Intersectional boundary work in socializing new experts. The case of IPBES

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ABSTRACT
Expert organizations are often described as facilitators of the interactions between science and policy. In managing this boundary, they must also manage other boundaries, such as those between different knowledge systems and between different categories of actors. However, how this intersectional boundary work is performed, and what it implies, is still unexplored territory. Focusing on the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES), this study contributes knowledge on the intersectionality of boundary work and how it influences the production of global policy-relevant knowledge. This is done by examining how IPBES socializes junior experts to become senior experts. This socialization process makes a number of norms and ideals visible and enables an analysis of how the know-how of boundary work is passed forward from one generation of experts to the next. The study analyzes three boundaries: between senior and junior experts, between science and policy, and between scientific knowledge and indigenous and local knowledge. The findings show how intersectional boundary work is crucial in the creation of expert organizations and policy-relevant knowledge. In the case of IPBES, this study shows how the institutionalization of the organization unintentionally has created restrictions for the boundary work between different knowledge systems.

1. Introduction
Engaging in contemporary global environmental governance means engaging in the shaping and transcending of boundaries between science and policy as well as between different knowledge systems (e.g., scientific, indigenous, and local knowledge). Such ‘boundary work’ (Gieryn 1983) is particularly accentuated within expert organizations, among which the Intergovernmental Panel on Climate Change (IPCC) is the most well-known. These organizations incorporate actors from both sides of the science-policy boundary and facilitate co-production of policy-relevant knowledge, thereby shaping the boundary between policy and science (Guston 2001; Gustafsson and Lidskog 2018a). Moreover, when such organizations are attributed a central role in policy, there is an increased risk for the politicization of science; i.e., science could become a ‘battlefield on which political advocates, not to mention lawyers and those with commercial interests, manipulate “facts” to support their positions’ (Pielke 2002, p. 367).

There are two analytically distinct responses to the politicization of science. The first one, which in large part has been advocated by the IPCC (Beck 2012), is to safeguard the boundaries between science and policy and between ‘legitimate’ and ‘illegitimate’ knowledge claims by following a linear ideal of science-policy relations and stressing the impartiality and unique position of science (Beck 2012; Heink et al. 2015). The second response is to democratize science, that is, to encompass a collaborative ideal of science-policy relations that strives to make science more inclusive of perspectives and more transparent regarding different and opposing claims (Heink et al. 2015; Montana 2017).

The linear ideal of who is to participate in knowledge production to ensure the development of credible, relevant, and legitimate knowledge has long been dominant; however, the collaborative ideal is currently gaining momentum and is – at least to some extent – starting to shape expert organizations (Heink et al. 2015; Montana and Borie 2016; Montana 2017). In this process, social boundaries are renegotiated and potentially redrawn such that new science-policy relations are created. However, little is known about the type of boundary work that goes on within collaboratively minded expert organizations charged with producing policy-relevant knowledge to address global challenges.

Utilizing the case of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), the aim of this paper is to explore the nature of the boundary work within an expert organization that proclaims inclusiveness. Two questions are addressed: i) How are boundaries between science and policy, knowledge systems, and actors created in the production of global policy-relevant knowledge? ii) How do different types of boundary work intersect and influence one another?

On a global scale, IPBES is one of the most ambitious efforts to embrace a collaborative ideal of knowledge...
production, including non-scientific knowledge in its assessments and stakeholder participation. In its work, IPBES highlights two crucial boundaries: the boundary between science and policy and the boundary between scientific knowledge and indigenous and local knowledge (ILK). This means that IPBES follows in the footsteps of IPCC by highlighting the boundary between science and policy as well as in the footsteps of the Millennium Ecosystem Assessment in its effort to break new ground on how to include and synthesize different knowledge systems (Díaz et al. 2015b; Turnhout et al. 2016; Obermister 2017).

In this study, we examine the IPBES fellowship program to analyze how IPBES socializes junior experts to become senior experts (see section 3). The socialization process makes a number of norms and ideals visible, including how to make and manage the boundary between science and policy, how to draw the boundaries between different knowledge forms, and how these boundaries intersect. We are thus able to analyze how institutional practices and skills related to boundary work of IPBES are, implicitly and explicitly, passed forward from one generation of global experts to the next. This approach also opens up opportunities to discuss general issues concerning the implications of the intersectionality of boundaries, such as its effects on the production of global policy-relevant knowledge.

The paper is organized as follows. The second section elaborates on the study’s theoretical framework, that is, boundary work, whereas the third section describes the research process, the methods used and the analytical strategy. The fourth section explores the intersectionality of boundary work by focusing on IPBES’ fellowship program. The final section discusses the general implications of intersectional boundary work for IPBES’ intentions to function as a collaborative and inclusive expert organization.

2. Theoretical framework: boundary work

In addition to producing facts and explanations, an important aspect of knowledge production processes is to create trust and legitimacy (Cash et al. 2003; Heink et al. 2015). As such, knowledge production is an activity in which boundaries are drawn, such as between different social practices (e.g., science and policy), different knowledge systems (e.g., science, indigenous, and local knowledge), and different knowledgeable actors (e.g., junior and senior experts) (Star and Griesemer 1989; Gieryn 1999; Jasanoﬀ 2004).

Knowledge production presumes boundary work where actors create, shape, and disrupt boundaries between knowledge systems. The boundaries allow a knowledge system and its characteristics to be defined in relation to what it is not, thus illuminating its uniqueness. In its most elementary forms, boundary work produces either expulsion or expansion (Gieryn 1983, 1999). On the one hand, trustworthy and authoritative knowledge can be produced through the expulsion of knowledge practices, knowledge systems, and actors that are seen as polluting the (scientific) production of knowledge (cf. Swedlow 2007). On the other hand, trustworthy knowledge can be produced by expanding the boundaries of what is seen as acceptable knowledge by including different knowledge practices, knowledge systems, and actors. Epistemic authority is here gained through an inclusive approach in which actors outside of the (scientific) knowledge system are invited to contribute, thereby strengthening the relevance and legitimacy of the knowledge produced. The motivation for inclusion may be instrumental (inclusion makes implementation smoother), substantive (inclusion generates better decisions) or normative (inclusion is a fair and democratic end in itself), depending on different claims for legitimacy (Stirling 2008; Heink et al. 2015).²

Boundary work in knowledge production is a dynamic process of negotiations and re-negotiations (Gieryn 1999). Crossing or dissolving boundaries leads to new boundaries, which in turn influence other boundaries. As with all social practices, boundary-making produces unanticipated results; when some boundaries are intentionally acted upon, new ones may be drawn unintentionally. Furthermore, boundary-making is partly a reflective practice in which actors intend to bridge, dissolve or reproduce certain boundaries and partly an unreflective practice that takes place as part of the tacit knowledge and know-how that guide actors on how to produce knowledge. Thus, boundary work is most often the outcome of a complex mix of social practices.

Boundary work has mainly been studied by focusing on a single boundary, e.g., the boundaries between science and policy (e.g., Beck 2012) or between science, indigenous and local knowledge systems (e.g., Dunkley et al. 2018). However, we argue that the complexity of the social practice in which boundary work takes place causes boundaries to influence each other, and this intersectionality is scantly researched. To understand how boundaries influence the production of global policy-relevant knowledge, it is important to explore the dynamics of intersecting boundaries.

In what follows, we elaborate on how the processes of expulsion and expansion have played out on a global scale to establish the two boundaries most central to our study: the science-policy boundary and the boundaries between science, indigenous, and local knowledge systems. The elaboration is not an exhaustive systematic review of the literature and the development of the concept of boundary work (for more on the development and analytical use of the concept of boundary work, see, e.g., Powell 2007; Swedlow 2007; Ramírez-i-Ollé 2015; Braunstein 2018; Dunkley et al. 2018). Instead, we elaborate on how the boundary works of expulsion or expansion have played out to understand...
the construction of the boundaries of science in relation to both policy and other knowledge systems. Based on this elaboration, we create a theoretical framework for use in our analysis. This framework allows us to explore boundaries both between science and policy as well as between different knowledge systems and to explore the intersection of these boundaries and its possible effects on the production of global policy-relevant knowledge.

2.1. Boundary work – science and policy

Much of the boundary work that aims at producing knowledge with high credibility, relevance and legitimacy concerns the boundary between science and policy. Science and policy are two different social practices with different languages and ideas about what constitutes a persuasive argument (Gieryn 1999; Cash et al. 2003; Heink et al. 2015). Thus, to make the science-policy relation work, actors on both sides of the boundary must find a common language and decide on a division of labor that draws the boundary between the two different practices in a way that results in neither science nor policy losing credibility, legitimacy or independence. Previous research on this boundary and the relation between science and policy reveals how boundary work through expulsion and expansion tends to result in two different models of science-policy relations: the linear model and the collaborative model (Gieryn 1999; Heink et al. 2015).

Boundary work through expulsion strives towards a linear model of science-policy relations in which science simply provides decision-makers with facts (Pielke 2007; Heink et al. 2015). The legitimacy of science is assumed to lie in its objectivity and truthfulness. To safeguard its purity, science must be clearly delimited from policy. As a consequence, the dichotomization of science and policy is crucial in the construction of science as impartial, objective and value-neutral. When a scientific value-neutral consensus is established, it is assumed to affect policy and to be transmitted into applied knowledge (cf. Swedlow 2007).

Boundary work through expansion strives towards a collaborative model of science-policy relations in which co-production of knowledge is embraced as enhancing the trustworthiness of the knowledge process (Jasanoff 2004; Lidskog and Sundqvist 2015). The motivation for including perspectives is primarily substantive and normative (Stirling 2008). If knowledge is seen as inseparable from values, including more perspectives not only enables a more nuanced understanding of an issue but also prevents an unreflected establishment of a hegemonic perspective (Wynne 2005; Boström et al. 2017). Furthermore, an inclusive perspective opens up a more democratic knowledge process that, due to its social robustness and legitimacy, is argued to produce credible and relevant knowledge.

However, even though the linear ideal most often strives towards a scientific consensus and the collaborative ideal most often aims to provide more context-sensitive, plural, and socially robust knowledge (Berg and Lidskog 2018), it would be wrong to assume that the decision to strive towards either consensus or plurality is set by the separate ideals of linearity or collaboration (Stirling 2008). The social processes of boundary work are much more complex. A knowledge process with a linear ideal of who should participate in knowledge production could alternatively strive towards an outcome that accounts for diverging and conflicting perspectives (Pielke 2007). Similarly, a knowledge process that strives towards collaboration could do so with the objective of reaching consensus (Montana 2017). This decoupling of the decision on who is to participate in knowledge production (based on a linear or collaborative ideal) from the decision on what knowledge outcome to strive towards (consensus or plurality) is one aspect of the complex process of boundary work.

2.2. Boundary work – different knowledge systems

IPBES defines a knowledge system as ‘a body of propositions that are adhered to, whether formally or informally, and are routinely used to claim truth’ (Díaz et al. 2015a, p. 13). The difference between knowledge systems thus lies in the particular propositions (ontology and epistemology) but also in how these propositions through boundary work are used to claim truth – including issues of participation in knowledge production (e.g., Banuri and Apffel-Marglin 1993; Tengö et al. 2014, 2017; Löfmarck and Lidskog 2017). Examples of distinctions include how knowledge is achieved and validated, ideas about what actually exists, and norms regarding who is seen as a knowledgeable actor. This kind of boundary work has traditionally been executed by science through expulsion to argue for a unique and often superior position relative to other knowledge systems, such as indigenous, local and practitioner knowledge (Stephenson and Møller 2009).

The boundary between science and non-science has generally been manifested by the drawing of boundaries between dichotomies such as objective methods and subjective experiences and between degrees of context dependency (e.g., Agrawal 1995). Science is typically seen as valid in any context, while indigenous knowledge or practitioner knowledge is seen as tied to the daily practices in which it evolves (e.g., Banuri and Apffel-Marglin 1993). It is difficult to separate scientific knowledge from the daily practices of the scientific context, but science is often staged as decontextualized and presented as universal and value-free (e.g., Hilgartner 2000; Jasanoff 2004; Turnhout et al. 2016).
Within contemporary environmental governance, boundary work on knowledge systems has increasingly shifted from expulsion towards expansion, where epistemological and ontological differences are put aside (Heink et al. 2015; Montana and Borie 2016; Montana 2017). The focus is on finding and creating synergies between differing knowledge systems, which is believed to generate an enriched picture that benefits all involved knowledge systems, creates global policy-relevant knowledge, and enables more sustainable development (Banuri and Apffel-Marglin 1993; Tengö et al. 2014, 2017; Diaz et al. 2015a, 2018).

The importance of redrawing the boundary between science and policy is often discussed in the context of global environmental knowledge assessments and environmental governance (e.g., Hoppe 1999). The boundary between different knowledge systems is often acknowledged, but it is less often that these different knowledge forms are included in knowledge assessments and organizational settings (e.g., Tengö et al. 2014; Löfmarck and Lidskog 2017). It is important to note that these boundaries are not alone; rather, a number of other boundaries co-exist and influence knowledge production. Examples of other boundaries are seniority, gender, geographically belonging, and culture. These boundaries may deeply affect knowledge production and knowledge assessment because they affect who is allowed to participate in these practices and thus whose perspective and knowledge count (cf. Stirling 2008; Montana 2017).

3. Research design and empirical methods

This study concerns how boundaries between science and policy, knowledge systems, and actors are created within IPBES and how different types of such boundary work intersect and influence one another. To analyze this, we focus on the IPBES fellowship program in which junior experts are introduced to the work of IPBES with the aim that these junior experts come close to, or even cross, the boundary between junior and senior experts. This is a socialization process that includes passing on tacit knowledge on how to perform boundary work. Through this socialization, boundaries between science and policy and between different knowledge systems are either reproduced or changed, which opens up a window for studying intersectional boundary work. Hence, the IPBES’ fellowship program represents a rich case for studying boundary work, as socialization includes learning how to differentiate and navigate between social practices and knowledge systems.

The empirical material for this study comes from (i) interviews with 12 junior experts participating as fellows in the first cohort of the IPBES’ fellowship program, (ii) participant observations from a workshop within the fellowship program, (iii) and official documents from IPBES.

The 12 interviews were conducted with junior experts who were participating as fellows in IPBES regional assessments on biodiversity and ecosystem services and thus were experiencing first-hand the socialization of how to do boundary work. Three fellows from each of the four regional assessments were asked and agreed to participate in the interview study (i.e., 12 out of 26 fellows in total). The fellows were strategically selected to ensure variation among the respondents with respect to gender, age, level of education (MSc or PhD), and field of expertise. The interviews were conducted via Skype (except for two interviews conducted via telephone) between February 2016 and April 2016. At the time of their interview, each fellow was preparing to submit or had just submitted his/her contribution to the first draft of the assessment. Each interview lasted between 60 and 90 minutes. All interviews were audio recorded and transcribed verbatim.

To protect their anonymity, the fellows are identified by the regional assessment in which they participated rather than pseudonyms, nationality, age, or education level (cf. Declaration of Helsinki of 2008, 2008, article 24). Maintaining anonymity in this way does not prevent an honest, detailed presentation of the analysis.

In December 2015, as part of the fellowship program, IPBES held a four-day workshop in Bonn, Germany. Materials for the current study include notes from observations during the last two days of the workshop. We observed the workshop’s program and execution, including both the format and content of the event.

Finally, the empirical materials also include official documents from IPBES. All documents are available on the IPBES website. The documents include decisions and meeting reports from Plenary meetings as well as working documents and publications from the organization (e.g., [IPBES] Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services 2015, 2017, 2018).

The interview material was thematically coded and theoretically analyzed to allow us to identify, explore, and explain boundary work within IPBES and its intersectional qualities (cf. Miles et al. 2014). To structure the analysis, we used a combination of empirically (e.g., application process, work assignment, fellows’ support structures, fellows vs. Lead Authors) and theoretically driven codes (e.g., junior-senior, science-policy, different knowledge systems). The results from the coded interviews were examined by going back and forth between the different materials. In this way, the interviews functioned to structure the analysis, while the content and final argumentation of the analysis were derived from the combined analysis of the interviews, observations, and documents.

The analysis is presented following the three steps in which it was performed. The first step focuses on the boundary work in IPBES between who is a junior and
senior expert. Previous research has developed criteria for including a researcher in predefined categories (e.g., Bazeley 2003; Angervall and Gustafsson 2014). However, junior and senior are relational concepts with different meanings in different contexts. In this first step of the analysis, we take IPBES’ administratively decided boundary between junior and senior (visible in the description of IPBES’ fellowship program) as the starting point and thereafter empirically investigate the negotiations of the content of these categories – their meaning and significance – that take place in the actual collaboration between junior and senior experts. The analysis specifically focuses on the boundary work between junior and senior experts, a process that sets the stage for the socialization process that aims to shape senior expertise. The second step of the analysis focuses on IPBES’ boundary work on the two most prominent and central boundaries within IPBES – the boundary between science and policy and the boundary between scientific and indigenous and local knowledge – and how knowledge of this boundary work is forwarded within the socialization process. The third and final step makes use of the theoretical framework to synthesize the empirical results, to explore the intersectionality influences the production of global policy-relevant knowledge.

4. Boundary work in IPBES’ socialization of new experts

The following analysis includes four parts. The first part sets the stage for IPBES’ socialization of junior experts by analyzing the boundary work between junior and senior experts. The second and third parts analyze the boundary work on the science-policy boundary and the boundary between different knowledge systems. The last part focuses on the intersectionality between these boundaries.

4.1 The boundary between junior and senior

First, the process of selecting experts to IPBES formally determines who junior and senior experts are. This boundary is drawn through the nomination and selection of authors to expert groups and fellows to the fellowship program. IPBES has parallel selection criteria guiding the selection processes (Gustafsson and Lidskog 2018b). Senior experts are nominated and selected by IPBES member states based on their scientific merits. Junior experts are nominated by academic institutions or knowledge organizations, and senior IPBES experts select them based on their scientific merits. Both processes aim to achieve a geographic, gender, and interdisciplinary balance (Timpte et al. 2018). Thus, both of these processes are hybrid processes in which both political considerations and scientific merits are important in nominating and selecting persons to the positions of senior and junior experts (Montana and Borie 2016; Montana 2017; Gustafsson and Lidskog 2018b).

Second, the boundary between junior and senior experts is negotiated and established through boundary work at author meetings, where actors in the two categories meet in person. The interviews with the fellows about their experiences in their first author meeting show that this boundary work on seniority is a process in which various types of social boundaries, such as age, gender, and culture, are important when creating hierarchies and power relations between senior and junior experts (cf. Collins and Bilge 2016). It also becomes evident that those who hold a privileged position at the intersection of these boundaries, most often older males, have the power to assert themselves as senior experts and, second, to assign others the identity of being either a senior or junior expert. With this power, senior experts are able to act as gatekeepers, deciding who is allowed to cross the boundary to be considered a senior expert and who is not.

Third, there is informal socialization towards seniority in the work between author meetings. After the author meetings, all authors and fellows return to their home department with assigned tasks to collaborate on writing specific parts of the assessment report. Thus, most of the work on the assessment is done by the authors and the fellows at their respective home departments; they collaborate on and coordinate their work through the internet, at a distance. In this work, the fellows are socialized in the know-how of how to perform an assessment; in other words, they learn what it takes and what is expected of someone who participates as a senior expert. As exemplified by the following extract, what becomes important in this work setting is whether one is committed, motivated, and engaged in the work – that is, whether one contributes to the assessment in a productive and qualified way.

At that stage, I think every contribution counts to advance the work. Because now we just want to be done with the work, and there is a lot of [Lead] Authors that are not responding, so even if you are a fellow, everybody is contributing/.../now I feel that there isn’t a difference if you are a fellow or you are an [Lead] Author. (Fellow interviewed 23 February 2016, IPBES Regional Assessment Africa)

The work process functions as a social practice in which persons selected as junior experts are allowed to perform the role of a senior expert; i.e., junior experts have the opportunity to temporarily and informally cross the boundary to seniority and experience the feeling of being acknowledged as a senior expert.

Fourth, as a part of the fellowship program, IPBES arranges workshops where fellows from around the world who are participating in IPBES’ different
assessments have the opportunity to come together and meet in person to share their experiences. The workshop serves as formal socialization of what it means to be a senior IPBES expert by introducing the fellows to the wider aim and IPBES’ work and situating the assessments within IPBES’ objectives. At these workshops, the fellows obtain unique insight into the work of IPBES, i.e., what it means for IPBES to be a science-policy interface and what IPBES’ strategies are to synthesize knowledge systems. The fellows develop a general and deepened knowledge that most senior authors participating in the assessments do not receive or pursue. Thus, the workshops contribute to a formal socialization that enables the fellows to become future senior IPBES experts (cf. Gustafsson 2018).

The above-described process of boundary drawing between senior and junior experts sets the criteria for what specialist knowledge and know-how are needed to go from junior to senior IPBES expert. The different character of how this boundary work is done, e.g., formal or informal, explicit or implicit, face-to-face or at distance, determines when and how junior experts find out what they need to learn to become senior experts. In other words, the character of the junior-senior boundary work sets the stage for the process of socialization in which the junior experts appropriate senior expertise and know-how (cf. Collins and Evans 2007). Among this specialist and tacit knowledge, learning how to draw the boundaries between science and policy and between different knowledge systems within the context of IPBES is a central skill for junior experts to master if they are to become senior IPBES experts. In what follows, we focus on the construction of these two boundaries and how they are reproduced through the socialization process.

4.2 The boundary between science and policy

IPBES’ name, objectives, and self-presentation emphasize the boundary between science and policy. In IPBES in general, science is thought and expected to influence policy, while policy is thought and expected to inform science about its need for knowledge. This general idea is reflected by the junior experts throughout the interviews. As one IPBES fellow puts it:

If we scientists understand the [policy] process and understand […] what’s being discussed and what are the issues, what are the concerns, we can be better prepared to say, "Oh, let’s not say this in this way, but let’s say [it in an]other way" […] Because the same thing can be [said] in several different ways, and we, scientists, are very, you know, [have a scientific] jargon. (Fellow interviewed 24 February 2016, IPBES Regional Assessment Americas)

From this perspective, IPBES is seen as an interface between science and policy in which a dialogue is performed that crosses the science-policy boundary and expands the knowledge production process into a collaborative one. The interviews show that junior experts have been made well aware of this collaborative objective; they know that IPBES is ‘a very political process’, as one of the fellows expressed it. For many of the junior experts, this was also one of the main reasons why they applied to the fellowship program. However, this does not mean that they expect IPBES to be an organization without boundaries between science and policy; quite the opposite is true. When asked about their reasons for being part of the IPBES fellowship program, the fellows’ common answers were to learn ‘the language you have to use when you write assessments’, ‘how to better present or better communicate results to policymakers’ and how to come up with ‘effective messages’. In other words, the junior experts expect to learn the skills of how to communicate scientific facts to policymakers. They expect to learn how to become experts without losing credibility as scientists (cf. Pielke 2007; Swedlow 2007). Thus, despite IPBES’ expanding and collaborative intentions and expectations, the young fellows’ answers are based on the linear model of science-policy relations, where science is given the task to speak truth to power and the challenge is to frame scientific knowledge in a way that makes it understandable and relevant for policymakers.

This linear relation reappears in the junior experts’ experiences of science-policy relations within IPBES. The junior experts describe an organization in which both science and policy take part but are also clearly separated through expulsion. Thus, the dialogue between science and policy within IPBES does not dissolve the boundary but instead reproduces it. The boundary work is based on expulsion through a division of labor where knowledge is requested by one of the parties (policy) and delivered by the other (science) (cf. Guston 2001; Gustafsson and Lidskog 2018a).

To be honest, I thought there was going to be a lot of politics and a lot of lengthy discussions. […] But then, to my surprise, doing the first authors’ meeting in Bogotá, I found it wasn’t, it wasn’t that way. […] It was really cool, it was really productive discussions about science. (Fellow interviewed 24 March 2016, IPBES Regional Assessment Americas)

Understood from the perspective of the young fellows and IPBES, scientific knowledge production takes place in the context of the assessment process. Politics is restricted to the IPBES’ Plenary, in which member states meet to reach consensus decisions on, e.g., IPBES’ work plan and budget and to approve the summaries of scientific assessments word by word (cf. [UNEP] United Nations Environment Program 2012). Overall, we can see how IPBES’ boundary work on the science-policy relation allows for expansion and collaboration by including multiple actor categories in the same organization (cf. Montana and Borie 2016;
Montana 2017). However, through boundary work by expulsion and a division of labor, IPBES also creates and stabilizes a clear boundary and a linear relation between science and policy.

4.3 The boundary between different knowledge systems

In the IPBES assessments, scientific, indigenous and local knowledge are treated as separate knowledge systems with different knowledge claims, but they are intended to be synthesized on equal terms. To this end, IPBES has developed a conceptual framework to function as a ‘common ground, to facilitate cross-disciplinary and cross-cultural understanding and interoperability, and to identify options for action’ (Díaz et al. 2015a, p. 4).

The conceptual framework has been described as a translation device created to allow for the inclusion of and communication between multiple knowledge systems, thus moving the IPBES assessment process towards a collaborative process of knowledge production (Díaz et al. 2015a, 2015b). The boundary work on how to synthesize knowledge systems is described as a central and ongoing effort within IPBES (see, e.g., the discussion on the difference between the concepts ‘ecosystem services’ and ‘nature’s contributions to people’ (e.g., Díaz et al. 2018; Braat 2018; Masood 2018)). However, the conceptual framework has been criticized for resulting in the boundary work of expulsion rather than creating collaboratively produced knowledge (Löfmarck and Lidskog 2017; Dunkley et al. 2018).

Though acknowledged as having the potential to facilitate a change in how the boundary is drawn between science and indigenous and local knowledge systems, the conceptual framework is argued to not yet have found a way to allow ILK to participate on equal terms with science in the assessment processes and the production of the final reports (Borie and Hulme 2015; Bridgewater 2017).

In the following, we analyze how the interviewed junior experts had experienced the boundary between scientific knowledge and indigenous and local knowledge at the time when they submitted their contribution to the first draft of the regional assessments. To elaborate on the analysis, we have chosen to use an interview extract that condenses and clearly exemplifies the interviewed IPBES fellows’ shared experience of working with different knowledge systems.

It has been very difficult, I think, for everyone, especially in my chapter, to include that kind of knowledge [indigenous and local knowledge] into the chapter. Because, I don’t know, it’s something that is new. It’s something that has not been happening. [1] Most of us have been taught how to use scientific knowledge, how to use scientific data, but none of us really, as much as we may know it from our personal experiences and other experiences, we’ve not been able to, we don’t know how to include it. [3] How do we say: this is credible, that is not credible? [2] Yes, we had a session [at the fellowship workshop] when we were taught a lot about it, but even the people who were presenting say that “the problem is getting credible sources of this kind of knowledge”. [3] So in as much as the assessment wants to include it, the system for doing that is not yet established. So it’s a big struggle. Personally, I’ve not used it; I only use it in my personal work. (Fellow interviewed 26 February 2016, IPBES Regional Assessment Africa)

The extract shows how the boundary between scientific knowledge and indigenous and local knowledge becomes visible in different ways in different facets of the work process. First [1], in addition to a plurality of scientific disciplines among the fellows, the interviewed fellow points to the lack of competence among the IPBES fellows in the field of ILK. Thus, the fellowship selection process has become an intentional or unintentional process of boundary work on knowledge systems that have excluded actors with backgrounds other than scientific ones. The call for fellowship participants does not explicitly exclude non-scientific competences. However, the description of the fellowship as a program that aims ‘to enable young scientists to take part in the work of IPBES’ and the request for applicants to ‘be in the early stages of their careers/ … /after having completed their relevant academic degree’ ([IPBES] 2015) are strong contributing factors to the fact that all fellows so far have been based in the scientific knowledge system ([IPBES] 2018). In sum, through boundary work of expulsion, the selection process has made the IPBES fellows junior scientific experts who are on their way to becoming senior scientific experts.

Second [2], IPBES’ ambition to expand the traditional idea of what is relevant knowledge by making use of different knowledge systems was formally introduced to the junior experts at their first fellowship workshop. Sessions focused on both IPBES’ conceptual framework and IPBES’ work on ILK. During these sessions, discussions were held, and many questions were raised on how to synthesize knowledge systems in practice, i.e., how to engage in boundary work that expands knowledge boundaries. Among these questions, as the interview extract above also indicates, the focus was on how to include ILK and how to determine what is credible and what is not credible. No clear answers were given. Instead, information was provided on how IPBES’ task force on ILK continues to work to develop the capacity on knowledge syntheses and integration of ILK, e.g., by launching pilot projects in relation to the ongoing assessments.

Third [3], the junior experts describe how, despite the conceptual framework and senior experts’ sincere ambitions to include ILK in the assessment, they experienced a lack of guidance on how to synthesize knowledge systems and include ILK in the
assessments. The fellowship workshop sessions gave the junior experts an awareness of IPBES’ ambition to expand knowledge boundaries and include ILK, but they did not have enough knowledge to feel confident about engaging in boundary work that would replace their scientific way of validating knowledge with something new. Instead, in the absence of guidance on how to engage in knowledge synthesis, both the junior and senior experts are left to rely on their personal interest and previous knowledge on how to validate knowledge and how to work with different knowledge systems. Thus, the boundary work on drawing and overcoming boundaries between knowledge systems is individualized rather than turned into a collective process, and the scientific view persists pending something new.

The synthesis of knowledge systems implies the expansion of knowledge boundaries and the embrace of differences in both ontologies and epistemologies. In history, successful examples of this are rare (cf. Tengö et al. 2014; Löfmarck and Lidskog 2017). Instead, collaborations between knowledge systems have historically been built on terms set by science (Agrawal 2002), something that IPBES is trying to avoid with its conceptual framework. However, as seen in both the name of the platform and the interview extract above, science and the scientific way of thinking are still dominant within IPBES and thus are also passed along from senior experts to junior experts when drawing the boundary between relevant knowledge and non-relevant knowledge. In this boundary work, credibility becomes the watchword, and fact-based scientific knowledge claims become the assessment’s main body in which other knowledge systems are to be included (cf. Tengö et al. 2014; Dunkley et al. 2018). Thus, despite ambitious attempts to create an inclusive and collaborative process, boundary work on knowledge systems in IPBES is to a large extent characterized by a hierarchical relation between science and other knowledge systems, i.e., between facts and values, between formalized methods and social experiences, and between degrees of context dependency (cf. Banuri and Apffel-Marglin 1993). Pending explicit criteria within IPBES that challenge and replace the scientific view on how to determine which knowledge to include in the assessment, the traditional scientific way of operating has implicitly become IPBES’ way of operating (cf. Tengö et al. 2014).

4.4 The intersectionality of boundary work

As shown above, IPBES intends to enable collaborations that expand the boundaries between science and policy and between scientific knowledge and indigenous and local knowledge (cf. Dunkley et al. 2018; Timp te et al. 2018). This is visible in IPBES’ acknowledgment and basic assumption that sustainable management of the earth’s biodiversity is dependent on collaborative efforts engaging multiple knowledge systems as well as policy actors on multiple levels. It is also visible in the junior experts’ experiences of being a part of the boundary work of IPBES. However, the analysis also shows that the success of implementing such collaborative relations between both science and policy, as well as between scientific knowledge and indigenous and local knowledge, has faced limitations on multiple occasions. The boundary work that the fellows have ended up doing has largely and unintentionally reproduced a linear boundary relation. In this final section of the analysis, we will take the analysis further and argue that this gap between intentions and ongoing boundary work is the result of intersections between the two boundaries (cf. Koetz et al. 2012).

Furthermore, our analysis has shown that IPBES tries to create a collaborative forum where representatives from science and policy meet and participate in knowledge production. However, the boundary work on science-policy relations manifested in the organizational structure and everyday work is at the same time strongly characterized by expulsion and a linear science-policy relation (cf. analysis of IPCC in Beck 2012). This primarily occurs through a division of labor and the Plenary’s striving towards consensus. Thus, despite creating structures for diversity among participants, the logic of a linear science-policy relation is implicitly guiding the institutionalization of IPBES, making the linear science-policy relation central also for other forms of boundary work (cf. Obermister 2017). Thus, in addition to facing the challenge of finding ways to overcome differences in ontology and epistemology between different knowledge systems, this boundary work is also restricted by the intersecting boundary between science and policy.

Letting the linear model of science-policy relation guide what knowledge is to be understood as credible creates a demand for scientific objectivity and neutrality, a demand that as an unintentional consequence excludes other knowledge systems from what is defined as policy-relevant knowledge. Thus, despite an explicit strategy for inclusiveness through a transdisciplinary conceptual framework, IPBES nevertheless faces problems to include other knowledge systems in its assessments. An example of this is how the fellows end up not including sources from ILK because IPBES has not succeeded in offering an alternative to their (academic) training and rationale, thereby hindering the fellows from judging these sources’ validity. Instead, upholding scientific criteria has become essential in their interaction with policy to maintain their respective roles to produce policy-relevant knowledge.

This result aligns with previous studies on IPBES’ efforts to synthesize different knowledge systems (e.g., Borie and Hulme 2015; Turnhout et al. 2016; Bridgewater 2017; Löfmarck and Lidskog 2017). This research has shown how IPBES has strategically been working towards creating a plurality through
representation both in the conceptual framework (Dunkley et al. 2018) and among IPBES experts (Montana and Borie 2016; Montana 2017); however, the logic of science until now has always functioned as the main structure of the work process, limiting the possibility for other knowledge systems to have a place in final reports and decisions. Thus, to move towards a synthesis of knowledge forms, it is not sufficient for IPBES to focus on ontological and epistemological differences between science, indigenous and local knowledge systems. Moving towards a collaborative knowledge production that includes multiple knowledge forms also requires a reexamination of the scientific ideal, which in turn affects the boundary work on science and policy. It requires changes in the institutionalization of IPBES from a science-policy platform to a knowledge-policy platform (cf. Tengö et al. 2017).

5. Conclusion

By using IPBES as an example of an expert organization that proclaims inclusiveness, this study has produced knowledge on how boundaries are drawn and forwarded intentionally and how they are maintained through unintentional boundary work in the development of assessments. The analysis shows how the process of producing policy-relevant knowledge within IPBES involves boundary work between science and policy, between knowledge systems and between actor categories, and it shows that these intentional and unintentional boundary processes shape and restrict each other. IPBES invites processes of expansion when opening up to plural perspectives and when deciding on who is eligible to participate in IPBES. However, the process of working to combine the perspectives to reach a consensus in Plenary decisions on the current state of biodiversity and ecosystem services is dominated by boundary work through expulsion.

By showing that IPBES’ boundary work consists not of separated processes but instead of intersecting ones, the analysis also provides important insights into the production of global policy-relevant knowledge and into the intersecting and dynamic character of boundary work. In the case of IPBES, it has been shown how the institutionalization of the organization’s structure and work process, in line with a linear science-policy relation, have unintentionally created restrictions for the boundary work on different knowledge systems.

Notes

1. Drawing on the tradition initiated by Gieryn (1983), ‘boundary work’ is to be understood here as the social and intellectual practice in which the boundaries of science are drawn to protect its credibility. Science is defined in relation non-science in an ongoing negotiation regarding where the boundary is to be drawn and why (cf. Powell 2007; Swedlow 2007; Ramírez-i-Ollé 2015; Braunstein 2018; Dunkley et al. 2018).

2. Besides expulsion and expansion, there is a third, and slightly different, form of boundary work: protection of autonomy (Gieryn 1999, p. 17). It is a response to a situation where other social practices (e.g. legislators and various types of media) align themselves with science and use scientific knowledge to gain trustworthiness and legitimacy. The boundary work in this situation strives to protect the scientific autonomy by showing that it is a false pretext that the alignment is a mutual engagement. This kind of boundary work, however, is not relevant for the aim of our study: to explore the nature of the boundary work in the production of global policy-relevant knowledge. However, in future studies of intersectional boundary work in the communication and implementation of IPBES assessment reports, this third form of boundary work would be expected to play an important role.

3. After the interviews, the junior experts participated in finalizing the regional assessments on biodiversity and ecosystem services, and they attended two additional fellowship workshops. The last workshop was held in parallel with IPBES’ sixth session of the Plenary in Medellin, Colombia, in March 2018 (IPBES 2017, 2018).

4. Similar patterns can be found in the selection of senior experts (Heubach and Lambini 2017; Montana 2017; Timpte et al. 2018; Gustafsson and Lidskog 2018b).

Acknowledgments

A special thanks to two anonymous reviewers for valuable and constructive comments.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by the Svenska Forskningsrådet Formas;

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References

[IPBES] Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services. 2015. Additional guidance for nominated and selected fellows. [Accessed 2018 Feb 19] https://www.google.nl/url?sa=t&rct=j&q=&esrc=s&sourc=web&cd=1&cad=rja&uact=8&ved=0ahUKEwj7KCGibLZAhUDb1AKHe2UDQFQFggMA&url=https%3A%2F%2Fwww.rcenetwork.org%2Fportal%2Fsites%2Fdefault%2Ffiles%2F20150506_Additional_guidance_for_nominated_and_selected_fellows.pdf&usg=AOvVaw2q6T0saDETTG-hVUneJ5H
[IPBES] Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services. 2017. IPBES/5/INF/3: update on the work of the task force on capacity-building (deliverables 1 (a) and 1 (b)). Bonn, Germany. 7–10(Mar):2017.

[IPBES] Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services. 2018. IPBES/6/INF/12: information on work related to capacity-building (deliverables 1 (a) and 1 (b)). Medellin, Colombia. 18–24(Mar):2018.

[UNEP] United Nations Environment Program. 2012. UNEP/IPBES.MI/2/4: rules of procedure for the meetings of the platform’s plenary. Panama City (Panama). 16–21. Apr 2012.

Agrawal A. 1995. Dismantling the divide between indigenous and scientific knowledge. Dev. Change. 26:413. doi:10.1111/j.1467-7660.1995.tb00560.x.

Agrawal A. 2002. Indigenous knowledge and the politics of classification. International Social Science Journal. 54 (173):287–297. doi:10.1111/iss.2002.54.issue-173.

Angervall P, Gustafsson J. 2014. Becoming an academic researcher. Policy Futures in Education. 12(2):191–199. doi:10.2304/pfe.2014.12.2.191.

Banuri T, Apffel-Marglin F. editors. 1999. Who will save the forests? knowledge, power and environmental destruction. London: Zed.

Bazeley P. 2003. Defining ‘early career’ in research. Higher Education. 45:257–279. doi:10.1023/A:1022698529612.

Beck S. 2012. Between tribalism and trust: the ipcc under the “public microscope”. Nature and Culture. 7(2):151–173. doi:10.3167/ncc.2012.070203.

Berg M, Lidskog R. 2018. Pathways to deliberative capacity: the role of the IPCC? Climatic Change. 148(1–2):11–24. doi:10.1007/s10584-018-2180-8.

Borer E, Hulme M. 2015. Framing global biodiversity: IPBES between mother earth and ecosystem services. Environmental Science & Policy. 54:487–496. doi:10.1016/j.envsci.2015.05.009.

Boström M, Lidskog R, Ugglä Y. 2017. A reflexive look at reflexivity in environmental sociology. Environmental Sociology. 3(1):6–16. doi:10.1080/23251042.2016.1237336.

Braat LC. 2015. Five reasons why the science publication “assessing nature’s contributions to people” (Diaz et al. 2018) would not have been accepted in ecosystem services. Ecosystem Services. 20:A1–A2. doi:10.1016/j.ecoser.2018.02.002.

Braunstein R. 2018. Boundary-work and the demarcation of civil from uncivil protest in the United States: control, legitimacy, and political inequality. Theory and Society. 47:603–633. doi:10.1007/s11186-018-9329-3.

Bridgewater P. 2017. The intergovernmental platform for biodiversity and ecosystem services (IPBES) – a role for heritage? International Journal of Heritage Studies. 23 (1):65–73. doi:10.1080/13527258.2016.1232657.

Cash DW, Clark WC, Alcock F, Dickson NM, Eckley N, Guston DH, Jäger K, Mitchell RB. editors. 2003. Knowledge systems for sustainable development. Pnas. 100 (14):8086–8091. doi:10.1073/pnas.1321321100.

Collins HM, Evans R. 2007. Rethinking expertise. Chicago (IL): The University of Chicago Press.

Collins P, Bägge S. 2016. Intersectionality. Cambridge: Polity Press.

Declaration of Helsinki of 2008. 2008. [accessed 2018 Aug 24]. https://www.wma.net/policies-post/wma-declaration-of-helsinki-ethical-principles-for-medical-research-involving-human-subjects/.

Diaz S, Demissew S, Carabias J, Joly C, Lonsdale M, Ash N, Driver A, Adhikari JR, Arico S, Baldi A, et al. 2015a. The IPBES conceptual framework—connecting nature and people. Curr. Opin. Environ. Sustain. 14:1–16. doi:10.1016/j.cosust.2014.11.002.

Diaz S, Demissew S, Joly C, Lonsdale W, Lariaguerie A. 2015b. A rosetta stone for nature’s benefits to people. PLOS Biol. 13(19):1–8. doi:10.1371/journal.pbio.1002040.

Diaz S, Pascura U, Stenseke M, Martín-López B, Watson RT, Molnár Z, Hill E, Chan KMA, Baste IA, Brauman KA, et al. 2018. Assessing nature’s contributions to people. recognizing culture, and diverse sources of knowledge, can improve assessments. Science. 359 (6373):270–272. doi:10.1126/science.aap8826.

Dunkley R, Baker S, Constant N, Sanderson-Bellamy A. 2018. Enabling the IPBES conceptual framework to work across knowledge boundaries. Int Environ Agreements. 18:779–799. doi:10.1007/s10784-018-9415-z.

Gieny TF. 1983. Boundary-work and the demarcation of science from non-science: strains and interests in professional ideologies of scientists. American Sociological Review. 48:781–795. doi:10.2307/2095325.

Gieny TF. 1999. Cultural boundaries of science: credibility on the line. Chicago: University of Chicago Press.

Gustafsson KM. 2018. Producing expertise: the intergovernmental science-policy platform on biodiversity & ecosystem services’ socialisation of young scholars. Journal of Integrative Environmental Sciences. 15(1):21–39. doi:10.1080/1943815X.2018.1439509.

Gustafsson KM, Lidskog R. 2018a. Boundary Organizations and Environmental Governance: performance, institutional design, and conceptual development. Climate Risk Management. 19:1–11. doi:10.1016/j.crm.2017.11.001.

Gustafsson KM, Lidskog R. 2018b. Organizing experts. IPBES and the Construction of Epistemic Authority. Environ. Sociology. 4(4):445–456.

Guston DH. 2001. Boundary organizations in environmental policy and science: an introduction. Science, Technology, & Human Values. 26(4):399–408. doi:10.1177/016224390102600401.

Heink U, Marquard E, Heubach K, Jax K, Hugel C, Neßhöver C, Neumann RM, Paulsch A, Tich S, Timaeus J, et al. 2015. Conceptualizing credibility, relevance and legitimacy for evaluating the effectiveness of science-policy interfaces: challenges and opportunities. Science and Public Policy. 42(5):676–689, 1–14. doi:10.1093/scipol/scu082.

Heubach K, Lambini CK. 2017. Distribution and selection of experts in the intergovernmental science-policy platform on biodiversity and ecosystem services (IPBES): the case of the regional assessment for Africa. Innovation. doi:10.1080/13511610.2017.1377601.

Hilgartner S. 2000. Science on Stage: expert Advice as Public Drama. Stanford: Stanford University Press.

Hoppe R. 1999. Policy analysis, science and politics: from “speaking truth to power” to “making sense together”. Science and Public Policy. 26:201–210. doi:10.3152/147154399781782482.

Jasanoff S. 2004. The Idiom of Co-production. In: Jasanoff S, editor. States of knowledge: the co-production of science and social order. London: Routledge: p. 1–12.

Koetz T, Farrell KN, Bridgewater P. 2012. Building better science-policy interfaces for international environmental governance: assessing potential within the intergovernmental platform for biodiversity and ecosystem services. Int. Environ Agreements. 12:1–21. doi:10.1007/s10784-011-9152-z.

Lidskog R, Sundqvist G. 2015. When does science matter? international relations meets science and technology
Löfmarck E, Lidskog R. 2017. Bumping against the boundary: IPBES and the knowledge divide. Environmental Science & Policy. 69:22–28. doi: 10.1016/j.envsci.2016.12.008.

Masood E. 2018. The battle for the soul of biodiversity. Nature. 560:423–425. doi: 10.1038/d41586-018-05984-3.

Miles MB, Huberman AM, Saldaña J. 2014. Qualitative data analysis: a methods sourcebook. 3rd Angeles L. CA: Sage.

Montana J. 2017. Accommodating consensus and diversity in environmental knowledge production: achieving closure through typologies in IPBES. Environmental Science & Policy. 68:20–27. doi: 10.1016/j.envsci.2016.11.011.

Montana J, Borie M. 2016. IPBES biodiversity expertise: regional, gender, and disciplinary balance in the composition of the interim and 2015 multidisciplinary expert panel. Conservation Letters. 9(2):138–142. doi: 10.1111/conl.12192.

Obermister N. 2017. From dichotomy to duality: addressing interdisciplinary epistemological barriers to inclusive knowledge governance in global environmental assessments. Environmental Science & Policy. 68:80–86.

Pielke RA Jr. 2002. Science policy: policy, politics and perspective. Nature. 416(6879):367. doi: 10.1038/416367a.

Pielke RA Jr. 2007. The honest broker. Cambridge: making sense of science in policy and politics. Cambridge: Cambridge University Press.

Powell RC. 2007. Geographies of science: histories, localities, practices, futures. Progress in Human Geography. 31(3):309–329. doi: 10.1177/0309132507077081.

Ramírez-i-Ollé M. 2015. Rhetorical strategies for scientific authority: a boundary-work analysis of ‘climategate’. Science as Culture. 24(4):284–411.

Star SL, Griesemer JR. 1989. Institutional ecology, ‘translations’ and boundary objects: amateurs and professionals in Berkeley’s museum of vertebrate zoology, 1907–39. Social Studies of Science. 19(3):387–420. doi: 10.1177/030631289019003001.

Stephenson J, Moller H. 2009. Cross-cultural environmental research and management: challenges and progress. Journal of the Royal Society of New Zealand. 39(4):139–149. doi: 10.1080/03014220909510567.

Stirling A. 2008. “Opening up” and “closing down”, power, participation, and pluralism in the social appraisal of technology. Science, Technology, & Human Values. 33(2):262–294. doi: 10.1171/0162243907311265.

Swedlow B. 2007. Using the boundaries of science to do boundary-work among scientists: pollution and purity claims. Science and Public Policy. 34(9):633–643. doi: 10.3152/030234207X264953.

Tengö M, Brondizio ES, Elmqvist T, Malmer P, Spierenburg M. 2014. Connecting diverse knowledge systems for enhanced ecosystem governance: the multiple evidence base approach. Ambio. 43:579–591. doi: 10.1007/s13280-014-0501-3.

Tengö M, Hill R, Malmer P, Raymond CM, Spierenburg M, Danielsen F, Elmqvist T, Folke C. 2017. Weaving knowledge systems in IPBES, CBD and beyond – lessons learned for sustainability. Environmental Sustainability. 26–27:17–25.

Timpte M, Montana J, Reuter K, Borie M, Apkes J. 2018. Engaging diverse experts in a global environmental assessment: participation in the first work program of IPBES and opportunities for improvement. Innovation. 31(S1):S15–S37.

Turnhout E, Dewulf A, Hulme M. 2016. What does policy-relevant global environmental knowledge do? the cases of climate and biodiversity. Current Opinion in Environmental Sustainability. 18:65–72. doi: 10.1016/j.cosust.2015.09.004.

Wynne B. 2005. Risk as globalizing “democratic” discourse? framing subjects and citizens. In: Leach M, Scoones I, Wynne B, editors. Science and citizens: globalization and the challenge of engagement. London (UK): Zed Books; p. 66–82.