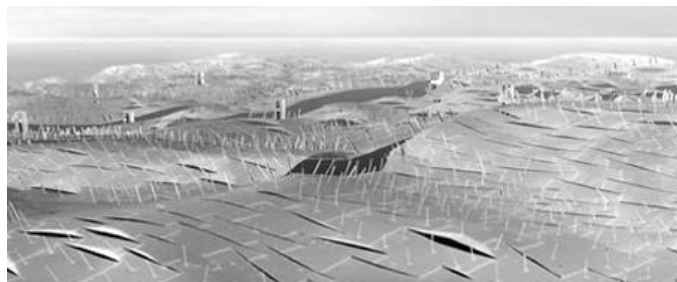


Wave Garden

Yusuke Obuchi interviewed by Chrysostomos Tsimourdagkas

http://www.floatermagazine.com/issue01/Wave_Garden/



Yusuke Obuchi, *Wave Garden*, perspective, collage, 2002. Courtesy Yusuke Obuchi.

Wave Garden, designed by Yusuke Obuchi in 2001-2002, is a floating 480-acre artificial landscape consisting of 1,800 tiles of three-inch thick "piezoelectric" membranes located off the San Luis Obispo coastline, California. Monday to Friday, it functions as an alternative power plant, oscillating with the ocean waves and generating energy. At weekends, it becomes a buoyant public park.

CHRYSOSTOMOS TSIMOURDAGKAS: What is the conceptual core for the "Wave Garden" project?

YUSUKE OBUCHI: The inspiration for the Wave Garden project dates back to the late 90's when I started explaining a territory of architecture beyond mere form. It started by questioning how to go beyond object and what to start engaging things with larger social-cultural issues that become the driving force for defining architecture. That was a very rough idea but the starting point of how you establish an architectural concept. The second question was how you visualise measure of social-cultural movement. A unique way to do that is by measuring energy consumption. If you are doing something during the day or during the night, you are always using electricity. If you are watching TV, if you are cooking, if you are working on your computer, you are always consuming energy. So that's exactly the best thing to measure. And, certainly, one should examine kinds of movement not only within the house or within the city, but globally. And a third question was how you find different sources with which you can produce energy, how you invent alternative ways in which you can produce a power plant, how you design a architectural form, whatever it might be, that acts as a generator.

CT: How does this oscillating environment become functional?

YO: The project becomes functional due to the use of the "Piezo electron", a material which is similar to the muscles. "Piezo electrons" and muscles are principally the same, even though muscle version of "Piezo electron" is made out of crystals, ceramic crystals. This material has the capacity to convert electric current into movement, to produce stress or strain when an electric field is applied (that's what the muscles do). So the electric energy becomes kinetic. The other part of this material property is the reverse of that, the production of electricity when stress is applied, meaning it is me who create forces that, then, produce an electric current. The "piezoelectric" effect has already been used in numerous ways. It has been applied in medicine for the creation of artificial muscles. It has also been used in military. In the last Iraqi war, there was an attempt to power battlefield equipment (laptops, mobiles, whatever) by "piezoelectric" generators embedded in soldiers' boots. The soldiers could actually produce the energy they needed by just walking. Now, how does the "Piezo electron" become functional

in the *Wave Garden* project? Simply, "piezoelectric" membranes produce electric current, by just oscillating with the movement of the ocean waves. The kinetic forces of the waves are converting into electric energy. So, during the weekdays, this is acting as an electric generator. However, in the weekend, things change. Depending on the demand for the produced energy during weekdays, its function is determined on the weekend, when energy consumption declines (businesses don't operate and about 30 percent of energy is consumed). If citizens have consumed little energy, they are rewarded: the platform rises and forms recreational spaces and swimming ponds. But if weekday demand is too high, the platform remains strictly a power plant. Acting as a barometer of energy use, the *Wave Garden* makes invisible power visible. So, what's the function? It has a bi-function: production of electric energy and production of physical space.

CT: What is your opinion about floating architecture in general, utopia or reality?

YO: It is totally reality. It is already happening pretty much everywhere around the world. I think there are a lot of projects. In Japan, for instance, they are looking for an airport, not the Kansai Airport which is anchored, but a purely floating one. The disadvantage of floatation, however, is that you have to deal with the constant movement. That is the difficult part, how you stabilize a structure. I mean, for the inspirational part, it requires an ability to shape it and stabilize it from the movement of the water. To conclude, I don't think it is really utopian in the sense of speculative. It is a matter of finding out different technologies and techniques to achieve habitable floating spaces. I think it is here, not utopian at all.

CT: How do you think new technologies will contribute to future experimental forms of architecture?

YO: There are different levels of involvement of technology in architecture. There is involvement in the techniques of designing as well as the techniques of understanding (for the production of knowledge). Technology of a hundred years ago, during the industrial revolution, was a particular one that shaped the society, politics, everything. Of course, architecture was part of that. Right now, we have technology in relation to information. I think it has changed dramatically. That's what we are examining at the DRL (Design Research Lab). What's the relationship between information and architecture, how you materialize information. This process will radically change the way in which we understand materials, how to manage materials, how to use material in different ways so we can actually generate highly intelligent environments. I think it is a matter of thirty-fourty years, when we can actually engineer the material that will suit our needs. Right now, the materials seem to be quite dense. Paper is just there for you to write something on, but, in twenty years from now, it will build something. Paper will actually change, whatever the shape and color might be, and have the ability to bear different kind of information in relation to the performance. So, I think technology will directly affect the way we conceptualize how things operate. The question is how we exploit the potential within the architectural domain.

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