

Nature Artists, Design Researchers and Scientists Collaborate on a Resource Scarcity Research Lab that Doubles as a Public Art Installation

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Abstract: The researcher describes the early stages of an ongoing process to co-create a collaborative research lab, aiming to produce green energy and prepare for natural resource scarcity. The lab will also double as a public art installation within a community in the republic of Korea. Natural artists, design researchers and scientists collaborated with the community not only to prepare for the future energy but also to raise community awareness and to motivate them to participate. Meeting and talking with people within the community inspired us to co-create a research lab that was also a public art installation.

Key words: Public art installation, collaboration, natural resource scarcity, community engagement, community inspired, mind

INTRODUCTION

Convergence research centre: This project was initially commissioned to research the problem of natural resource scarcity as it pertained to the future of the republic of Korea. Unlike many art and science collaborations in which artists are interested in using technology as the new material for arts, e.g. (Sandin *et al.*, 2006; Bermudez *et al.*, 2005; Neff *et al.*, 2010) the Ministry of Science, ICT, future planning initiated the Convergence Research Centre (CRC) project, a cross-disciplinary research project between arts, design and science because they believed a cross-functional team can react faster to the current issues (Ulrich and Eppinger, 2012). In particular, the government requested that, throughout this research, communities are made aware of natural resource scarcity and encouraged to save energy. Artists and designers often share their designs with the public. Thus, the government recommended that we as design researchers who used to practice design by trade were to join this research.

The collaboration team comprised two design researchers, one art research, one philosopher, seven different disciplinary scientists (e.g., water, climate change and urban environment) and various industry partners (e.g., different groups of nature artists, digital artists, graphic designers and engineers).

In order to research together, we discussed building a temporary research lab at UNIST (Ulsan National Institute of Science and Technology) as a testbed for next 7 years. The building housing the research lab will be two stories high and contain about 99 m² floor space.

However, we did not consider the research lab as a public art installation until we began to speak to people within the community. Yet, all of us were keen for the lab to become a symbol of our collaborative research.

SKETCHING THE RESEARCH LAB

During an initial meeting, we expressed our desire that this research building ought to somehow be representative of our pragmatic research philosophy (Goldkuhl, 2012) or of life or of a living creature. Since, our goal is both to create sustainable green energy and to transform encourage our community to save energy, it ought not to be just static but to be full of vitality. The artists from YIP. (2011) are an organization founded in 1983 who coined the term 'nature art' to describe themselves. The philosophy of nature art which the founder of Yattoo, Mr. Koh, Seung-hyun explained to fellow engineers and scientists can be summed up in the following principles: no pre-planning an interaction between natural energy and human imagination, an attempt at co-existence between art and nature, an art research is naturally diminished within nature and art researches diminished by nature stay in the mind and memory of the audience.

Then, inspired by our conversation, he began to sketch. He drew the building as a hexagonal form which can be thought of as a bee hive. He described it as a home for a group of bees who live in an area with clean air because the results of our research and collaboration will contribute to cleaner and more sustainable consumption of energy.

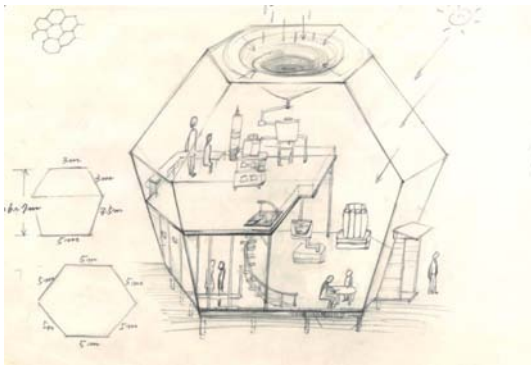


Fig. 1: A sample sketch of the research lab as a public art installation (© Seung-Hyun Koh)

Based on his initial sketch, we and the other scientists and engineers, added the functions to the building that we need. Thus, we arrived at the final sketch of our research building (Fig. 1). Simultaneously, we as designers were curious to learn how the community understood the need to save energy. In particular, we wanted to know how this building would be perceived by people in the community. Thus, we proceeded to speak with them.

Talking with people in the community: We conducted structured interviews (Creswell, 2013) randomly with 140 students enrolled at UNIST who are the main residents of this community. We asked them three questions: what kind of buildings or a symbol do you want to have in your community? Do you have any preferences for functions that this building might have? And what is your favorite building or a creative structure? The responses were thematically analyzed. Although, the interviewees majored in different types of engineering studies, similar themes emerged when categorizing their answers. Three themes were found:

- Inspirational, symbolic and earth-friendly art installations that they can show to visitors
- A place to take a short break near to nature and in the shade
- An interactive art research that stimulates

We were surprised how the community responded about what they want for the building on the campus. First of all, most students wanted to have a symbolic building that made them feel proud of being enrolled at one of the top ranked universities. At the same time, they can introduce it to their visitors as a symbolic building. UNIST was newly founded in 2009, so, the campus buildings are new but just plain geometric shapes.

Secondly, they wanted a place to take short breaks. This was where we felt sympathy for UNIST students. Due to their busy study and assignment workloads, they realistically did not want to take long breaks. While taking a short break, most of them expressed the wish either to see nature or to be surrounded by nature. Also, UNIST is located in the South East of the Republic of Korea and so is exposed to strong sun from early summer to late autumn. That is why they were so, keen on having buildings that provided shade from the sun all over the campus.

What interested us about this category was that the campus is surrounded by mountains and trees. It also has a pond. Due to their busy study timetable and heavy assignment workloads, they did not have time to enjoy their surrounding nature.

Lastly, they want the new building to be an interactive place where they can meet other students. Also, they would like it to be an interactive art research that they can enjoy during their busy study lives. We also interpreted the meaning of this category to be similar to the other two categories. Therefore, the students here at UNIST want a symbolic art installation as well as a place to take short breaks whilst enjoying nature interactively with other students. We shared these findings from the community with the other members of our collaborative team in order to discuss the building directions for our research lab.

The research lab as a public art installation: While presenting our findings, we expressed our sympathy for the students. We recommended that we ought to seek an opportunity to serve what students required for the new building. Won-Gil (2015), the director of Yattoo and a nature artist, suggested adding to the building the function of being a public art installation. Then, students would be able visit the building anytime in order to enjoy it as a public art installation. Also, he suggested having short and small workshops for those students who wished to see nature. So, the students can learn how to enjoy nature in their busy lives.

In the earlier meeting, all of us wanted to build this temporary building simply as a research lab. However, when we found what the students thought about their studying conditions, we agreed that the building should have an extra function as a public art installation. This is also based on our pragmatic research perspective (Patton, 1990). It is often the case that new ideas can be generated as design process progresses (Lawson, 2005). Therefore, we discussed locating all scientific research equipment on the second floor. The first floor can then become a visiting place for experiencing art researches. Also, it

meets the aim of the research if this place would present the energy scarcity problem to the community to raise awareness and encourage them to participate in energy-saving for a more energy-efficient community. Thus, this building will be built not only as a research lab dealing with the energy scarcity problem but it also will be a place to enjoy art researches where the visitors will learn how to enjoy nature.

Community engagement for better public environment:

In order to build this building, we are still discussing how we should design the first floor for visitors who wish to take a break to learn how to enjoy nature and art researches and to be aware of natural energy scarcity and of the necessity to use less energy.

This collaboration across disciplines to solve the public energy problem has benefitted from approaching and speaking to the local community. Understanding what people really need and want gave us insight into how to build the research lab. Without approaching people, it may have led to yet, another mundane building. Throughout this process, we consider this user-centered approach (Boyle and Harris, 2010) to solving public problem to be highly appropriate because talking and responding to the community will gradually raise their interest. The construction of this research building as a public installation completed and since the community is already aware of this building, they are more likely to visit and co-operate in cutting their energy usage. Thus, it increased the points of contacts with the public which will be helpful in solving local energy problems together to achieve better public environment.

User centred approach for co-designing a waterless toilet:

A family of four spend 225 L of water on average, per day. This represents 27% of household water consumption (K water). The domestic house uses 65.9% of total water usage. It is one of main causes of contaminated water in this nation. In order to remove phosphorus, water scientists from the Department of Urban and Environmental Science initiated a waterless toilet project. We aimed to explore with people in the community who will be future users of the waterless toilet. It is a reflective problem-solving approach to design prototyping (Fig. 2a, b). UV lights were installed to be looked more sterilisable, so when people is about to sit on the seat it would give you more fresh feeling.

The lid automatically opens when it detects a user and the seat can adjust to the angle that is most comfortable and straight to rectum. Therefore, it is designed ergonomically, so, it would avoid constipation and get to health condition eventually.

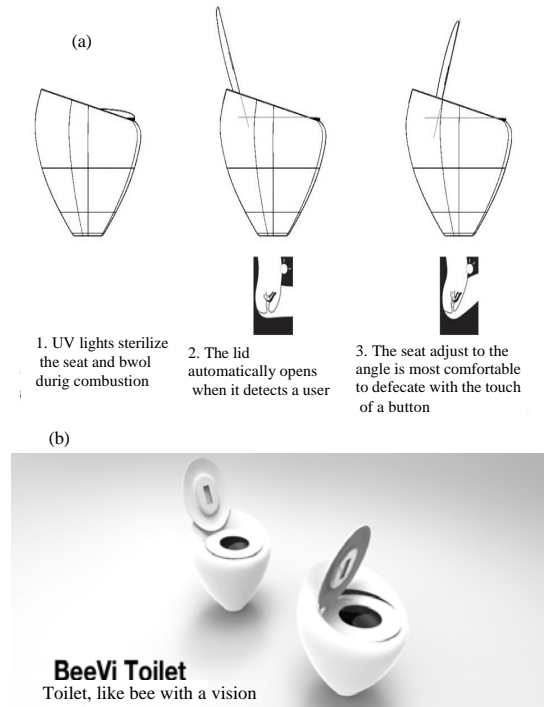


Fig. 2: a) Toilet design and b) Toilet prototype

Form-wise, this waterless toilet doesn't have to have cylindrical shape for water centrifugal force anymore so we designed more like catenary shape to look like a wine glass or a vanity table, a toilet set emphasizing that toilet's rhetoric origin came from the French word, "toilettes".

Media art; citizen-friendly presentation by info-blind technology:

We designed a 'Info-Blind' which functions as blind for shading and also (Fig. 3a, b) it has LED lights set horizontally every wings so we can express media art connecting to computer.

We visualized the result of bio gas quantity as a tree that the lab produces every day on the blinds so when people pass by at night, they would know how much output was produced on that day. So, it attempted interaction between public and lab engineers. Without this visualization public would not know what we are doing in the lab at all. Ultimately this media art connected and indirectly communicated with public as an intermediary.

We visualized designed logo that express the character of each lab which is involved in this project and let it present on the architecture. It is also a try for let public know easily about what kind of engineering department has been collaborating for this project.

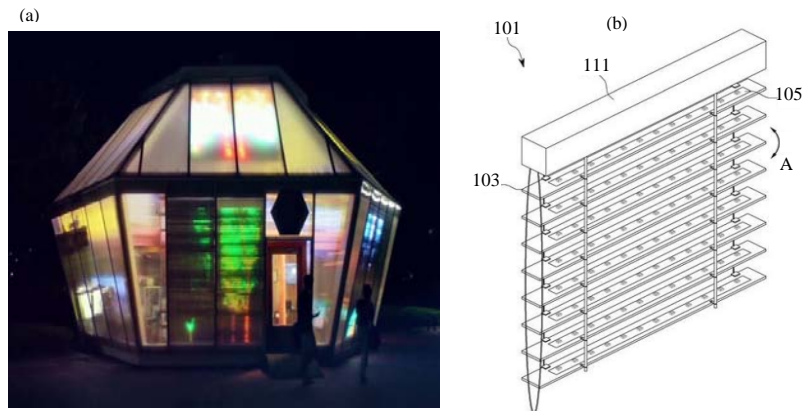


Fig. 3: a) Media art and b) Info blind

Consequently, public said it looked like an art museum which has an exhibition that the public can know what kind of contents are there.

CONCLUSION

Design and art could make easy interaction between general public and scientists by visualizing ambiguous theory to understandable image. Design and art could make a product more human-centered, comfortable, convenient as a liaison.

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