Questioning 'integrated' disaster risk reduction and 'all of society' engagement: can 'preparedness pedagogy' help?

Kaori Kitagawa

Department of Education, Practice and Society
UCL Institute of Education
20 Bedford Way
London WC1H 0AL
Email: k.kitagawa@ucl.ac.uk

Cass School of Education and Communities
University of East London
Stratford Campus
Water Lane
London E15 4LZ
Email: k.kitagawa@uel.ac.uk

Abstract:
This paper contributes to the conceptual and empirical development of 'preparedness pedagogy (PP)'. Preparedness involves learning, thus disaster risk reduction (DRR) should be discussed more in the field of education, particularly its sub-discipline of public pedagogy. DRR education should have an element of *a pedagogy in the interest of publicness*, which is an experimental pedagogy, in which citizens act in togetherness to develop their own preparedness. The paper pays attention to the two phrases utilised in the recent DRR discourse – 'integrated' DRR and 'participation by all' – and examines the case of Japan, applying whole system thinking. It is suggested that 'the mesosystem' of the DRR system yields relationships and learning, and thus enables collaboration, change and 'participation by all'. PP has a role to play in this. The mesosystem functions as the confluence between state-led and community-based DRR to truly integrate the system.

Introduction
This study is a contribution to its developmental process of 'preparedness pedagogy (PP)'. The purpose of this paper is to explore how PP could be positioned conceptually and empirically in relation to disaster risk reduction (DRR). Studying 'emergency education' or 'disaster education' comparatively to share knowledge and experience is becoming increasingly significant given that risks and hazards are growing and diversifying worldwide. Four major strands can be identified in the existing literature that looks at the learning and teaching in relation to disaster. First, the number of international and comparative literature that discusses 'emergency education' is in growth. Bromley and Andina (2010) suggest that the growth is due to a shift in 'world culture' that has come to accept education as 'a fundamental human right' and also 'international standardization' led by transnational agencies and NGOs. The United Nation's Education for All framework, for example, addresses education in unusual circumstances. Researchers have responded to this end (e.g. Penson and Tomlinson 2009; Baxter and Bethke 2009; Cooper 2006). Whatever the emergency is, emergency education research tends to probe how to re-establish school education for children and youths after an emergency occurred.

The second strand is probably the largest, which examines the governance, policy and curriculum of 'disaster risk reduction (DRR)[1] education' or 'disaster education'. The driver was the Yokohama Strategy for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation and its Plan of Action adopted in 1994 as the output of the World Conference on Natural Disaster Reduction held in Yokohama. 'Education' was identified as one of the key challenges in the Strategy. It was revised in Kobe as the Hyogo Framework of Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. By then, the United Nations Office for Disaster Risk Reduction (UNISDR) established in 1999 was playing a leading role in the field of DRR. The Hyogo Framework shifted the paradigm of DRR from post-disaster response to pre-disaster prevention and preparedness (UNISDR 2015), 'education' being the central means. DRR education research increased in the disciplines such as civil engineering, information science and environmental studies, which had historically hosted disaster research. A number of researchers have developed a curriculum – 'what should be learnt' – for effective DRR (e.g. Adamson 2014; Johnson et al. 2014). Shaw, Shiwaku and Takeuchi's (2011) *Disaster Education* was one of the first comprehensive books that compiled approaches and methods in various settings. In 2015, the Framework was revised in the city of Sendai, which was one of the severely affected areas of the Great East Japan Earthquake and Tsunami of 2011. The Sendai Framework for DRR 2015-2030 comprises four priorities for action to prevent new and reduce existing disaster risks placing 'education as a crosscutting issue' (Shiwaku, Sakurai and Shaw 2016, 261): '1) understanding disaster risk; 2) strengthening disaster risk governance to manage disaster risk; 3) investing in disaster reduction for resilience and; 4) enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction' (UNISDR 2015, 7).

Deriving from the second group, the literature that investigates community-based DRR is expanding. Their research is not necessarily categorised as 'education', but it is worth highlighting because this paper also discusses community's engagement. One of the major themes in this group is social capital. Research findings have confirmed that the higher the level of social capital in a community is, the more prepared and resilient the community deems to be (e.g. Inaba 2017; Mutch 2014; Lalone 2012; Harada 2012). The paper indeed refers to

---

[1] The term was introduced by the UNISDR, which was established in 1999 as a dedicated secretariat to facilitate the implementation of the International Strategy for Disaster Reduction in the United Nations.

social capital, particularly in relation to 'trust' and 'relationships'. Moving beyond the measurement of social capital in communities, the perspective that DRR and community development as complementary has also been developed. Paton and Johnston's (2006) community engagement theory aims for 'an integrated model' which combines risk management and community development. It is argued that the model is an effective and sustainable approach to enhance community resilience to adversity (Paton 2008). Another example is 'collaborative practice [*kyodoteki jissen*]', which is an epistemological stance of 'DRR human science [*bosai ningen kagaku*]' that is a new sub-field in DRR that is being developed by a group of Japanese social psychologists and information scientists (Yamori and Miyamoto 2016; Yamori et al. 2011). They argue that expert researchers are part of 'a community of practice' (Lave and Wenger 1991), supporting laypersons' 'legitimate peripheral participation', aiming for their full participation exercising agency.

PP forms the fourth group. Studies of PP clearly differ from those of emergency education in a sense that the former is about education *for* emergencies, while the latter is about education *in* emergencies. DRR education research covers preparation in pre-disaster contexts, but it tends to examine curricula, systems and governance. PP's interest lies on pedagogy – learning process – considering preparedness activities 'engage individuals in learning about emergency situations' (Preston 2012, 3). For this, it is significant to discuss preparedness development in the field of education, more specifically, to situate within its sub-discipline of 'public pedagogy' (Preston 2012; Chadderton 2015; Kitagawa 2017). Public pedagogy is generally understood as 'various forms, processes, and sites of education and learning beyond or outside formal schooling' (Burdick, Sandlin and O'Malley 2014, 2).

So far, PP research has discussed the development of preparedness without enough reference to the field of DRR, let alone DRR human science. This paper therefore explores the role of PP in the existing DRR system. The paper pays attention to the two major phrases widely utilised in the recent DRR discourse: 1) the 'integrated' DRR system; 2) 'all of society' engagement/'participation by all'. In considering this, the paper examines the case of Japan, applying social ecosystem thinking (SET) (Spours and Hodgson 2016). As a disaster-prone country, Japan has been a global leader in the field of DRR, having all three international frameworks for DRR adopted in the country. The new Sendai Framework stresses 'all of society' engagement in DRR (UNISDR 2015), referring to an integrated approach to DRR between the state's initiatives and communities' efforts. Particularly since the Great East Japan Earthquake and Tsunami of 2011, there has been a consensus in the country that disaster preparedness and resilience must be built through 'all of society' – the amalgamated effort of public investment, individual self-help and community-based actions (Kitagawa 2016). However, the meanings and methods of 'integration' and 'participation by all' are not necessarily elaborated. SET is a means to help us clarify this by depicting the DRR system to identify gaps. The analysis of the DRR structure will refer to the small-scale empirical study of Kuroshio Town[2] in Kochi Prefecture. After the 2011 disaster, the Cabinet Office undertook a revision of the predictions of forthcoming major disasters. It was announced on 31 March 2012 that one of the probable earthquakes in the Nankai Trough region could be as big as the seismic intensity of seven, and the tsunami could be as high as 34.4 metres in a certain area of Kuroshio Town (Kuroshio Town 2017). Kuroshio Town, as well as Kochi Prefecture, have been investing in human and material resources for DRR initiatives. The aforementioned

---

[2] Kuroshio Town has a population of 11,559 (as of March 2017) of which about 41 percent is age 65 or over. Its geography is a combination of a long and complex coastline and inland mountains. Fishery and agriculture are the major industries.

4

research group of collaborative practice has been working in the town, and I have visited there to gain insights into their activities.

The main argument of the paper is that 'the mesosystem' of the DRR structure seems to be the critical system level that yields new relationships and learning experiences, and thus enables collaboration and decision-making. PP has a role to play in the mesosystem to enable such collaborative learning and thus 'participation by all'. The mesosystem then functions as the confluence between state-led and community-based DRR, leading to a truly integrated DRR system. The development of effective 'mechanisms' to help foster interactions and interrelationships between stakeholders is proposed.

The paper first discusses the analytical framework for the discussion of the DRR system of Japan. This is followed by an explanation of the methodology of the study, which comprises documentary analysis and empirical fieldwork. The paper then describes the Japanese DRR structure. The local analysis uses the materials from Kuroshio Town. The data are discussed in relation to the significance of the 'mechanisms'. The paper then offers an account of the relationships between DRR, SET and PP, proposing a joined-up thinking of all. The paper concludes by addressing the importance of not treating the Japan's approach or Kuroshio Town's practice as easily transferrable in a different context.

Connecting SET with PP in DRR analysis
Examining the application and development of the concept 'ecosystem'[3] over time and in a range of contexts, Spours and Hodgson (2016) lay out its four evolutionary stages: 'a dynamic model of the natural world (Stage 1)'; 'a metaphor for complex human activity (Stage 2)'; 'theories of human, skills development and technological systems (Stage 3)'; and civil society building based on a vision of post-capitalist forms of organisation (Stage 4)'. Stages 3 and 4 of SET are of particular interest to this paper.[4] Stage 3 addresses 'theories of human, skills development and technological systems (Spours and Hodgson 2016, 4)' and draws on Bronfenbrenner's (1979) Ecological Framework for Human Development, which was 'the beginning of a *social ecological theory* comprising a series of extended and inter-dependent social landscapes (Spours and Hodgson 2016, 11)'. As a developmental psychologist, Bronfenbrenner argued that the whole ecological system that surrounds the individual needs to be taken into account in understanding her/his development.[5] The ecological system intends to aid understanding of connections between different levels of human activity. As I view 'preparedness' as something that individuals 'learn' and 'develop', the nested structure of different levels moving from the individual through to the societal levels enables me to illuminate which level in the system prompts learning through PP.

A *microsystem* is 'a pattern of activities, roles, and interpersonal relations experienced by the

---

[3] 'Ecology' can be used in 'a neutral sense to describe a set of inter-dependent relationships regardless of their condition'; 'ecosystem' denotes 'a positive, self-sustaining and improving dynamic at different levels or scales that is contrasted to the negative condition of "static equilibrium"' (Spours and Hodgson 2016, 12-13).

[4] Preston et al. (2016) studied differentiating patterns of community's response in post-disaster contexts. They suggested that community learning can be understood as operating on different levels, from small, incremental changes to large, and paradigm shifts, as 'navigation', 'organisation' and 'reframing'. This application of the term 'ecological' corresponds to Stage 3 of the SET framework. The work focused on community's learning in post-disaster contexts, taking a macro approach examining national policies and histories, whereas this paper seeks examine how communities prepare for forthcoming disasters in a pre-disaster context, analysing the micro-level empirical data, and at the same time, to broaden discussion considering the relevance of DRR and PP in shaping the future.

[5] Bronfenbrenner later accepted biological impact on human development.

developing person in a given setting (Bronfenbrenner 1979, 22)'. 'A setting' is 'a place where people can readily engage in face-to-face interaction', e.g. family, school, neighbourhood. As the term 'experienced' implies, an individual lives in the microsystem in which most immediate and direct impacts occur;

A *mesosystem* is 'a system of microsystems' (Bronfenbrenner 1979, 25). It refers to interactions and relationships between two or more settings in a microsystem;

An *exosystem* is the settings that have an indirect influence on the individual, even though s/he is not 'an active participant (Bronfenbrenner 1979, 25)' in them;

A *macrosystem* is about wider historical, socio-economic and cultural contexts that encompass the exso-, meso- and microsystems (Spours and Hodgson 2016). It is the underlying 'consistencies' of the nested structure, which could be in the form of 'belief systems or ideology' (Bronfenbrenner 1979, 26);

A *chronosystem*, which Bronfenbrenner (1994) recognises in his later work, is the patterning of environmental events and transitions over the life course, as well as socio-historical circumstances.

The paper then tentatively looks at implications of the Stage 4 SET for DRR and PP as an aspect of civil society development. Moving beyond Bronfenbrenner's framework, Spours and Hodgson (2016, 13) propose 'a Stage 4 evolution' of SET, referring to Laloux's notion of 'Evolutionary-Teal', which is 'a living organism … evolving toward more wholeness, complexity, and consciousness (Laloux 2014, 56)'. Analysing the evolution of different stages of organisational development, Laloux (2014) symbolises each stage by a metaphor and colour: 'Impulsive-Red', 'Conformist-Amber', 'Achievement-Orange', 'Pluralistic-Green' and 'Evolutionary-Teal'. Unlike the first four organisations, Teal 'can accept, for the first time, that there is an evolution in consciousness, that there is a momentum in evolution towards ever more complex and refined ways of dealing with the world (Laloux 2014, 43)'. Such 'complex adaptive systems' are ecosystems, and 'Teal' can lead to 'post-capitalism' (Spours and Hodgson 2016; Spours 2016).

The Stage 4 viewpoint has a resonance with PP that promotes stakeholders' acting in concert. In improving the 'fragile' (Burdick, Sandlin and O'Malley 2014) nature of public pedagogy literature, Biesta (2014) suggests a typology of *a pedagogy of the public, for the public* and *in the interest of publicness*, and a shift from the first two to the third. The latter, which applies the public logic of taking initiative, democratic decision-making, public duty and collective-interest, forms the basis of PP. My proposition is that DRR education should have an element of *a pedagogy in the interest of publicness*, which is an experimental pedagogy of demonstration, in which citizens act in togetherness to develop their own preparedness methodologies (Kitagawa 2017). For DRR, however, evolving into the third model completely is not the goal; the goal is to balance the three – state-led instructions, facilitated individual learning and act-in-concert civic activities.

Methodology to examine the DRR system and PP
This paper analyses the Japanese DRR system in a reverse order, starting from the broadest chronosystem because the DRR system is better understood from broader environments first. For the depiction of the chronosystem, the macrosystem and the exosystem, desktop research was carried out and official resources and existing literature on DRR were investigated. With these three system levels, most communities in Japan share the same description, unless the exosystem is interpreted to express regional differences.

To examine the mesosystem and the microsystem, as they involve people's interactions and relationships, collecting empirical data was required. I examine the development of disaster preparedness in communities with a focus on human relationships, and the interpretation of these interactions as they occur. I visited six communities in Kuroshio Town to conduct a pilot study to probe the following questions as my initial empirical study of PP. I use the term 'community' to refer to the smallest administrative and geographical unit in a municipality:
1. What are the settings of the microsystem in the context of this particular community?
2. How do interactions occur and relationships develop between those settings?
3. What is the role of PP in the mesosystem?

Facing the likely severe impact of the Nankai Trough Earthquake, the municipal government (Town Hall) of Kuroshio Town has been working with the abovementioned group of collaborative practice researchers in developing preparedness in communities. I already obtained a permission from the principal investigator of the research team[6] (PI) to access their fields. I approached him because I saw a similarity between their community of practice approach to DRR with the togetherness principle of PP in terms of the focus on human relationships. The PI and one of his researchers then obtained permissions from the Kuroshio Town Hall and community leaders for me to undertake my research. To clarify, my study is independent of the research team's research, and therefore in referring to 'the research team', I am not part of it. They develop tools and programmes, undertake action research projects using them and evaluate if there are changes in community members' behaviours and perceptions; whereas I investigate how stakeholders work together in the DRR activities developed and implemented by the research team. There is no overlap between the data they collect and my data.

Qualitative approaches were employed to probe the research questions. For observation, I was able to accompany the Community-based DRR Course offered by the Japan International Co-operation Agency[7]. The course included observing facilities (e.g. stockpiling warehouse) and technologies (e.g. quake-generating car), participating in drills (e.g. tsunami evacuation drill) and also experts' lectures. I also sat in two community meetings. At all events, I took notes to record what was happening, who was involved and what kinds of interactions were noticeable. I also had informal conversations with several residents and officials during the observations, which are treated as part of the observation data and quoted in the analysis below.

As for interviews, the researcher of the research team helped me arrange them in three communities. In this paper, I refer to the data from one community that I was able to interview all following six stakeholders:
1. A town official who has been central to the policy-making of DRR (Town official 1);
2. A town official whose major responsibility is outside of DRR (Town official 2);
3. A community member who has a leading role in the community's DRR (Community member 1);
4. A community member who does not necessarily have a leading role in the community's DRR (Community member 2);
5. A researcher from the research team (Researcher 1);
6. Another researcher from the research team (Researcher 2).

---

[6] The research team comprises Professor Katsuya Yamori and his researchers from the Disaster Prevention Research Institute of Kyoto University.

[7] They run a series of courses targeting developing countries. In this particular course, representatives from 15 countries travelled across Japan to learn about community-based DRR.

The sample was small in size but served the purpose of gaining a balanced view of the community in teasing out what was happening inside the mesosystem. The data from the other two communities also helped shape my understanding of Kuroshio Town's mesosystem.

In the interviews, some written documents were offered by the interviewees, which have also been utilised in the analysis. As I collected data, I analysed them manually to identify the key themes in Bronfenbrenner's conceptualisation of a mesosystem – experience, face-to-face interactions, engagement, interrelationships – as well as those of PP – experimental, demonstrative, togetherness, act-in-concert. I then triangulated my analysis through the discussions with two DRR expert. Consents were obtained from all interviewees, the Town Hall, as well as the PI in my using the empirical data.

The dominant culture and the legal and policy DRR structure in Japan
Chronosystem
Japan is currently in the middle of 'a quake-active period' (Cabinet Office 2011). Located in the Circum-Pacific Mobile Belt, the country has experienced constant seismic and volcanic activities in its history. Particularly in recent decades, there have been a number of large-scale earthquakes across different parts of the country.[8] Two particular disasters have had a significant impact on DRR policy. The Hanshin/Awaji Earthquake of 1995 was a seismic intensity 6 earthquake that hit the fifth largest city of Kobe. 6,437 were declared dead or missing, nearly 250,000 buildings totally/partly collapsed and around 15,000 buildings were totally/partly burnt down. After this event, a shared understanding developed amongst policy-makers and experts that the damage caused by a disaster can be reduced, although the disaster itself cannot be stopped. In 2003, the Cabinet Office (2011) set the goal to reduce damage by 50% in predicted large-scale earthquakes. The 2011 Great East Japan Earthquake was a more complex disaster. The seismic intensity 7 earthquake was the largest recorded in Japan, affecting a wide area (Japan Meteorological Agency 2017b), but it was the tsunami that led to 18,800 deaths and missing people (National Police Agency 2017). 39.7 meters was recorded at the highest point (Japan Meteorological Agency 2017c). In addition, the tsunami triggered the accident at the Fukushima nuclear power plant. As such immeasurable damage was 'beyond the scope of the assumption [*soteigai*]', searching for measures and strategies not to experience it again has become the central concern for policy-makers and experts.

To this end, a revision of the forthcoming large-scale disasters was undertaken. Official sources confirmed that in the coming 30 years, there would be between a 60% and 70% probability for an earthquake in Tokyo, as well as in Tokai, Tonankai and Nankai regions, which cover a large part of the Pacific coastal prefectures. The estimated maximum damage from one such event is 300,000 fatalities, 240,000 totally collapsed houses (Central Disaster Management Council 2014a) and £670 billion (97.6 trillion yen) in economic damage (Central Disaster Management Council 2014b). Furthermore, other disasters are of concern as well. There are at the moment 110 active volcanoes in Japan, some of which are said to have the possibility for a large-scale eruption at any time (Japan Meteorological Agency 2017d). Typhoons and torrential rains that lead to landslides have been causing infrastructure damage and fatalities in recent years (Japanese Government Public Relations Office 2014).

---

[8] Over the seismic intensity 6 earthquakes were in 2004 and 2007 in Niigata, in 2008 in Iwate, in 2011 in Nagano and Shizuoka after a series of tremors in the Tohoku region, in 2016, several in Kumamoto Prefectures (Japan Meteorological Agency 2017a).

In its history, Japan has had to develop ways to live with natural disasters. At present, some measures have been proven effective, while others have not been so successful. Efforts must continue into the future. This is the chronosystem in which many of the Japanese live.

Macrosystem
In the area of DRR, the ideology of 'participation by all' is currently promoted by international agencies and national governments. Compared with the previous Hyogo Framework, the Sendai version stresses 'all of society' engagement in DRR (UNISDR 2015). In the context of Japan, there is one policy discourse utilised by the government to persuade citizens to participate, and that is *kojo, jijo* and *kyojo*:

Kojo provided by the public administration, *jijo* based on self-awareness and *kyojo* of local communities are all equally necessary. This is a long-term national campaign for everyday disaster reduction, which is participated and invested by various stakeholders in the society, including individuals, families, communities, businesses and government bodies (Central Disaster Management Council 2017, 7).

The reference to the tripartite framework has significantly increased since the Tohoku disaster of 2011. Recent DRR policy revisions have addressed the balancing of the three forms of aid. Particularly *kyojo* has been emphasised in promoting 'coproduction' and 'collaboration' (Kitagawa 2016). A similar intention can be identified with a simple slogan 'all Japan' often used by the Abe Administration. The Basic Law of National Resilience passed in December 2013 states that the whole population must develop resilience in preparing for national-scale disasters (Cabinet Secretariat 2017). 'All Japan' has been promoted to persuade every citizen to engage in preparing for forthcoming disasters and building resilience in communities.

Exosystem
Japan has a clear legal and policy structure for DRR, and this is the exosystem. It is the Disaster Countermeasures Basic Act enacted in 1961 that established the system for disaster management (e-Gov 2016). The act stipulates the Central Disaster Management Council situated within the Cabinet Office to oversee DRR at the national level. The Council is responsible for the Basic Disaster Management Plan, which lays out policies and measures for different disasters and for each disaster cycle, and also clarifies the roles of the central, prefectural and municipal governments, and the population. The Basic Plan has laid out measures for building disaster resilience. 'Diffusion of DRR knowledge in the population', 'strengthening DRR systems in local communities' and 'promotion of disaster volunteering' are stressed throughout the plan (Central Disaster Management Council 2017, 12-16).

Prefectural and municipal governments are obliged to design Regional Disaster Management Plans taking their specific risks and needs into consideration. The Basic Plan also designates 24 government organisations and public corporations to design their own Disaster Management Operation Plans (Cabinet Office 2011, 8). Those regional and organisational plans set out protocols and arrangements as well as areas of responsibilities within the institution in case of an emergency. The exosystem also entails a number of legislations and policies relevant to DRR, such as those for disaster insurances, social services and school curricula.

Now the paper turns to analyse the micro and meso levels based on the data collected in Kuroshio Town.

[Figure 1 here]

Three key settings in the microsystem

As a mesosystem is 'a system of microsystems', it is necessary to discuss the settings of the microsystem first in order to understand the mesosystem. Kuroshio Town comprises 61 communities, which are 61 microsystems. These microsystems share three influential settings with regard to community-based DRR: the Town Hall, Voluntary Disaster Prevention Organisations (VDPOs) [*jishu bosai soshiki*]/fire brigade branches and the research team. Kuroshio Town has a much more serious challenge than many other parts of Japan because of the worst possible prediction of the Nankai Trough Earthquake and Tsunami. Senior officials feared that no 'countermeasure' could prevent such a gigantic tsunami and that the town might be washed away completely (Kuroshio Town 2017). Pessimism spread amongst the inhabitants, resulting in an attitude of 'giving up' – some out-migrated the town and others insisted not evacuating even if a tsunami came. The strategy taken by the Town Hall was to present a clear philosophy to unite the whole town – 'Never give up (Kuroshio Town Disaster Management Council 2017)'. Their strong determination is expressed in 17 concrete measures to achieve 'zero victims'. Both 'hard' measures – building public facilities and tsunami evacuation towers – and 'soft' measures – educational activities and evacuation drill – have been combined.

The second setting in the microsystem is the VDPO. Each of Kuroshio Town's 61 communities has a VDPO, although its title varies. The VDPO and the fire brigade branch are not necessarily the same organisations, particularly when the fire brigade branch is in charge of more than one community. Nevertheless, from the viewpoint of a community, there is only one VDPO and fire brigade branch with which the community is associated. The Disaster Management Basic Plan (Central Disaster Management Council 2017) stipulates VDPOs, promoting voluntary cooperation in the community in preparing for emergency situations. Most of the communities in Japanese cities and towns have a VDPO, although its formation and naming vary. It often overlaps with a Neighbourhood Association [*chonaikai*] or a Fire Control Club [*boka kurabu*], and tends to be led by retired firemen. Usually, the local fire brigade carries out initial measures, and VDPO members assist them. If the disaster is large-scale or happens in a small town, the role of the VDPO becomes critical in saving the community.

Thirdly, the research team can also be considered as a setting in the microsystem in the case of Kuroshio Town. Since 'the 3.31 shock', responding to the Town Hall's request, the research team has been undertaking a three-year DRR project to help the town develop their DRR. There was a continuity because the researchers had already been undertaking research in the town. Conventionally, DRR researchers would have been located as a setting in the exosystem. The 'research stance' (Sun et al. 2016) has been to pass on their expertise to community members, resulting in their passive attitudes and loss of agency. To resolve this, collaborative practice researchers are working to narrow the expert-layperson divide to restore agency in the latter, based on the belief that researchers are part of 'a community of practice' (Yamori 2011). The research team is currently leading this emerging discipline.

Mesosytem, mechanisms and learning

The key finding of the small-scale empirical study in Kuroshio Town is that there are three 'mechanisms' which seem to endorse interactions and promote learning.

Community Disaster Management Plans

Community Disaster Management Plans are a new measure introduced in the 2013 revised

Disaster Countermeasures Basic Act, as a means to promote *kyojo* – collaborative help.[9] Every community in Japan is encouraged to create a DRR plan. Kuroshio Town too is aiming to develop plans in as many communities as possible,[10] and the Plans have triggered interactions between the settings in the microsystem. This could be seen when I attended a community meeting, of which agendas were to decide the details for stockpiling and furniture fixing. The attendees were VDPO representatives, two town officials allocated through the following staff-in-charge system and a researcher. The atmosphere of the meeting was open and informal throughout. One of the officials chaired the meeting. In deciding the date for taking individual stockpile boxes up to the evacuation site, one member suggested, 'let's wait till the weather gets warmer'. Another member followed, 'we should have two dates in case of rain'. It was then agreed to have two dates. During the meeting, the researcher focused on offering technical suggestions and some useful information about other communities' experiences. This kind of planning and decision-making meetings between Town Hall officials, VDPOs and the research team takes place regularly in the majority of the 61 microsystems. It can be suggested that a community of practice is developing in such a way.

Town Hall's staff-in-charge system

Implemented after the 3.31 shock, the staff-in-charge system allocates a responsibility to every official of the Town Hall[11] to support DRR of the 61 communities. The town has one fire brigade, which is divided into 14 branches, which are then responsible for 61 communities in total (Kuroshio Town 2017). The system allows officials to get out of the Town Hall buildings, meet residents in their communities and discuss together how to develop their preparedness. The role is in addition to staff members' daily duties. Basic DRR training was provided to them in undertaking the role. One senior official explains why staff are willing to accept extra duties:

We are all facing the same direction. We could unite because of the 3.31 shock – we are all confronting an extremely tough situation (Town official 1).

There was of course some uncertainty when the system was introduced:

I wasn't sure at the beginning. But now, it isn't a burden to me at all (Town official 2).

She went on to explain:

Staff members' awareness is quite high, but that is no surprise. The town's whole existence is endangered! (Town official 2)

In the staff-in-charge system, where possible, officials are allocated to the communities in which they grew up or live in. This strategy allows officials' deeper engagement with the communities based on their detailed knowledge of and understanding about the community and its members:

I literally know everybody in this community. I even know which part of the house one sleeps (Town official 2).

---

[9] The government has implemented an initiative to support communities, offering subsidies and expertise in creating a plan. As of February 2017, there are in total 44 communities across Japan have been recruited for the initiative (Cabinet Office 2017).

[10] So far, 32 out of 61 communities are in the middle of creating their plans (Town official 1).

[11] Except the Mayor, the Deputy Mayor and the staff members in the Disaster Prevention Unit (Town official 1).

This kind of information is critical in planning safety and evacuation. In addition to such logistical knowledge, what elevates 'interactions' to 'interrelations' seems to be the sharing of the valuing of their communities, as one official expressed it:

We all have strong feelings [*omoi*] towards our communities (Town official 1).

The officials' sincere attitude to preserve the town and protect its population is appreciated by community residents as one of them indicated, 'the official in charge is doing very well. She comes to see us regularly and helps us.'

And, the relationship is mutual:

I feel I am nurtured by this community that I am in charge. This is a both-way relationship (Town official 2).

The system has helped the building of trust through increased face-to-face communications between Town Hall staff members and community members – this point was indicated by all interviewees.

Research team's methodology
The research team's collaborative practice methodology inevitably differs from conventional approaches taken by the majority of DRR experts. The twin pillars of the methodology are 'agency [*shutaisei*]' and 'engagement [*kanyosei*]' (Yamori and Miyamoto 2016). A lack of agency and engagement results in, for example, a distributed hazard map being in a rubbish bin in many households. It happens when community members are excluded from the process of the map creation without learning what it is for and without gaining the ownership of the map (Yamori 2016, 16-18). In contrast, the research team focuses on understanding community members' needs and working together with them. Their methods of inquiry therefore take the forms of action research and ethnography to realise collaborative practice (Yamori and Miyamoto 2016; Yamori et al. 2011). Such approach is referred to as 'deep outreach' in which responsibilities are shared between researchers and community members, as opposed to 'shallow outreach' in which researchers pass DRR knowledge to community members (Yamori 2016). In practical terms, the researchers have been staying in the communities in Kuroshio Town and spending a lot of time with the residents since the beginning of the project. As a consequence, they have developed close relationships with individual community members, as some of them described that 'he [the researcher] is like a chap next door', and 'I feel him like part of my family'. What the research team is doing is to redefine the boundary between 'experts' and 'laypersons' through ethnographic and collaborative approaches to make real changes in the communities. As Atsumi (2011, 2-3) sums up: 'Action research is the approach taken as a researcher; "collaborative practice" is the approach taken as a human being'. Based on such a clear ontological and epistemological position, the research team is able to interact frequently with town officials and community members to build positive working relationships in pursuance of effective DRR.

Collaborative practice thus has a resonance with PP, of which premise is mutual learning and acting in togetherness. I would propose that collaborative practice that shares a similar ethos with PP could be considered as one methodology of PP.

Japan has a clear guiding DRR ideology, which is translated into laws, policies and initiatives. It has become clear from the above system analysis that investing on the

mesosystem is critical in enabling community-based DRR and building an integrated DRR system. Those mechanisms are in fact, intentionally employed to enhance both the quantity and the quality of interactions between the microsystems. Quality interactions then lead to relationships. It can also be suggested that a mesosystem is where social capital in the vocabulary of DRR literature or *kyojo* in the Japanese policy framework is mobilised. I would argue that PP should be positioned in the meso level where collaborating, experimenting and working together occur.

Towards an evolutionary community and the potential role of PP

Developing an interconnected DRR system could contribute to positive societal change and the building of civil society – this is the topic of this final section. The hypothetical discussion is to address the potential of the Stage 4 SET to further explore the connection between SET, DRR and PP. Spours and Hodgson (2016, 17) advocate that a social ecosystem based on Evolutionary-Teal thinking could be understood as a way of responding to multi-layered challenges – limitation of neoliberal politics, climate change, the digital divide – that the world is facing. As an alternative transformational thinking, SET could provide us with 'post-capitalist visions', which entail an understanding of 'the potential of collaborative, productive relationships in all walks of life' and 'the growing role of values such as care, inter-dependency' and 'concern for the environment and our relationship with the planet'. SET could be a response to people's wish 'to see human relations and the future of humanity in more environmental and relational terms'.

The implication of the Stage 4 proposal for DRR and PP is that a nested DRR structure, which embraces the state leadership and bottom-up community engagement, could potentially lead to a social ecosystem. If the concept of Evolutionary-Teal can be utilised aiming at wider economic and societal change to respond to a range of challenges that the world is facing, Evolutionary-Teal thinking is certainly relevant in the field of DRR. State-led DRR alone has not been sufficient enough, and 'participation by all' has been clamoured. A new relational and educative model of nested DRR that embeds PP in the mesosystem promotes agency and engagement of participants. Such 'collaborative, productive relationships' allow learning from each other and beyond, making critical decisions together and potentially resulting in positive change. If that is the case, PP will no longer be addressing disaster preparedness per se, but play a pivotal role in the community's transformation towards civil society.

Conclusion

The conclusion highlights two tentative findings of this developmental study of PP. The first is a conceptual clarification of the treatment of PP in relation to DRR, DRR education and DRR human science. PP has a potential to establish a mesosystem to bind a split DRR structure towards a truly 'integrated' system. As an additional educational form to the existing DRR education, PP can cement the gaps in the DRR system to develop interactions and relationships amongst stakeholders. Through the application of SET, the study has been able to identify 'a missing link' in the current dominant policy discourse of 'participation by all' and '*kojo, jijo* and *kyojo*', i.e. the mesosystem. Human interactions do not necessarily occur by verbal encouragement or through documented policy. Human relationships are even harder to be developed, certainly unlikely in 'shallow outreach'. It is in the intermediary mesosystem that communications and interactions occur, which develop into collaborations and interrelationships, which then enable practice and change. The intermediary is thus critical in mobilising social capital and developing *kyojo*. The study has also proposed the collaborative practice approach taken by the research team is the very first example of PP. Their work in Kuroshio Town could be regarded as one way to develop a strong mesosystem and hence an

integrated DRR system. The next task for PP research is to look out for more methodologies and approaches that enable the establishment of a mesosystem.

The other contribution derives from the empirical part of the study, which has been able to surface what 'participation by all' actually means in a real situation. A number of educational initiatives have been implemented to promote individual responsibilities and proactive communities under the initiatives of 'participation by all', 'a civil society model' or 'a bottom-up approach'. However, the majority of the methodologies employed has been shallow outreach – pedagogies of instruction that transmit knowledge from 'haves' to 'have nots'. As collaborative practice researchers have argued, unless the challenge of developing community members' agency and their ownership in DRR activities is tackled, preparedness is unlikely to be fostered in them. International agencies, governments and experts agree that community engagement is necessary, but concrete ideas for 'enablers' have been scarce. My argument here is a need for support mechanisms that help develop agency and ownership in community members, like Kuroshio Town's staff-in-charge system. Frequent communications embedded in the mechanism have enabled the building of trust relationships in communities. In fact, action research and ethnography have been widely applied in educational research, with an aim to change children, young people and adults' behaviours and perceptions. The field of DRR will benefit from joining up with PP.

I have also explored an idea that the nested DRR system which embeds PP in the mesosystem could be a social ecosystem that endorses transformation. Places such as Kuroshio Town must prepare for the forthcoming disaster and build resilience. As one town official said: 'For us, disaster preparedness is a manner. That is what it means to live in Kuroshio Town (Town official 1).' Warned all the time, the population is learning to live under certain conditions. The communities in Kuroshio Town are thus 'living organisms', 'evolving toward more wholeness, complexity, and consciousness (Laloux 2014, 56)'. They are facing the same direction not to give up their hometown, developing complex interrelationships with stakeholders appreciating interconnectedness and becoming more aware of the environment in which they live. As the paper has emphasised, this part of the discussion is speculative. However, it is important to include it to illustrate the likely benefit of SET and its link with PP.

Kuroshio Town's case demonstrates the significance of developing its own mechanisms that work for their communities. It has to be stressed, however, not to idealise their policy and practice and to imitate them without cautious examination. The reason for this was expressed comprehensively by the Town Mayor when I had an informal conversation with him: 'our methods (e.g. the staff-in-charge system) work for us because of Kuroshio Town being Kuroshio Town. If I am a Mayor in a big city like London, I would have to do differently, for example, making the most of pubs for community-based DRR'. This point corresponds with what has been warned by comparativists such as Cowen (2000) and Steiner-Khamsi (2016) – the danger of pragmatic policy borrowing and lending that blindly utilises comparison to import/export educational policy and practice without considering the differences of the contexts. As this paper has discussed, DRR has become one of the urgent educational agendas for international agencies and governments. There is an appetite for them to find 'the best practice' with a belief that it would solve the problem elsewhere. DRR needs vary depending on meteorological, geographical and socio-economic conditions, and DRR education and PP should respond to them accordingly.

References

Adamson, Carole. 2014. "A Social Work Lens for a Disaster-informed Curriculum." *Advances in Social Work and Welfare Education* 16 (2): 7-22.

Aldunce, Paulina, Ruth Beilin, John Handmer and Mark Howden, 2014. "Framing Disaster Resilience: The Implications of the Diverse Conceptualisations of 'Bouncing Back'." *Disaster Prevention and Management* 23(3): 252-270. doi: http://dx.doi.org/10.1108/DPM-07-2013-0130.

Atsumi, Tomohide. 2011. "Collaborative Practice *[Kyodoteki jissen]*." In *Human Science of Disaster Prevention/Reduction: Protecting Life, Supporting the Field [Bosai/gensai no ningen kagaku: inochi o sasaeru, genba ni yorisou]*, K. Yamori, T. Atsumi, S. Kondo and T. Miyamoto, 2-7. Tokyo: Shinyosha.

Baxter, Pamela and Lynne Bethke. 2009. *Alternative Education: Filling the Gap in Emergency and Post-Conflict Situations.* Paris: IIEP/CfBT Education Trust.

Bromley, Patricia and Marina Andina. 2010. "Standardizing Chaos: A Neo-institutional Analysis of the INEE Minimum Standards for Education in Emergencies, Chronic Crises and Early Reconstruction." *Compare: A Journal of Comparative and International Education* 40(5): 575-588. doi: 10.1080/03057920903254972.

Bronfenbrenner, Urie. 1979. *The Ecology of Human Development: Experiments by Nature and Design*, Cambridge, MA: Harvard University Press.

Burdick, Jake, Jennifer A. Sandlin and Michael P. O'Malley. 2014. *Problematizing Public Pedagogy*. New York: Routledge.

Cabinet Office. 2011. "Disaster Management in Japan." [Nihon no saigai taisaku.] Accessed 1 May 2017. http://www.bosai.go.jp/1info/pdf/saigaipanf_e.pdf

Cabinet Office. 2017. "Community Disaster Management Plans That We Create By Ourselves." [Chiiki de tsukuru chikubosai keikaku.] Accessed 1 May 2017. http://www.bousai.go.jp/kyoiku/chikubousai/

Cabinet Secretariat. 2017. "Basic Law on National Resilience." [Kokudo kyojinka kihon ho.] Accessed 1 May 2017. http://www.cas.go.jp/jp/seisaku/kokudo_kyoujinka/index.html

Central Disaster Management Council. 2014a. "The Estimated Damage of Nankai Trough Mega Earthquake (Second Report) – Infrastructure Damage." [Nankai torafu kyodai jishin no higai soutei ni tsuite (dainiji houkoku) – shisetsu no higai.] Accessed 20 June 2017. http://www.bousai.go.jp/jishin/nankai/taisaku_wg/pdf/20130318_shiryo2_1.pdf

Central Disaster Management Council. 2014b. "The Estimated Damage of Nankai Trough Mega Earthquake (Second Report) – Economic Damage." [Nankai torafu kyodai jishin no higai soutei ni tsuite (dainiji houkoku) – keizai no higai.] Accessed 20 June 2017. http://www.bousai.go.jp/jishin/nankai/taisaku_wg/pdf/20130318_shiryo3.pdf

Central Disaster Management Council. 2017. "Basic Disaster Management Plan." [Bosai kihon keikaku.] Accessed 1 May 2017. http://www.bousai.go.jp/taisaku/keikaku/pdf/kihon_basic_plan170411.pdf

Chadderton, Charlotte. 2015. "Civil Defence Pedagogies and Narratives of Democracy: Disaster Education in Germany." *International Journal of Lifelong Education* 34: 589–606. doi:10.1080/02601370.2015.1073186.

Cooper, Elizabeth. 2005. "What Do We Know About Out-of-school Youths? How Participatory Action Research Can Work for Young Refugees in Camps." *Compare: A Journal of Comparative and International Education* 35(4): 463-477. doi: 10.1080/03057920500331488.

Cowen, Robert. 2000. "Comparing Futures or Comparing Pasts?" *Comparative Education* 36(3): 333-342.

e-Gov. 2016. "The Disaster Countermeasures Basic Act." [Saigai taisaku kihonhou.] Accessed 20 June 2017. http://law.e-gov.go.jp/htmldata/S36/S36HO223.html

Harada, Hiroo. 2012. "The Great East Japan Earthquake and Social Capital." [Higashinihondaishinsai to shakai kankei shihon.] *Social Capital Research Journal* [Shakai kankei shihon kenkyuu ronshuu] 3: 5-20. Accessed 1 May 2017. http://www.senshu-u.ac.jp/scapital/pdf/harada,jscs3.pdf

Inaba, Yoji. 2017. "Social Capital: What We Have Learned From Disasters and the Importance of Social Capital Surveys for Community Disaster Management Plans." *C+Bousai – Journal of the Society of Community DRR* 8: 3-11.

Japan Meteorological Agency. 2017a. "Seismic Intensity Database Search." [Shindo deeta beesu kensaku.] Accessed 1 May 2017. http://www.data.jma.go.jp/svd/eqdb/data/shindo/index.php

Japan Meteorolgical Agency. 2017b. "The Great East Japan Earthquake – Portal Site." [Higashinihon daishinsai – po-taru saito.] Accessed 1 May 2017. http://www.jma.go.jp/jma/menu/jishin-portal.html

Japan Meteorological Agency. 2017c. "About Tsunami." [Tsunami ni tsuite.] Accessed 1 May 2017. http://www.jma.go.jp/jma/kishou/know/faq/faq26.html.

Japan Meteorological Agency. 2017d. "About Active Volcanos." [Katsukazan ni tsuite.] Accessed 20 June 2017. http://www.data.jma.go.jp/svd/vois/data/tokyo/STOCK/kaisetsu/katsukazan_toha/katsukazan_toha.html

National Police Agency. 2017. "The Damage Statistics of the Great East Japan Earthquake and the Police Measures." [Higashinihon daishinsai no higai yosoku.] Accessed 1 May 2017. http://www.npa.go.jp/archive/keibi/biki/higaijokyo.pdf

Japanese Government Public Relations Office. 2017. "The Landslides Happening All over Japan." [Nihon zenkoku de hasseishiteiru dosha saigai.] Accessed 1 May 2017. http://www.gov-online.go.jp/useful/article/201106/2.html

Johnson, Victoria, Kevin R. Ronan, David M. Johnston and Robin Peace. 2014. "Implementing Disaster Preparedness Education in New Zealand Primary Schools." *Disaster Prevention and Management* 23 (4): 370–380.

Kitagawa, K. 2016. "Disaster Preparedness, Adaptive Politics and Lifelong Learning: A Case of Japan." *International Journal of Lifelong Education* 35(6): 629-647. doi: http://dx.doi.org/10.1080/02601370.2016.1231230.

Kitagawa, K. 2017. "Situating Preparedness Education Within Public Pedagogy." *Pedagogy, Culture and Society* 25(1): 1-13. doi:10.1080/14681366.2016.1200660.

Kuroshio Town. 2017. "Kuroshio Town Disaster Management Plan." The Course Materials in the JICA Community-based DRR Course, 8 March 2017.

Lalone, Mary B. 2012. "Neighbors Helping Neighbors: An Examination of the Social Capital Mobilization Process for Community Resilience to Environmental Disasters." *Journal of Applied Social Science* 6(2): 209-237.

Laloux, Frederick. 2014. *Reinventing Organisations: A Guide to Creating Organizations Inspired by the Next Stage in Human Consciousness.* Brussels: Nelson Parker.

Lave, Jean and Etienne Wenger. 1991. *Situated Learning: Legitimate Peripheral Participation*. Cambridge: University of Cambridge Press.

Mutch, Carol. 2014. "The Role of Schools in Disaster Preparedness, Response and Recovery: What Can We Learn From the Literature?" *Pastoral Care in Education: An International Journal of Personal, Social and Emotional Development* 33(1): 5-22. doi: 10.1080/02643944.2014.880123.

Paton, Douglas. 2008. "Community Resilience: Integrating Individual, Community and Societal Perspectives." In *The Phoenix of Natural Disasters: Community Resilience*, edited by Kathryn Gow and Douglas Paton, 13-31. New York: Nova Science Publishers.

Paton, Douglas and David Johnston. 2006. *Disaster Resilience: An Integrated Approach.*

Springfield : Charles C. Thomas.

Penson, Jonathan and Kathryn Tomlinson. 2009. *Rapid Response: Programming for Education Needs in Emergencies*. Paris: IIEP; Reading: CfBT Education Trust.

Preston, John. 2012. *Disaster Education: Race, Equity and Pedagogy*. Rotterdam: Sense.

Preston, John, Charlotte Chadderton, Kaori Kitagawa and Casy Edmonds. 2015. "Community Response in Disasters: An Ecological Learning Framework." *International Journal of Lifelong Education* 34(6): 727–753. doi: 10.1080/02601370.2015.1116116.

Shaw, Rajib, Koichi Shiwaku and Yukiko Takeuchi. 2011. *Disaster Education*. Bingley: Emerald Publisher.

Shiwaku, Koichi, Aiko Sakurai and Rajib Shaw. 2016. *Disaster Resilience of Education Systems: Experiences from Japan*. Tokyo: Springer Japan.

Spours, Ken and Ann Hodgson. 2016. "The Evolution of Social Ecosystem Thinking: Its Relevance for Education, Economic Development and Localities." A Stimulus Paper for the Ecosystem Seminar 22 June, 2016, Organised by the Centre for Post-14 Education and Work, UCL Institute of Education.

Steiner-Khamsi, Gita. 2016. "New Direction in Policy Borrowing Research." *Asia Pacific Education Review* 17: 381-390.

Sugiman, Toshio. 2006. *Komyunitii no guruupu dainamikusu* [Group Dynamics of Communities]. Kyoto: Kyotodaigaku gakujutsu shuppankai.

Sun, Yingying, Katsuya Yamori and Ryota Tanizawa. 2016. "The Single-person Drill: An Action Research Approach for Inducing Participants' Subjective, Individual [*sic*] Initiated Disaster Risk Mitigation." *The Japanese Journal of Experimental Social Psychology* 55(2): 75-87.

UNISDR. 2005. *Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters*. Accessed 1 December 2017. http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf

UNISDR. 2015. *Sendai Framework for Disaster Risk Reduction 2015-2030*. Accessed 1 December 2017. http://www.unisdr.org/files/43291_sendaiframeworkfordrren.pdf

Yamori, Katsuya. 2011. "Legitimate Peripheral Participation." In *Bosai/gensai no ningen kagaku: inochi o sasaeru, genba ni yorisou* [Human Science of Disaster Prevention/Reduction: Protecting Life, Supporting the Field], edited by Katsuya Yamori and Tomohide Atsumi, Seiji Kondo and Takumi Miyamoto, 232-237. Tokyo: Shinyosha.

Yamori, Katsuya. 2016. "Developing Science of Disaster Reduction". In *Genba de tsukuru gensaigaku: kyodo jissen no itsutsu no furontia* [Science of Disaster Reduction Developed in the Field: Five Frontiers of Community of Practice], edited by Katsuya Yamori and Takumi Miyamoto , 1-26. Tokyo: Shinyosha.

Yamori, Katsuya, Tomohide Atsumi, Seiji Kondo and Takumi Miyamoto. 2011. *Bosai/gensai no ningen kagaku: inochi o sasaeru, genba ni yorisou* [Human Science of Disaster Prevention/Reduction: Protecting Life, Supporting the Field]. Tokyo: Shinyosha.

Yamori, Katsuya and Takumi Miyamoto. 2016. *Genba de tsukuru gensaigaku: kyodo jissen no itsutsu no furontia* [Science of Disaster Reduction Developed in the Field: Five Frontiers of Community of Practice]. Tokyo: Shinyosha.