

Promoting and Supporting Biodiversity Conservation Activities with the Pattern Language Approach: A Pattern Language for Collaborative Activities for Biodiversity Conservation

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1. Overview

This research aims to create new words (Pattern Language) to enable the collaboration of different stakeholders in the biodiversity conservation. In the creating process, we will conduct interviews to people working in some areas in Japan which are known as successful models working for biodiversity conservation. We will extract the knowledge of practice from the individual cases: how they have been constructing Collaborative Innovation Networks. We expect this outcome to be applied to various areas and support the next generations of the communities for Biodiversity Conservation.

2. Background and Objectives

In Japan as well as other developed countries, the quality and quantity of the ecological services have been dramatically lost due to the loss of biodiversity. Activities for conservation and the suitable usage of the ecosystem have been therefore strongly recommended and promoted. In some areas, such activities have been successfully working and producing good results, whereas others have been struggling with problems.

The actions needed in conserving biodiversity largely differ depending on the situation of each region. Therefore, a solution which was proved to be successful in one specific case cannot be always successful in another location. In addition, a collabora-

tion of different stakeholders involved, not only the experts of this topic, is necessary in order to secure enough personnel for biodiversity conservation in each region. However, it is not easy for non-experts to recognize the problem and truly understand the importance of preserving biodiversity and the related activities, because the impact of problems due to the loss of biodiversity appears in a long run and cannot be seen in our daily life.

Meanwhile, in Kitahiroshima in Hiroshima Prefecture, the NPO led initiative brings together forestry families, local businesses, hotels, and schools to promote the usage of wood as an energy source. It aims to contribute to the local economy by circulating firewood using a local currency and regenerate ecosystems through the usage of forest. Here, the contribution of Katsunobu Shirakawa who got to the town as a curator became a Creator, made the Collaborative Innovation Networks gradually formed. Such cases have been seen in other areas as well.

What was done in these practices known as successful models in Japan? In particular, how could different stakeholders form the good relations which enabled the projects to work well? This research aims to generalize the essential patterns gathered through interviews with key persons in the model cases, and make them able to be applied to other locations using the methodology of the pattern language.

3.Method

3-1. Pattern Language

Pattern Language is a methodology of extracting and sharing the knowledge of practice (rules of thumb and tips) from individual cases and experiences. It works as a common language among different people from different areas, and therefore enables the collaborative works.

The pattern language method captures the practical knowledge of a certain topic in the unit of “patterns”. A pattern language is the result of loosely structuring such patterns, each with its own “name”, into a whole and comprehensive form.

Each pattern is written in a specific format that summarizes the Context, Problem, Solution and Consequence. In other

words, each pattern expresses knowledge of that in a certain context, what kind of problem frequently occurs, and what is a good solution for that problem and what will happen when it is successfully implemented.

In this way, the pattern language makes it possible to share the essential patterns needed for something to work well. In addition, because each pattern has a “name”, which works as common vocabulary, stakeholders across different projects and sectors can discuss, learn from others and collaboratively work together.

In order to create a pattern language, it is first necessary to extract knowledge of practice (rules of thumb and tips) through the investigations of the successful modes and interviewing people (Phase 1: Pattern Mining). In the next phase, a full description of the patterns (Context, Problem, Solution and Consequence) is written down based on the seeds of patterns (Phase 2: Pattern Writing). This description is then subject to a detailed collaborative revision process. In the final phase, a Pattern Name and Pattern Illustration are added to express the essence of patterns symbolically (Phase 3: Pattern Symbolizing). During these processes, certain phases are revisited/repeated as the language develops, as necessary.

3-2. Models

The actions needed for conserving biodiversity largely differ depending on the situation of each region. Nonetheless, a solution which was proved to be successful in a specific case has been likely to be simply duplicated in other areas, causing nothing to improve. However, with the pattern language approach, it is expected for each project to understand the essential patterns needed and apply proven practices in their own contexts.

Furthermore, successful cases often have a key person whose contribution plays a crucial role. In such a case, it is often assumed that the success of that project was brought about solely because of the key person’s individual charismatic skills. However, the pattern language approach would lessen the focus on individuals’ abilities and make more peo-

ple to actively join the activities toward improvement of situation.

This research is based on the investigations of successful practices. In the first year, we have conducted an investigation in Kitahiroshima in Hiroshima Prefecture. Additional investigations are now planned in the following three areas.

- **Fukutsu City in Fukuoka Prefecture**

This city has been being developed as a commuter belt with the growing population since 2010. The forest, however, has been damaged. A part of this city is a specified area named as “Genkai National Park), and very important for the story Satoyama habitat, but has been facing to environmental problems such as the lack of control; and the invasion of bamboo forest. Therefore, a laboratory of environmental design in Kyushu University has taken initiative to improve the situation by collaborating with the citizens, local groups for environmental conservation and high schools (Prefectural Fisheries High School and Prefectural Kouryo High School), learning the ecological system and sharing information with others. (Ito, et al., 2017)

- **Aya in Miyazaki Prefecture**

In September 2011, the elephant tree forest in this town was recommended for UNESCO Eco Park, and it was officially registered in July 2012. Activities have been promoted since then to create a mechanism for residents to take part in the community development, including the preservation of local living forest. Efforts were made as a public-private partnership to thin our artificial forests and restore the natural forests. Many achievements have been drawing attention, as it has enabled the sustainable coexistence of people and nature (Shinku, et al., 2013).

- **Tokushima Prefecture**

In the formulation of the Biodiversity Regional Strategy of Tokushima Prefecture (Tokushima Prefecture 2014), the

"Biodiversity Tokushima Conference" which was voluntarily organized by eighteen civil social groups and researchers in Tokushima Prefecture played a major role (Kamada, 2013). This conference organizes town meetings in various parts of the prefecture, in which the members collect and consolidate opinions of residents as facilitators, and link various entities such as prefectures, experts, committees and companies / business operators to promote the collaborative activities.

4. Investigation

In Kitahiroshima in Hiroshima Prefecture, Katsunobu Shirakawa who got to the town as a curator contributed to form the local Collaborative Innovation Network which has enabled the biodiversity conservation activities in this area to keep going on. Although Onishi (2015) has mentioned about what he has done in this project, but it has not yet been clearly explained how he has actually realized the great collaboration as a coordinator. Using the method of Iba & Yodar (2014) known as Pattern Mining, interview to Shirakawa was conducted to extract the knowledge of project, especially about its situation, problem and solution. Through the study, 23 patterns were created. Here is the description of its creating process.

(1) Interviewing (November 26th to 29th, 2017)

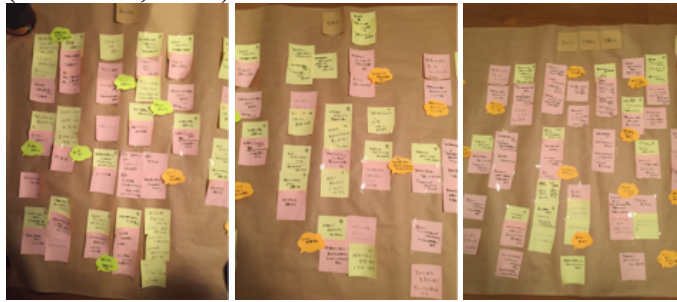
We visited Geihoku area in Kitahiroshima, and interviewed five people involved in the activity (1.5 hour each). We also visited the undeveloped woodland in which the activity has been taking place, its elementary school and the town office.





(2) Clustering

In this phase, the fragments of data extracted from the interviews were clustered and structured, using the KJ Method (Kawakita, 1967).



(3) Writing

A full description of the patterns (Context, Problem, Solution and Consequence) is written down based on the seeds of patterns.

(4) Reviewing (January 9th to 11th, 2018)

We visited Geihoku area in Kitahiroshima again, to have a feedback and discussion for the improvement of the pattern descriptions.



As a result, 23 patterns were extracted/created. The two categories which arose are, “hints for understanding the history of the relationship between local ecosystems and the people who live there”, as well as “hints for maintaining collaboration between various stakeholders toward reviving biodiversity”. A notable point discovered in this research is that successful projects are not the result of a groundbreaking idea/plan, but rather result from good face to face connections/collaboration among local stakeholders. Despite the general perception that “biodiversity initiatives are only for those with specialized knowledge”, anyone can be a participant if a “laid back participation” style is implemented.

Intriguing Proposal / Personal Enticement / Passion Stock / Risk Forecast / Room for Progress / Visible Resolution / Explanation Chain / Trigger for Change / Easy Entrance / Comfortable Workspace / Progress-Inducing Request / Attraction as Participant / Face to Face Connections / Passion within Chatting / Individual Proposals / Familiar Words / Start by Joining / Merit for Partners / Overlap of Words / Context-Driven Proposal / Collaborative Problem-Setting / Shared Vision / Speed Booster

The contents of all patterns can be seen in the appendix.

5.Expected Outcomes

The pattern language approach makes it possible to share the essential patterns needed for something to work well. Therefore, it lessens the focus on individuals’ abilities, and enables each project to apply proven practices in their own contexts. Because each pattern has a “name”, the patterns themselves function as common vocabulary, stakeholders across different projects and sectors can discuss, give advice, ask common vocabulary, questions, and learn from one another.

Furthermore, by describing/visualizing the key persons’ implicit skills, it is possible to define his/her role and the significance they play. This creates a higher possibility of the

project being able to acquire the proper budget needed to maintain and run the project.

In order to elaborate on the pattern language, we will go through more investigations in different areas in Japan. We will apply this pattern language to other areas in Japan to support and evaluate the Biodiversity Conservation Activities.

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7. Appendix

Pattern Name	Context	Problem	Solution
Start up the Project			
Intriguing Proposal	You need to find people who are willing to work together to move the project forward.	It is hard to get new members, if you just call for somebody's participation in front of many people.	Make a proposal for each one of people you want to invite and tell them what exactly you want to do with them.
Personal Enticement	You want to call for volunteers who are willing to implement the project together.	Inviting a wide range of people does not attract enough number of people.	Send letters or e-mails directly to the people who might be interested in your activity or would never feel uncomfortable with the invitation.
Passion Stock	You got volunteering members in your project.	If their motivation to commit to the project diminishes, it is difficult to keep the project on track.	Ensure that every members can sustain their motivation as a volunteer.
Risk Forecast	You are working with people gathered as volunteers.	Some people may not follow the rules or just take pictures and do not concentrate on the activity, but pointing them out during the activity may ruin the atmosphere.	Inform the important rules beforehand to those who have decided to participate in the activity.

Room for Progress	You received opinions and requests from volunteers.	You may have unintentionally drawn a clear line between you and volunteers as managers and participants, and therefore cannot share the important roles and information with them.	Give them appropriate roles and tasks, depending on what they want to do, and share the purpose firmly.
Attraction as Participant	You want to carry on the project, having new volunteering members continually recruited.	If you explain the attractive part of the project by yourself, it may sound like a lie.	Pick up words from the actual participants.
Face to Face Connections	You want many people to engage in the activity on an ongoing basis.	If there are few opportunities to meet up, their motivation easily diminishes.	Keep communicating with participants so that they can easily think of your face.

Warm Up to the Project			
Easy Entrance	You want the local people get interested in the nature and the environmental conservation.	Even if you hold a symposium or events, most participants are from outside, not the local people.	Allow the “laid back participation”, by inviting guests who are not directly related to the environmental activities and making it easy to jump in.
Comfortable Workplace	You want the local people get interested in the nature and the environmental conservation.	When thinking about the nature, environmental conservation and the future, the atmosphere is likely to get too serious.	Have the discussions with eating and drinking, or set a tea time in between to make the workplace more comfortable.

Progress-Inducing Request	You want to hear the opinions and needs from people who participated in the local event.	Even if you have prepared a questionnaire, you may not be able to get honest voices from them.	Ask questions to get constructive ideas for the next time.
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Respect the Collaborators' Context			
Start by Joining	You want to collaboratively work with people from different sectors in that region.	If various organizations stick with their own context, the collaboration will never work.	Join the work first.
Passion with-in Chatting	You want to collaboratively work with people from different sectors in that region.	It is difficult to fully understand what people need and thus it is difficult to always make appropriate suggestions.	Assemble the needs and complains from the daily conversations.
Individual Proposals	You want to collaboratively work with people from different sectors in that region.	It is difficult for people to understand and imagine the actual activity taking place, when they just hear the keywords such as "environmental conservation" and "natural learning".	Make proposals according to the personal experience, taking account of their living place and belonging organizations.
Familiar Words	You want to collaboratively work with people from different sectors in that region.	If the concepts and keywords of the project are not familiar with the local people, they will not get empathy to take actions.	Express your goal image, using the dialects or distinctive phrase in that region.

Overlap of Words	You want to work firmly with the administration.	Due to the nature of administrative works, it is uneasy to get flexible responses and supports, and therefore conflicts often occur.	To make the work easier for administrators, make a proposal with the goals and keywords described in the administrative official documents.
Context-Driven Proposals	You want to educate children in the region about the local nature and environmental conservation.	In the framework of existing curriculum and courses, it is impossible to provide attractive classes for children.	Grasp the flow of the education and suggest ideas accordingly.
Merit for Partners	You have been driving the project with people from other sectors in the region.	Even if you propose ideas and opinions to make the situation better, it is difficult to be convinced.	Make the proposal from the others' points of view to strengthen its merit for them.

Move things forward			
Visible Resolution	You are requesting cooperation from other stakeholders for starting a new project.	It is often difficult to gain understanding of others, and it takes time to start the project more than necessary.	Make up your mind to implement the project even all by yourself, and show it to them.
Explanation Chain	You are requesting cooperation from other stakeholders for starting a new project.	You may have no idea how to start explaining the problematic situation to persuade them.	First, go to talk to the people who you can access easily and explain your situation persuasively one after another.

Trigger for Change	Various opposing voices were raised by starting the project as it is a different approach from previous mechanisms and practices.	Trying to explain and persuading everyone, you will run out of energy and time .	Do not be swayed by everyone's opinions, think about where to put your energy.
Collaborative Problem-Setting	You are collaboratively working with people from different sectors in that region.	The project is likely to get stuck, when the problem is differently recognized among stakeholders.	Conduct a field work, figure out and state the problem together.
Shared Vision	You want to apply the successful method has been working well in other areas in your own region.	Just learning the mechanism and mimicking it does not work.	Visit to see the successful model with the administrative communities the works that are working together and think about what you can do in your area.
Speed Booster	You went to visit other areas with local people.	It is likely to end up with just saying "it was a great model", and bring back nothing to improve your region.	Think about how you can realize what you have learned, and put it into words as soon as possible.