

FIELD ACTION JOURNAL

DESIGNING
MIGRATORY
STRUCTURES

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SUSTAINABLE SYSTEMS

PARSONS THE NEW SCHOOL FOR DESIGN , SUMMER 18
INSTRUCTOR: CAROLIN MEES

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SOCIAL & SYSTEMS



This Changes Everything

The global economy is dependent on fossil fuels since these are still the primary sources of the energy that we use to warm our houses, transport, and to cook. The movie *This Changes Everything* focuses on how fossil fuels companies treat the Earth as a machine by burning these materials on an industrial scale and creating waste in our commons. These pollution is contributing to the increase of temperature of the Earth, which is expected to get two degrees Celsius higher, which would be inhabitable. Efforts by local institutions and campaigns against the exploitation of the environment help, but there will not be an end to this disproportionate mismanagement of resources if the companies themselves continue polluting to create wealth.



Seekers, 512 Truth. „When Republican Party Was Bought by the Fossil-fuel Industry.“ Medium. November 16, 2017.

How community gardens mitigate climate change effects and provide social benefits for the community?

Founded in 1977, The 9th Street Community Garden and Park helps reduce the temperature of the area by the vapor and oxygen that plants release, which cool the environment. Also, by composting, they not only diminish the amount of waste transported to landfills but also create nutrient-rich soils. The 9th Street Community Garden is also trying to mitigate climate change by creating solar energy.



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Community gardens also provide social benefits such as a space of fresh air for the neighbors. In the 1970s, the East Village was considered a dangerous neighborhood with police brutality, and drugs. The garden provides the community a space for the people to plant their food, have a good time with their family and recycle. The art in the mural of the 9th Street Community garden increases the value of the neighborhood, and the pond on the garden has a system to prevent flooding for possible future hurricanes such as Sandy in 2012.



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Grow Your Own Food Experiment



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From the growing process of my own food I learned that it takes effort and perseverance to create my sustainable aliments, but that it is completely achievable. I feel it is important to be part of this kind of experiments to realize the impact we could provide to the polluted environment.

Grow Your Own Material Experiment

My self-made bio-leather is sustainable because it takes into consideration the needs of the present while preserving the finite resources that are exploited. The bio-leather is made from a fermentation process of tea, sugar, vinegar, and SCOBY (a symbiotic community of bacteria and yeasts). This medium does not need light to grow, it only needs to be in a warm place (of around twenty-seven degrees Celsius), and can then be biodegraded. The bio-leather is flexible right after it comes out of the fermentation process when you can manipulate it and sow it. Then it becomes more rigid and water absorbent. Some of the unsustainable materials that would be beneficial to have replaced by bio-leather are cotton, denim, leather, and polyester.



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Final Steps



After four weeks of growing the bioleather, I took it out of the pot, and cleaned it with water and soap. The bioleather appeared to have black mold, therefore I decided not to use the material.

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CLIMATE CHANGE & ENERGY



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Sustainable Food Production Governor's Island

Grow NYC's Teaching Garden designed a system in which the plants absorb the ammonia produced by fishes as nutrients, and both the fish and the plants are edible. Apart from being sustainable is also an affordable project since it uses little electricity, and the containers were the plants, and the fish are placed are recycled.



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On the other hand, the Earth Matter organization works on composting to create fertile soil on the island. Their platform is sustainable because of the close location that they choose, which permits them to handle all the organic waste of the island.





The third initiative is the Billion Oysters project who does aquaculture for the restoration of the NYC Harbor. Their system is sustainable since oysters are filter feeders, which permits them to reduce the waste of the sea and provide a safe habitat for other species.

These projects represent a minimal percentage of sustainable practices in the city. Every day there could be from 3 to 4 tons of waste composted, and Earth Matter is only composting around 7 tons a year.



Concert for a Sustainable Planet | Climate Week. Climate Week NYC. Accessed June 09, 2018.

For the Grow NYC's Teaching Garden and the Earth Matter project to be viable in the city, they need to find spaces where they are allowed to do it and that are small enough to be manageable. They also need funding to afford the materials necessary to make it possible, and the people to understand the process. To make the NYC Harbor viable in other areas of NY, we would need collaboration from more restaurants and their oyster shell waste, and create more oyster restoration schools and projects.

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Mobility / Kinetic Energy

When an object is in a resting position and accelerates it produces kinetic energy, and when it decelerates it can transfer it. This type of power is most of the times wasted. However, there are ways in which it can provide electricity. Some highways and sidewalks utilize this type of energy recollection by including panels on the floor that take the energy of the cars or the people that passes on top of them to transfer it for another use such as feeding energy plants of a particular neighborhood.



Pavegen. "Pavegen Powers Olympics Transport Hub from Footsteps." YouTube. October 03, 2012. Accessed June 11, 2018.



Richard, Michael Graham. "What Is Kinetic Energy? Can It Be Harnessed to Power Our Stuff?" TreeHugger. February 05, 2018.



Kart, Jeff. "New Rumble Strip Gets Kinetic Energy from Cars." TreeHugger. February 05, 2018. Accessed June 11, 2018.

This type of energy is beneficial for the environment because it is non-polluting, which has an immense potential to reduce the greenhouse gas emissions. However, the scenario is currently not that optimistic since the technology behind this renewable energy still needs further development. To make kinetic energy viable, scientists have to find ways to do not slow down the object that produces the heat when they take part of it for their purposes.

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We all create kinetic energy with our bodies every day, and we all live on a planet that is desperately asking for different ways of treating it. Even though not all of us are fortunate to have a system of kinetic renewable energy in our neighborhoods, ideally, one day we can all be involved and benefited from this advancement.



Jones, Andrew Zimmerman. "Energy: A Scientific Definition." ThoughtCo. Accessed June 12, 2018. <https://www.thoughtco.com/energy-definition-and-examples-269976>.

The Brazilian football player legend Pelé was sponsored by Royal Dutch Shell to create underground tiles on a soccer field in a favela called Morro da Mineira at Rio de Janeiro.



Ap. "Pele Advises Brazil to Play as a Team." DAWN.COM. September 12, 2014. Accessed June 11, 2018.

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Ap. "Brazil Soccer Field Harnesses Player-power." CBS News. September 11, 2014. Accessed June 11, 2018.

These tiles capture the kinetic energy from the players, which then, in conjunction with solar panels serves to generate renewable electricity for the vicinity.

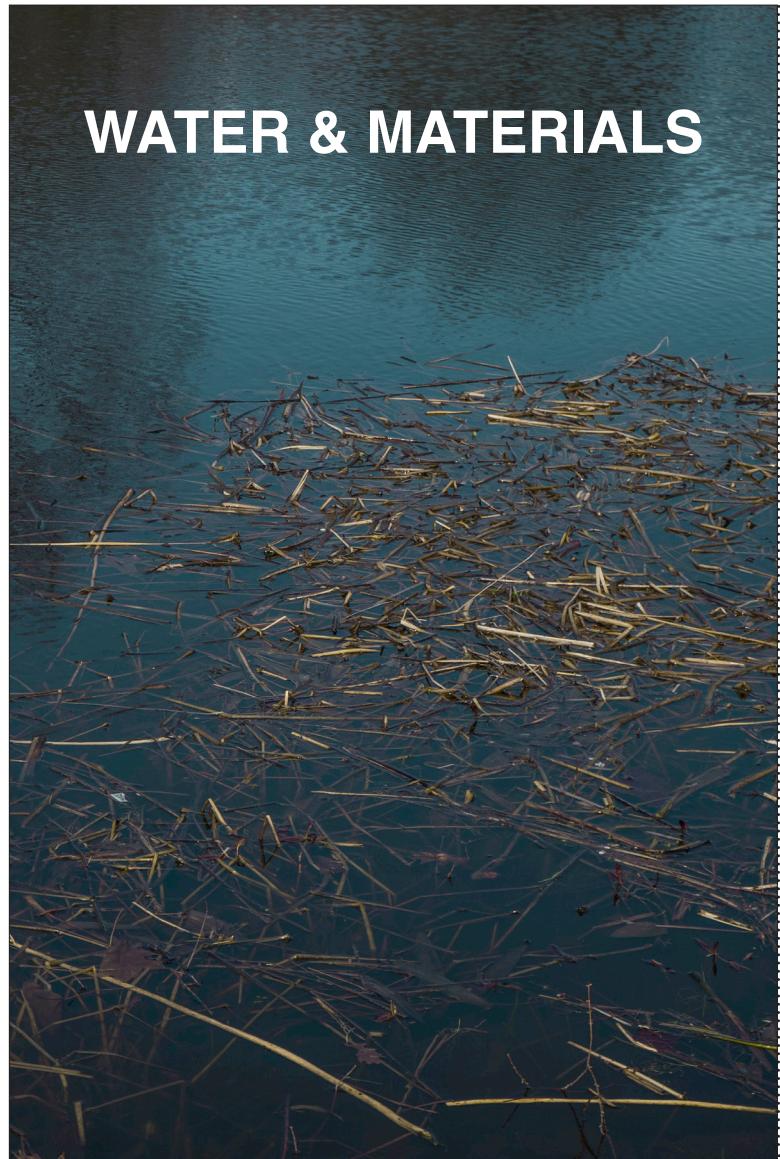
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Cited Work

Singh, Timon. "World's First Kinetic Energy-Powered Football Stadium Opens in Rio De Janeiro." Inhabitat Green Design Innovation Architecture Green Building. October 02, 2014. Accessed June 11, 2018.

"Shell Unveils First Soccer Field Powered by Players'Footsteps." Sustainablebrands.com. Accessed June 11, 2018.

Richard, Michael Graham. "What Is Kinetic Energy? Can It Be Harnessed to Power Our Stuff?" TreeHugger. February 05, 2018. Accessed June 11, 2018.



Science Lab - Coliform Testing

Ken. Beyond My ...File:2016 One World Observatory View Southsoutheast towards Brooklyn and Manhattan Bridges.jpg." Wikimedia Commons. February 18, 2016.

New York City's waterways become contaminated during storms with sewage due to the water drainage system that for many years was connected to the pipes that carry the fecal matter to the rivers. Also, the lack of open land spaces makes it difficult for NYC to absorb that water. When these waters get fecal matter, they get coliform bacteria, which is not safe to drink.

The quality of the drinking water in the city is influenced by the filtering processes taken care of by fourteen publicly owned water treatments. In addition to these treatments, the EPA has identified contaminated bodies of water, called Superfund sites, and have cleaned them. To reduce and ideally stop the contamination of the waterways, all the water that goes to the rivers should be appropriately filtered before getting to its final destination. Also, the government must ensure that the drainage system and the pipes are completely separated.

Cited Work

DePalma, Anthony. „When It Rains, Sewage Often Pours Into Harbor.“ The New York Times. August 11, 2007. Accessed June 14, 2018. <https://www.nytimes.com/2007/08/11/nyregion/11drain.html>.

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Material Connexion Library

To construct the off-grid sustainable structure to use in situations of extreme floods for Ababa in Faizabad I need a structural material for the construction, a material that could permit food production, and materials for the energy systems implemented (wind and kinetic energy). I decided to use all natural materials.



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For the structure, I will use Kenaf boards. Kenaf is not only a renewable material that is strong and stable but is also grown near Faizabad in South Asia. Its thermal properties are superior to the ones of other elements, which will permit the structure to cool and warm up when necessary. I can mold this material into the Fibonacci structure.



For the food production element, I will use ABS/POM/PP since it is ideal of injection of molded parts, which serves as a suitable material to make the containers where the food will grow. To mold, this material is from 10-50% faster than other plastics, and all of its parts can then be biodegraded.



I will have another material as well as part of the walls and the ceiling of my structure, which is a handmade rubber that is waterproof, flexible, and weatherproof.



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Finally, for the part of the structure that creates the wind energy, I will use Ramtec. This material is not only adaptable to different temperatures which makes it suitable for Faizabad's climate but is also high wind resistant.



Cited Work

"Database Catalogue Search." Material Connexion
(For text and images)

Science Lab - Reflections



In the University Center Science Lab, we conducted an experiment on the quality and the effects of the water treatment system in New York City. We tested if the filtered water that came from the river presented coliform (bacteria, either total or fecal). The control sample plate (with Sterile H₂O) served for us as a reference to compare with the experimental samples results (the river sample filtered and non-filtered). This type of experiment is crucial for sustainable design since it permits us to understand what is functioning (in this case the filter), which will tell designers in which direction they must create and plan.

It will be interesting to do other experiments in the Science Lab to produce more sustainable designs. For example, we could experiment with the polluting effects of the materials that we use daily in our designs such as plastic. We, as design students could participate in the investigation of which other materials would be more sustainable to include in our work. Fashion designers might also be intrigued by experimenting with innovative ways of dying their clothes that are more eco-friendly.



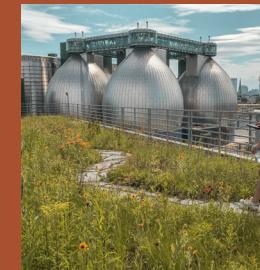
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Newtown Creek

The Newtown Creek used to be an epicenter for Native Americans to participate in activities such as fishing. Nowadays, it is considered one of the most polluted areas of the United States caused by the oil refineries, chemical production plants, and factories located in the area. The companies responsible for this contamination have left the bottom of the creek with toxins that are unhealthy for the ecosystems that live there.



The Alliance's job is crucial to diminish the elements of contamination in this very inaccessible waterway. It is essential to higher the bar of what type of pollution is an issue, and the Alliance is working diligently in achieving this in the area. Also, their contribution with a green space helps to absorb the rainwater, lower the temperature (that has risen by the Heat Island Effect), and to insulate the building.



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