

# **‘Bricolage’: Motivating Public Climate Action by Participatory Design in Constrained Speculative Technological Scenarios**

Bengi Agcal <sup>a\*</sup>, Ziyou Yin<sup>b</sup>, and RAY LC<sup>c</sup>

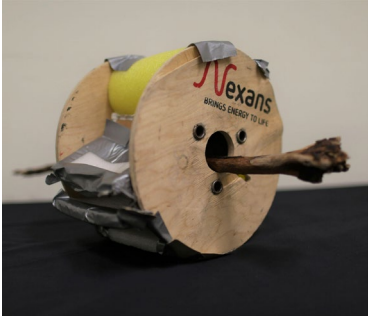
*<sup>a</sup>Faculty of Critical and Creative Studies, University of British Columbia, Kelowna, Canada; <sup>b</sup>School of Design, Hong Kong Polytechnic University, Hong Kong; <sup>c</sup>School of Creative Media, City University of Hong Kong, Hong Kong.*

## ***Appendix A: Demographic Information of the Participants***

<b>ID (Initials)</b>	<b>Gender</b>	<b>Age</b>	<b>Nationality</b>	<b>Assigned Team</b>
P1 (EC)	F	18-25	Turkey	Explorer
P2 (NMA)	F	18-25	Myanmar	Explorer
P3 (VR)	F	18-25	Singapore	Explorer
P4 (CMT)	F	18-25	Hong Kong	Explorer
P5 (ST)	F	18-25	Indonesia	Explorer
P6 (LAPD)	M	18-25	Indonesia	Engineer
P7 (SL)	F	18-25	S. Korea	Engineer
P8 (VU)	M	18-25	India	Engineer
P9 (CC)	M	18-25	M. China	Engineer
P10 (FI)	M	18-25	Hong Kong	Engineer
P11 (SD)	F	18-25	India	Architect
P12 (DC)	F	18-25	Philippines	Architect
P13 (AMA)	F	18-25	Maldives	Architect
P14 (LZ)	F	18-25	M. China	Architect
P15 (CM)	F	18-25	Indonesia	Architect

P16 (MA)	F	18-25	Indonesia	Collector
P17 (EK)	F	18-25	Indonesia	Collector
P18 (JL)	F	26-35	S. Korea	Collector
P19 (YCC)	F	18-25	Hong Kong	Collector
P20 (AL)	F	18-25	Hong Kong	Collector
P21 (TS)	F	18-25	Hong Kong	Collector
P22	F	18-25	Japan	Collector
P23	F	18-25	Japan	Engineer
P24	M	36-50	Japan	Engineer
P25	M	36-50	Japan	Engineer
P26	F	36-50	Japan	Collector
P27	M	50+	Japan	Explorer
P28	F	18-25	Japan	Collector
P29	F	26-35	Japan	Explorer

***Appendix B: Works Exhibited as a Result of the Intervention***

Final Work	Description
	<p><b>River Stream Turbine (Engineer Team)</b></p> <p>We have various methods for generating energy within a natural landscape, such as burning biomass, utilizing solar power, harnessing tidal energy, and harnessing wind energy. However, for the case of Pak Shui Wun, one source stood out beautifully: the river stream. The river complemented the landscape and provided a safe and consistent source of kinetic energy.</p> <p>We prototyped a water-based energy generation system using a wooden handle found at the beach, to which we attached a long stick. Initially, we constructed two handles to</p>

position it over the narrowest part of the river. However, this part had a stagnant flow on the upper river, prompting us to relocate the device to the lower part where the flow is strong. Although the generation is robust there, it posed challenges in holding the turbine in place.

One crucial design consideration was the leaf elements on the turbine. We found the most success with a cup-like design, allowing water to flow into the cup side and turn the turbine. Overall, it was a challenging process, but we achieved success in obtaining periodic good flows from the turbine, resulting in sustainable water-based energy production.



**Post-Apocalypse Energy Generator Triple Power 5G**  
(Engineer Team)

Our initial concept was to develop a multi-energy-source generating system that utilizes wind, water, and solar energy to produce electricity and perform various functions depending on the availability of each source. We proceeded to prototype a device capable of harvesting energy from the river using a dual mechanism that turns regardless of the water flow direction. However, during testing in the ocean, the prototype was washed away.

For our third attempt, we designed a portable device that generates energy when you spin its wheel. Intended to be carried everywhere and used at any free moment, this device converts human power into usable energy by turning the wheel. While it remains a prototype, the concept explores the potential of utilizing movement to our advantage.



**A New Species** (Collector Team)

For the exhibition of the dying biodiversity of the island, we created a work that collected each of our specimens to be displayed in three different axes: from natural to human-made, from small to large size, and from low to high mobility. These works are tied together with cloth and simple strings in these three dimensions, anchored by the largest wooden stick that we can find. In the middle of these specimens is the strange new species we found that was a combination of Styrofoam core with cement exterior with clamshell. We named it Animantia Styrofoam, a species that can only arise out of the symbiotic relationship between nature and human production. The exhibition shows the way human intervention and nature are coupled with each other and the way old species can disappear, but new species can arise out of the relationship.



### **A Trace of the Subject in the Object** (Collector Team)

To show the disappearing diversity of our world, we created a work that instead of showing us visual artifacts alone, provides us with tools with which we can recreate sounds of the environment. Each instrument in the exhibit is meant to create a different sound. By blowing on the surface of the rocks, we hear a different sound. By hitting the plate with a rod, we hear another sound. By touching the surface of the board, another flavor of sound emerges. The interactive sound display is overlooked by the backside of Jesus, whose hair can be seen over the exhibition, back turned against us. Jesus was a part of our community long ago, but now merely its back is seen from our point of view now. It has left our consciousness and our reach.



### **A New Home** (Architect Team)

To explore design considerations for a world of rising sea levels and inhabitable islands, we crafted a floating structure capable of staying above the water in case of rising tides. This dwelling is constructed using recyclable materials and adorned with renewable cells. Additionally, it incorporates a workstation with attached instruments. During the initial test, the home floated for a while but eventually toppled over. For the next iteration, we introduced an anchor that, when lowered, enables the home to float on the waters surface while maintaining balance. The anchor takes the form of a heavy rock that can be lowered into shallow waters as needed. Together, these elements create a system that allows us to survive high tides and floods, while also being adaptable for living on sand and gravel.



### **Floating Garden** (Architect Team)

To mimic the world where rising sea levels cause unpredictable rising tides, we created a house and a connected greenhouse that provides a sustainable home for the future. It is complete with green plants that allow us to be completely self-sustaining, with a door to enter each that can provide effective barriers. The entire home is fashioned from found plates and materials on the beach, plus our own sandwich and McDonalds cups, showing the effect of our civilization. In testing our design, we floated the home on the river to see if it could survive the flood. It worked! We can have a haven to protect our trees now, and the home can sit in a world of dangerous and unpredictable water flows.



### **The Present Dystopia™ (Explorer Team)**

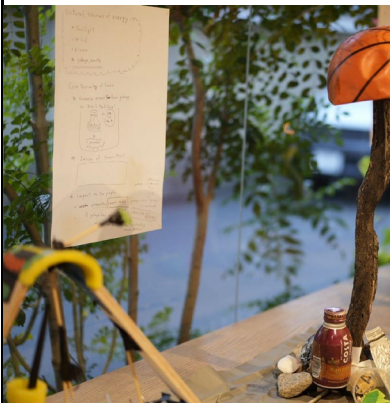
We created a map of our proposed waste facilities on the island and mapped it with waste that we found can be grouped into different categories. The resulting map is evidence of our waste and destruction and is meant to be an artwork and map of our dying world. Note that we attached instruments like plastics and wrapping to show the attachments that exist on the site itself. Our map was constructed from our explorations of the island, which is represented here in physical form.



### **A Colorful Future (Explorer Team)**


While exploring the area, we decided to divide our community into sections: nuclear, composting, beach, ocean, and forest. To delineate the borders and accurately represent the landscape, we utilized the waste we found in the surroundings. During the process of collecting waste and creating the map, we couldn't help but be amazed by the variety of colors present in the trash. We named this piece 'A Colorful Future' because, undoubtedly, our future will be more vibrant.

Initially, we gathered all the pieces we could find and discovered a surprising array of colors on the beach and at trash sites, especially those close to human activity like fishing spots. Subsequently, we attempted to categorize them meaningfully to depict the diversity of waste in our world. We created nuclear waste sites, plastic centers, a bridge connecting the beach and forest areas, and more. The entire array is showcased on a plate that abstractly represents our island. The colors we observe represent waste but also reflect the colorful past it accumulates.



### **GARDEN: Garbage Reproduces Delightful Energy (Engineer Team)**

In the movie 'Back to the Future,' Doc Brown utilized food scraps, banana peels, leftover beer, and various other discarded items to fuel his DeLorean vehicle. Intrigued by this concept, we pondered whether the most effective renewable energy involves transforming what we discard into what we desire. In Japan, where trash cans are scarce, our first task involved scouring hidden spots around bushes and building perimeters to uncover materials that people intended to dispose of but couldn't find a proper place for. Our excitement peaked when we discovered substantial pieces of trash, such as a broken basketball.

	<p>While collecting garbage, we came to the realization that in our landscape, trash is the most abundant resource for energy, given the absence of other options. Consequently, we hypothesized that a power plant utilizing trash to generate energy should also be constructed from discarded materials. Facing challenges in constructing the machine, we engaged in trading with the depot, acquiring a glue gun, tape, and crazy glue to successfully complete the building. Since our group amassed a considerable amount of trash, sacrificing a few collected items posed no difficulty. In this envisioned future, our trash isn't mere waste; its our valuable resource.</p>
	<p><b>The Nest: The Tree of Nature Created by Nutria in Polluted Kamagawa River (Collector Team)</b></p> <p>In 2070, Kyoto experienced multiple water disasters attributed to climate change. Frequent landslides and floods wreaked havoc on the city's urban infrastructure, leading to the abandonment of urban areas as river levels surged and rivers expanded. The once-polluted riverbanks witnessed the demise of various organisms and plants, except for the persistent presence of nutria. As the water levels rose, nutria nests migrated to trees. Examining these nests revealed footprints from diverse creatures that had once occupied them, along with remnants of human life.</p> <p>Our expedition to the nutria nests along the Kamagowa River enlightened us to the altered water levels. Collecting traces of the nests and additional materials for our project, we faced a challenge in assembling the branches and materials. Resorting to trade, we exchanged rocks for rubber bands and glue, enabling us to construct the nest. Nevertheless, we encountered difficulty in erecting the nest, prompting us to borrow a large pot. To secure the nests trunk for display, we traded the pot for a wooden block, completing our project.</p>



**Reincarnation: Trash is the Resource of the Future**  
(Explorer Team)

The waste generated in the future cannot be stored conventionally due to limited space. Instead, the renewal process occurs within the city itself as part of a reappropriation system. In our city, trash serves as a resource for generating new ideas and structures. The map illustrates this process, depicting the recycling efforts that channel waste into a central area for transformation. The red sign functions as a station where the flow of trash converges, symbolizing a place of renewal. The blue wire tracks signify the movement of waste from various city locations, converging at the central sign, akin to a life-giving sun at the heart of the city.