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APPLICATION OF SITUATED LEARNING FOR REALIZING DESIGN ETHICS

N. Wakabayashi and T. Hasumi

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1. Introduction

The purpose of this paper is to explore some of the new possibilities in design ethics education, especially focusing on the topic of sustainable design. As problem solving capabilities of designers for social problems are more and more realized, the expectation and responsibilities a designer has to take are increasing. This means that designers should be more aware of the social impact their design could cause to others and the environment, and also be aware of the amount of consideration regarding design ethics they have to put into what they design. However, on the other hand, the method for design ethics education hasn't been established enough yet, possibly because of the short history of the field itself, and also because of the difficulty in applying ethics to practical design situation. In this paper, we would like to propose an approach that incorporates the idea of "sensitizing for realization", by applying an idea drawn from situated learning as a basic learning ground for the development of design ethics in sustainable design. The method of situated learning is introduced in parallel with an example of the method used in *Sadou* (traditional Japanese tea ceremony), and finally looking at a case study utilizing the method.

2. Approach to environmental ethics in Japanese culture

In Japan, historically, ethics are not considered as a subject to be taught in a school environment. Rather, it was considered as a matter that is acquired at home or from daily life experience, and or through the experience in the society. Often, ethics are considered and taught in structural and logical thinking, however, at a very basic level, it can be considered that ethical behavior is often based on something we acquire sensuously from our daily experience. For example, we know why we have to take care of living animals, not because we are simply taught so in a book or at school. Most of us may think so because we have encountered a scene where an animal was actually dying, or getting killed. By feeling the cruelty and the fear of lives being lost, the idea to avoid such an experience is deeply inlaid in that person, as a base of moral judgment not to kill living animals for no justifiable reasons.

For sustainable design education, the education of environmental ethics is especially important. In Japan, just as the other ethics and disciplines had been taught through daily training of martial arts, environmental ethics had been taught through *Sadou*. It has long been practiced at school, and also at home, regardless of the social classes. As the idea of *Sadou* is originally rooted in *Zen*, the equality between people, nature, and all the living things is articulated. As *Sadou* is not a study that can be learned through a textbook, students were expected to learn the art by following the master's meticulous body movements and using their five senses fully to pay attention to their surroundings. We can see the idea of sustainability was incorporated into *Sadou* through the mastery of the art

especially in the code of principles proposed by *Senno Rikyu*, one of the greatest masters of *Sadou* from the 16th century. Although *Rikyu* didn't have any intention or awareness of sustainable design, it is interesting to see the relevance of his teaching corresponding to the principles of sustainable design, and how the teaching was indirectly conducted, by sensitizing students through realization of value of nature.

There are seven codes in the code of principles called *Rikyu Nanasoku*.

1. Tea should be served as to match the guest's tasting
2. The coal should be placed so that the water should boil
3. The flower should be as if to exist in the field
4. As cool in the summer, as warm in the winter
5. Be early on time
6. Be prepared in case of rain
7. Pay attention to each guest

These principles may sound awfully simple and even naïve. When one of *Rikyu*'s apprentices heard these principles from him, he said to *Rikyu*, "but master, I already know such things". Then *Rikyu* replied, "If you really can do these things, I would become *your* apprentice". *Rikyu* had put complex ideas and philosophy of art, nature, and life into these seemingly simple principles. What is interesting to note here is that the purpose of tea ceremony is not directly to teach the importance of protecting natural environment, but rather, to do so indirectly by promoting the idea of enjoyment in coexistence with nature. Thus, as these seven codes are practiced in the action of *Sadou*, apprentices are sensitized about the importance to live in harmony with nature, by realizing the idea through the mastery and perfecting the art.

Here, we show how the idea of sustainability was indirectly communicated through *Sadou*, by looking into *Rikyu Nanasoku* more closely:

1. Tea should be served as to match the guest's tasting
   This is not only saying that the tea should match the taste of the guests. Moreover, this is to notify that the tea should not be made only with the egoism of the master. This is just as the principle of human centered design. Often in the world of design, designers can design based on the ego of him/herself. Thus creating a fashion that may not be really wanted and can get easily bored by the consumers, affecting the product longevity. For the tea to be consumed with an enjoyment, the tea must be prepared and served with a great consideration to the guest's taste, feelings, place, and situation. Likely, designers should design with the user's true need, feelings, and circumstances as he/she designs an object for the product to be accepted and used for a long time, to reduce end-waste.
2. The coal should be placed so that the water should boil
   This may sound too ordinary, however, actually, there are various kinds of coals to prepare the fire for the tea pot (called *chagama*), and each kinds of coal needs to be placed in such a placement that would boil the water fastest and at the right timing during the ceremony. The planning of the placement of the coal was important, as it cannot be changed once the heavy *chagama* goes on top of it. A great deal of attention and practice are required to master this, as it is also affected by the climate of the tea room in various seasons. This can be equivalent of the idea of energy efficiency. Designers are expected to plan a product that would utilize as little energy resource as possible in production process/usage. This is to plan so that the energy resource is secured throughout the product life.
3. The flower should be as if to exist in the field
   Something to be noted here is that the flower (to be arranged in the tea room) should be "as if" it exists in the field, and not "just as" it exists in the field. *Rikyu* had a great understanding that the flower that is brought into the tearoom can never look exactly like as it exists in the nature. Human beings cannot design like nature. However, considering all that, the idea was to express the nature by carefully observing the elements of nature, and incorporate it to the artificial creation. To know the essence of the nature is to have a better understanding of it. Also it was to let humans to have a modest attitude toward nature to always have an attitude to learn from it. This is an important point for a designer to understand, too, as they could easily

believe that they have a right to control over nature under the name of technological development. However, we notice that we are far from having rights to control or destroy nature, as we, as living organisms, *are* part of nature.

4. As cool in the summer, as warm in the winter
   As there was no such thing as air conditioner in the time of *Rikyu*, tea masters at this time had to use their creativity to ease the heat/coldness in the tea room. It was important to create the atmosphere of coolness or warmness, as there was no other means of controlling the temperature. For example, coolness was expressed by using the sound of flowing water, or the use of cool colour or wind chimes. Warmness was expressed by using the warmer hued flower or using a taller tea cup to keep the warmness of the tea inside as long as possible. Such a consideration of the tea master was appreciated by guests' five senses. By proposing a design that would wisely use human senses, overuse or misuse of limited energy resources can be avoided. Also to exercise such creativity leads to let designers to have a better sense of designing products that would supplement the joy of being in, and coexisting with the natural environment, rather than dominating or controlling it.
5. Be early on time
   Since the modern age, time is often considered as something that needs to produce some form of profit, just as represented in a proverb such as "Time is Money", or in the recent fashion of time management. It almost sounds like modern people are expected to compete with time, sometimes even "kill" time to have a complete control over it. In the time of *Rikyu*, time was treated more like something to be felt, expanded, and appreciated. Thus this code is not telling you to be simply punctual, but to be able to plan ahead of time so that the time actually spent in the ceremony will be fully appreciated. It is important to note that this kind of sensitivity toward time lies at the base of sustainability. By paying the attention to the quality of time, a designer could improve the product longevity to a great extent.
6. Be prepared in case of rain
   It is basically telling that you need to be prepared for any kind of situation, including the worst case scenario. Although tea ceremony is usually systematically preceded under certain mannerism and procedures, there are often the time where an unexpected accident may happen. The code warns that the host should not be disturbed by such an accident to proceed with the ceremony, but more over to be sure that the guests would not feel worried or uncomfortable. By anticipating every expectable situations possible, and by being prepared for such situations, hosts can provide a sense of security and relaxation to their guests, letting them to indulge in the art without any disturbance. Sustainable design also is a form of risk management. Designers are expected to consider the whole product life cycle, from cradle to cradle, to provide users security and pleasure of the product for its whole life cycle.
7. Pay attention to each guest
   Rikyu started a unique style of serving tea, which now became a distinct manner called *Koicha* (thick, strong tea). The style is to serve one cup of tea for a few people (usually three to four people per cup), so that people would have to share the same cup of tea. It is said that this is to emphasize the idea of equality, respect, and sense of bonding between the participants in the tea room. At the time of *Rikyu*, there were strict social classes, *samurai* being at the top of the pyramid. However, even a *samurai* was not allowed to bring in a sword, which is the symbol of their social status, into the tea room for a tea ceremony. Regardless of the social status, everyone entering the tea room had to go through a small door which is about 66cm x 63cm, by bending over the head. This is to represent and emphasize the loss of social status as soon as you enter the tea room. In this way, *Rikyu* was trying to provide the idea of humanity and human equality in the art of tea ceremony. After all, systems and social status are the products of the artificial. The world view that every human beings to be completely equal, in the way that we are all produce of nature and part of nature, lays at the heart of the philosophy of sustainable thinking.

Kakuzo Okakura, who had introduced the culture of *Sadou* into Western society back in 1906, wrote "The Philosophy of Tea is not mere aestheticism in the ordinary acceptance of the term, for it

expresses conjointly with ethics and religion our whole point of view about man and nature" [Okakura 1906]. Thus we can bring back the idea of the education of ethics in an indirect manner, as seen in the example of *Sadou*, to be applied to sustainable design education.

3. Sensitivity as the base of moral development

According to Thorne, there are four steps for ethical decision making: Identification of Dilemma, Ethical Judgment, Ethical Intention, and Ethical Behavior [Thorne 1998]. The first step, the Identification stage is driven by sensitivity using perception. This is the base of moral development, which is "the cognitive acts of recognizing moral issues and thinking them through" [Armstrong et al 2003]. Without noticing that there is actually a problem, no motivation for problem solving activities can occur. Furthermore, to note what the problem is, one has to know what is the "good" or "natural" state in the society they belong to. In James Rest's Four-Component Model of ethical behavior, which was integrated into Thorne's model, Moral sensitivity is defined as "interpreting the situation, role taking how various actions would affect the parties concerned, imagining cause-effect chains of events, and being aware that there is a moral problem when it exists" [Armstrong et al 2003] Here, sensitivity toward the surrounding environment to notice moral issue is considered as a very important step for ethical decision making.

The effects of human sense, emotion, and affective intuition on moral judgment are also noticed in the field of cognitive sciences. According to Joshua Greene and Jonathan Haidt, there is a new findings in neuroscience and evolutionary psychology that there is an "automaticity" related to moral judgment. That is, "moral judgment is much like aesthetic judgment: we see an action or hear a story and we have an instant feeling of approval or disapproval." [Greene and Haidt 2002] If moral judgment is as instant and spontaneous as emotions, compared to what we believed it to be, then it can be argued that sensitivity toward surrounding environment and the experience that would create that kind of sensitivity can be related to moral decision making to a great extent.

Considering from the facts noted above, it is reasonable to think that sensual experiences can be a base for realization of value, thus leading to the base of moral judgment. Thus, it can be summarized that more application of actual experience to expose students to sensual experiences to stimulate their five senses can be incorporated for the improvement of the sustainable design education.

4. Application of Situated Learning to education

In the world where efficiency is prioritized over quality, and as the world becoming more and more "virtual" thanks to the advancement of computer technology, the real life experience tends to be lost more and more. Especially in the school environment, education is based primarily on feeding students with piles of information, without providing them with actual experiences that utilize their five senses. School curriculums are organized in a way that students can remember as much information in the most efficient way. Design schools are no exception to this trend. Many design students are concerned with the school projects only within the restriction of the project, without thinking about the relevance of their design in the real world. In such an educational system, it is difficult to teach them how their design could impact the society.

The importance of social experience for learning is increasingly getting attention in the field of educational technology. Noyuri Mima, specialist in cognitive science and education technology considers the human learning is not owned by an individual, but as a socially shared property that is acquired by an experience and realization of each learner's role/position in the society [Mima 2005]. The concept, "Situated Learning", was first introduced by Lave and Wenger, and noted that human learning is based on communication and interaction with others, and can never be considered apart from the learning situation and the social settings [Lave and Wenger 1991]. Mima further points out that in such a learning style as situated learning, it is easier for students to find the context and the purpose of his/her study, and also it gives them an opportunity to encounter real-life problems that cannot be encountered in textbook learning. By encountering these kinds of realistic situations, students will learn to come up with the solutions in a creative, and original way [Mima 2005]. The true learning (something that would become a base of "principle" of living or working such as ethics) is

acquired not through individual studying, but is considered to be gained through an actual experience of communication or by being a part of social community (Cf. Figure 1).

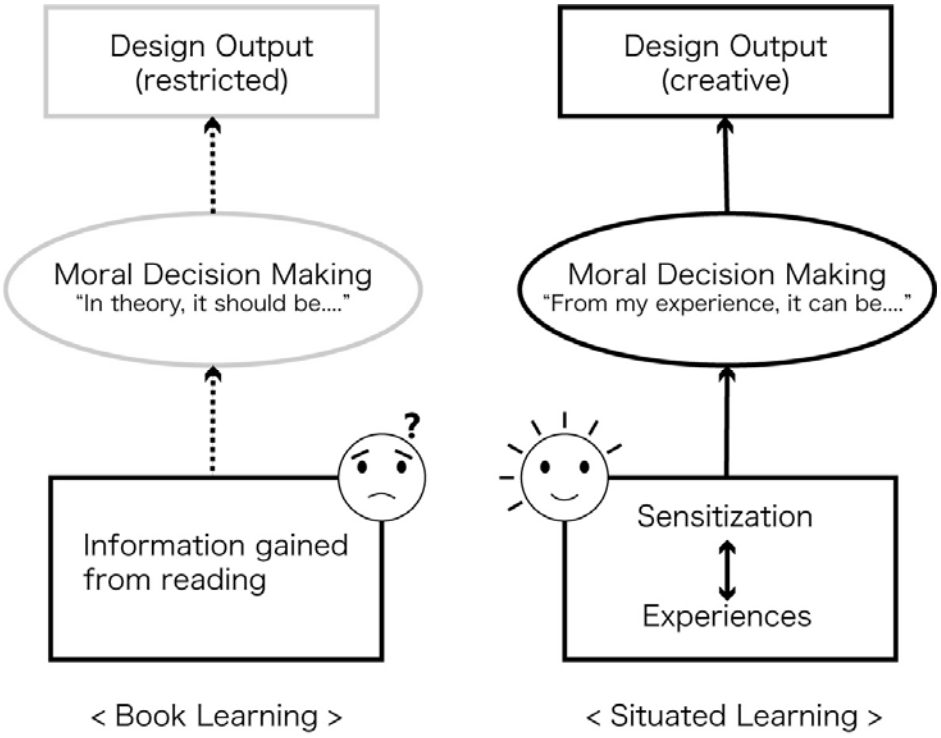

Figure 1. Comparison between Book Learning and Situated Learning

5. Case Study

Then how could this kind of real life experience in a social setting incorporated into sustainable design education, to guide design students for better solutions by prompting them with moral decision-making? Here we introduce a design project done at University of Tsukuba, Ibaraki, Japan can be an example of such a case.

5.1 Project Overview

The "*Haryu* Project" was conducted to come up with a design solution for a bald mountain in *Haryu* district in *Fukushima* prefecture, Japan. The mountain was balded for the production of pulpwood since 1992, and now is completely balded. There has been a historical consensus among the residents of the legion regarding the production of the pulpwood. The last logging was done 100 years ago, and the residents consider the mountain as a field where they "grow" trees to support the local production. They have co-existed with the mountain as it regenerated over years, and enjoyed the both the rich forest it provided when there were more trees, and the open field view when there were less trees. Now that the mountain was balded once again, they were seeking for a solution to incorporate the environment into their daily life, in a style that would suit the lifestyle of the modern residents.

The project objective was to come up with an environmental design solution to make a good use of the bald mountain for the time it regenerates. Thus, any buildings to be suggested were required to be completely disassemblable to be taken down, not to interfere with the growth of the pulpwood. Because of the environmental constraint such as necessity to consider the deep snow (as deep as 5m) they have during the winter time, and bears making occasional appearance, proposition of temporary sheltering to accommodate people to enjoy the environment seemed to be a difficult one. However,

Kokuyo co., Ltd., that was developing a sheltering unit "CROSSKUBIC" at this time, and had knowledge in material usage and production technology readily available, offered to support the project. Thus it finally became a joint project between University of Tsukuba, Kokuyo Co., Ltd., and the environmental non-profit organization "Minamiaizu Green Stock Club". It provided students with the solid working field for their projects, outside of the normal school environment, with the actual field experience.
Upon the start-up of the project, students were taken to the bald mountain, which is about 230km away from where the university is located. There, they had three days design workshop, as they lodged at the foot of the bald mountain. They spent the night under the sky filled with bright stars, and realized how peaceful the dark and quiet mountain was. They also interacted with the local residents, to find out their life style, and what their needs/wishes upon the balded mountain were.

5.2 Design outputs

It is important to note that the design process was taken place in rather unusual structure. In Japan in the 1980s, during the years of high economic growth under bubble economy, many community-related environmental design projects were conducted. Many of these design projects were contracted to large design consultancies, often far away from the actual site where the design is going to be applied to. Thus, often the needs of the residents were not put into consideration in the design output, and sometimes they ended up to be something that was overscaled for the environment, or buildings that wouldn't match with the necessity of the residents/users. For *Haryu* Project, the students had a chance to spend some time in the environment where their design would be put in, and then could think about what would be appropriate form of design output for such a place. This can be called more of an organic process for designing: activities to be taken place by the users at the sight are considered first, then design solutions to grow after, not vice versa. This process can be an example of an appropriation of human design to the natural environment.

5.2.1 Design Output #1 Night Life Design on the balded mountain

A group of students were impressed by the open view with the deep darkness around during the night time on the balded mountain. They proposed a camping site for staying for a few nights around the new moon, along with an event that involves the residents who live around the foot of the mountain. The cottage that utilizes CROSSKUBIC is designed so that people could sleep during the daytime, and enjoy the special darkness the nature provides in the evening by staying up. The event was planned for the night of the new moon. The main proposition of the event was to ask the residents around the mountain to turn off the light for 10 minutes at the same time in the midnight to let the visitors to enjoy the sparkling stars in the sky to the full extent. This proposition of ecological nightlife lets visitors to realize the appreciation of the darkness, which they may not realize in the nightlife in a city with neon lights. Also, by incorporating residents around the mountain into the event, it is also bringing an attention to support the regeneration of the mountain to the people who live close by. It is interesting that this group has put much attention to the activity surrounding the products, not only the design of the product itself.

5.2.2 Design Output #2 Design of a community currency system "Kira"

The proposition made in this group was the community currency system to prompt the interaction between the visitors and the locals. Visitors are to exchange the Japanese yen to *Kira*, a form of community currency, upon the arrival to *Haryu* district. Then they make "*Kiralist*", a list stating what they would like to exchange their *Kira* to, such as "Please teach me gardening", or "Please let me know where would be a good site to visit". The list also includes a list of services they can provide in exchange for *Kira*, such as "I can teach how to use a PC", or "I will baby-sit for you". This promotes the tourism beyond just a shopping spree. Alastair-Fuad-Luke, advocator of Slow Design as a concept for sustainability, states in the "manifesto for slow sustainable designers" that the designer should "dematerialise products into service products wherever there is proven benefit in terms of individual, social and/or environmental well-being". [Fuad-Luke 2003] *Kira* is a design to dematerialize tourism experience, as well as supporting the local community by bringing in talents from outside.

5.2.3 Design Output #3 Design of a playground for children: "KUBLOCK"

KUBLOCK is a proposal of CROSSKUBIC used as a play equipment for children use. The designer, who was reminded of his childhood when he played in the mountain as he visited the balded mountain, proposed a playing system for children on the open ground. The system can be used to promote athletic playing, and can be rearranged, expanded to a larger unit, or disassembled anytime if desired. Modularity is a key word for design of products to enhance their creativity, and also to accommodate the speed of their growth and changing needs for playground. This design proposal effectively utilized the characteristics of CROSSKUBIC being modular, flexible, easy to assemble/disassemble, and recyclable.

5.3 Speculations

The *Haryu* project was not outwardly a sustainable design project. The project was taken as an ordinary project as a part of the product design course, and there was no word of sustainability discussed in the design brief. However, as a result, sustainable solution came out rather naturally, without forcing students to do so for improvement of their grades or any other kind of rewards. The outputs were purely emerged from their creative mind and moral judgment. Many of the ideas were derived from the experience at the actual site and interaction with the people in the village. For the students, the sustainable design intention was purely voluntarily, and we think that here lays a key issue to effective method in education of design ethics.

Then, how could design education bring students naturally and voluntarily to ethical decision making, without forcing them with formulas and book-written morality? In this particular project, we analyzed that there were two major contributive elements which brout successful design solutions.

- Responsibility given to student designers for design in the real world
  As many design projects practiced at design schools are hypothetical, it is sometimes hard for design students to judge the relevance of the project to their real life experience. This allows them to explore beyond the restriction of the "reality" in the actual field of design, such as budgetary or technological restrictions, however, it usually just leaves them with the sense of detachment from the position they could have in the real world. After all, we see the reality by having a sense of where we are located in the greater view of the world.
- Experience in the actual project site sensitized students with the appreciation of nature
  It would be hard to convince someone who had never had a good experience in nature to think about the importance of environmental protection. In many parts of the capitalist societies, people are separated far from the natural environment, being caged in buildings established on an asphalt ground. This is more and more a case with design students in Japan, too. One of the questions a design student could have when being assigned a sustainable design project is "why should I design for the environment? I design for people's pleasure, not the environment." This is the simple case when they have not had an experience where they realize that people's pleasure can lay in being part of our mother earth. In the case with this project, some of the students were from large cities such as Tokyo, and had never had an experience of camping or growing vegetables. Even though the field trip in the actual site was a temporal and short one, they had been sensitized from the experience of being in the nature and have become to understand/appreciate it more. The design output showed their intention in creating a design that would fit better with the environment, without distracting it. It is doubtful that they could come up with such sustainable solutions if they had not had the experience of being in the actual field.

5.4 Situated Learning applied to education of design ethics

Considering from the results noted above, we organized the major factors of situated learning to be applied to design ethics education.

- Distance to the Design Site: As human thinking is strongly based on the environment they are in (not only based on the knowledge already acquired), it is important to bring students to the place as close as where the design problem lies.

- Communication: To come up with an effective solution, the problem solving activity may require repetitive discussions and communication with others. Especially for a complex problem solving such as ethics-related questions that requires multiple points of views, discussion with concerned parties should be highly regarded. To provide designers with such an opportunity is necessary.
- Community Participation: The awareness of the self-relevance to the problem and the responsibility increases as a student finds his/her position in the community where the problem lies, the position of the student designer in the project has to be clarified.
- Use of Five Senses in the Learning Process: Learning experience is remembered better when five senses were fully used. The experience well remembered could become the base of ethical decision making in the future, and should be treated with a high consideration.

6. Conclusions

It has been more than 30 years since Victor Papanek, in his book *Design for the Real World*, raised a question to the world of design driven by consumer society that goes on without a consideration to ethics of design [Papanek 1972]. Although many design educators realize the importance of design ethics nowadays, they are still struggling, or seeking a way to apply the philosophy into actual design projects in school to introduce the idea to their students. The movement is happening in rather a slow speed than expected by the society, and it shows the challenge and the struggle of design ethics education. Just as any other issues of ethics, ethics in design couldn't provide a complete manual for designers that shows how to respond to every design situation. To make an ethical decision, a designer must have her/his own ground for moral judgement to decide what is better. To know that, they need to have experiences in what could provide pleasure to humans in a long run. They also need to know what kind of standpoint they have in the society as a designer, to be confident about their role in the flow of design process. This makes them to be more responsible for making moral judgement, as they are more aware of the impact they could cause to the society in conducting a design project. It follows from these points that situated learning, making students to have a sensual experience in the actual field such as wild nature, is greatly effective to prepare them and to invite them to more sustainable design solution with the realization of what lays at the base of ethical design decision making, and values in human life as a whole.

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Nami Wakabayashi
Graduate School of Comprehensive Human Science
University of Tsukuba
1-1-1, Tennoudai, Tsukuba-Shi, Ibaraki-Ken, 305-8574 Japan
Tel.: +81-29-853-2230
Email: wnami@geijutsu.tsukuba.ac.jp