).

The proponents of ES anticipate that awarding a positive label and according an economic prize or quantitative value to ecological values increases decision-makers' awareness of the importance of biodiversity protection and leads to more sustainable resource use and management (Peterson et al., 2010; Braat and de Groot, 2012). Considering the still growing global network of scientists and practitioners, the sheer number of (interdisciplinary) studies and conceptual reflections, and the appearance of the term in policy vocabulary, it is fair to say that the ES concept has effectively gained ground and facilitated cooperation between the actors with a stake in environmental decision-making. For example, ES feature centrally in the official EU Biodiversity Strategy which "calls Member States to map and assess the state of ecosystems and their services in their national territory with the assistance of the European Commission" (European Union et al., 2015: article 5).

In spite of the emergence of the concept on policy agendas, some authors have pointed at the lack of 'translation' of ES to

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governance and decision-making, and argued for a better ‘take-up’ of the concept in urban governance particularly by taking local contexts into account (e.g. McPhearson et al., 2015). Other authors have argued for a better reflection on the very concept and questioned its practical consequences. They contend that in spite of its popularity, the ES concept is laden with uncertainties and differences of interpretation, so that what ESs are, is fundamentally contested (e.g. Cowell and Lennon 2014; Norgaard, 2010; Barnaud and Antona, 2014). It is not our aim here to resolve these uncertainties and contestations. We also do not wish to do away with the concept of ES, as it has drawn attention to ‘services’ of ecosystems previously neglected. But, we wish to emphasize that it is important to recognize that any concept is performative rather than neutral – i.e. it is not a mere reflection of a world out there but always does particular work – and that the work done by any concept is restricted (Hardy et al., 2000). Therefore we make a point of arguing for a continuing transdisciplinary exploration, use and further development of other concepts that can do other work. This is important, to enrich critical debate about what kinds of reflexive urban governance are possible into the future.

One potentially underutilized concept in the debate about urban green space governance is biocultural diversity (BCD). BCD has been introduced for studying the interrelationships between nature and culture and is referring to the inextricable linkages between cultural diversity and biological diversity and what these mean for nature and culture (Posey, 1999:3). The concept of BCD has originally been used to look into traditional and indigenous groups, their livelihood systems and their roles for nature conservation in developing countries, particularly through case-studies in Latin-America and Asia and South-Africa (Pretty et al., 2009; Maffi and Woodley, 2010; Cocks and Wiersum, 2014). The term is starting to leave its traces in the global policy arena, with CBD and UNESCO jointly having produced the “Joint Programme on the Links between Biological and Cultural Diversity (JP-BiCuD)”. Associated conferences aimed to further the implementation of the Programme in European cultural landscapes (UNESCO and SCBD, 2014; Agnoletti and Rotherham, 2015) and the term has been promoted to emphasize the interrelatedness of biodiversity and cultural practices in relation to urban green spaces (Elands et al., 2015).

Here we will argue that BCD can do particular work other than ES for providing options to live sustainably with natures in cities. This paper aims to (i) critically reflect on the ES concept, (ii) propose biocultural diversity as an alternative heuristic device (iii) explore what the concept of BCD entails for the conduct of research and for urban governance. The paper is structured in accordance with these three aims.

2. Ecosystem service approach

In this section we review the critiques towards ES that we consider most relevant for our plea to further elaborate alternative concepts.

A first critique concerns the simple assumption of a positive, one-directional human-nature relationship. The ES model was originally developed to emphasize that human wellbeing is strongly reliant on nature and biodiversity (MA, 2005). In this model, services provide the ‘bridge’ between the human or demand side and the nonhuman system or supply side (Braat and de Groot, 2012). The model tends to present a passive flow from nature to human wellbeing, paying little attention to the reciprocal nature of interactions between humans and nature (Lyytimäki and Petersen, 2014). This is in spite of how, in the literature on socio-ecological systems, human-nature interactions are viewed as dynamic ‘bundles’ where humans and nature (more or less together and simultaneously) have to adapt constantly to maintain

their resilience in times of environmental change (Berkes et al., 2003; Folke, 2006).

A second critique to the ES model considers the dominant market paradigm of a one-directional relationship between the human (demand) and nonhuman (supply) side and the prioritization of economic valuations of commodities or goods. Identifying values in market terminology is reducing value systems, reasonings and motivations with regard to ecosystems to preference-based, rational choices of utilisation or economically driven decision-making (e.g. Chee, 2004; Spash 2008). It may also bias decision-making towards the very processes that have given rise to unsustainable relations between humans and nature in the first place (Turnhout et al., 2013). In response to this limitation, value pluralism has lately been advocated as a key ingredient of the ES research agenda (see e.g. Gómez-Baggethun et al., 2014a), as well as a range of stakeholder participation methods to go beyond measuring (static) individual preferences and promote social learning (Chee, 2004). Also efforts have been made to develop research methods to better integrate more intangible values, especially cultural or social values, into ES frameworks (e.g. Chan et al., 2012). Other authors are making a distinction between cultural and utilitarian services of biodiversity. They emphasize that too much focus on valuating the former may disregard the latter, such as the provision of food or raw materials and the regulation of climate or purification of water, while *both* cultural and utilitarian services are important to understand the daily practices by which various social and cultural groups enjoy, understand and protect biodiversity (Russell et al., 2013; Elands et al., 2015). In spite of these efforts, an economic logic of supply and demand is currently still the most dominant in scientific and policy deliberations of ES. The question is whether this will change with a continued focus on the concept of services, and a one-directional operationalization of distinct/separate values that are, in fact, overlapping and interrelated.

The critique that the original ES model primarily identifies values in market terminology is connected to another point of attention, namely that the model does not address value-laden social justice and equity-questions of ‘who benefit’ or ‘who loose’, and at which spatial and temporal scales (e.g. Hein et al., 2006). Indeed, the delivery of an ecosystem service may be connected to the delivery of a disservice from a different point of view (Lyytimäki and Petersen, 2014), or change from positive to negative over time or across spatial scales. In other words, ES has focused attention on the possibilities of an alignment of different interests, but this has displaced attention for potential vulnerabilities, potential conflicts and tradeoffs (Lele et al., 2014). Authors acknowledging the important role of power-differences, the likelihood of tradeoffs, the importance of engagement to disclose cultural and intangible values and the need to interact with local stakeholders about what these are, still in the end strive for the development of “commonly accepted frameworks” (Chan et al., 2012).

Our hope is that adding alternative concepts will a. illuminate how the ES-concept (and its origins) prioritizes one specific view above others and b. reveal alternative ways of living with nature.

A third critique involves the top-down, standardized classification and quantification of ‘deliverables of nature’ (e.g. MA, 2005; TEEB, 2010; CICES, 2014). These standardization and classification practices are considered as one of the key conditions for a better incorporation of ecosystem services into decision-making (Daily and Matson, 2008). In line with this argument, the EU advocates on its webpage that ecosystem service mapping can be used for “explaining the relevance of ecosystem services to the public in their territory” (European Union et al., 2015). However, the language of ES has become rather inaccessible for non-scientists and fails to support local citizen’s engagement in decision-making and practices (e.g. Chan et al., 2012; Krasny et al., 2014). Luck et al.

(2012:1021) emphasized that the ES concept should be considered as a framework to support interdisciplinary communication between academics, policy-makers, stakeholders and other interest groups, and as a strategic instrument in biodiversity conservation policy. Overall, evidence of participation of local stakeholders in decision-making about what are considered as services are scarce and academics focusing on larger scales are dominating the debate (e.g. Seppelt et al., 2011; Opdam, 2013) while examples of resistance against using ES as the sole policy relevant concept for the governance of biodiversity are emerging (Borie and Hulme, 2015; Turnhout et al., 2013). Stakeholder participation in the scope of ES is not aimed at problematizing situations and concepts, at jointly formulating the research questions related to these problematisations, or at debating questions about the inherent biases of policy concepts and choice of metaphor and how these are inclusive of some worldviews and exclusive of others. Thus, in the framework of ES, participation must take place within the dualistic idea of separating humans and nature that is inherent to modernity including its views on the role of science in a modern world, of which ES-thinking is part. As we will explain in the next section, BCD offers one route to opening up spaces of conversation to alternative ideas.

Thus, whilst acknowledging that the ES concept has promoted attention for multiple benefits of nature in policy decisions, with the apparent tendency of ES to become the *dominant* concept steering policy interventions it seems critical to reflect on what the concept does and consider developing alternative concepts and add these to the repertoire (cf Raymond et al., 2013). Biocultural diversity, or the diversity of ways in which biological and cultural diversity are intertwined, is one such alternative concept. We will now turn to what this concept entails in the following section.

3. Biocultural diversity

Proposing the BCD concept as an additional heuristic is to highlight that a focus on biocultural diversity is performative in a different way than the concept of ES. It is important to emphasize again that performative here should not be equated with 'achievement', or 'realisation of policy goals'. Rather, we understand performativity as the particular work done by a concept to direct focus to certain options for action and not to others. BCD, for that matter, directs focus to the diversity of biocultural *inter-relationships* and not, as in the case of ES, to ideas of a dualism of humans and nature and their one-directional relationships. The discussion in the following first presents a short background of the concept, and then elaborates three types of work that we see done by the concept.

The concept of BCD has a relatively short history – and geographically, its deployment has largely been restricted to studying traditional ecological knowledge of indigenous groups and their roles in nature conservation in developing countries, particularly through case studies in Latin America, Asia and South Africa (Pretty et al., 2009; Maffi and Woodley, 2010). By means of these case studies, authors have found a positive correlation between the number of bird, mammal and plant species and the number of ethnic, religious and linguistic groups in a specific area (Loh and Harmon, 2005).

Several studies have also identified common threats to biodiversity and cultural diversity (Pilgrim et al., 2008; Pretty et al., 2009). Elaborating on these studies, the concept was specified as involving the diversity of life in all its manifestations – biological, cultural, and linguistic – which are interrelated (and likely co-evolved) within a complex socio-ecological system (Persic and Martin, 2008; Maffi and Woodley, 2010). There are two main fields of research that link BCD to improved conservation outcomes: ethnobiology (e.g., Davidson-Hunt et al., 2012) and

cultural heritage/landscape studies (e.g. Harmon, 2007; Rössler, 2012; Pungetti 2013). In spite of their rather different angle and focus, both maintain an orientation towards conservation. At the policy level the conservation of traditional values and practices by traditional societies also came to be seen as a means to prevent the loss of biodiversity, as expressed for example in the UN Convention on Biological Diversity and the World Heritage Convention. Other authors have questioned a sole focus on conservation, and critiqued it for masking the dynamic ways in which humans are creative in modifying landscapes (urban and rural), and innovative in mobilizing biocultural heritage to advance sustainable ways of living (Elands and van Koppen, 2012; Cocks and Wiersum, 2014; Davidson-Hunt et al., 2012).

3.1. BCD: multi-directional relationship

The concept of BCD builds upon the idea that nature is not something that exists 'out there', but is socially constructed. In contrast with the ES-idea of services as a bridge *between* humans and nature, BCD gives expression to the idea that biological diversity and cultural diversity are intertwined—they are 'made' together and imply each other, they are inextricably linked. The concept of BCD also accentuates the dynamic, constantly evolving, nature of interactions between humans and natures. The focus on dynamics is similar to how in cultural sociology, culture has currently been interpreted as a never finished dynamic practice, which isn't just there but develops over time (Calhoun and Sennett, 2007).

The interrelationship between humans and natures becomes particularly articulated through their practices, when people develop a relationship with specific places they live, work or recreate in. This is referred to as a 'sense of place' or 'place attachment'. According to Tuan (1974), place is a centre of meaning or field of care that emphasizes human emotions and relationships. Time spent or visiting frequency has been shown to increase peoples' emotional bond to a place (Peters et al., 2010; Raymond et al., 2010). It is important to note that a strong place attachment and a sense of place identity between one culturally homogenous group and a place may be at the expense of possibilities for 'outsiders' to experience or use a place (Kyle et al., 2004). Place attachment is dynamic and relational. It comes into being as people interact with places, through how they are "living with" biodiversity (Turnhout et al., 2013). The term *place making* accentuates this dynamic interaction. "People and groups [. . .] actively accomplish places, and the process is never the same from here to there" (Gieryn, 2000:469). Place making is political; people may actively make alterations to a place and give and enhance its political leverage by putting it on a map, placing objects in it, attaching a story to the place and sharing this with others (Buizer and Turnhout, 2011). Many citizens 'make' (biodiverse) places through nature volunteering, urban gardening and protesting against development plans in nature areas. To conclude, a green place in the city does not have *inherent* qualities or services that are unrelated to how people interact with it—it is relational and always changing. When using the concept as a heuristic for planning and policy-making it is important to take into account issues of scale: broadly speaking, processes of place attachment might limit BCD in one place yet by enhancing a different mix in another place, diversity may be greater when considered at a larger scale. In the end, it remains an open question what kind of diversity involved stakeholders consider desirable.

3.2. BCD: humans differ in their valuations of nature, an economic valuation is just one of the possibilities and power-differences need to be acknowledged

The inextricable linkages of biological diversity and cultural diversity imply that variations in how humans value urban

landscapes stem from how they use and experience these urban landscapes. Therefore, explorations into how different cultural groups in specific contexts (e.g. groups with a different ethnic and/or social-economic background) interact with or value green open spaces or specific (groups of) plant- or animal species, are an essential ingredient of BCD research. It is important to learn about these cultural valuations, first of all because they might cover different services than those recognized in the majority of ES-typologies, secondly because different groups of people value nature differently and this may change over time, and thirdly, because they originate from interactions/experiences with nature in specific places. Attention for these differences is in contrast with most of the studies on ES, which does not ask 'for whom' a specific service, if at all considered a 'service', is useful and how. Acknowledging that there may be differences between gender and generations, immigrant people is relevant. Research from the UK has revealed that the social-economic status of different groups is of relevance in the sense that the most income-deprived groups were also the most deprived of access to public parks (Jones et al., 2009). Several authors have reported that in most European countries, minority ethnic groups rarely visit green spaces outside cities (Peters et al., 2010; Jay et al., 2012). They have also found that when ethnic groups visit urban green, they use it more frequently than others for social gathering and food related activities and less frequently for walking, sporting and cycling on an individual basis or in small groups (Jay et al., 2012). Urban parks, on the other hand, have been found to be places where different social and ethnic groups mingle, thereby potentially stimulating interactions and enhancing social cohesion among urban inhabitants (Peters et al., 2010).

A focus on diversity, thus, may come with gains for some populations and/or individuals and losses for others. Urban green spaces may render disservices to humans or vice versa and conflicts may arise between types of biodiversity or cultural preferences. The BCD concept can highlight such potential vulnerabilities.

3.3. BCD: linking up knowledges

As reviewed in the above, we have seen an increase of commentary with respect to ES approaches as being overly science-based and focused on quantification, making the link only to policy and insufficiently to local communities. Increasingly attempts have been made to correct this from within this body of research (e.g. Chan et al., 2012; Opdam, 2013; Krasny et al., 2014). These authors emphasize the importance of including communities and doing qualitative research, for example to improve understanding of the social and cultural context of ES. However a majority of studies still assume that it is sufficient to obtain such insight from the outside, without deliberating with stakeholders (Chan et al., 2012). Stakeholder involvement is often instrumentally considered as a means for bringing to light intangible services, for improving outreach or for achieving common understanding and support for data collection (Hernández-Morcillo et al., 2013). An instrumental view of including communities leaves unaddressed more fundamental questions of desirability such as from which cultural worldview it is desirable to quantify ES, or which public goods gain priority over others by a focus on ES, and for whom this this seems right and for whom it does not seem to be right at all.

In contrast to most of ES knowledge production which has focused on the generation of comprehensive typologies of ES and to "map and assess the state of ecosystems and their services" (EU biodiversity strategy), with regard to BCD, it is *essential* or a necessary condition to engage with stakeholders in a range of urban settings and debate about the range of practices involved

with biological and cultural diversity. Robertson and Hull use a similar term bioculturalism, "a view of the natural landscape that encourages stakeholders to recognize human society as an integral component of ecological systems and find ways for people to interact with and live sustainably in nature" (Robertson and Hull 2003). According to Robertson and Hull, a public ecology considers knowledge as a *process* and promotes that there are different knowledges involved in explorations of biocultural diversity. In this view not one knowledge can be complete. Thus, when exploring biocultural diversity in cities—a transdisciplinary inquiry into 'good practices' of biocultural diversity may start with the identification of developments that different participants frame as good practice, to be followed by explorations of the criteria of success and failure used by the different participants. What is 'good practice', cannot a priori be established by prioritizing one type of knowledge but may be the outcome of a process of multiple actors and, within the diversity, is likely to have both winners and losers. By itself the promotion of participatory methods for research purposes is not new—ES-researchers are increasingly promoting participatory methods (Gómez-Baggethun et al., 2014b), but as we have already emphasized, this often happens for instrumental reasons, with little reflection on the ways in which a single concept may imply a limited worldview that does not give much room to other directions. Indeed, inspiration can be drawn from authors that have emphasized that the idea of one (ultimately knowable) world is restricted, and that even the acceptance of different worldviews is insufficient to acknowledge diversity, if such acceptance does not also question the culturally determined, partial idea of a one world (Law, 2011). Although it is beyond the scope of this paper to elaborate further on this important point, we wish to emphasize that BCD as a concept should contribute to exactly this kind of questioning. It should open up to, and engage with, perspectives from the global South and different ways of 'living with nature', that may also involve other than one-world perspectives (cf. Barth, 2002; Coates et al., 2006; Turnhout et al., 2013).

4. Discussion of consequences of using BCD for research and governance

In the previous two sections we have discussed aspects of the ES concept and introduced BCD as an alternative. Using this concept has important consequences for the conduct of research and for governance, the topics to which we will now turn. In particular, this section will clarify why looking through the lens of BCD enables *and* requires forms of transdisciplinarity focused on reflexivity, and links such a perspective to forms of reflexive governance that acknowledge the role of conflict and ambivalence.

4.1. Transdisciplinary research

We can find in the literature a wide range of definitions of transdisciplinary research. Pohl (2005) brings together elements considered as key to transdisciplinarity by defining it as research that "takes into account the complexity of an issue (. . .), addresses both science's and society's diverse perceptions of an issue (. . .), sets aside the idealised context of science in order to produce practically relevant knowledge (. . .), and deals with the issues and possible improvements of the status quo that are involved in balancing the diverse interests and inputs of individual stakeholders and disciplines" (Pohl, 2005:1160–1161).

A transdisciplinary research approach recognizes that people value, and live with nature differently, see problems differently and that this is context-related. To produce context-specific, practically relevant knowledge thus requires the involvement of a range of actors (including but not restricted to scientists). Clearly just

'involvement' or 'communication' and the application of methods to achieve involvement is not enough. Transdisciplinary research for just involvement seems to be – and is often accused of being – rhetorical rather than real. Rather, activities involving full cycles of problematisation, experimenting and monitoring in specific situations is required. Different heuristics can be used to critically reflect on ways of thinking and develop strategies for approaching a situation that cannot well be understood when staying within the confines of a discipline and taking an outsider position (Huutoniemi, 2014; Boyd et al., 2015).

For such transdisciplinary endeavors to succeed the idea of (objectified, generalized) *knowledge* has to be replaced by the idea of (contextualized) *knowledges* (Rydin, 2007). This realization of *knowledges* about a diversity of relationships between people and nature in cities is at odds with the requirement posited as essential for ES research of standardized classification assessment and mapping (see Section 2, the third critique). The classifications and mapping is generally conducted by academic professionals looking at themselves as neutral observers more or less positioned at the outside of the system at stake. The reflexive transdisciplinary researcher, on the other hand, does not assume neutrality and is taking on an insider position. He/she is dependent on the involvement of a range of actors in dialogue about what works in a specific context and realizes that knowledge is being co-produced between the different stakeholders, and in relation to the real-world issue at hand. In cities, where many different types of people, nature qualities and cultures are assembled, this is a challenge that must be confronted when BCD is a starting point.

4.2. Reflexivity

Reflexivity is generally accepted as an important ingredient of transdisciplinary research, but has often been critiqued for not sufficiently having been explained. Popa et al. (2015) argue that without such clarification, transdisciplinarity often remains restricted to involving stakeholders in deliberative processes, motivated by achieving social legitimacy – a rhetorical tool to remain the status quo – without “a critical inquiry into the intellectual and value commitments of the dominant scientific discourse, and on the institutional and power structures supporting it” (Popa et al., 2015:50). Instead they argue for pragmatist approaches that are “extending actors’ reflexivity through their participation in concrete problem-solving and social experimentation and learning processes” (Popa et al., 2015:46). Deliberation on problem framing is then connected to reflexivity about “values and understandings in concrete problem-solving and social experimentation processes” and “normative commitments and ideological orientations in social transformation processes” (2015:49).

A transdisciplinary research process that is not restricted to acquiring social legitimacy in the process of knowledge production requires a transformational type of reflexivity to acknowledge that researchers’ own understandings are value-laden. These should be made explicit and deliberated on. Possible consequences for the organization and institutions of knowledge-production should, then, also be taken into account. Thus, reflexivity is here understood as openness to other knowledges, questioning and contextualizing ones own knowledge and deliberation about how different knowledges are perceived to be useful (or not) for social and policy innovation in a particular context and consideration of the institutional setting of knowledge production. In ES research, reflexivity is directed chiefly at the identification of the types of services to be considered for uptake in decision-making, while taking for granted the values and assumptions underlying the researchers’ understanding of the very concept of services itself. It matches the complex systems and resilience approaches that it is

affiliated with, in the lack of acknowledgment of the implicit values underlying researchers’ understandings (Popa et al., 2015), or critical consideration of the organizational and institutional structures in which these values are embedded.

Relative to ES, BCD is less definitive, and more of a sensitizing concept by its focus on diversity and its lack of focus on a productivist line of thought (our first critique to ES). To clarify our point, we borrow from Blumer (1954) the distinction between definitive and sensitizing concepts, who stated in making the distinction:

“Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look” (Blumer, 1954:7).

As stated in the introduction, work done by any concept is restricted, and BCD is value-laden, too. However, the BCD concept does not provide strong prescriptions of what to see, in comparison with ES that, as argued, prescribes an economic and quantitative perspective. We are not against the production of quantitative data per se—but the act of counting might leave some issues of value out of sight, which the lens of BCD does reveal. Thus, BCD and ES are both guidelines for the analysis and search for options for living sustainably with natures in cities, nothing more, and *both* should be reflexive in a transformative way. However we propose that BCD is better suited for such a reflexive approach.

Furthermore, the way ES researchers deal with stakeholder knowledge is generally in a way that ‘translates’ this knowledge into ES models. There is also nothing essentially wrong with this. However, such translation, without reflections on aspects such as the economic-productivist understanding underlying the concept of ES, risks losing from sight options that do not fit within this understanding. Without reflection on the valuations and world-views that *all* the stakeholders bring to the table (including those of the researchers), transdisciplinary approaches run the risk of being focused more on acquiring social legitimacy for one single point of view, than on opening up to alternative perspectives and world-views (cf Popa et al., 2015).

4.3. Governance and sites for reflexivity and contestation

It is only a small step from a reflexive transdisciplinary research as defined in the above, to forms of governance and planning that emphasize the involvement of different actors in decision-making. In the environmental domain, *governance* is often considered a response to the mounting complexity and multilayered nature of environmental problems, which are assumed not to have been adequately addressed by hierarchical *government* (Bulkeley, 2005). Increasingly, societal actors are viewed as agents of change. This is expressed in terms such as self-governance and co-governance, deliberative or participatory governance. These forms of governance and planning are often framed in optimistic terms. They entail a whole range of new political practices associated with terms such as networks, deliberation, open-ended processes and trust. However, the optimistic tone in which governance is often framed displaced attention for conflicts by trying to work towards commonly agreed frameworks and consensus. This may be particularly difficult in multicultural urban settings, and even undesirable if it means that diverging, ‘unfitting’ views and practices are displaced. In contrast, the emphasis on BCD is intended to bring into focus the possibility (or rather, likelihood) that there are multiple perspectives on living with nature, that there are different conflictive normative frameworks, and winners and losers to any outcome of policy deliberations.

Similar to our argument for reflexivity in transdisciplinary research, we make a case for reflexive governance, with sites for the contestation of different valuations, concepts and discourses,

including those being brought to the debate by researchers. A key question here is how to create these sites for contestation that do not forcefully try to eradicate conflict or antagonism (Mouffe, 2013). This is still a rather abstract appeal. A specific starting point is to open up governance to multiple concepts, contestation, and ambivalence (Walker and Shove, 2007). Reflexive governance also entails continuous monitoring, feedback and action—meaning that new tensions always recur and are given a space.

Emphasizing the role of biocultural diversity in urban governance thus presumes that there is room for a productive articulation of conflict and possible disagreement (see also Eizaguirre et al., 2012), not just by bringing ambivalence and conflict out in the open but also by articulating the politics of it (Walker and Shove, 2007). In contrast with ES, which does not explicitly ask 'for whom' something is a service (or potentially a disservice), BCD, by its focus on diversity, assumes difference from the outset and does not strive for consensus. For this reason, the transdisciplinary research approach that we envision for BCD in urban settings, with its emphasis on an acknowledgement of the value systems behind all disciplinary contributions, can more readily be accessed for deliberation about policy and social action. This is because BCD intends to view human–nature interactions not as one-way traffic but as multi-directional; green places in cities do not just provide 'services' to people, but people value these places differently, make use of them differently and actively change or 'perform' these places in practice. Transdisciplinary approaches can bring the different valuations, performances and potential interventions to the forefront of debate, showing that in the process, some preferences may become more exposed and visible than others.

5. Conclusion

In this paper we explored how the concept of BCD can counterbalance elements of ES research, and explained how BCD requires and enables reflexive transdisciplinary approaches and forms of governance that do not displace conflict or try to abolish antagonism. BCD explicates the many potential linkages between biodiversity and cultural diversity, particularly those that may not so easily be transferred to the language and metrics of ES, and offers a guideline for doing research from within. We do not make a case for replacing the concept of ecosystem services by BCD, but posit that biocultural diversity implies, because of its inherent focus on diversity, an acknowledgement of different value systems and analytical perspectives. It draws attention to other relationships than those articulated by ES, including potential conflicts and the politics involved.

The concept of BCD draws attention to the multiplicity of interactions between humans and nature in cities, and to the necessity of exploring, deliberating about and acting upon those in reflexive transdisciplinary ways. The great variety of cultural groups and practices in most urban settings on the one hand, and the availability and characteristics of urban spaces with their species diversity as a constituent factor on the other hand, necessitate such an approach. We have highlighted how the BCD concept offers one (indeed, just one) way of working towards strategies to live sustainably with nature in cities. BCD gives greater weight to the potential trade-offs of natural values and human practices, and offers a different direction for analysis and interventions than those offered by ES. This ambition should not be taken light-heartedly. There is a large body of research on the bottlenecks to transdisciplinary approaches, ranging from institutional cultures at universities and reward systems privileging high publication rates over dialogue with stakeholders, to personal feelings of unease when working across the boundaries of one's discipline. These bottlenecks are still far from being resolved

(Horlick-Jones and Sime, 2004; Buizer et al., 2015), but addressing them is a necessary step to move closer to forms of research and governance that acknowledge the role of difference. A reflexive governance approach to BCD that opens up to different knowledges and that acknowledges that participants bring different worldviews to the table has to be open to ambivalence and the potential of conflict. This by itself, is promising.

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