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Boundary Objects and Public Deliberation: Analyzing the Management of Boundary Tensions in the Consensus Conference

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Abstract

Consistent with studies on inclusive management, this paper adopts the concept of "boundary object" and therefore an emergent approach to explain the collaboration of heterogeneous social actors in public deliberation. My long-term participant observation of the consensus conferences in Taiwan from 2002 through 2005 in general and the transcript of a national consensus conference on prenatal examination in 2005 in particular form the data sources. The identification of a series of boundary objects in the consensus conferences led me to conclude that, on the one hand, the consensus conference is a boundary infrastructure that fosters the establishment of a community of participation and thereby facilitates diverse parties' deliberation on sensitive issues. On the other hand, whereas a newly formed collective identity is emerging in public deliberation, boundary tensions and the differences between diverse social actors are managed and halted temporarily instead of eliminated permanently by boundary objects. That is, collaboration in public deliberation is always an achievement "in the making" by all parties.

Keywords

Acknowledgements

Introduction: Explaining the collaborations of heterogeneous actors in deliberation by boundary objects

First developed by the Danish Board of Technology, the consensus conference as an elaborated form of public deliberation has been broadly promoted (Kluver 1995; Mayer 1997). Consensus conferences are designed to take socially sensitive issues (especially topics of science and technology) directly to the public and to bridge the gaps among scientific experts, politicians, and citizens (Fisher 2005: 234-235). In consensus conferences, heterogeneous actors interact and even collaborate. Although the citizen panel is composed of only ten to twenty-five lay participants, panelists are selected "on the basis of sociodemographic criteria such as education, gender, age, occupation, and area of residence" to make the composition of the panel as diverse as possible (Fisher 2005: 235). In addition to lay citizens, scientific experts, politicians, and representatives from related social organizations with distinct and even contradictory perspectives are intentionally involved at each stage of the conference.

Scholars have offered various explanations (Perrin 2005; Fligstein 2001; Mansbridge 1983) to explain how – despite their enormous heterogeneity – social actors in public deliberative forums such as consensus conferences succeed in collaborating sufficiently to deliberate together. Nevertheless, in this paper, I argue that the existence of "boundary objects" in deliberative occasions like consensus conferences plays a crucial role in fostering requisite collaborations as well.[1] According to Geoffrey C. Bowker and Susan Leigh Star, "boundary objects are one way that tension between divergent viewpoints may be managed" (1999: 292). The concept of boundary object has been broadly accepted and applied to investigate cooperation in various social fields (Carlile 2002; Bechky 2003; Lee 2005; Kimble et al. 2010; Kim and Herbert 2012; Banner et al. 2012). More importantly, a growing body of scholarship has employed this very concept to apprehend the inclusive management practices that aim to create a community of participation and develop an "alternative collective way of knowing" in policy-making processes (Feldman and Khademian 2007; Feldman et al. 2006; Goldstein 2010; Quick and Feldman 2011). Based on extant research and the analysis of my data, I suggest that public deliberation as a social realm is highly loaded with boundary objects. Specifically, in consensus conferences, boundary objects can be observed to greatly enhance participants' acceptance of this "innovative" deliberative form and to result in collaboration to reach consensus.

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[1] Although the strict definitions of "cooperation" and "collaboration" differ slightly – collaboration is a "maximal" and "advanced" form of cooperation – this paper uses the two terms interchangeably since research on boundary objects and inclusive management tends to use the two terms interchangeably without making a clear distinction between them.

The contribution of this paper is twofold. Theoretically, although the scholarship on the process of inclusive management has included the role of boundary objects in its discussion, this paper provides a delicate elaboration on how exactly boundary objects result in collaboration between social actors in public deliberation. Not only are the four types of boundary objects (either abstract or concrete) suggested by Star and James R. Griesemer (1989) identified in the consensus conference, but the characteristics of boundary objects are clarified further as well. Adopting the concept of boundary object to understand people's deliberation implies the actor-network theory (ANT) and thereby an emergent approach (Yeh 2013; Feldman et al. 2006; Latour 2007; Pickering 1993). That is, the association in public deliberation is deemed a fluid network composed of both human and nonhuman actants and the collaboration between social actors is treated as an accomplishment in the making. Therefore, empirically, through highlighting the role of boundary objects in public deliberation, this paper sheds light on how to practically support collaboration in deliberating sensitive issues through the deployment of the heterogeneous network in general and boundary objects in particular. While some of the boundary objects identified here may have been taken for granted previously or even viewed as trivial, my analysis provide evidence that they indeed play an indispensable role. By highlighting the role of boundary objects, this paper contributes to what Jane Mansbridge et al. (2006) called the practical theory of public deliberation.

Boundary objects: Making the cooperative task of multiple social worlds possible

Discussing the history of the Museum of Vertebrate Zoology at the University of California, Berkeley, Star and Griesemer concluded that the cooperation of actors–professional scientists, amateur naturalists, patrons, hired hands, and administrators–from several distinct social worlds should not be assumed to be the result of a natural human capacity for consensus or an innate disposition to seek it (1989: 388). Rather, they claimed, consensus is not necessary for cooperation. Moreover, cooperation between social actors is the result of substantial effort:

> When the worlds of these actors intersect a difficulty appears…[B]ecause these new objects and methods mean different things in different worlds, actors are faced with the task of reconciling these meanings…This reconciliation requires substantial labour on everyone's part (1989:388).

It is the development of boundary objects under specific conditions that helps to facilitate cooperation among heterogeneous actors (Star and Griesemer 1989; Star 2010). All people are members of various social worlds and have to conduct activities together in various situations throughout their everyday life.[2] For instance, people with distinct food habits need to find ways to eat together and, despite the variation in fields of interest, students who attend a conference interact and make the academic meeting possible. Boundary tensions inevitably arise from the "collision" of different worldviews (or "ways of knowing," according to scholars of inclusive management). The resulting conflicts must be resolved or at least "managed" through strategies such as accommodation, work-around, a higher level of artful integration, artful juggling, gestalt switching, and/or on-the-spot translating (Bowker and Star 1999: 292). While it by no means constitutes the only way to ease and halt tensions between worldviews, exploiting boundary objects has the potential to support or enhance most or all of these approaches.

Nevertheless, what *is* a boundary object? A boundary object is anything to which all members of a diversely constituted group can "relate." The idea of a boundary object was first proposed to identify information used in different ways by different communities. According to Star and Griesemer (1989:393):

> Boundary objects are objects which are both plastic enough to adapt to local needs and constraints of the several parties employing them, yet robust enough to maintain a common identity across sites. They are weakly structured in common use and become strongly structured in individual-site use. They may be abstract or concrete. They have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable…The creation and management of boundary objects is key in developing and maintaining coherence across intersecting social worlds.

In other words, boundary objects are entities that allow heterogeneous actors to develop trust and form stable (if only transitory) working relationships (Kim and Herbert 2012; Kimble et al. 2010). Boundary objects allow different groups to work together without consensus (Star 2010:602). They can be concrete or abstract. For example, just as a map can be a boundary object that a group can use to find a campground for recreation and scientists can employ to find animal habitats and geological sites, a theory can be a powerful boundary object that is used across groups (Star, 2010). Instead of its "thing-ness", Star reminded us,

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[2] For more discussion on how people's belonging communities influence their worldviews (and therefore their values and interests), see Berger and Luckmann 1967 and Shibutani 1955.

something becomes a boundary object only when it is used between groups (or say, when people act towards and with it) (2010:603). In this sense, anything has the potential to be turned into a boundary object, though its significance varies depending on the contextualized cases. For example, a truce can be a boundary object between two antagonistic nations; an announced syllabus works to guide a class during a whole semester; and the ideal of being a "melting pot" leads people in a specific society to hold a more tolerant attitude towards others.

I want to suggest in addition that boundary objects should be understood as artifacts that work to link diverse values and interests by attending to people's need for identity maintenance on two levels simultaneously. This is a salient characteristic of boundary objects that deserves more academic attention. On the one hand, social actors have the local need to maintain their original worldviews and thus their local identities when they collaborate with other social actors who come from different social worlds; on the other hand, social actors have the collective need—even if only transitorily—to make the collaboration and thus the newly emerging collective identity in the intersection of multiple social worlds workable. The interpretation flexibility, the dynamics between ill-structured and more tailored local uses, and the satisfying of information and work requirements (Star 2010) explain boundary objects' crucial role (even if only temporarily) in encapsulating needs at both local and collective levels. People enter an association or a network with their given identities and perspectives, and it is difficult (also unnecessary) to expect them to throw away their original identities and perspectives simply to embrace the newly emerging collective ones. Quite to the contrary, people's newly emerging collective identity and perspective may build on the fact that social actors understand that their given identities and perspectives are included, considered, and respected. That is, the connections between heterogeneous actors and a sense of belonging to the new collectivity may be the consequence of inclusion. Marriage is a great example to think about here: People do not "let go" of their original identities and perspectives when entering marriage, and there is a newly emerging collective identity/need to maintain a family. Boundary objects work to attend to people's identification on two levels and to manage the possible tensions and inevitable, constant switches between them via ways.

The concept of boundary object has been applied to collaboration in social fields where boundary tensions caused by the intersection of diverse social worlds are especially obvious, such as curriculum reform, new product development, and the scientist-teacher community (Carlile 2002; Bechky 2003; Lee 2005; Kimble et al. 2010; Kim and Herbert 2012; Banner et al. 2012). These studies further examined and elaborated the characteristics of boundary objects. They also demonstrated that, although in theory a boundary object may seem to be an

abstract and even confusing idea, once embedded in a specific social context it becomes a practical and useful tool for analyzing and understanding the social world.

Collaboration in public deliberation reveals the significance of boundary objects when the policy-making process wants to take various perspectives on public issues into consideration. Collaboration in public deliberation such as consensus conferences means that participants want to listen to and respect alternative perspectives, have an informed and calm discussion with other participants, and work to achieve an all-agree-upon conclusion on a specific public issue. Public deliberation is a social field where diverse social worlds are intentionally brought together to share their distinct perspectives on highly sensitive issues. In public deliberation, the boundary tensions are created intentionally and, as a result, collaboration between social actors may be harder to achieve. Scholars from inclusive management studies have suggested that boundary tensions which build from distinct "ways of knowing" (perspectives) in public deliberations can be resolved by boundary objects and their applied expansions, such as boundary experiences, boundary organizations, and boundary zones (Feldman et al. 2006). In brief, they have suggested that boundary tensions – among others, the collisions between inside and outside organizational positions, expert and lay knowledge,[3] temporal, and issue boundaries – which occur in the public inclusive process can be managed by "keeping boundaries in play"(Quick and Feldman 2011). That is, I would like to emphasize that boundary tensions exist not only inter-group but also intra-group: Whereas experts, governmental representatives, interest groups, and laypeople may have different ways of knowing, each group itself may split into different ways of knowing. Since collaboration is a desirable process, the existence of boundary objects in public deliberation is indispensable.

Whereas given studies did underscore boundary objects' significance in encouraging collaboration in inclusive management, thus far, the specific role that boundary objects play in public deliberative forums such as consensus conferences has not been adequately addressed. A close-up examination of empirical cases can unravel how various boundary objects influence the fluid network of formatting inclusive and alternative public opinions and further advance our understanding of their characteristics.

Case and Data: Consensus conferences in Taiwan

[3] For a discussion of establishment of the boundary between expert knowledge (especially scientific knowledge) and lay knowledge, see Gieryn (1983).

To illustrate public deliberation as a field rife with boundary objects as well as to identify different types of boundary objects in deliberative forums, this paper analyzes consensus conferences in Taiwan from 2002 through 2005. Aimed at spreading the idea and practice of deliberative democracy and public participation in Taiwanese society, a team called Technology, Society, and Deliberation (TSD) was established in the Department of Sociology at National Taiwan University in 2002. Among many different forms of public deliberation, the TSD team spent a significant amount of effort and resources on promoting the consensus conference. In the view of its founding members, the consensus conference is the most elaborated form of deliberative discussion and provides a superior platform for diverse social actors to consider sensitive public issues (Lin and Chen 2003; Deng and Wu 2004; Lin et al. 2005; Chen 2006; Lin 2010). Basically following the format developed by the Danish Board of Technology and with some "localized" adjustments, several national consensus conferences and numerous regional consensus conferences were held or supported by the TSD team from 2002 through 2005.[4]

The initial TSD consensus conferences[5] earned positive feedback and led to the proliferation in Taiwan of this very form of deliberative discussion (Lin 2009; Lin 2010). Even as it continued to organize consensus conferences at the national level, the TSD team was invited to conduct workshops for bureaus of the central government, young teens, high school teachers, and local community colleges to promote the spirit of public deliberation and to provide instruction on how to hold a fruitful consensus conference. In 2004, the TSD team started to engage in standardizing the whole process of holding a consensus conference. A booklet entitled *The Manuel of the Consensus Conference* detailing the standard operating procedures of hosting a consensus conference was published to serve as a ready-made toolkit for anyone interested in holding a consensus conference to deliberate public issues (Lin et al. 2005). That is, the TSD team played the role of public manager in the inclusive process (Feldman and Khademian 2007).

As a core member of the TSD team from 2002 through 2005, I collected valuable data and information in the course of attending various meetings, including general staff meetings on development of the TSD team; administrative preparatory meetings of national and regional consensus conferences; regular meetings for the steering committee on numerous consensus conferences; and several of the national and regional consensus conferences. Most of the meetings

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[4] Issues such as national health insurance, surrogate motherhood, crossing seaports via cable cars, energy utilization, and prenatal examination were discussed.
[5] See Lin and Chen (2003) and Lin et al. (2005) for an overview of the process of the TSD-style consensus conference.

were recorded and minutes were taken down and, in terms of the national consensus conferences, the entire processes were documented into videos and transcribed verbatim. Thus, in addition to my personal participation, I can refer to these detailed records. Moreover, since I played diverse roles at different stages in several consensus conferences, I jotted down notes and reflections regarding my observations (though not systematically). Following is an introduction of the specific positions that I held during the analyzed period, along with what kinds of information and observations I may have derived from them. As the administrative assistant, I participated in the decision-making of the TSD team and thereby obtained first-hand knowledge of the process. As chief staff in several national consensus conferences, I had frequent interactions with citizen participants as well as with the steering committee and with invited lecturers. As the facilitator of several national consensus conferences, I studied and personally experienced the dynamics in these deliberative discussions. As a lecturer of workshops that provided instructions on how to host a consensus conference, and as an advisor to several regional consensus conferences, I standardized the overall process and even the details of holding a consensus conference.[6] Finally, the TSD team also interviewed some of the panelists and the invited lecturers to see how they experienced and evaluated consensus conferences. I personally interviewed 35 panelists and 3 invited lecturers, and all of these interviews were recorded and transcribed. Moreover, all of the documents – such as flyers, schedules, reading materials, minutes, and transcripts – that were produced and distributed during the consensus conferences were carefully filed by the TSD team and are open to the public.

In short, in this paper I draw on my various roles as a participant observer of Taiwanese consensus conferences from 2002 through 2005 in general, and on the transcripts and related documents of a national consensus conference on prenatal examination in 2005 in particular,[7] to explain how boundary objects were standardized by the TSD team and how successful collaboration between actors in multiple consensus conferences was achieved.

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[6] Though not fully wittingly, the four types of boundary objects were thus also utilized further and standardized. Although I am no longer an active member of the TSD team, the most recent consensus conference (held in September 2012) continued to adhere closely to the structure and procedures I participated in establishing years ago. The effects of institutionalization and standardization should never be underestimated.

[7] The consideration is – despite that my arguments are broadly derived from my observations of numerous consensus conferences – that providing particular examples from a single consensus conference can better illustrate my points. In the consensus conference on prenatal examination, I was one of the facilitators and from time to time was asked to provide suggestions on substantial arrangements for the conference.

Analysis: Managing boundary tensions through types of boundary objects

In most public forums, mutual trust that leads to collaborative deliberation does not arise naturally and spontaneously among participants. In the initial stages of consensus conferences, I observed wariness and even suspicion among diverse participants. For example, before and at the beginning of a consensus conference, some lay participants (who constituted the citizen panel) suspected that the host organization had its preferred stance on a specific public issue and therefore that the panelists were merely "puppets" who could be controlled. Additionally, some lay participants doubted whether their fellow participants were as open-minded and had as much enthusiasm about public issues as they did. Intriguingly, I discovered that some lay participants even distrusted themselves. Since in Taiwan (as in other democracies) ordinary citizens have been marginalized in the public policy decision-making process and have no say even on matters that greatly influence them, some participants were afraid they would not correctly understand complicated public issues and thus would be unable to make a "good" decision. Moreover, the invited lecturers–such as experts from research institutions, technocrats from government, and representatives from relevant interest groups–occasionally revealed their concerns to me about whether the host organization had its own pre-determined conclusion, or whether the citizen panel possessed the ability to make an informed decision on complex public issues.

Fortunately, a number of boundary objects helped mitigate distrust and allay suspicions.[8] I believe that at least four significant boundary objects can be identified in the TSD-style consensus conferences I observed:[9] (1) accessible reading material, (2) the ideal type of consensus conference, (3) skillful

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[8] I did observe that in a few consensus conferences some suspicions developed into insignificant or minor conflicts in a few consensus conferences. The failure of boundary objects will be addressed in the discussion section.

[9] I am not trying to provide an exhaustive list of boundary objects in TSD-style consensus conferences here. As mentioned earlier, everything has the potential to play the role of boundary object whereas the degree of significance may vary due to the embedded context. What I would like to do in this article is to identify the most salient boundary objects as well as reveal their various types. The process that led me to decide what the most salient boundary objects are and which should be introduced in consensus conferences is rather a mixture of inductive and deductive approaches: I benefit from both my long-term on-site observations and the inspiration of extant research and theories on boundary objects and inclusive management. The existing literature led me to target several entities as possible boundary objects; then, based on my participation, investigation, and collected data, I narrow down to entities that participants of consensus conferences frequently referred to and related themselves to. The last step is to carefully examine my data to see whether the identified entities do fit the characteristics that the literature mentions to determine their significance and effects.

facilitator(s), and (4) the printed schedule for deliberation. Each of these represents one of the four types of boundary objects identified by Star and Griesemer (1989:410-412): repository, ideal type, coincident boundary, and standardized form. Each reduces boundary tensions in its own unique way, thereby paving the way for collaboration among participants.[10]

1. Accessible reading material: Building a repository by accumulating diverse information

Right after the need for a consensus conference on a specific issue is established, a steering committee is appointed by the TSD team to organize and administer the conference. One of the most critical tasks of the steering committee is preparing accessible reading material for the citizen panel (Lin et al. 2005). Such accessible reading material is usually a booklet composed of several short articles that is sent to the panelists at least a week before the first day of the conference. Several criteria are used to judge the suitability of accessible reading material. First, considering that lay citizens have various levels of knowledge about the selected public issue, the accessible reading material should contain all the basic information that a layperson may need to develop an understanding of the issue. Second, multiple viewpoints should be covered in the accessible reading material to provide lay citizens with diverse perspectives. Third, whereas different "ways of knowing" are included, the whole reading material should avoid making any substantial conclusion or revealing any preference for a specific viewpoint. Fourth, because the educational level of lay citizens varies, the accessible reading material should be written in plain sentences to ensure that the arguments are comprehensible. In meetings prior to the consensus conference, the steering committee is busy determining what topics should be included in the reading materials, who should be invited to write the material, whether the draft of the reading material maintains a balance between different opinions, and whether the draft is concise, informative, and sufficiently easy to be read by lay citizens.

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[10] More specifically, collaboration in a consensus conference indicates that, on the one hand, the lay participants are willing to follow the scheduled timetables of the five-day TSD-style consensus conferences instead of "exit," listen to diverse viewpoints that inevitably include contradiction of their own perspectives, deliberate with other participants by voicing their own ideas and experiences on specific issues, and make effort to find compromises with other panelists to reach consensus despite the original heterogeneity. On the other hand, invited lecturers felt comfortable in playing their assigned role(s) in the consensus conferences, whether transmitting basic information, sharing their own experiences and opinions, taking lay participants' questions, or correcting factual mistakes in consensus reports.

In boundary object terms, the accessible reading material serves as a "repository" of information to which all who participate in the consensus conference can refer. Since the reading material aggregated basic information and diverse perspectives and is ordered and indexed into a standardized style, participants can easily find information of the sort they seek (Star and Griesemer 1989: 410).[11] In terms of the citizen panel (which is the target group of the reading material), for example, a citizen with a particular perspective and certain dispositions can readily find arguments in the reading material that are consistent with his/her own viewpoint. By the same token, it is also easy for a lay citizen who has a preference to find out how people who hold the opposite view make their arguments. Hence, a person who comes to a consensus conference without a clear stance on an issue can access diverse viewpoints through the reading material. A person can review the reading material to reinforce, revise, and advance what he/she already knows. In short, lay citizens' needs at the local level (to find out information that corresponds to or contradicts their own opinion as well as to review and/or learn new information) and at the collective level (to become an informed participant, to acknowledge the existence of diverse viewpoints, and to develop an alternative collective "way of knowing") are satisfied simultaneously by the provision of accessible reading material.

Additionally, although the reading material is not intended for the invited lecturers, they usually request a copy and review it to see whether it covers their perspective and whether it contains all the basic information a lay citizen needs to deliberate the selected public issue. In some cases, experts, technocrats, politicians, and representatives from interest groups agreed to attend the consensus conferences only after they looked at the accessible reading material. This means that the accessible reading material acts as a repository even for the invited lecturers: Both an invited lecturer's need at the local level (to determine whether the host organization includes his/her knowledge or perspective) and at the collective level (to be assured that the citizen panel is appropriately informed and thus prepared to deliberate on the selected issues) are addressed.

To sum up, boundary tensions are managed by the accessible reading material because it is inclusive, and the heterogeneous social actors can thus flexibly interpret the information not only for their more tailored on-site use but also to satisfy their need for an informed deliberation in the consensus conference. The translated contents of the accessible reading material of the consensus conference on prenatal examination exemplify the mentioned attributes of the accessible

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[11] According to Star and Griesemer, a repository has the advantage of modularity: "People from different worlds can use or borrow from the 'pile' for their own purposes without having directly to negotiate differences in purpose" (1989:410).

reading material and why it acts as a repository for diverse participants (see Appendix 1). Without leading readers to a substantive conclusion, basic information (such as the definition and purposes of prenatal examination, the availability of prenatal examination, the national regulations and subsidies on prenatal examination) and diverse viewpoints (the disagreement over whether to emphasize technological solutions or to stress ethics and other moral considerations) are introduced. In consequence, in this consensus conference, I observed that the reading material did manage tensions created by boundaries. For example, the boundary tension between expert knowledge and lay knowledge was dealt with: Invited lecturers were convinced that the lay participants could obtain necessary information and knowledge of the discussed issues from the reading material and thereby be informed and thus "qualified" to deliberate on this topic; meanwhile, laypeople recognized that, in addition to professional jargon and knowledge on this seemed-to-be complicated and highly technology-loaded issue, numerous real stories told from laypeople's perspectives and experiences were included in the reading material. Moreover, the tension between whether prenatal examination should be embraced and broadly institutionalized or we need to reconsider the moral issues that come with it was alleviated since the reading material covered opinions and information from both sides. Participants from different social worlds with various perspectives found that their "ways of knowing" were included in the reading material and were thereby encouraged to develop shared opinions on prenatal examination issues together.

2. The ideal type of consensus conference: highlighting the spirit and format by reiteration

Repeated reinforcement of the purpose of the consensus conference (and of public deliberation) commonly produces an ideal type of consensus conference for diverse participants in the TSD-style consensus conference.[12] The article entitled "Consensus conference: The democratic experiment of public participation" (Lin 2002) was included in the accessible reading material of every consensus conference to convey to participants the spirit and format of an ideal

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[12] An ideal type, according to Max Weber, is constructed by theoretically pushing all characteristics of a social element or a social action to the extreme to reflect the pure form. Yet, as Weber put it, in historical reality, we witness "combinations, mixtures, adaptations, or modification of these 'pure' types" (1978:954). While Weber did not consider ideal type to represent the desirable and optimal form of a social element or a social action, in the case of the TSD-style consensus conference, through continuously emphasizing the positive aspects and traits of public deliberation and consensus conferences, the constructed ideal type of consensus conference does tend to be the better form that the TSD team would like to promote.

consensus conference. Participants were strongly advised to read this article. In addition, administrative assistants provided an oral explanation of the principles of the conference and public deliberation. At least one official lecture was arranged at the beginning of the five-day conference to ensure that lay citizens had a clear understanding of the spirit and format of the conference (and how it could demonstrate the core value of public deliberation). Invited lecturers were also required to acknowledge the principle of the consensus conference. (All invited lecturers were given a copy of the article as a guideline.) The ideal type of consensus conference serves as another boundary object that checks boundary tensions and facilitates communication symbolically in the TSD-style consensus conferences. According to Star and Griesemer, the "ideal type" acts as a boundary object because its abstractness and vagueness (1989:410) allow people to believe that they at least have something in common since they can communicate through it and thus can work together.

Taking the consensus conference on prenatal examination as an example, the mentioned article in the accessible reading material, a short speech from the chairman of the steering committee (at the very beginning of the consensus conference), a fifty-minute lecture on "What is a consensus conference?" given by a representative from the TSD team (as the first lecture session), and two facilitators' occasional reminders during the five-day conference contributed to construction of the ideal type of consensus conference. Two main messages that contributed to construct the ideal type of consensus conference were conveyed to participants. First, defects and deficiencies of the prevailing system of adversarial democracy were identified and contrasted with the advantages of deliberative democracy. Then the spirit and format of a typical consensus conference were described. Following is a translated excerpt from the "Consensus conference: The democratic experiment of public participation," which constitutes the basic arguments of what a consensus conference is, its value, and format:

> …the limitation of existing democracy is…the monopoly of knowledge. People who have the power to obtain information can thus control laypeople who do not have a chance to receive adequate knowledge. The result is that laypeople can only express their opinion through voting…To break through the "limitation of existing democracy," to empower laypeople who have never been given sufficient information to have a public deliberation, to enlarge citizens' participation in the decision-making process of public issues, Western societies have developed several forms of public deliberation. Among others, consensus conference is the most elaborated form. First developed in Denmark, the consensus conference as a mode of public deliberation has already been adopted in many countries. The main goal of the consensus conference is

to facilitate citizens' informed deliberation on public issues. A consensus conference invites laypeople to participate in it: By reading related information in advance, laypeople set the agenda by autonomously deciding the most important aspects of a public issue that they want to discuss. Then, in a public forum, lay citizens have a chance to question experts. Based on the information they receive, lay citizens deliberate and make judgments regarding a public issue. Finally, the citizen panel states the consensus that it reaches after deliberating in a concluding report and announces this report publicly as a reference for public decision making. In the consensus conference, it is laypeople–instead of experts–who determine what the significant issues are. Assisted by information from experts, informed lay citizens not only evaluate the interests and values that are related to a public issue but also attempt to reach consensus perspectives on the disagreements.

(Lin, 2005: 1-2)

An excerpt from the speech of the chairman of the steering committee (of the consensus conference on prenatal examination) illustrates the mentioned reiteration in the TSD-style consensus conference:

…we believe that there are better and more acceptable ways to express laypeople's opinions on public issues [than the existing ways such as lobbying]. Thus, the TSD team imports the consensus conference as an alternative channel through which laypeople can voice their viewpoints. The consensus conference has already been promoted in many other countries, for example, the United States, European countries, Japan, Korea, and so on. The most important element of the spirit of a consensus conference is to have an informed and calm deliberation. We expect you to share viewpoints with each other, and even reach a consensus on the public issue. However, it is still okay to not have a consensus among lay citizens…In the consensus conference, participants start to deliberate only after they have a basic understanding of the public issue, and that is why it takes a longer time [than conventional meetings]. I believe that you all received the accessible reading material prepared by us. Participating in a consensus conference can be one of the steps to becoming a responsible citizen in society and advancing democratic democracy in Taiwan…Every consensus conference is significant not only for the TSD team but also for Taiwan society. Your opinions will be indispensable information for the government. We appreciate that all of you are willing to participate in our conference, to fulfill your responsibility as a citizen by attending a public deliberation such as this!

(Chen, April 16, 2005, Transcript)

The excerpts above reveal that the messages on the advantages of deliberative democracy and the spirit and format of the consensus conference are abstracted from specific domains and localities, and this very characteristic makes these descriptions flexibly interpretable and highly adaptable. Whereas the multiple benefits of having public deliberation and the public-spiritedness and overall format of a consensus conference are introduced, a lay participant can adapt the ideal type of consensus conference to his/her own local usage. For example, it is common to see a panelist claim that he/she has attended the consensus conference solely for a single reason–whether learning something new, experiencing/advancing deliberative democracy, opposing adversarial democracy, accessing diverse opinions, speaking for a public issue in which he/she is interested, making more friends, consuming leisure time, or even targeting the monetary compensation from the host organization[13]–instead of aiming to pursue all the advantages of the consensus conference.

The constructed ideal type of consensus conference (with its abstractness) allows each participant to 'buy in' to the conference for his or her own reasons, which do not need to be the same as those of other participants. This creates a kind of "diversity within unity" (or "unity overlaid upon diversity") or, borrowing the aforementioned concept developed by the scholars of inclusive management, it keeps the "boundaries in play." Table 1 lists the motivations that fifteen lay participants articulated in the consensus conference on prenatal examination. In terms of the format of a consensus conference, depending on his/her own on-site adaptation, a lay citizen may be highly interested in only one type of arrangement–whether lecture sessions (which mainly involve receiving information from the invited lecturers); the opportunity to question experts, technocrats, politicians, and representatives from interest groups; the intra-citizen panel discussion; or the "unofficial" interactions and communications with other participants[14]–and have little concern about other types. Moreover, all these localized adaptations and flexible interpretations of the ideal type of consensus conference not only existed between lay citizens but also between invited lecturers.

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[13] I summarize these motivations both from the short statements that lay citizens were required to provide when they applied to participate in the consensus conferences and the self-introductions that lay citizens gave at the beginning of each consensus conference.

[14] I summarize these preferences from personal conversations with lay citizens and post-conference in-depth interviews with panelists.

Table 1: Motivation(s) to apply for attending this consensus conference

Panelist	Motivation(s)
Panelist #1	I have never attended a consensus conference, and it is an opportunity to make friends.
Panelist #2	I thought this is a good chance to learn something new.
Panelist #3	I believe this is a way to enhance my own capacity. My kids are not married yet; I think that I may be able to learn some required information in this conference.
Panelist #4	I know that this issue is highly related to females instead of males, but since this is a consensus conference, everybody is welcomed, right? Therefore, I am here…this may be a crucial issue for me in the future, and I want to learn something about it.
Panelist #5	I love to participate in all kinds of public affairs…consensus conference is a new thing and I experienced it once in my community college…I am also highly interested in this issue…
Panelist #6	I am interested in this issue.
Panelist #7	I did some prenatal examinations…and I believe that prenatal examination is very important…
Panelist #8	I was intimidated by the five-full-day schedule of the consensus conference. Although I know that I may be exhausted by the busy schedule...I come here to learn.
Panelist #9	This issue is related to some innovative technology, and I believe that I can learn something new.
Panelist #10	I am glad that I have a chance to participate in a consensus conference. Moreover, I expect that I can learn more information.
Panelist #11	I have some opinions on this very issue. This is a significant issue not only for me but also for our whole society!
Panelist #12	I have negative experiences in pregnancy; therefore, I am highly interested in this topic.
Panelist #13	This is a very important issue.
Panelist #14	I believe that this is a crucial and innovative issue.
Panelist #15	My mother suggested this is an interesting issue and encouraged me to come here.

*Translated by the author. Obtained from the transcripts of the self-introduction session of the consensus conference on prenatal examination.

In addition to allowing room for diverse participants' local adaptation and usage, the constructed ideal type of consensus conference simultaneously works to put all diverse participants "on the same page" to indicate an alternative to conventional adversarial democracy for making decisions on public issues. The conference offers a potentially better way for citizens to voice concerns and desires and to make decisions together. It does this by creating an intersection where multiple social worlds meet. As experience with the TSD-style consensus conference grows, a collective "culture" of and identification with the conference is emerging. For example, comments such as "Since this is a consensus conference, I believe that we should…"; "to go back to the spirit of a consensus

conference…"; "don't forget that we are in a consensus conference…"; and "according to the format of a consensus conference…" were usually made by heterogeneous social actors–lay citizens, invited lecturers, facilitators, members of the TSD team, staffs of the host organizations–in the TSD-style consensus conferences. None of the mentioned comments included further detailing of the definition and exact content of "a consensus conference," and this reflects the fact that reiteration on the public deliberation and consensus conference to a great extent leads diverse participants to assume a common understanding of a consensus conference (and its spirit and format). As a result, the ideal type of consensus conference is attached with symbolic meanings and facilitates communication between diverse participants.

3. The facilitator: a coincident existence with different internal contents

The facilitator plays a significant role in a consensus conference (Fisher 2005; Lin et al. 2005). For example, he/she is responsible for facilitating discussion on the intra-citizen panel during the five-day conference, maintaining a pleasant atmosphere in which diverse participants interact, managing time to adhere to the busy schedule, observing the dynamics within citizen panels as well as between lay participants and invited lecturers, and monitoring to ensure that the principle of public deliberation is secured. The facilitator of a specific consensus conference is recommended and determined by the steering committee. Once selected, the facilitator is invited to attend steering committee meetings, provided with basic information on the specific public issue, and trained to have a clear understanding of the spirit and format of the consensus conference.

It is not surprising to claim that a facilitator fosters the collaborations between heterogeneous actors in the consensus conference; after all, *literally* speaking, a facilitator is responsible for facilitating. It is *how* a facilitator in a consensus conference fulfills his/her tasks as a boundary object requires explanation. I suggest that facilitators in the TSD-style consensus conference function as yet another boundary object: Whereas all the diverse participants have a coincident understanding of who the facilitator is and his/her assigned duty in a consensus conference, they can flexibly "fill up" the facilitator with different internal contents (Star and Griesemer 1989: 411-412).[15] A counterintuitive standard that the TSD team sets in selecting a suitable facilitator is that he/she does not have too much engagement in the specific public issue so as to ensure that the given

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[15] Whereas Star and Griesemer exemplified this type of boundary object (coincident boundaries) with a rather abstract object, I claim that a concrete object (here, the facilitator) has the same functions and characteristics.

acknowledgment, experiences, and preferences do not hinder the required impartiality. A noteworthy similarity between facilitators in TSD-style consensus conferences is that they clearly defined their responsibilities as facilitator but at the same time mentioned their "emptiness" (non-expertness and impartiality) on the specific issue to the diverse participants at the beginning of the conference. These characteristics are demonstrated by the following remarks made by facilitators of the consensus conference on prenatal examination:

> **Facilitator T:** As facilitators, facilitator Y and I take charge of trivial things for you guys [citizen panel], for example, we give you beverages when you feel thirsty, and we help you to write down your questions on the board as a record. During the discussion, we will double check with you whether we have summarized your ideas correctly. It is you who makes the effort to deliberate and produce a consensus report.

> (April 16, 2005. Transcript)

> **Facilitator Y:** Many of you have questions about governmental subsidies [on prenatal examination]…do not forget to raise these questions tomorrow in the lecture session…Some of you came to either facilitator T or me with these questions after the lecturers left. We two know nothing about prenatal examination, ha! Both facilitator T and I learn all the information with you guys. So, please, always raise your questions when the invited lecturers are here.

> (April 16, 2005. Transcript)

At the collective level, the clearly defined responsibility of the facilitator leads diverse participants toward a common perception of who the facilitator is and his/her main duty, and the assertion made by the facilitator that he/she is neither an expert nor an interested party helps reassure participants that he/she will act as a neutral guarantor of the inclusivity and fairness of the deliberative process. At the local level, the clearly defined responsibility provides a list for lay citizens' personal interpretation and selection, and the facilitator's claimed emptiness enables diverse participants to flexibly fill up the facilitator with distinct internal contents. Since the facilitator in the TSD-style consensus conference is trained to not encourage or discourage a specific perspective (or way of knowing), when interacting with participants, he/she usually adopts an ambivalent attitude towards participants' substantial comments on the targeted public issue. As a result, the ambivalent attitude invites participants to freely "guess" the facilitator's opinion on specific issues. For instance, as the facilitator of several national consensus conferences, from time to time, participants approached me and expected me to explain my standpoint on the discussed issues. After I refused to expose my

opinion, participants usually "kindly" helped me to determine my viewpoint – without directly confirming with me – as they murmured "I know that you must prefer…" when leaving. Intriguingly, as a facilitator, my enthusiastic reaction and ambivalent attitude towards discussed issues gave participants the impression that their perspectives were included and respected.

Actors can subjectively explain facilitators' thinking and behaviors to fit their needs. Consistent with the two previously mentioned boundary objects, the role of a facilitator simultaneously satisfies the needs of heterogeneous actors at both the local and collective level. As participants of a consensus conference, diverse participants generally suppose that the facilitator will impartially fulfill his/her expected duties (e.g., managing time, guarding the principle of public deliberation, facilitating the discussion). As a member from a specific social world, a participant can flexibly explain the facilitator's most crucial duty and interpret the facilitator's standpoint regarding a specific public issue as neutral, "stand-by-me," or even oppositional.

4. The schedules: deleting the local contingencies for actors through standardization

In the TSD-style consensus conferences, the schedules for the five-full-day conferences act as boundary objects that serve to reduce or even eliminate local uncertainties and contingencies for heterogeneous participants by standardizing the schedule.[16] Each day, the participants–including the TSD staff members, citizen panel, invited lecturers, and other guests–of the TSD-style consensus conferences are provided with a timetable upon their arrival. A timetable contains the schedule of arranged sessions and activities as well as the names and backgrounds of the invited lecturers for each period. The translated Day 3 timetable of the consensus conference on prenatal examination in Appendix 2 is a typical example. To ensure that all lay citizens pay sufficient attention to the timetable, a time period is arranged for the facilitator to go over the timetable

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[16] The last type of boundary object that Star and Griesemer identified is standard forms. According to them, standard forms work to decrease local contingencies by standardization (Star and Griesemer 1989: 412-413). In a TSD-style consensus conference, many standard forms are designed. For instance, laypeople are required to fill out an application form if they want to have a chance to be selected as a panelist; a consent form is signed by lay citizens on the first day of a consensus conference; and another agreement form on the consensus report is signed by all lay citizens at the end of the consensus conference. Nevertheless, this paper argues that schedules of the consensus conference have the same function and are more significant than other standard forms by slightly "twisting" the definition of this type of boundary object.

before the formal sessions begin. Diverse participants are thus *synchronized* by the timetable.

As a significant boundary object, the schedules are frequently referred to by all participants who attend the TSD-style consensus conferences. According to my observation, the first thing that most participants (especially the panelists) do when they arrive at the conference is to take a look at the distributed schedules to get a sense of the overall arrangement of a day. In national consensus conferences in which I participated, all participants – panelists, invited lecturers, facilitators, staffs, TSD-team members, journalists – acted towards and with the schedules: A general expectation is that the schedules should be strictly followed. Missing the schedules usually causes participant panic and a sense of "dislocation" in the daily arrangement.

Just like other types of boundary objects, the distributed schedules work to satisfy participants' identities and needs at both the collective and individual levels. At the collective level, by distributing the schedules, the host organization can ensure that heterogeneous social actors have an understanding of the arrangement and decrease the possibility of undesired tardiness and absences. This benefits the overall newly emerging community of participation in the consensus conferences. Moreover, schedules are something that all participants can relate to and rely on to communicate. Comments such as "according to the schedule, we should have finished our discussion on the first sub-issue five minutes ago"; "I know that we have already run out of time"; "I believe that we can get more information in a scheduled session later today"; and "is it possible that we can leave the unsolvable discussion to tonight's intragroup discussion" indicate that participants interacted with each other "through" the schedules in consensus conferences. At the local level, individual participants can employ the schedules to not only locate their preferred sessions in a day, but also to "tune" their private time in the busy schedule of a consensus conference. For instance, panelists actively approached invited lecturers – who held either a similar or opposite way of knowing to them – during the intermissions for further discussion of specific topics. In short, the distributed schedules informed them of how much time they had to delve into personal conversations.

Discussion

This paper supports the view that the concept of boundary object helps explain how heterogeneous social actors collaborate without consensus (Star and Griesemer 1989). Specifically, it identifies four types of boundary objects in consensus conferences and suggests how they foster people's collaboration to

reach consensus. A noteworthy contradiction between the original concept of "boundary object" and the empirical analysis of TSD-style consensus conferences is – although Star and Griesemer did not expect it – that facilitated collaboration between social actors who do not have a consensus by boundary objects may eventually lead people to reach consensus under specific conditions. After all, the ultimate goal of collaboration in public deliberative forums such as consensus conferences is to develop a perspective that is accepted by heterogeneous participants. The analysis of the TSD-style consensus conferences further clarifies the characteristics of both the boundary object and the public deliberation. Seven findings are discussed below.

1. The consensus conference as a boundary infrastructure

The consensus conference should be regarded as a boundary infrastructure which is deployed with a series of boundary objects (Bowker and Star 1999; Star 2010). According to my analysis, to maintain coherence and manage the boundary tensions in the consensus conference, multiple boundary objects were wittingly or unwittingly developed, managed, and institutionalized in the TSD-style consensus conferences. As a boundary infrastructure, the consensus conference is a social mechanism that does the work to "keep things moving along"; thus, in Taiwan, many sensitive public issues that had been disputed and that had resisted agreement have been discussed in consensus conferences since the TSD team was established in 2002 (Lin 2009). Consensus conferences – as a boundary infrastructure developed by public inclusive managers – thereby is an organizational technology that greatly contributes to inclusive management of policy issues (Hasenfeld and English 1974) by producing boundary experiences and boundary zones for participants (Quick and Feldman 2011).

2. The co-existence of local identity/needs and collective identity/needs in public deliberation

While collective identification (by diverse participants in a consensus conference) and collective needs (to seek a consensus, to follow the principle of public deliberation) emerge by attending a consensus conference, it should not be assumed that the heterogeneous social actors completely give up their local identification and local needs. Rather, my analysis reveals the co-existence of participants' local and collective identities and needs in the consensus conferences and how a series of boundary objects encourages people's joint cooperation across boundaries while at same time respecting people's differences (Banner et

al. 2012: 586; Kimble et al. 2010: 438; Carlile 2002: 452). Thus, effective boundary objects are requisites for public deliberation, where multiple social worlds are intentionally brought together and intense boundary tensions can be anticipated.

3. Boundary objects enable both informational work and relational work

Scholars of public inclusive management have argued that inclusive managers (such as the TSD team) have to constantly engage in both informational work and relational work to make their inclusive management effective. Among other observations, they have noticed that the boundary object is a useful tool to facilitate these two types of work simultaneously:

> Informational work identifies and disseminates information about different ways of understanding policy problems, translates ideas between participants and promotes a synthesis or new way of knowing the public problem. Relational work creates connections between people in ways that legitimize perspectives and create empathy for participants who represent different ways of understanding and addressing the problem. Managers use various tools, such as boundary objects and boundary experiences, in performing this informational and relational work (Feldman and Khademian 2007:306-307).

Echoing their argument, the four boundary objects identified in TSD-style consensus conferences in this paper do more or less play the role of enhancing informational and relational work. In addition to providing information, they connect participants and nurture a sense of belonging. In other words, a community of participation which is informed of different ways of knowing is created and encouraged to develop an all-agree-upon perspective on public issues (Feldman and Khademian 2007; Quick and Feldman 2011) in TSD-style consensus conferences.

4. Boundary objects play their roles in a fluid network by activating a collaborative process

Boundary objects play their roles in consensus conferences not because of their "thing-ness" (especially when abstract entities can also play this role) or as an independent existence; rather, the reason that a boundary object can exert its influence is that it motivates people to "act towards and with" it in a fluid network

composed of both human and non-human actants. This characteristic is not only consistent with scholars of inclusive management's perspectives on policy issues as a fluid network of ways of knowing (Feldman et al. 2006:90), but also foregrounds the role of non-human actants which have been marginalized previously. In the case of consensus conferences, it is the overall deployment (among others, the boundary objects) work to urge the emergence of a community of participation and to create an ongoing process of consensus. That said, whereas we acknowledge that certain entities are boundary objects in consensus conferences, it is insufficient to say that participants' collaboration in consensus conferences can be guaranteed by solely standardizing these identified boundary objects. It is the collaborative process that boundary objects can activate in the fluid network that counts. Therefore, to promote deliberative democracy and inclusive management practices, in addition to standardizing/institutionalizing the identified boundary objects, the dynamic process and the interconnections intermediated by them should be addressed and emphasized as well. After all, nothing is essentially a boundary object, and the boundary object's importance lies in whether it can be used between social groups and maintain boundaries in play under specific circumstances.

5. Contextualizing boundary objects: constant boundary objects and periodic boundary objects

Boundary objects must be contextualized. A boundary object can be effective at one stage but ineffective at another stage due to variations in circumstances (Carlile 2002: 452). According to my analysis of TSD-style consensus conferences, we have to distinguish between *constant boundary objects* and *periodic boundary objects*. Although constant boundary objects persist to facilitate people's collaboration when a social field endures, periodic boundary objects merely work to check, reduce, or eliminate boundary tensions during a specific time period. For example, in the TSD-style consensus conferences, the facilitator is a constant boundary object and the accessible reading material is a periodic boundary object. While the facilitator works to check boundary tensions all the time during a five-day consensus conference, the accessible reading material mainly functions in the first few days of a conference; putting too much emphasis on differences between viewpoints in the later stages of a consensus conference may increase the difficulty for lay citizens to reach consensus. Mistakenly treating a periodic boundary object as a constant boundary object or employing a periodic boundary object at an improper stage may result in ineffectiveness. Although more empirical cases are needed to validate my assertion, it is possible that constant boundary objects endure over time but with

low intensity and periodic boundary objects last a short time but with high intensity regarding managing the boundary tensions.

6. The failure of boundary objects

Boundary objects are no "magic bullet" (Carlile 2002), and the failure of boundary objects is yet another issue to be discussed (Star 2010; Lee 2005; Bechky 2003). I suggest that boundary objects should be seen as devices that have the *potential* to manage boundary tensions. Inappropriate employment decreases their effectiveness. Whereas my analysis illustrates that four significant entities act as boundary objects to facilitate people's cooperation in consensus conferences, in a few regional cases (which were advised and supported by the TSD team), I observed the failure of these boundary objects. For example, accessible reading material that fell short of including diverse perspectives on a specific public issue was criticized as biased and evoked some participant opposition. Moreover, paying too little attention to highlighting the value of public deliberation and the spirit and format of a consensus conference caused the unsuccessful production of the ideal type of consensus conference; as a result, participants were not properly motivated to seek a consensus and did not see the benefit of searching for an alternative way to make decisions on public issues. Both a facilitator who failed to impartially lead the discussion of lay citizens (e.g., by allowing one lay citizen to speak much longer than other lay citizens) and a facilitator who assumed that his preferred stance on a specific issue was "better" than the opposite viewpoint generated resentment. Finally, schedules that contained either errors or insufficient information led to confusion and schedule delays. Instead of halting boundary tensions and fostering collaboration, the failure of a boundary object increases boundary tensions and hinders coalescence.

7. Adopting an emergent approach to investigating actors' collaboration in public deliberation

Applying the concept of boundary object to interpret collaboration in public deliberation means that the temporal emergent aspect of practices is highlighted (Pickering 1993: 559-589; Star 2010: 604). Whereas boundary objects can halt and manage boundary tensions, the heterogeneity of diverse social actors is by no means eliminated. The obstacles created by people's differences that may hinder cooperation in an intersecting social field can only be transitorily canceled by the boundary objects(s). Star and Griesemer made a similar comment: "…representations, or inscriptions, contain at every stage the traces of multiple

viewpoints, translations and incomplete battles" (1989: 413). The facilitated collaboration between social actors from multiple social worlds in a specific social field thus is an open-ended "process of becoming" (Pickering 2002). On the one hand, adopting an emergent approach to investigate the TSD-style consensus conferences sheds light on the continuous efforts of various actors to reach reconciliation during the five-day consensus conference; on the other hand, it leads us to see the multiple boundary objects taking part in the relay race of managing boundary tensions. Thus, the deliberative discussion inevitably is an accomplishment of all the participants, and what we observe is always a deliberation (or, to push it further, a consensus) "in the making."

Conclusion

Heterogeneous social actors' collaboration should be analyzed instead of assumed. Consistent with extant studies on inclusive management, this paper applies the concept of boundary object to explain people's collaboration in public deliberation. A series of boundary objects is identified in the TSD-style consensus conferences and the understanding of both boundary objects' and public deliberation's characteristics is advanced. This paper claims that, whereas boundary objects can foster collaboration between social actors without a consensus, consensus can be achieved through the collaborative process. Also, adopting an emergent approach, this paper argues that the management of boundary tensions in public deliberation is a ceaseless process because boundary objects exert their influence by "keeping boundaries in play" instead of attempting to eliminate specific perspectives (or say, cancel all the boundaries). In addition, treating the various perspectives on policy issues as a fluid network composed of both human and non-human actants, the discussion on boundary objects in public deliberation underscores the significance of the "chores" associated with holding a deliberative forum. It is not uncommon for participants of a deliberative forum to judge whether their perspectives are respected and included by examining the distributed materials, the prevailing ideas, the attitude of facilitators, and handouts, to name a few.

A practical implication of this paper is that illuminating the indispensable role of boundary objects in public deliberation can encourage practitioners (or public inclusive managers) to employ them as useful tools. While, as said, it is insufficient to standardize the identified boundary objects to ensure collaboration in public deliberation due to boundary objects not functioning as independent existences and since there is no once-and-for-all formula for a successful public deliberative forum, comprehension of how boundary objects work in the fluid

network is nevertheless instructive for inclusive managers. More empirical cases should be analyzed to enrich our understanding of boundary objects in public deliberation and to ensure the applicability of this paper's findings. Future research can, for instance, investigate boundary objects' role in other types of public deliberative forums, examine why boundary objects succeed or fail under specific arrangements, and compare the differences between constant boundary objects and periodic boundary objects.

Appendix 1

Reading Material as a Repository

Contents of the accessible reading material (Prenatal Examination Consensus Conference)

Appendix 2

Schedules as Standardized Forms

Day 3 Timetable of Consensus Conference on Prenatal Examination

April 30 (Saturday) Schedule

Meeting Room: R601 at Howard International House

Time	Agenda	Presenter(s)
9:00-9:20	Check in	-------
9:20-9:30	An Overview of Schedule	**Min-Chi Chen** (Assistant Prof., Sociology at NTHU)
9:30-9:40	Introduction of Basic Rules	Facilitators
9:40-9:50	Intermission	-------
9:50-12:30	Cross-examinations: The Decision Right of Parents and the Status of Fetuses	**Tsai-Tan Xie** (Prof., Obstetrics and Gynecology at CGU) **Li-Yin Chen** (Managing Director, Taiwan Foundation of Rare Disorders) **Chia-Ling Wu** (Associate Prof., Sociology at NTU) **Hua Dai** (Prof., Philosophy at NCCU) **Wen-Mei Lei** (Associate Prof., Financial and Law Department at CYCU)
12:30-13:00	Lunch	-------
13:30-16:00	Cross-examinations: Technologies of Prenatal Examination and Issues of Health Care	**Rei-De Liu** (Director, Obstetrics and Gynecology at Chang Gung Memorial Hospital) **Xuan-Pei Lin** (Director, Pediatrics Genetics at MMH) **Min-Yi Zhong** (Associate Researcher, Research and Education Center at TVGH) **Mei-Zhen Chen** (Attorney, Mei-Zhen Attorney Co.)
16:00-16:20	Intermission	-------

Time	Agenda	Presenter(s)
16:20-18:00	Cross-examinations: National Welfare and Care	**Li-Chung Su** (Minister, Ministry of the Interior) **Bi-Xia Huang** (Director, Children Welfare Bureau) **Kuo-Yu Wang** (Associate Prof., Social Welfare at CCU) **Mei-Zhuan Lin** (Associate Director, Eden Organization)
18:00-19:20	Dinner	-------
19:20-21:00	Intra-Citizen Panel Discussion	Facilitators

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