Environmental Science & Policy 68 (2017) 20–27

Contents lists available at ScienceDirect

Environmental Science & Policy

journal homepage: www.elsevier.com/locate/envsci

Accommodating consensus and diversity in environmental knowledge production: Achieving closure through typologies in IPBES

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ARTICLE INFO

Article history:
Received 23 August 2016
Received in revised form 23 November 2016
Accepted 24 November 2016
Available online 1 December 2016

Keywords:
Consensus
Diversity
Environmental knowledge
IPBES
Typology
Unity in diversity

ABSTRACT

How can a diversity of perspectives be accommodated in scientific and political consensus on environmental issues? This paper adopts a science and technology studies (STS) approach to examine how the pursuit of consensus-based knowledge and diverse participation, as seemingly contradictory commitments, have been converted into practice in the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES). Through a series of negotiations, these commitments have been translated into a set of situated practices that now dominate this expert panel. Consensus has been achieved through the pursuit of closure, in which meetings of expert and administrator groups produce texts, tables and images that stabilise ostensibly collective decisions. Within this framework, diverse perspectives have been accommodated through the production of typologies, such as lists of comparable options, which allow for the coexistence and commensurability of a range of knowledges and experts. However there is a politics to typologies, which requires specific attention to how decisions are made (deliberation), who participates in them (participation), and the extent to which these participants are representative of broader knowledge and policy communities (representation). While the potential of typologies to accommodate consensus and diversity offers the hope of realising 'unity in diversity' for both environmental knowledge and policy, recognising the politics of their production is important for more equitable processes of environmental governance.

1. Introduction

In environmental governance, there is a growing tension between the pursuit of scientific and political consensus, and the recognised need to open up governance processes to diverse participants and worldviews. In the production of environmental knowledge, the inclusion of a wider range of experts and knowledges is not only considered important for traditional forms of capacity building, but also for attaining more equitable environmental outcomes (Castree et al., 2014; Mooney et al., 2013; Turnhout et al., 2016). While many initiatives now recognise the need for wider participation, approaches for achieving diversity in practice are still in experimental stages (e.g. Clark et al., 2016; Palsson et al., 2013; van der Hel, 2016). In light of this challenge, this paper asks: How can consensus-based knowledge and policy processes take account of divergent perspectives?

This paper examines the case of the Intergovernmental Platform on Biodiversity and Ecosystem Services (hereafter IPBES, or 'the Platform'), which is an international expert panel for biodiversity established through the United Nations system. Influenced by the perceived success of the Intergovernmental Panel on Climate Change (IPCC), the foundation of IPBES was catalysed by an ambition to bring greater unity to biodiversity knowledge. Billed as an 'IPCC for biodiversity' it was argued that an intergovernmental structure would allow biodiversity science "to evolve [. . .] towards greater unity and integration." (Loreau et al., 2006: 246) In the following years, the IPCC became an important model for emulation. In fact, the formal rules of IPBES agreed in 2012 reflected many features of the climate panel, including: an intergovernmental structure; highly formalised procedures that governed its functions, structures and processes; and a system of documentation based on the circulation of meeting reports, decision documents and drafted texts between groups of administrators, experts and peer reviewers.

During this period, expectations of what constituted good environmental knowledge were also changing. Although premised on the success of the long-standing climate panel, the negotiations around IPBES opened up opportunities to scrutinise the perceived failings of the IPCC. Notably, the climate panel had been criticised for having limited participation from developing countries (Hajer, 2012; Hulme and Mahony, 2010), was lacking in the meaningful

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http://dx.doi.org/10.1016/j.envsci.2016.11.011

integration of diverse disciplinary perspectives (Ford et al., 2012; Godal, 2003; IAC 2010), and prioritised a framing of the climate as a 'global kind' that privileged top-down forms of governance (Hulme, 2010; Jasanoff, 2010). In designing IPBES, it was also recognised that biodiversity was materially different to climate, encompassing highly dynamic and diversely distributed socio-ecological relationships that needed attention at multiple scales. Similarly, the need to account for the rights and agency of indigenous peoples and local communities, which had been raised in the Convention on Biological Diversity (see for example, Reimerson, 2013), also prefigured new approaches to knowledge production (Turnhout et al., 2012). These emergent perspectives were by no means universally held amongst the architects of IPBES, but were none the less integral to a call for greater inclusivity, in which a wider group of voices were to be welcomed into the process.

To examine how the pursuit of consensus and diversity were converted into practice in the case of IPBES, this paper draws on theoretical and methodological approaches from science and technology studies (STS). This field of scholarship has drawn attention to how science shapes, and is shaped by, the settings in which it is produced (Jasanoff, 2004). In particular, it has shown that the precise mechanisms through which knowledge production takes place reflect the commitments of the institutional and political cultures in which they are situated (Jasanoff, 2005; Miller, 2008). The structure of IPBES as an ostensibly global organisation in the United Nations system, for example, predisposes the Platform to produce what have been considered 'global kinds of knowledge' (Turnhout et al., 2016). However, previous scholarship has also shown that such commitments translate into practice in different ways in different settings. Even broadly prevalent commitments, such as that of objectivity, become enacted through practices that are highly context dependent (Jasanoff, 2011). In the case of IPBES, the commitments to consensus-based knowledge and diverse participation were therefore translated into their own situated practices. In this paper, I empirically examine this process and identify the emergence of one particular solution – the typology – as a means of achieving closure in heterogeneous settings. While typologies facilitate coexistence and commensurability in environmental knowledge production, they also bring the politics of participation to the fore. When inclusion in a typology is dependent on being involved in their negotiation, the questions of who participates and how in environmental knowledge production becomes increasingly important.

2. Case study and methods

This research is based on the case study of IPBES, an international expert institution for biodiversity (www.ipbes.net). IPBES was formally established in 2012 with the mandate to "strengthen the science-policy interface for biodiversity and ecosystem services" (IPBES, 2012). The Platform has an intergovernmental framework, which brings together an international cast of over 1000 experts and 120 governments to produce its first work program between 2014 and 2018 (see overview in Montana, 2016). It has four broad functions: to conduct assessments on the state of knowledge on biodiversity; build international capacity across knowledge and policy communities; catalyse the development of policy support tools; and support new knowledge generation. The Platform is intended to produce a range of outputs, including assessment reports, methodological guides, participatory processes, and online catalogues. IPBES was the result of around a decade of discussions, workshops, and formal intergovernmental negotiations that took place both inside and outside of the United Nations system (see account in Vadrot, 2014b).

This research applied qualitative methods to collect and analyse data from interviews, participant observation, and official documents between December 2013 and February 2016. Interviews for this research were conducted with both IPBES experts (n = 12) and administrators (n = 5). Experts were defined as those selected for the IPBES work program (anonymised as E1 - E12). Administrators were defined as those working in the secretariat, technical support units, Bureau and Multidisciplinary Expert Panel (anonymised as A1 - A5). Administrators worked in collaboration to oversee and coordinate the IPBES process and are grouped accordingly here. Interviews were semi-structured and conducted in person or via Skype. Interview data was complemented by participant observation at IPBES meetings, including three Plenary meetings (Antalya, Turkey in 2013; Bonn, Germany in 2015; Kuala Lumpur, Malaysia in 2016), one expert group meeting (Ushuaia, Argentina in 2015), and a joint meeting of the Multidisciplinary Expert Panel, Bureau, and three task forces (Bonn, Germany in 2015). This was complemented by background research during a four-month institutional placement with the IPBES secretariat from January until April 2015. Some data was also extracted from official documents. Collected data was analysed using computer-assisted thematic analysis (Atlas.ti) using an iterative three-pass coding process. Quotations provided in this paper are representative of the coded themes.

3. Institutionalising consensus

Although an ambition for forging consensus and increasing diverse participation were articulated in the lead up to the establishment of IPBES, the precise mechanisms through which these commitments would be translated into practice were subject to a series of negotiations. In the intergovernmental Plenary of IPBES, the institutional conditions of knowledge production were negotiated in the form of operating principles, rules and procedures. These documents set the scope of the IPBES work program and established expert groups to carry it through to completion. They defined rules that would guide the selection of experts and specified the procedures for peer review. These 'rules on paper' sketched out the rough framework within which IPBES would carry out its work, allowing the subsidiary bodies, secretariat and expert groups to interpret and operationalize them into what would later become the Platform's 'rules in use' (to draw on the language of 'new institutionalism', Young, 2002). From this perspective, the institutionalisation of consensus was the result of a series of negotiations that took place across the Platform's formal structures.

IPBES emerged as an outcome of the United Nations system, in which consensus-based decision making and state sovereignty are central principles of operation. It is perhaps no wonder, then, that the rules prescribed consensus as the chief decision-making framework of its intergovernmental Plenary. Defined by tradition, consensus is achieved through the absence of formal objections, rather than the outcome of a majority vote or unanimous agreement (UNEP, 2007). This provides, according to an administrator in IPBES, "an environment where people are basically owning and being part of whatever is being produced" (Interviewee A5, June 2015). Driven by this motive, consensus was institutionalised as "a principle that runs across the whole operations of IPBES" (Interviewee A3, May 2015). However, unlike the Plenary, the administrative and expert groups of IPBES did not have strict rules that governed how decision making should take place. Frameworks of deliberation instead emerged as local cultures dependent on the particular styles and preferences of those involved. While meetings of the formal administrative bodies (i.e. the Multidisciplinary Expert Panel and Bureau) worked towards consensus in accordance with United Nations tradition, decision making in other expert groups was much more variable.

As one of the administrators explained, expert groups "are all a little bit different. It gets down into the level of individuals and characters. And then different set ups." (Interviewee A5, June 2015) Yet, despite this heterogeneity, the administrative and expert groups of IPBES had a recognisable common project that tied them together. Ultimately, they had been charged with the completion of the IPBES work programme, which meant: developing and following the rules of the Platform; coming to forms of collective agreement; and completing the various deliverables that they had been mandated to produce. In fulfilling this commitment, the administrators and experts met, discussed, debated, negotiated and ultimately produced texts, tables and images. This practice of *putting on paper* stabilised group decisions and provided a means of achieving temporary closure.

The attainment of closure, as a form of consensus, did not necessarily mean that member states, expert groups and administrators explicitly agreed. Rather, closure in IPBES allowed for the temporary stabilisation of decisions, which were characterised by three dimensions: negotiation, collective ownership, and the production of a written record (Fig. 1.).

Firstly, closure in IPBES was reached through a process of negotiation. This was most explicitly recognisable in the Plenary, but was also carried out across the administrative and expert groups. As one of the administrators explained:

> Of course, when the experts work they are negotiating in a way also. Trying to bring different perspectives in from different disciplines. (Interviewee A3, May 2015)

The experts and administrators participating in the process originated from diverse backgrounds and therefore brought competing perspectives into their work. Despite this, productive negotiations were driven by the need to work together to complete the work programme: an ambition that was widely accepted as a requirement of participation in the IPBES process.

Secondly, negotiations consistently moved towards a conclusion that was seen as a collective decision. Authors were expected to take ownership of the content of their reports, as one of the participating experts explained:

> any publication that has multiple authors, anything expressed in that multiple author publication is, I guess, the views of all the authors. And you don't agree or sign off on a manuscript or a draft report, agreeing for it to be published unless you are happy with the content and any messages that are contained therein. (Interviewee E8, March 2015)

Reflecting on their experience at an early author meeting, another of the IPBES experts noted that: "we ended up having everyone having bought into this and driving it, so that was the nice thing about the meeting." (Interviewee E1, December 2014) This process of achieving joint ownership of decisions was central to achieving closure in IPBES.

Finally, once disputes had been settled and compromises had been found, the collectively negotiated positions were put on paper. This process of producing documentation has previously been recognised as central to the Platform's commitment to transparency (Granjou et al., 2013), but it also functions as a critical device for stabilising consensus across the Platform. The production of texts, tables and images, from the lists of selected experts to the annual budget, are representative of these moments of closure in the Plenary, administrative or expert group meetings.

In IPBES, the pursuit of closure became a collective venture that was underpinned by a lively operational discourse: consensus was described as a problem to be 'solved'; expert groups were given 'marching orders'; 'time-bound' activities were delegated to 'task forces'; and the Multidisciplinary Expert Panel was 'mandated' to complete 'work programme deliverables'. It was this drive to demonstrate success and relevance that Kovács and Pataki (2016: 133) characterise as a "need for speed" in their critical evaluation of the IPBES process. This operational discourse established a logic in which success could be measured by the completion of products and the passing of decisions, which were often greeted with enthusiastic applause during Plenary meetings. As such, the production of texts, tables and images to stabilise ostensibly collective decisions was highly effective. However, the drive towards closure also came into conflict with other established commitments in the work of the Platform. In particular, the ambition to include a greater diversity of experts and knowledges in its work.

4. Normalising diversity

Like consensus, the precise practices through which a commitment to diversity was institutionalised in IPBES were determined through a series of negotiations. The IPBES operating principles, agreed intergovernmentally in 2012, set out that the Platform should carry out its work:

> taking into account the need for different disciplines and types of knowledge, gender balance, and effective contribution and participation by experts from developing countries (IPBES, 2012: 4).

Following this, the approval of the IPBES conceptual framework in 2013 provided a framework that made an "explicit, formal incorporation of knowledge systems other than western science" (Díaz et al., 2015). These documents were important stabilising devices for diversity in the Platform, however they required further

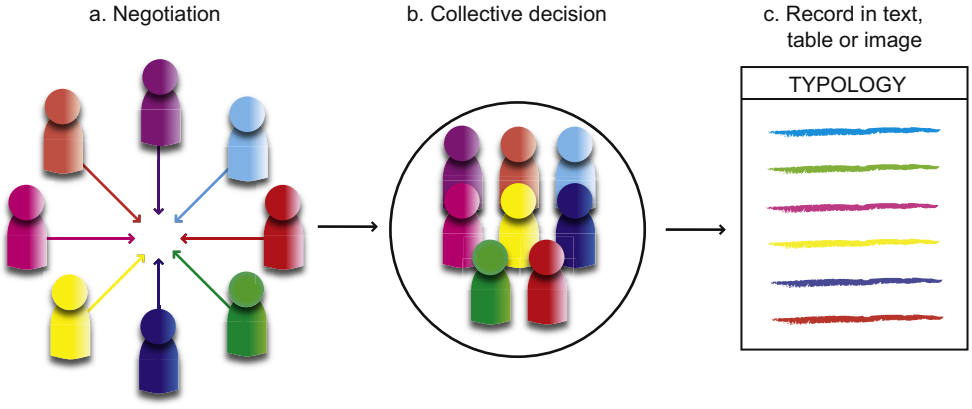

Fig. 1. The three dimensions of closure in IPBES: a) the negotiation between divergent perspectives; b) the formation of an ostensibly collective decision; and c) the production of a documented record of the decision.

Table 1
System of expert categorisation as applied during IPBES expert selection in April 2015.

Type of nomination	World region	Gender	Discipline or practice expertise
• Government • Stakeholder	• Africa • Asia-Pacific • Eastern Europe • Latin America and Caribbean • Western Europe and Other	• Woman • Man	• Economics • Freshwater • Indigenous and Local Knowledge • Marine • Natural sciences and conservation • Practitioners • Social sciences • Terrestrial • Other expertise

interpretation and operationalization. While the Plenary defined disciplines, knowledges, gender, and world regions as desirable categories of diversity, the means through which difference would be determined was not specified in exact terms. Deferred to the administrators of the Platform, new systems of classification emerged that would allow experts and knowledges to be divided, counted and reported in the expert selection process. In 2015, for example, experts were divided up by their gender, their world region, their area of expertise, and the source of their nomination (see categories in Table 1.) Expert identity was no longer simply defined by eminent authority, but derived through new markers of expertise based on embodied lived experience in different social worlds. Throughout expert selection, these categories provided a device for numerically tallying diversity across the Platform. Expert groups were evaluated against negotiated ideals of balance, and the result – a list of selected experts – represented yet another written product of closure.

However, the system of expert selection had important features that set it apart from other forms of closure. Embedded within the process were records of both a collective decision and the accommodation of diversity (see examples in Fig. 2.). Each individual selected according to this system was clearly recognised as an expert by the Platform. In this sense, each expert was equivalent to any other expert. Yet, at the same time, each expert was anything but equivalent, and was defined by clear markers of difference that the Platform carefully accounted for. Seen as a whole, each expert list therefore encompassed both commonalities and desirable differences amongst experts. A previous analysis of the composition of the Multidisciplinary Expert Panel, for example, has shown how categorisation allowed for this expert group to be broken up into different units of difference, encompassing gender, disciplines and world regions, allowing diversity to be metrically compared between different groups (Montana and Borie, 2016). In other words, the expert groups themselves can be understood as typologies that both accommodate a consensus around who should be considered an expert in the IPBES process and the inclusion of the diverse categories of embodied experience that are also considered important. Typologies such as this became prevalent across the entire IPBES process.

5. Producing typologies

Throughout the work of IPBES, typologies have become important devices for accommodating consensus and diversity in the production of environmental knowledge. During the production of the methodological assessment on biodiversity models and scenarios, which brought together over 80 different experts between October 2014 and February 2016, typologies loomed large in the report writing process. Confronted with divergent perspectives at one of the author meetings on this report, one of the coordinating lead authors commented that:

> we all have a different idea about what a model is and we probably need a top-down decisions about how they are defined. None of us will probably like it, but that's what we need (Field Notes, March 2015)

In response, another of the authors at the meeting suggested: "or, we need a typology of models" (Field Notes, March 2015). Presented in this way, typologies appear as powerful devices for accommodating difference without resorting to the top-down impositions of 'global kinds of knowledge'. In fact, the final methodological assessment report adopted in early 2016

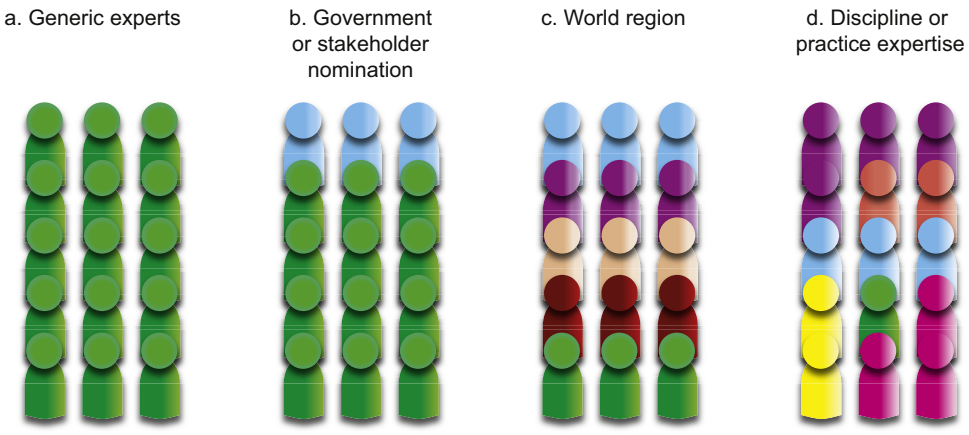

Fig. 2. Characterisations of the diversity embedded in the expert groups of IPBES, illustrating how diversity was characterised by the Platform. A single expert group could be perceived as: a) generic experts; b) representatives of either government or stakeholder nominations; c) representatives of different world regions; or d) representatives of different disciplines or domains of practice.

Table 2
Some illustrative examples of typologies in IPBES.

Source of typology	Category of difference	Kinds of difference
Conceptual framework (Díaz et al., 2015)	Knowledge systems	• Scientific knowledge • Other knowledge systems
Preliminary guide to the diverse conceptualisation of values (IPBES, 2015b: 3)	Values	• Non-anthropocentric • Anthropocentric
Preliminary guide to the diverse conceptualisation of values (IPBES, 2015b: 5)	Valuation methods	• Biophysical and ecological • Cultural and social • Economic • Public health • Holistic, Indigenous, and local knowledge-based
Guide to assessment across all scales (IPBES, 2015a: 27)	Spatial scales for assessments	• Global • Regional • Subregional • National

developed numerous typologies in the form of tables, which reflected a range of "illustrative and non-exhaustive examples" (IPBES, 2016). More broadly, similar typologies have emerged as solutions to divergent perspectives across IPBES on issues ranging from the values to the scales of biodiversity (see Table 2.). Even the conceptual framework of the Platform, which explicitly incorporates multiple framings of biodiversity, can be understood as a typology. Identified in Borie and Hulme (2015: 494) as "a solution to create an agreement out of disagreement, to create a consensus out of dissensus", the use of colour coding to identify different knowledge systems, from natural science to indigenous and local knowledge, provided a powerful device for allowing their co-existence in the conceptual framework. Typologies have therefore been used frequently in IPBES as a means of reaching closure while acknowledging diversity, and in doing so allowing those involved to achieve the mandate of completing the IPBES work programme.

The production of typologies in IPBES is likely to have implications that go beyond just facilitating closure. Typologies both impose categories – making kinds comparable to other kinds – but also erase differences that may later be considered desirable. In their analysis of how categories and standards shape the modern world, Bowker and Star, (2000: 196–203) advanced a critique about the power of these typological categories to impose particular frameworks of behaviour on groups of people, which can have real impacts on real lives. While these practices may be considered broadly benign in a biodiversity expert panel, the impact of the typological approach in shaping how nature is understood and governed should remain a point of reflection for the Platform. For example, Bowker and Star (2000: 116) also noted that the production of typologies "presets the options about the range of possibilities." In this sense, decisions made in IPBES directly constrain the range of possible options available to downstream processes like the Convention on Biological Diversity (CBD). While some might consider that the production of typologies leave the options too wide open for policy makers, and that difficult choices between divergent perspectives should take place in IPBES instead, others are likely to welcome the retention of diversity in the products of the Platform. Rather than being considered the end of the story, the typology framework in IPBES might be better understood as the temporary stabilisation of an underlying politics of knowledge that is often left obscured. And, these politics can be made available for analysis by asking a series of key questions.

6. The politics of typologies

The proliferation of typologies as a means of accommodating the production of consensus-based knowledge while taking account of diversity appears as an exemplary solution in IPBES. At once, it recognises a plurality of perspectives and appeals to the pragmatic logic of getting things done. However, the production of typologies is not always a straightforward process. As the co-chair of the methodological assessment on models and scenarios reported to the Plenary in 2016: "it took a lot of pain and a lot of work to reach a consensus – even in our eighty person team – to produce that typology" (Field Notes, February 2016). This reflection hints at the politics that is inherent to the production of typologies. Politics that should be acknowledged in the further use and analysis of this device in environmental governance. In particular, questions should be raised about how collective decisions are made, who participates in the process, and the extent to which those involved represent the diversity of perspectives that exist outside any given deliberative process? In other words, the process of negotiation itself needs to be opened up to examination.

Building on previous work in the field of STS, I draw on insights from democratic theory to reflect on the importance of taking account of deliberation, participation and representation in the production of typologies (a similar framework was applied to compare the workings of expert advisory bodies in Jasanoff, 2005). In doing so, I argue that sensitivity to these factors should be taken into account if the production of typologies is to lead to more equitable forms of environmental governance. This consideration should be carried out recognising that the pursuit of diverse participation is often motivated by very different factors. The growing push to bring a wider group of experts and knowledges into the production of sustainability and environmental change research, for example, is considered to fulfil a number of possible functions, including: a normative function that increases the legitimacy of the process; a substantive function that strengthens the knowledge base towards more appropriate solutions; and/or an instrumental function that supports more collaborative relationships and joint ownership of the knowledge produced (Blackstock et al., 2007). Regardless of the motivation, inclusion and exclusion of different perspectives deeply influence the kinds of knowledge considered to be relevant in the IPBES process, and ultimately the kinds of political responses that will be seen as appropriate to address biodiversity decline (Turnhout et al., 2016). Reflection on why diverse participation is considered desirable will

help elucidate questions regarding where, when and how the politics of knowledge production matter.

6.1. How are decisions made?

If diverse participation is going to have more than a legitimating effect, it needs to be effective. Different approaches to communicating information and making decisions can greatly impact the effectiveness of participation in deliberative processes (Fung, 2006). More than simply being present in negotiations, effective participation requires approaches to discussion and decision making that support the active inclusion of diverse actors. In global expert panels, like IPBES, effective participation often relies upon those participating having knowledge and experience of the local cultures of negotiation, as much as the subject matter under discussion (Jasanoff and Martello, 2004: 347). For example, the speed with which IPBES has carried out its work has previously been identified as a major limitation in establishing the knowledge and experience required amongst all participants for equitable and effective participation (Kovács and Pataki, 2016). Ensuring that deliberative frameworks do not preference some actors over others, or providing adequate capacity building support to acculturate newcomers, would help overcome the situation described by an IPBES expert following one of the first author meetings, in which: "there are a few people who are actually driving [the report writing process] and there are other people who are just running along" (Interviewee E1, December 2014). In these cases, diversity risks becoming as much performative as it is practical, providing only the normative function of legitimation, which this author described as having some authors "just there to make up numbers" (Interviewee E1, December 2014).

6.2. Who participates?

If typologies provide a means of accommodating diversity, then it matters what kind of diversity is included in the process. In political systems, the premise of participatory democracy recognises the value of bringing different voices into deliberations (Fung, 2006). Based on this assertion, the significance of participation in IPBES was perhaps best demonstrated through the influence of the Bolivian delegation in specific negotiations, which arguably drove the inclusion of indigenous and local knowledge systems in both the IPBES conceptual framework and rules of procedure (Borie and Hulme, 2015; Vadrot, 2014a). However, while voluntary participation of each member state in the Plenary was protected by the Platform's rules, the administrative and expert groups of IPBES were necessarily finite in size. As such, despite the apparent willingness to open up to diverse forms of knowledge and expertise in IPBES, the strict rules that governed who can and can't participate in these groups inevitably left many potential perspectives outside of negotiations. Furthermore, a lack of engagement with the process further exacerbated the problems of achieving diverse participation. The recognised absence of social scientists in the early stages of the IPBES work programme (see, for example, Larigauderie et al., 2016) provided one notable illustration of how limited participation might hinder attempts to accommodate diversity in knowledge production. Participation clearly matters in the production of knowledge. As one of the co-chairs of the methodological assessment reflected: "no matter how much the individuals involved come into this process keen to leave their particular perspectives at the door, it is almost impossible to do that completely." (Interviewee E12, June 2015) Yet, with finite author groups in global expert panels, there will always be a requirement for participants to bring in perspectives from others on the outside.

6.3. Is representation sufficient?

To counter the concern of limited participation, proponents of processes, like IPBES, might argue that diversity can be represented through a sub-set of selected participants. In such a case, concern should be less focused on the inclusion and exclusion of individuals, and more on how included individuals bring the perspectives of others into negotiations with them. In political systems, the premise of political representation refers to the relationship through which political actors advocate and act on the behalf of larger groups (Heywood, 2013: 197). Reflecting this approach, the management of knowledge and expertise in IPBES can also be understood to conform to a representative framework. However, it has been noted that the tradition of consensual and cumulative knowledge production most suited to a system of representative participation is not uniform across domains of knowledge (Obermeister, In Press). While it may be reasonable to assume that the inclusion of a natural scientist will ensure that a breadth of natural scientific knowledge is included in an assessment, it is less clear if the diverse range of pluralist approaches in the social sciences or indigenous knowledge systems can be similarly accommodated through a small sub-set of representative participants. In considering the design and analysis of knowledge production processes, attention should be given to the different way in which selected participants establish accountability to the wider communities of research and practice that they claim to represent. Beyond the peer review process in IPBES, which has targeted a small set of scientists and practitioners that are already engaged with the process, the consideration of how to strengthen the accountability of its knowledge production to communities outside of the intergovernmental Plenary merits further attention.

7. Conclusion

The adoption of typologies as means of reaching closure in IPBES has allowed the diversity of knowledges and experts that have been brought into the Platform to be detectable in its outputs. Although this paper has focused primarily on the production of the typologies, how they are received in the various policy forums once they leave the IPBES process is of comparable, if not greater, importance. Presented with a menu of diverse options, negotiators in the CBD or elsewhere are not bound to take account of the diversity presented to them. Rather, they may choose to disassemble these typologies in favour of single 'global kinds', which have a tendency to prescribe top-down management frameworks and reinforce hegemonic norms (Hulme, 2010; Turnhout et al., 2016). The inclusion of indigenous and local knowledge systems, for example, provides an opportunity for these alternative forms of knowledge to be carried into political forums for consideration. However, a lack of capacity in interpreting these knowledge systems could easily lead them to being disregarded, despite their inclusion in typologies. How typologies that encompass new configurations of knowledges are received into policy forums is a prime area for further research.

In considering the production and reception of typologies, it is notable that typologies, which make differences in perspective explicit, commensurable and co-existent, appeal to a different kind of environmental politics. From the diverse conceptualisation of the values of nature, to the multi-faceted criteria for the identification of experts, typologies facilitate a harmonisation of approaches that reflects a commitment to *unity in diversity*. The notion that both unity and difference can meaningfully co-exist has provided inspiration for natural and political philosophers for centuries. While in the nineteenth century the naturalist, von Humboldt (1860), wrote of unity in diversity as a definitive quality

of Nature itself, the concept persists today as a motto and political ideal of the European Union. In less explicit terms, a commitment to unity in diversity can be recognised across the domains of environmental science and policy. The negotiation of co-management arrangements that accommodates, and values, the different stewardship systems of the First Nations of Canada and the Canadian state, provides one illustrative example (see Houde, 2007). Similarly, the differentiated commitments of greenhouse gas reductions from different nations that functioned as a key characteristic of the 2015 Paris Agreement (see Rajamani, 2016), acknowledged that different actors can each take different action, while essentially all doing the same thing: namely responding to climate change. The ability for collective action, while accepting difference, therefore opens up wider possibilities for environmental policy.

In the production of environmental knowledge, a discourse of unity that embraces diversity has already inspired a new wave of thought and activity (Clark et al., 2016; Cornell et al., 2013; Mace, 2013; Mauser et al., 2013; van der Hel, 2016). Harnessed effectively, these experiments in environmental knowledge production could lead to a reimagining of the concept of consensus itself. Here, consensus might no longer simply reflect the certainty of hegemonic science, or the pursuit of the lowest common denominator in political settings. After all, it has been acknowledged that the unification of nature through universalist sciences is unlikely to lead to the unification of politics (Latour, 2004). Instead, the pursuit of consensus in environmental governance might be reimagined and refocused to embrace diversity in knowledge and politics, and become at ease with the continuation and coexistence of difference.

Funding

This work was supported by the Economic and Social Research Council, UK [University of Cambridge DTC].

Acknowledgements

The author would like to thank Bill Adams, Josie Chambers, Chris Sandbrook and attendees at the Science and Democracy Network 2016 Annual Meeting for comments and guidance.

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