Reconciling intergenerational conflicts with imaginary future generations - Evidence from a participatory deliberation practice in a municipality in Japan -

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Abstract

Coping with intergenerational conflicts is one of the fundamental keys to building a sustainable society. However, current decision-making systems tend to be inclined towards the preferences of present generations, simply because future generations do not yet exist and therefore cannot participate in present day negotiating processes. In this paper, with an aim towards reconciling possible intergenerational conflicts, we present the first attempt at creating a participatory intergenerational deliberation practice by creating "imaginary future generation" groups to represent future generations and negotiate with present generation groups regarding future visions and associated decision making. To accomplish this, a series of workshops were organized in a local municipality in Japan in which participating imaginary future generation groups and present generation groups first deliberated separately, and then worked together, to form a consensus over prioritizing policy measures associated with their separate visions of the municipality in 2060. We then analyzed deliberation and consensus-building processes used and observed a stark contrast in deliberation styles and priorities between the groups. For example, imaginary future generation group measures were primarily characterized by utilizing existing

local resources while the present generation groups aimed more at solving current problems. Notably, the consensus-building processes resulted in choosing more than half of measures originally proposed by the imaginary future generation groups, thereby indicating that decision-making preferences had shifted to future generations. We contend that our approach, which is based on introducing imaginary future generation groups as stakeholders, could provide indicators towards coping with intergenerational conflicts via present-day decision-making processes.

Keywords: Future design, Participatory deliberation, Imaginary future generations, Intergenerational conflicts, Consensus building

1. Introduction

In recent decades, a variety of complex problems, ranging from climate change to ecosystem degradation, have emerged and are now posing serious threats to the sustainability of our societies. To cope with these challenges, ''sustainability science'' has been playing essential roles. In particular, it has explored the following aspects: 1) comprehensively grasping and understanding the structure and cause-and-effect relationships of various problems; 2) proposing visions of sustainable societies, and then describing and designing future scenarios to fulfill those visions; 3) integrating and formulating knowledge for fulfilling the created visions; 4) creating multidimensional assessments of sustainable socioeconomic and technology systems; and 5) implementing strategic management and measures to effect social transformation and transition towards the realization of those visions (Kates et al. 2001; Clark and Dickson 2003; Komiyama and Takeuchi 2006; Kumazawa et al. 2014).

While theoretical research and practices relevant to the abovementioned domains have been extensively carried out in pursuit of sustainability societies, one fundamental challenge

still remains, that is, how to reconcile the conflicts and tradeoffs between the present generation and future unborn generations. Here, we must begin by acknowledging that any decision-making processes or practices used by present generations will directly or indirectly influence future generations. This is clearly illustrated by various sustainability problems, such as climate change and resource depletion. The fundamental problem, however, is that the future generations cannot make their voice heard in any present-day decision-making and negotiation processes simply because they do not yet exist.

Although the notion of sustainable development defined by the World Commission on Environment and Development (1987), which reads in part, "Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs." is globally accepted, the concept has not been operationalized in reality. The heart of these problems is an intergenerational tradeoff between current and future generations in relation to convenience and responsibility. In other words, a serious conflict of interest exists, and the fact that none of the stakeholders on one side of this conflict of interest, specifically, future generations, are available to negotiate this tradeoff is decisively important.

As argued above, it is important that any sustainable development effort to reshape society considers the viewpoints and interests of future generations. Yet, in practice, explicitly reflecting the interests of a future society, and then making decisions that avoid intergenerational conflicts of interest and other conflicts, is no easy matter. Indeed, making concessions for the benefit of future generations instead of pursuing the needs of the present generation is fundamentally quite difficult, given that any decision making and planning by present-day individuals will be biased to the present situation, and since it is difficult for one generation to care about subsequent generations (Saijo 2018; Sherstyuk et al. 2016). While both self-regarding preferences and other-regarding preferences are part of human nature (Fehr-Duda and Fehr 2016), it would be excessively naïve to expect an individual of our present generation

to make decisions that would eventually benefit future generations at the expense of his or her own generation (Saijo 2015).

In addition to the factors associated with such aspects of human nature, under the societal systems in modern society, such as the market, it is unlikely that the conflict between current and future generations can be eliminated in order to enable transformation to a sustainable society. The market that underpins our society exerts a powerful influence on the distribution of resources in order to satisfy the needs of the present generation, and it cannot consider the needs of future generations. Once again, the root of the problem is that future generations have no voice in the market because they are not present (Saijo 2017).

Meanwhile, in terms of future visioning and scenario making, numerous efforts have been made and put into practice in the field of sustainability science. In particular, participatory methods have been applied to envisioning sustainable futures and sustainability backcasting scenarios in order to incorporate personal preferences and reflect normative aspects (Kishita et al. 2016; Schneider and Rist 2014; Carlsson-Kanyama et al. 2008; Quist and Vergragt 2006). Such participatory methods have also been used for consensus building and policy debates in various fields such as urban planning (Hara et al. 2016; Innes and Booher 2003). Nevertheless, it is important to remember that such futures are created based on the perspectives of present generations, who naturally envision the future from their standpoints in present society (Hara et al. 2016, Kishita et al. 2016).

Therefore, we can see that building a sustainable society that is truly and uninterruptedly connected to future generations requires a methodology and mechanism that facilitates a form of decision making that is capable of counteracting human short-sightedness (Sapolsky 2012). In order to cope with the fundamental challenge of incorporating the preferences of future generations in present decision making and vision setting, a new institutional mechanism, whereby "imaginary future generations" groups tasked with representing and speaking for the benefit of the future generation negotiate with present

generation groups in an effort to reconcile intergenerational conflicts and make better decisions by balancing the benefits of both present and future generations, has been proposed (Hara 2017; Hara and Saijo 2017, Hara et al. 2015, Saijo 2015, Kamijo et al. 2017). Under this concept, decision making and vision design are achieved by negotiation and consensus building between the present and imaginary future generations.

Relevant studies have been carried out to examine the effectiveness and roles involved in the creation of imaginary future generations, particularly from the viewpoint of overcoming present-day short-sightedness. For example, Kamijo et al. (2017) examined how the presence of negotiators for a future generation can increase the benefits inherited by future generation through a laboratory-controlled intergenerational sustainability dilemma game (ISDG).

While previous studies such as the above suggest the effectiveness of creating imaginary future generations to cope with intergenerational conflicts, no study has previously been performed that involved participatory deliberation in the real world by introducing the concept of imaginary future generations. In this paper, we present the first such participatory deliberation practice by creating imaginary future generation groups that aim for vision setting and relevant decision making in a local town in Japan, and present implications derived from the resulting deliberations and consensus building between the imaginary future and present generation groups. In particular, we present how priorities and decisions made by both present and imaginary future generation groups were altered after negotiations and consensus-building processes. We also summarize the pattern of judgements and the characteristics of deliberation employed by each group and present the stark contrast in the deliberation characteristics shown by the imaginary future and present generation groups. Furthermore, we demonstrate that the ideas proposed by imaginary future generation groups could influence the decision making of present generation groups, and that consensus-building processes by the pair groups resulted in choosing more than half of the ideas originally proposed by the imaginary future generation groups. With these points in mind, we argue that our approach has the potential to yield a

decision-making process that could overcome human short-sightedness and take into account the possible values and benefits of future generations, thereby paving a way to cope with intergenerational conflicts.

The remainder of this paper is organized as follows. Section 2 demonstrates the significance of incorporating the preference of future generations in present society in order to cope with the intergenerational conflicts in decision making. Furthermore, we introduce our approach to creating imaginary future generation groups as "stakeholders" who can participate in decision making and negotiating processes with the present generation, along with implications from previous studies that applied the approach of creating imaginary future generations. Section 3 presents the methods and processes of our case study involving citizen participation in Yahaba Town, Iwate Prefecture, which is located in the northern part of Japan, during which both present and imaginary future generation groups deliberated for vision setting and identifying policy measures aimed at supporting the envisioned future, and then negotiated together to develop a consensus over the most essential policy measures. Section 4 discusses the results from our case study, highlighting how priorities and decision making by each group changed through the deliberations held within each group, and the negotiation processes between imaginary future generation and present generation groups. Section 5 summarizes our future research agenda, and is followed by our conclusions.

2. Creating imaginary future generations - Incorporating the viewpoints of future generations into the present

Given the reality that short-sightedness is a part of human nature, as well as social systems such as markets (as discussed in the Introduction), it is clear that any kind of decision making that sufficiently takes future generations into account is going to be difficult to achieve. Nevertheless, some recent studies have already started to look at transforming our social systems so that the interests of future generations can somehow be taken into account in the present day. For

example, Demeny (1986) focused on voting age, proposing a system in which people of all ages have the right to a vote (i.e., Demeny voting); for all those under a certain age, a parent casts a vote by proxy. However, there are virtually no real-world examples of this kind of system in operation, and relevant studies to date are limited to dealing with experiments in laboratory settings (Kamijo, Hizen and Saijo, 2015).

In light of this awareness, the authors and associated researchers have undertaken research on a new kind of theoretical and practical science for designing a future society, and are making it a reality through a form of decision making that explicitly reflects the viewpoints and interests of future generations in the present (Hara 2017; Hara and Saijo 2017; Hara et al. 2015; Saijo 2015; Kamijo et al. 2017; Shahrier et al. 2017). The relevant research has aimed at constructing a methodology for future-oriented vision creation and decision making that incorporates the viewpoints and preference of future generations. One promising approach that we have proposed is to create imaginary future generations by assigning stakeholders in the decision-making process with the responsibility of advocating the interests of future generations. The imaginary future generation advocates then negotiate and (hopefully) reach consensus with representatives of the present generation, thereby overcoming intergenerational conflicts of interests and appropriately coordinating shared interests. This method makes it possible to create decisions that reflect the interests of future generations to a certain degree, which we call "future design." In addition, there are some academic backgrounds that have become firmly established in recent years behind our ideas of creating imaginary future generations. These employ the use of empirical methods in the social sciences, the elucidation of social behavior in neuroscience, and theories of justice in philosophy (Saijo 2017).

A variety of approaches have been taken to examine the function and effectiveness of imaginary future generations, particularly from the viewpoint of overcoming short-sightedness. For example, in one experiment, groups that included an imaginary future generation demonstrated the capacity to make judgments and decisions that opted to leave resources for

future generations, even if that meant reducing the remuneration that the group itself would take home (Kamijo et al. 2017). It has also been demonstrated that the decisions of test subjects that were asked to rank multiple policy issues in order of importance in online questionnaire surveys differed significantly depending on whether they were assigned the role of representing the interests of future generations or simply asked to answer without constraints (Hara et al. 2015). For example, when asked to respond from the standpoint of the present generation—without any imposed conditions—people tended to give the highest priority to the urgent and important policy issues facing the present generation, such as "economic development" and the "wealth gap." In contrast, when they were asked to rank issues as advocates for the interests of future generations, they tended to give higher priority to policy issues that take longer to resolve, such as "global environmental problems."

All the above implies that if people are clearly assigned the role of representing the interests of future generations, their priorities tend to change, and they become capable of overcoming their own short-sightedness and making decisions that positively consider the interests of future generations. Associated experiments and studies are being implemented under various conditions in order to delve further into the mechanisms behind the behaviors and decision making of imaginary future generations. In the meantime, it is urgently necessary to demonstrate how the concept of an imaginary future generation will work out in real-world participatory deliberations and decision making, as will be discussed below.

3. Case study – Participatory deliberation with imaginary future generations

3.1 Case study area

In our case study, we carried out future design deliberations with the participation of local citizens in Yahaba Town in Iwate Prefecture, which is a dormitory town located just south of Morioka City, the prefectural capital. About 11% of Yahaba Town's economic output is derived from primary industry, while the secondary and tertiary industries account for 18% and

71%, respectively. Its population is approximately 27,000, but the city is not facing a declining population, in part because the Iwate Medical University, which is located there, attracts numerous students and workers.

Since 2008, Yahaba Town has been well known for its efforts to implement participatory workshops in which local citizens are invited to discuss and participate in the creation of a waterworks visions for the town. Since the expenditure associated with waterworks basically consists mostly of fixed costs, it is generally assumed that, under financial constraints of local municipalities, the scheduling of pipe replacement work is figured in hundred-year units. Indeed, there are specific rules set forth by an external agency of the Ministry of Land, Infrastructure, Transport and Tourism of Japan regarding when and which pipes are to be replaced in particular areas.

Meanwhile, in Yahaba Town, in addition to the physical rules assigned by the government, the citizens themselves have created new social rules and evaluation criteria aimed at, for example, accelerating the replacement of waterworks infrastructure based on such important points in the town as hospitals and evacuation sites. Comparing these new rules to the government-mandated rules, they successfully designed a town vision for piping replacement up to the year 2030. Our research group selected the town because of its long experience with, and capabilities for, participatory deliberation and consensus building that involves inviting local citizens to participate in vision setting.

3.2 Workshop methods and conditions

The future design workshop, which was held in close collaboration between university researchers (including the authors) and Yahaba Town Hall personnel in fiscal year 2015 (FY2015) based on the guidelines below, centered on community participation-style deliberations held with the goal of creating a future vision of the town in 2060.

These Yahaba Town future design workshops were held on a total of five occasions in

FY2015 (August 27, 2015; September 29, 2015; November 19, 2015; January 12, 2016; and February 2, 2016). The overall scheme of the deliberation processes, including consensus building in FY2015, is shown in Fig. 1. A group of approximately 20 people, the composition of which remained basically unchanged throughout the five occasions, participated in the deliberations. The group consisted of men and women ranging in age from their 20s to 80s. Most of the citizens who participated in the future design workshops had also participated in the waterworks and vision creation workshop described above.

Except for the first workshop, during which an evaluation of past trends was the main theme of deliberation, the citizen participants were divided into four groups, each comprising about five people in a balanced mix of genders and ages. Two of the groups (A and B) were categorized as imaginary future generation groups, and the two others groups (C and D) were assigned to represent the present generation. Apart from the fifth (and final) workshop aimed at consensus building between present and future generations, each group engaged in deliberations in a separate room, so that no group would learn from or be influenced by what the other groups discussed.

As a snapshot of these workshops, the following details of the third future design workshop held at Yahaba Town Hall on November 19, 2015 (the third workshop) are provided. This workshop, which aimed at developing a vision for 2060, involved 20 participants (6 men and 14 women), as well as 8 facilitators (5 Yahaba Town Hall staff members and 3 university faculty members). The 20 participants were divided into four groups: A (2 men and 3 women, mean age 52), B (1 man and 4 women, mean age 51), C (2 men and 3 women, mean age 55), and D (1 man and 4 women, mean age 55).

During these sessions, all four groups debated the same issues, with the final goal of formulating "A Vision of Yahaba Town in 2060 and measures to realize the vision." Most importantly, the members of imaginary future generation Groups A and B were given additional instructions in each room before the deliberation began. They were tasked to address issues and

visions from the standpoint of the people of 2060, and to represent the interests of that generation by assuming the role of people living at that time. Furthermore, they were clearly directed to consider, not the interests of themselves and their families, but those of their future generation and the whole of society. As supplementary information aimed at increasing their understanding, the researchers also explained the significance and meaning of representing future generations by providing some specific examples of long-timeframe issues, such as climate change. Instructing the future generation groups (participating citizens) in this way, in order to ensure that they become virtual representatives of the future generations that they are assigned to, is an important process. Note that, as a condition for role-playing a future person of 2060 (imaginary future generation), the participants were asked to assume that they had time-traveled to the year 2060 without aging (i.e., they were of the same age in 2060 as at the present).

The members of the imaginary future generation groups wore special Yahaba Town *happi* coats in order to help them identify as part of the imaginary future generations. Importantly, the instructions aimed at helping the imaginary future generation group (A and B) members assume their roles as representatives of future generations were not given to the present generation group (C and D) members. These instructions to future generation group members were repeated before each workshop, from the second through fifth events, before the start of deliberations.

To enhance the smoothness and effectiveness of the debate by visualizing participants' opinions, one Town Hall staff member was appointed to serve as a facilitator for each group, as well as a person to write down and illustrate the viewpoints of citizens on large sheets of paper (see Fig. 2). In the case of Groups A and B, the facilitator also ensured that the deliberation was conducted from the standpoint of future generations by, for example, offering the group occasional reminders to act as representatives and advocates of future generations.

3.3 Details of deliberation and consensus-building processes

From the first workshop on the August 27, 2015 was dedicated to the evaluation of the transformations that had occurred within the town from the past to the present from multiple perspectives. Since the 2060 vision design covers a period of 45 years, the participants assessed the changes that the town had undergone over the previous 45 years, 1970 to 2015. To implement concrete discussions, the participating citizens were provided with various reference materials, such as town reports issued in 1970, aerial photographs, and urban development plans from 45 years ago. From the viewpoint of infrastructure development, lifestyle, and environment, the participants exchanged opinions about the transformation experienced by the town's residents in the past 45 years. The outcomes of the first workshop were used as references during the second and third workshops when they crafted proposals for a vision of Yahaba Town in 2060, along with the policies to support them.

From the second workshop onwards, the participants were divided into future generation groups (A, B) and present generation groups (C, D) and conducted deliberations individually in separate rooms. As noted earlier, the imaginary future generation groups were given the instructions described above so that they could start identifying with the future generation of 2060. The second and third workshops were dedicated to identifying the concept and visions of Yahaba Town 2060, along with policy measures to achieve the visions from the broad viewpoints. In particular, each team member selected measures that should be implemented within five years in order to realize those visions. It should be noted that participants were also provided with basic statistics regarding the town, such as economic conditions and a population breakdown, as well as official predictions towards 2020, which had been previously prepared by the city hall, for use as the basis for discussion.

During the fourth workshop, each group prioritized the most essential measures towards their 2060 vision. The session was carried out as follows. In advance of the workshop, researchers engaged with the series of workshops, including the authors, selected and prepared a

list of the 24 most essential measures based on the measures proposal worked out by each group during the second and third workshops. Note that in preparing the 24 policy measures, the researchers selected 12 measures that had been proposed by Groups C and D, and 12 measures proposed by Groups A and B. (See Table 1 for a list of the 24 measures.) In other words, the researchers chose 12 sets that paired two similar but different concepts from the present and imaginary future generation groups. At the beginning of the workshop, each group was provided with a copy of a list of 24 policies and asked to rank them. Note that, at this point, participants were not informed of how the list of 24 measures were chosen under what principles. The workshop instructors asked the groups to study the list, and then select and rank the 10 most important policy measures in terms of which should be implemented most urgently within five years. Specifically, each group was given a total of 100 points to allocate to their 10 selected policy measures, which were then ranked in order from highest to lowest score. The method and strategy for using their available points was left to the discretion of each group.

During the fifth (last) workshop, the groups were paired off, Group A with Group D and Group B with Group C (Fig 2), where they faced each other for the first time in order to conduct negotiations and consensus building between the present and imaginary future generations. (Recall that each group deliberated in a separate room before the final workshop.) The aim of the fifth workshop was to allow each pair of groups to bring together their ranked lists of 10 policy measures from the fourth workshop, and then work together to produce a final shared 10 policy measures in order of importance, through an intergenerational process of negotiation and consensus building.

At the beginning, each group explained to the other in their group pair, their reasons for selecting and ranking their own list of measures and contents produced during the fourth workshop. The groups then temporarily separated to reconsider their policy measure selections and ranking in order to create a second proposal list of measures. At this point, the groups came together once again to form pairs (A with D and B with C). After each of the groups had

presented their second list, the two groups worked collectively to select and rank the final top 10 policy measures as a pair group. This fifth workshop was an attempt to recreate a process of overcoming intergenerational conflict by building a consensus between a present generation group and an imaginary future generation group.

For all sessions (first to fifth), the deliberations of all the groups were recorded in order to facilitate subsequent analysis of the debate content and thinking tendencies of each group.

4. Results and discussion

4.1 Judgement trends and priorities by group and changes after deliberation processes

Table 1 lists the 24 measures presented to each group for prioritization in the fourth workshop. Table 2 presents the 10 most important measures selected by each group at the end of the workshop. The number within each column indicates the item number of the policy measures listed in Table 1. Numbers within the parenthesis show the points allocated to each measure (100 points in total). An asterisk indicates that the associated policy measure was originally proposed in the second and third workshops by an imaginary future generation group (either A or B).

Some very important implications were obtained from the fourth workshop for ranking policy measures, and from the fifth workshop for consensus building. For example, it appears that the ranking sessions in the fourth workshop made the present generation groups more aware of, and sympathetic to, the thinking of the future generation. Indeed, more than half of the final 10 policy measures selected in the ranking exercise by both present generation groups corresponded to policies that were originally proposed by the imaginary future generation groups (see Table 2). Examples include the future generation proposals to promote "sixth sector industrialization of agriculture for primary producers' diversification into processing and distribution" and to "utilize Mt. Nansho, which is considered the point of departure in the novel

'Night on the Galactic Railroad' by Miyazawa Kenji, as a local resource."

These ideas were completely absent from the ideas produced by the present generation groups in their second and third vision design workshops. This demonstrates that, merely by having their attention drawn to them, people could become aware of, and appreciate the importance of, policies and ideas that they had not considered at all in normal vision design debates conducted from the standpoint of present generations. This finding has implication to our hypothesis that under the existing participatory vision setting and future scenario making practices which have been carried out so far, futures are primarily created based on the perspectives of present generations who envision the future from their standpoints in present society (Hara et al. 2016, Kishita et al. 2016).

On the other hand, the present generation groups' high ranking of "provide free medical and daycare for children" is very interesting. Indeed, there was a marked conflict in relation to this proposal during the subsequent consensus-building session between Groups A and D, based on the sense that future generations would be strongly opposed to it because it would impose a financial burden on them. Another notable point was that, in making their selections, the future generation representatives expressed the view that, in accordance with changing social circumstances, priority should be given to problems that are currently acknowledged as difficult to solve and investments should be directed preferentially to these problems.

In the fifth consensus-building session, the group pairs (A and D) and (B and C) came together to negotiate and build a consensus. Although each of the groups explained its ranked policy measures, the reasons for their policy selections, and the ranking decisions that it had made in the fourth session, the explanations of partner groups did not convince any of the groups to make changes when they subsequently formulated their second proposal. In other words, the intergenerational conflicts of interest had come to the surface by this point, whereas before negotiation each group's way of thinking seemed to be unanimous. Later, after each

group came back with its second (unchanged) proposal, each of the group pairs began negotiating together towards a consensus by deciding on a final proposal and ranking the policies as a pair. Tables 3 and 4 summarize the results of consensus building, i.e., rankings before and after consensus building between Group A (imaginary future generation) and Group D (present generation), and between Group B (imaginary future generation) and Group C (present generation), respectively. The blue colored cells indicate that the measures were originally brought up by the future generation groups (Group A for Table 3 and Group B for Table 4), whereas the green colored cells indicate that they were originally proposed by the present generation groups (Group D for Table 3 and Group C for Table 4.) Uncolored cells indicate measures common to the present and future generation groups.

The results reveal some fascinating tendencies. Firstly, the two group pairs, A–D and B–D, employed different strategies during their consensus building. Groups A and D arrived at a final proposal by a process of repeated demands and compromises. In contrast, groups B and C started the process of selecting their final 10 policies by agreeing, without any conflict, to accept their commonly selected policies as the foundation of their final proposal. Then, they engaged in a process of negotiation to decide on the remaining policies to include.

If we look at the final proposal of 10 policies (Tables 2 and 3), we find that 7 out of 10 in the case of pair group A–D and 6 out of 10 in the case of pair group B–C were proposed only by the imaginary future generation groups in the second and third workshops. We can interpret this to mean that, through a process of consensus building of future design, local residents, by themselves, can successfully formulate visions and policy proposals that substantially reflect the viewpoint of future generations. These results would have been difficult to achieve with a conventional method of vision design based on the viewpoint of present generations, as demonstrated by the fact that Groups C and D never came up with the ideas proposed by Groups A and B but were willing to substantially incorporate such ideas in their finalized proposal after the consensus-building processes.

As will be discussed later (Section 4.2), there was a substantial difference in discussions and thinking patterns between the imaginary future generation groups (A and B) and the present generation groups (C and D) in the second and third debates. As a result, the policy ideas that emerged were also quite different, and in fact, there were characteristic ideas suggested only by the imaginary future generation groups, as well as ideas that emerged only from the present generation groups. In other words, the fact that this process of pursuing future design (achieved by creating imaginary future generation groups) makes it possible to incorporate ideas into the policymaking that are unlikely to be generated by the present generation alone is in itself an important discovery.

4.2 Characteristics of deliberation by group

In this subsection, we summarize the trends and characteristics of discussion and judgment used by the present and imaginary future generations as observed from the workshop series.

Focusing on the third workshop, imaginary future generation Group A, for example, depicted the Japan of 2060 as a highly mechanized, robotized, information technology (IT) society, and thought about the possibility of installing new forms of human transportation. Noting that Yahaba Town is an easy town to live in but lacks any local specialties, they envisioned a future town of distinction and character. In addition, as part of their vision and policy proposals, they suggested that there was no need for new public buildings (because they are likely to become underused), so existing buildings should be reused, and rural scenery should be preserved.

On the other hand, the vision of Yahaba Town in 2060 as seen by present generation Group C tended to be shaped by current issues and needs that are not currently being met. The group's discussion dealt with population decline, demographic aging, birth rate decline, and the growing number of unmarried people, as well as the development of the district around Iwate

Medical University and the decay of other districts. After considering these issues, the group proposed a vision of Yahaba Town in 2060 that is characterized by the following: (1) attracting and developing the IT industry to create employment and care services for the elderly; and (2) support for marriage, childbirth, and childrearing. In this way, the group began by recognizing current issues and unmet needs, and from there they tended to adopt a vision of the future in which these issues are resolved.

We next delved into the results of discussions, such as graphics and recorded texts, from the workshop series and identified the thinking patterns and decision-making tendencies that were characteristic to the imaginary future generation groups (A and B). The key tendencies we identified based on those records are as follows: 1) being fully aware of available local resources, environmental, human and cultural, they tend to prioritize the sustainable full utilization of such local resources from generation to generation, and to utilize strong points, including such local town resources; 2) propose ideas that are very creative but at the same time concrete; 3) address future issues from the viewpoint of optimizing the entire locality and community, not just maximizing the benefit of Yahaba Town; 4) assign greater importance to complex issues that take a longer time to resolve than easy tasks; and 5) use backcasting-type thinking. For example, using statements declaring that "policy implementations should be complete within five years". Since Tendency 1 is particularly strong, it is fair to say that discussions focused on taking advantage of natural strengths is a characteristic of imaginary future generation groups.

In contrast, the general tendencies of the present generation groups (C and D) were as follows: 1) starting discussions with concern about current issues and unmet needs, such as long waiting lists for kindergarten enrollment and a lack of nursing care facilities for the elderly; 2) thinking of the future as an extension of the present; 3) adopting a vision of the future only after resolving the issues that are apparent now; and 4) generating ideas within the limitations of the present. Thus, present generation groups' discussions are characterized by a "problem-solving"

style.

While these findings were being extracted from the recorded text and graphics, the researchers were simultaneously conducting interviews with imaginary future generation participants in order to examine their way of thinking more in detail (Nakagawa, Hara and Saijo. 2017). The detailed analysis would also help us understand how the interaction among members within each group influenced their way of thinking in the process of deliberations.

Summarizing sections 4.1 and 4.2, we find that the implementation of future design debates in Yahaba Town led to the following valuable suggestions: 1) the thinking patterns of current and imaginary future generations are different as summarized in section 4.2; 2) so-called intergeneration conflicts of interest are recreated because the criteria for ranking and selecting policies differ significantly according to the viewpoint of each generation; 3) the process of future design debates makes present generations more aware of the viewpoint of an imaginary future generation; and 4) vision and policy proposals that might not have emerged if only the viewpoint of present generations had been considered were incorporated, to a large degree, into the policymaking process.

5. Further research challenges

Through this workshop series, we learned that if people are assigned the role of an imaginary future generation member, they may become capable of making judgments and decisions that consider the future. This experiment suggests that even when imaginary future generations are not experts in the fields debated, they can assume a broad and comprehensive view of numerous issues and policies and rank their importance. Specifically, they can propose and rank policies from a perspective that considers the interests of a community or society as a whole. In contrast, a feature of present generations is their tenacious focus on the issues at hand.

Looking ahead, to continue our implementation of participation-style future design as a social technology in order to overcome intergenerational conflicts and to refine the

methodology used, we see a need to examine some essential points as future study.

The first point to be more closely analyzed is the conditions for effectively creating imaginary future generations. In the present case study, we set specific conditions in the process of creating imaginary future generations and employed unified wording and examples (global warming). Verification of these instruction methods through accumulation of further case studies will be necessary in order to ensure their effectiveness and objectivity.

In relation to the first point, the second point to be studied comprises methods for providing information in future design debates. To accomplish this, it is essential to avoid information biases while expanding our imagination about the future. This case study was intentionally restricted to a limited amount of information and was centered on facts such as socioeconomic statistical data on Yahaba Town. Since the way that data are provided also influences the judgment of participants, further and more careful examination is required. From that viewpoint, it will be necessary to study what kind of information should be provided and in what ways, again by accumulating case studies under different conditions and contexts.

The third point is the need to develop criteria and indicators for analyzing and evaluating ways of thinking that consider the needs of future generations. From this workshop series, we discovered that the thinking patterns and criteria for policy-ranking used by imaginary future and present generation group participants are quite different. However, since any thinking about future generations depends on the context of the issues being dealt with, further research is also needed in this area. In this regard, we intend to carry out detailed analysis on how participants of imaginary future generation groups framed discussion topics in deliberation and negotiating processes by interviewing.

Yahaba Town is the first local municipality experimenting with participation-style future design. Therefore, another future issue is the need to analyze the conditions under which participation-style future design is socially implemented by accumulating case studies and examining the effectiveness and significance of imaginary future generations under a variety of

conditions.

6. Conclusions

In order to build a truly sustainable society, viewing the future solely from the viewpoint of the present generation is very limiting. Accordingly, it is necessary to develop and implement practical new methods of overcoming intergeneration conflicts of interest by clearly incorporating the viewpoints and interests of future generations into present decision-making processes. The future design process that we have proposed in this study provides a novel approach to this challenge that creates imaginary stakeholders of future generations that participate in negotiation and decision making with the present generation.

Through a case study, we showed the existence of a stark contrast in the characteristics of deliberation by the imaginary future and present generation groups. Furthermore, we demonstrated that the ideas proposed by imaginary future generation groups could influence the decision making of present generation groups, and that consensus-building processes by the paired groups led to decision-making processes that included the preferences of future generations.

We contend that creating imaginary future generation groups in deliberation and negotiating processes has the potential to help cope with intergenerational conflicts over present-day decision making by incorporating the preference of future generations. Although the significance and effectiveness of creating imaginary future generations can be recognized by the case study in Yahaba Town, we must await the results of future studies, as addressed earlier, so that participatory future design debates can become more firmly established as a practical social technology.

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┌─────────────────────────────┐    ┌─────────────────────────────┐
│  Imaginary Future Generation│    │     Present Generation      │
│        (Two groups)         │    │        (Two groups)         │
└─────────────────────────────┘    └─────────────────────────────┘
                      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                      │   Reflection of the    │
                        past/evaluation of alteration
                      │   in the last 45 years │
                            (Once)
                      └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                      │  Setting vision 2060 and│
                         identifying measures to
                      │   realize the vision   │
                              (Twice)
                      └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                      │  Prioritizing identified│
                             measures
                      │        (Once)          │
                      └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
                      ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                      │ Negotiation and consensus│
                        building between present and
                      │ future generations groups│
                              (Once)
                      └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘
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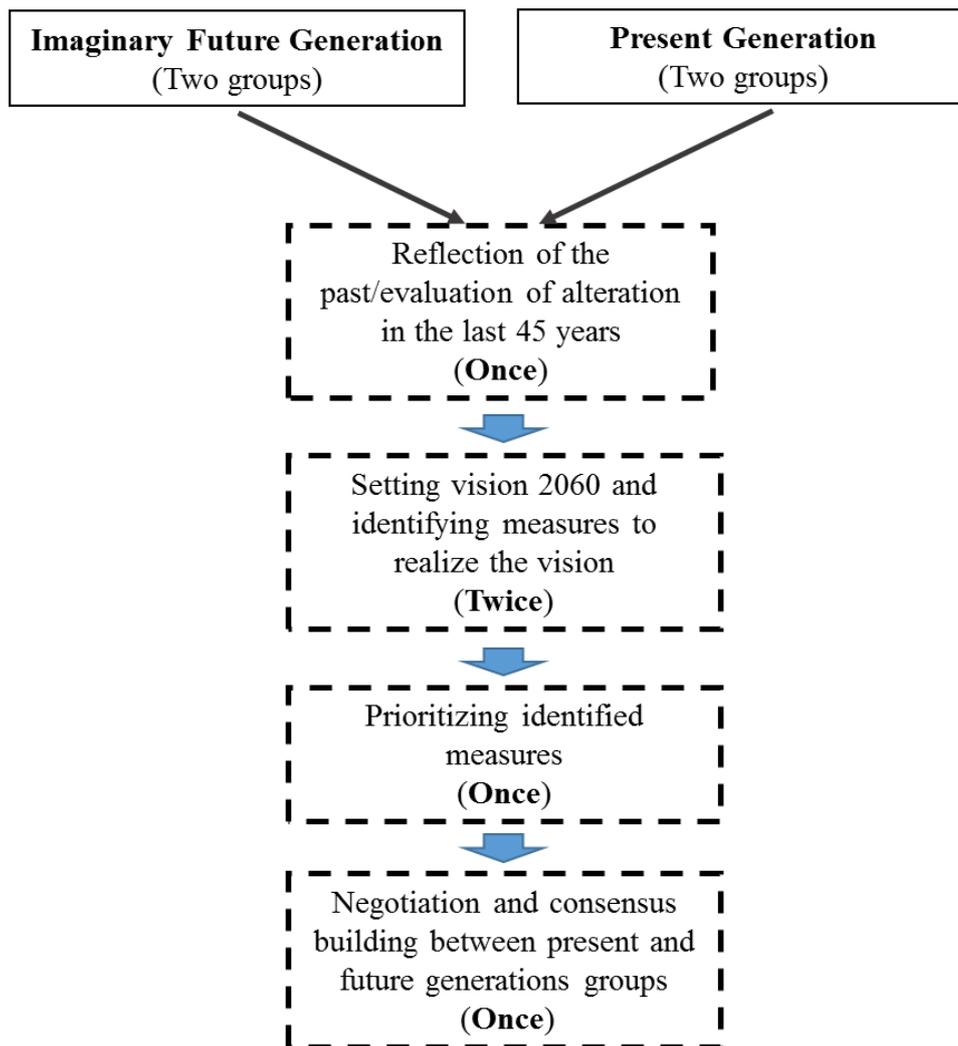
Fig1. Scheme of deliberation processes (FY 2015)

Fig2. A scene at consensus building process between the present and future generations

(the 5th workshop)

Table 1. List of 24 measures selected from the second and third workshops (shared with each group

for prioritization during the fourth workshop.)

Item number	Details of policy measure
1	Establish parks that are relaxing, even if they do not offer special amenities.
2	Establish large parks where children can play.
3	Rather than relying on new construction such as playground equipment, take active steps to leverage existing resources by reusing and repairing existing equipment.
4	Establish childcare facilities.
5	Implement steps to realize a town that understands the needs of working women and embraces diverse lifestyles, and that accepts the perspective of "house-husbands".
6	Establish town planning processes that offer a better environment for raising children, including the introduction of frameworks to send children to and pick them up from school during winter.
7	Provide free medical care or charge lower fees for children.
8	Take proactive measures to offer matchmaking for those seeking marriage.
9	Promote sixth-sector industrialization of farming and attract businesses to realize "Yahaba, a Healthy Town," where senior citizens can thrive.
10	Take active steps to attract businesses in order to secure opportunities for the present generation of workers.
11	Promote sixth-sector industrialization of farming, including branding (accompanied by the introduction of the private sector) and a shift from quantity to quality.
12	Preserve the rural scenery/landscape of farming communities and promote local production for local consumption.
13	Develop tourism resources unique to Yahaba Town, such as the theme of Kenji Miyazawa.
14	Make the local transportation system easier to use and develop promotional bus tours.
15	Promote self-sufficiency in energy and local production for local consumption by converting waste into energy through technological innovation, for example.
16	Promote recycling and the collection of recyclable resources in each area and set up designated boxes for sorting waste.
17	Propose and create Yahaba Town's concept of a transportation network inspired by Ginga Tetsudo.
18	Promote the use of a sightseeing bus by revising existing bus routes and making the names of bus stops easier to understand and remember.
19	Collaborate with the Iwate Medical University to actively promote health management that leverages Wi-Fi and other information technologies, such as robotics, to control data remotely.
20	Secure a bus route to the Iwate Medical University.
21	Promote local unique businesses that contribute to town planning with a focus on wellness.
22	Host festivals for all town citizens (this may become a tradition in the future).
23	Provide equal services across town.
24	Create *karuta* (traditional card puzzles) to facilitate the learning of place names

that are hard to pronounce and locate.

Table 2. Results of priority setting and raking of policy measures by each group

Ranking	Group A	Group B	Group C	Group D
1	17* (30 points)	11* (20)	11 (17)	7 (30)
2	12 (20 points)	16 (15)	7 (15)	3* (15)
3	9* (15 points)	12 (15)	9* (14)	4 (12)
4	19* (15 points)	13*(15)	13* (11)	5* (10)
5	15* (10 points)	10 (10)	3* (10)	8 (8)
6	13* (5 points)	7 (10)	23 (10)	9* (9)
7	1* (2 points)	22*(5)	19* (7)	10 (5)
8	3* (1 point)	23 (5)	14 (6)	11* (5)
9	5* (1 point)	3*(3)	1* (6)	13* (5)
10	22* (1 point)	9*(2)	15* (4)	16 (5)

Note 1: The number within each column indicates the item number of the policy measure listed in

Table 1

Note 2: The numbers of points indicated in parentheses are those allocated to the different measures

(the points sum to 100.)

Note 3: An asterisk indicates that the associated policy measure was originally proposed by an

imaginary future generation group (either A or B). This rule applies to Tables 3 and 4, as well.

Table 3. Ranking before and after negotiation and consensus building between Group A (imaginary

future generation) and Group D (present generation)

Ranking	Group A	Group D	A+D group
1	17*	7	12
2	12	3*	15*
3	9*	4	7
4	19*	5*	5*
5	15*	8	19*
6	13*	9*	3*
7	1*	10	10
8	3*	11*	9*
9	5*	13*	13*
10	22*	16	17*

Table 4. Ranking before and after negotiation and consensus building between Group B (imaginary future generation) and Group C (present generation)

Ranking	Group B	Group C	B+C group
1	11*	11	9*
2	16	7	12
3	12	9*	7
4	13*	13*	13*
5	10	3*	3*
6	7	23	23
7	22*	19*	19*
8	23	14	15*
9	3*	1*	14
10	9*	15*	1*