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Re-Designing Design - Design Principles Based on Historical Analyses of Human Emotions and Values

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We propose a set of design principles for designing a sustainable community. First, we analyze how our emotions and values have shaped human history and vice versa. Based on this analysis, we have implemented many projects in several local communities in Japan in which we tried to draw on local resources and wisdom to create values for the communities. Through these projects, we proposed a set of design principles. We try to design environments to encourage consumers to gradually become designers who design and create what they need, instead of depending on the mass production/consumption system that often causes many environmental/social problems. By making the processes of production and available actions visible, we strive to activate our emotions that have evolved to design tools to survive in natural environments for millions of years. Also, we need to encourage authentic values in order to connect individual interests and social contexts.

Keywords: Human Values, Emotions, Sustainable Society

1 Human Values and Global Issues

It is difficult in our modern society to recognize how our daily behaviour is linked to global issues such as environmental degradations, depletion of natural resources, and social inequality, which makes it difficult to realize sustainable societies. We propose a set of design principles for sustainable societies, based on some analyses of how such situations arose in the human history.

What makes the relation between our daily lives and global issues invisible is the mass production and consumption system we all depend on (Illich, 1973). This system seems to rely on the value “the more/bigger the better” which we apply to profits, properties, and organizations. Although this value may seem natural, in the hunter gatherer society in which humans had survived for over 99% of our history constantly moving from one place to the next, “more” or “bigger” must have been a negative value. For at least 2 million years after our ancestors started to create/use tools, they used only tools which they could carry. “Just the right size” must have been the value that they acquired to survive. However, after they started farming

about 11,000 years ago, they suddenly started to build bigger and bigger tools, houses, and communities. Only 5,000 years later they were building huge constructions like the pyramids and large cities. This suggests that "the more/bigger the better" is a value that we acquired only very recently in our history. Judging from the history of large civilizations like Egypt, Rome, and Easter Island which collapsed when they kept building large constructions and used up their natural resources, we can infer that this value is not sustainable. (Diamond, 2011)

This research has three major components tied together: a conceptual framework based on analyses of human history; projects in the social contexts of local communities; and design principles for designing the projects based on the conceptual framework. In the next section, we will discuss the conceptual framework for understanding how human emotions have shaped our society based on our values in different stages in human history. In section 3, we will list some design principles we have previously derived from the framework. Section 4 will describe some recent projects we have developed as attempts to tackle problems in several communities in Japan. In the final sections 5 and 6, we will conclude with new design guidelines for sustainable society we have developed through these projects.

2 The Framework: Values, Emotions and the Human History

2.1 Emotions as a System of Urges

Let us try to trace how our history brought forth the value "the more/bigger the better" and how it in turn has driven our history. For this purpose, we need to understand the origin of human emotions because our emotion drives our behaviour based on our values, thereby linking value and history. Urge theory by Toda (1981) postulated that our emotions evolved as a system of "urges" that urges behaviours necessary to survive in natural environments. An urge is a set of emotions and actions that is activated in certain circumstances. Once activated, an urge prepares the body and cognitive system to react to the situation properly and triggers a set of actions that are optimal for survival. Toda analysed human behaviours in various emotional states and concluded that behaviours produced by the urge system optimized for survival in the natural environments no longer function properly in our modern, civilized society resulting in behaviours that appear irrational.

We focus on two kinds of urges that function when we design and use tools.

- As "**Learning Urges**" (because they are essential for learning new skills and knowledge), we consider a "curiosity urge", an urge to know or understand something better, and a "challenge urge", an urge to try some action even if success is not guaranteed.
- As "**Social Urges**" (because they are essential for maintaining a society), we consider a "gratitude urge", an urge to thank someone who does something good for us, and "contribute urge" (Toda's "help urge"), an urge to help someone in need or contribute to something.

Now we can analyse how these urges are likely to be activated in different kinds of environments.

- **For Learning Urges:** In natural environments, curiosity and challenge urges are likely to be activated often, because users of a tool (for cooking, hunting, etc.) could observe the processes of making something that tended to be visible. Thus, when a less experienced user of a tool observes a more experienced user using it, s/he is likely to get curious and challenge her/himself to try it. Curiosity and challenge urges support each other because actions reveal more processes and curiosity reveals more actions.
- **For Social Urges:** For people living in natural environments, the gratitude and contribute urges are likely to be activated often because the process of using the tools tends to be visible. Thus, cooking and eating foods will activate a gratitude urge toward people and natural resources that produce them, and a contribute urge to protect them.

Table 1. Learning Urges and Social Urges, their conditions for activating

Urge Types	Urges for Knowledge	Urges for Action
Learning Urges	Curiosity	Challenge
Social Urges	Gratitude	Contribution
Activation Condition	Process is Visible	Actions are Visible

2.2 Urges, Values and History Drive Each Other

We can try to trace, at major turning points in human history, what the values and subjects of people's urges were and how they moved human history.

2.2.1 Hunter Gatherer (more than 2,000,000 years, more than 99% of human history)

During the hunter gatherer period when people produced what they needed, "empowering people" was the value, and the learning and social urges must have been devoted to mastering and improving their hand tools. Everyone needed to learn to design what they required to survive, accumulating knowledge, artifacts, and activities. (Figure 1)

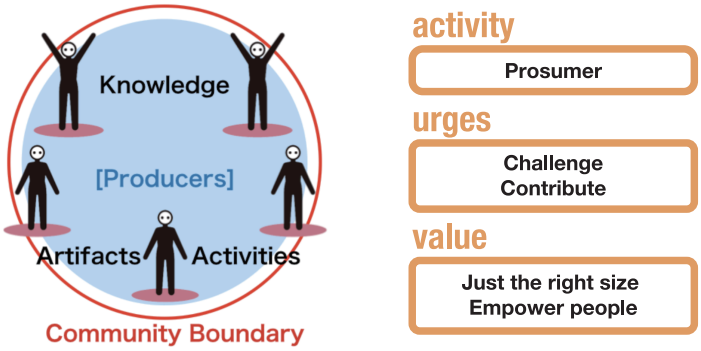

Figure 1 Hunter Gatherer Community - everyone produced.

2.2.2 Farming (11,000 years, less than 1% of human history)

With the start of farming, the value shifted to "the bigger the better", and settled societies started to grow larger. Some groups with accumulated knowledge became the elite class and it took only several thousand years for their urges to construct the pyramids, large cities, and churches. In contrast, producers who supported the

consumption of the elite groups with hand tools likely kept the value of empowering people. (Figure 2) Thus, the separation between social design/construction by the elite group and product design/construction by the producer group made their processes invisible to each other, which made it difficult for their social urges to function properly; e.g., politicians did not help farmers, and farmers were not motivated to contribute to their societies. As Diamond (2011) pointed out, many great civilizations collapsed when the elite class insulated themselves from the problems occurring within their societies.

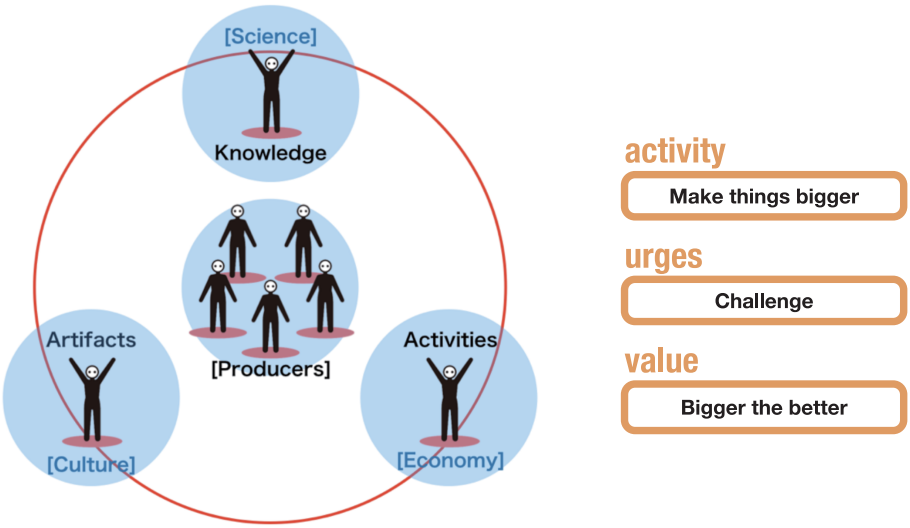

Figure 2 After Farming – Separation starts between elite consumer groups and producer group.

2.2.3 Industrial Revolution (300 years or less, 0.01% of human history)

After the industrial revolution began 300 years ago in Europe, and later in many other regions, fossil energies and machines that enabled mass production transformed the producers' value of "empowering people" to workers' value of "minimal human power". Many producers have been and many still are being assimilated into cities as workers/consumers, thereby making production processes even less visible to each other, and making it even harder for learning and social urges to function properly. For example, when city dwellers use complicated modern tools like an air conditioner or a microwave, they rarely feel curious about their mechanisms, feel challenged to construct/fix/improve them, or appreciate the value of the energy resources, as we would when using tools burning firewood. (Figure 3)

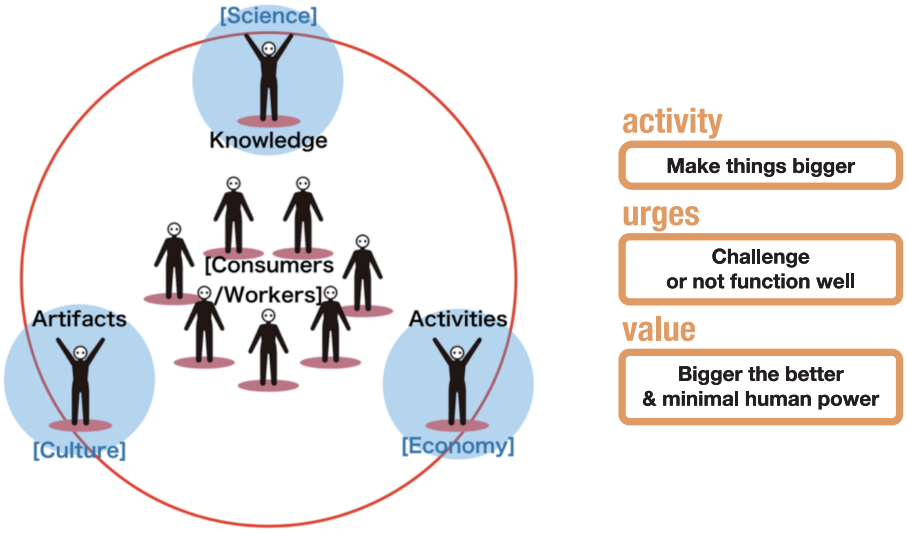

Figure 3 Industrial Revolution: Producers assimilated in large cities and became Consumers/Workers. Production processes became invisible.

3 Design Principles

As we discussed in section 2, many current social problems stem from the changes in our social structures which have made the production processes less and less visible which in turn made our learning urges and social urges difficult to function. This analysis led us to the following design principles. (Miyata & Ho, 2017)

- Design activities so that learning urges function properly:
  - Make the processes of production visible in terms of their mechanisms (curiosity urge).
  - Make the activities of production available (challenge urge)
- Design activities so that social urges function properly:
  - Make the production resources visible by facilitating design using local resources and wisdom. (appreciation urge)
- Design activities so that learning urges and social urges are linked:
  - Make the actions for contribution visible by identifying a value that attracts both individual learning and social interests (contribution urge)
  - Social urges can activate learning urges by recognizing skills/knowledge that once learned would enable one to contribute.
- Facilitate the value of “empowering people” by encouraging design by hands and interacting with people with passions.

4 Projects based on the principles

We have applied these principles in many projects that we have developed as attempts to tackle various problems in our local communities. As the authors work in universities located in different parts of Japan, all the projects involved students collaborating with people in the local communities. We describe below some recent project in each community. The authors and some of their students collaborated or

participated in many of the projects, discussed the project designs, analysed their observations, and developed the ideas discussed in the previous section and the following section.

4.1 Farm AR Project (Toyota)

In "Farm AR Project" (Miyata, Ueshiba, & Harada, 2018) in Toyota City, a group of design students visited young farmers who are striving to produce good quality organic foods for the community with aging and shrinking farming population. The students listened to the farmers' stories and observed them working in the farms. This triggered the students' social urge to contribute to the mission of the farmers who work hard to produce their foods which in turn triggered their learning urge to create AR (Augmented Reality) works to express the farmers' passion to consumers. The AR works were then incorporated in the menu of a restaurant run by the farmers using their products so that customers could view movies and animations showing the farms and messages from the farmers.

4.2 Rambling Design (Hachinohe)

In "**Rambling Design**" (Yokomizo, 2019) in Hachinohe City in northeast Japan, instead of giving design students tasks or goals to achieve, they were encouraged to immerse themselves in an old community where local people are striving to keep local tourism and businesses alive. The students listened to people and observed activities until the local resources and values became visible to them. They then tried to express their findings to the community as design components for wrapping paper. The citizens immediately found contexts to fit the designs in meaningful ways and together they created wrapping paper designs. (Figure)

4.3 Kizukai Project (Hakodate)

In "**KIzukai Project**" (Harada, 2018) in Hakodate City in northern Japan, students and teachers studying design and engineering visited a forestry/lumber factory, and listened to the timber workers and lumber producers, as they touched and smelled the wood in different stages of production. Then they visited a community composed of a shrinking and aging population and listened to the people striving to live there. They brainstormed ideas to help the community by using resources from the local forest in an attempt to connect the two contexts that they had just experienced. Using prototypes that they built the students explained their ideas to some people in the community. The community members gave them comments and advice that revealed their wishes and concerns, from which the students could learn new social contexts. Finally, students designed an event with live performance and a bar in an old house renovated by local group for which a group of students who participated in the same project in the previous year constructed some pieces of furniture using local woods.

4.4 World Environment Project (Toyota)

In "**World Environment Project**" (Miyata & Ho, 2017), a group of design and engineering students from Hong Kong Polytechnic University and Chukyo University visited craftsmen and farmers in rural areas in Toyota City in central Japan to observe, experience and learn traditional hand crafts such as bamboo basketmaking, indigo dyeing, weaving and papermaking, as well as organic farming such as rice planting and tea picking. Analyses of the students' reflection included expressions indicating learning urges (curiosity or

challenge) in every activity, and social urges (appreciation or motivation to contribute) when they not only observed local masters working but also experienced working with the masters.

5 Toward Designing for Sustainable Society

During the projects described in the previous section, we analysed how the design of activities, including locations, people and tools for communication, encouraged interaction among the people involved, including behaviours, narratives, designs created, and reflections. From these analyses, we identified some guidelines for overcoming our dependencies on the modern systems of mass production/consumption and find a path to a sustainable society. Below we try to summarize these guidelines.

5.1 Connecting Learning and Social Urges with Authentic Values

As we have discussed, it is important that the urges are driven by values that are sustainable. If learning urges are driven by unsustainable values such as “the bigger the better”, behaviors that ignore broader social contexts may result. As we pointed out already, this seems to have happened behind many current social problems. In our projects we found that authentic values seem to emerge when learning and social urges are connected. (Figure 4) We also observed that the learning and social urges were connected and they facilitated each other when one or more of the following conditions were present.

- Activities involved experiences of physical materials in authentic environments using bodies and five senses to find meanings in the real contexts, rather than reading written materials or just talking about ideas. Authentic environments seem important because local resources and values are visible in the ways people lead their daily lives.
- The participants (students and local people) were encouraged to express the meanings they had found as **narratives**. In other words, designs emerged in the process of creating narratives, rather than just thinking about ideas. Narratives seemed to connect physical (learning) dimensions and mental (social) dimensions.
- We went back and forth between **social urges** in constructing relations with people, and **learning urges** in constructing relations with component parts and mechanisms. For example, in the Kizukai project described above, the students went back and forth between physical experiences and communicating with people in the community.

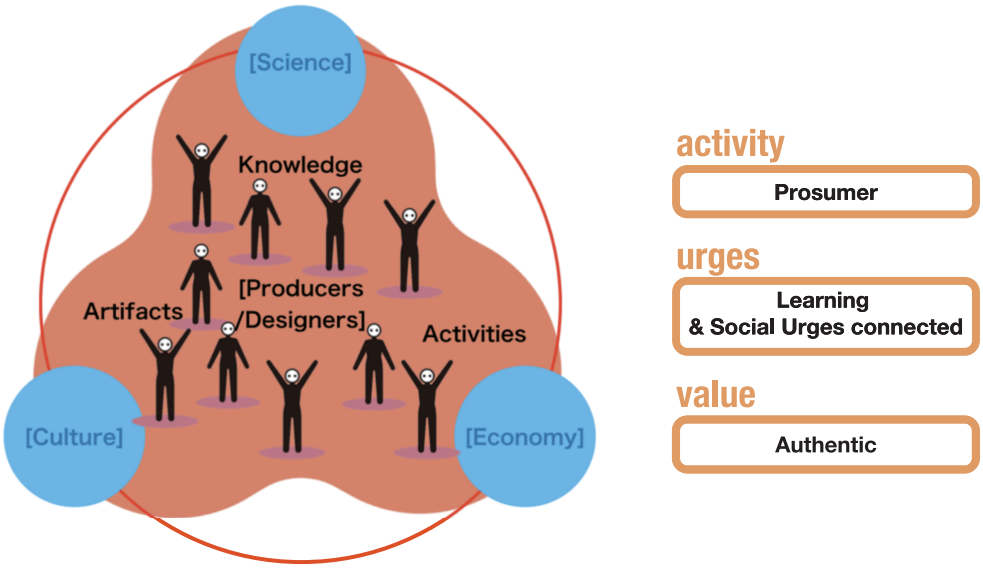

Figure 4 Our vision: Designers encouraging people to produce. Learning and Social Urges are connected with authentic values.

6 Conclusion

In our modern societies, almost everyone depends on the system of mass production/consumption. It would be very hard for politicians, company managers or factory workers to change the system they are directly immersed in. It would be relatively easier for a consumer to make small changes in their consumption behaviour – to design and make something instead of buying it. If enough consumers change their consumption patterns and gradually become producers, their choices would be a powerful encouragement for the other groups like politicians and managers to change. The role of designers is not to design things for consumers to buy and consume. Instead, designers should encourage consumers to become designers who design/make what they need and appreciate local resources and wisdom, thereby recognizing the value of their own design in their community. The projects and the principles we have described will be valuable for others developing projects in their own communities.

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Tamaki Motoki: Assistant professor at the Kyoto University. She has been co-working with researchers to design and create for visualization of academic activities. Research interests includes content design in non-profit activities, and in recording and description of design activity processes and communications.

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