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FIELD ACTION JOURNAL

PARSONS THE NEW SCHOOL FOR DESIGN , SPRING 19
INSTRUCTOR: CAROLIN MEES

SUSTAINABLE SYSTEMS

S.Luna Van Arsdale

DESIGNING
SUSTAINABLE
NOMADIC
STRUCTURES

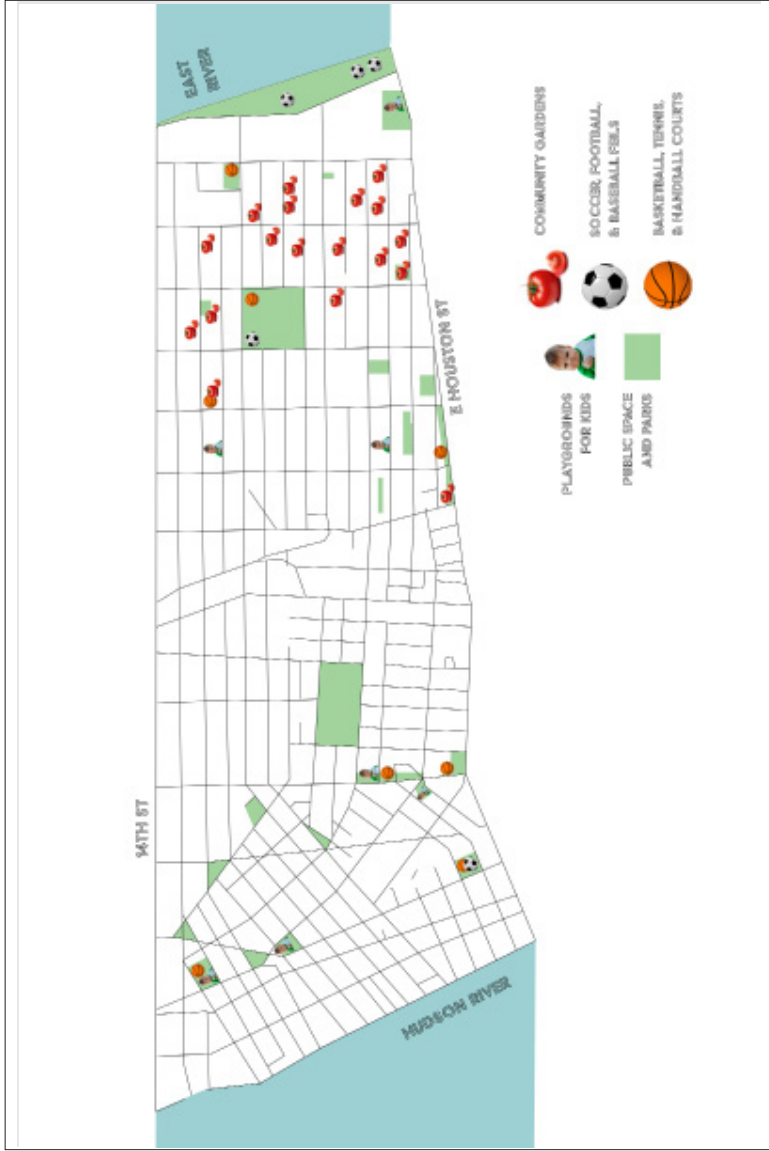
GLUE STRIP



SOCIAL & SYSTEMS



GLUE STRIP



GLUE STRIP



Medical Plants for the community



French water filtration system

Short Narrative of a Woman's Life in the East Village

Slicing up veggies in front of a window as the warm morning sun shines through, I push the skins to the side and then place them in the container perched besides my sink. I just recently moved to the East Village and have been trying to find community outlets. To my pleasure, I discovered an array of community garden plots dotting the neighborhood. I grew up in the countryside and am accustomed to using my green thumb, these gardens give me a sense of home, as well as community. I am a 32-year-old lady who scored a killer job in the big apple, but I refuse to forgo my upbringing in favor of the glamourized New York lifestyle. I grab the container of vegetable skins, snatch my pashmina, throw it around my shoulders, and head out the door. Flouncing down my three story walk up, I head toward the compost at the corner of my road. The warmth burning on my cheeks tells me I have arrived outside, as I turn my head, I spot the green leaves dangling over the stark, gray chain link fence – why they use such an unappealing barrier I will never know. In any case, I start towards the garden with a bounce in my step. As I arrive through the gates, I make my way to the vegetable compost and leave my offerings to the gods of fertile soil. I turn on my heel and head towards my plot. As I lean down, I see that the rosy tomatoes have become nice and plump. I feel at home.



CLIMATE CHANGE & ENERGY

GLUE STRIP

a-What are the conditions necessary to grow the edible plant wheatgrass?

The conditions necessary to grow wheat grass is having soil, sunlight, and water.

b- How long did it take you to grow this edible plant?

I had planted it originally about two weeks ago, and within a day or two it was already sprouting, and within two weeks it has exploded in size.

c- What would be a better design of a container for growing wheatgrass than a paper cup for growing wheat grass and why?

Probably one that allowed water to pass through it, the problem also with the paper coffee cup is that it has a tendency to begin decomposing when soaked so often. I would also like to have a larger container so that we could grow more at a time. I think a flower planter would be effective for this purpose.





wheatgrass seeds sproating

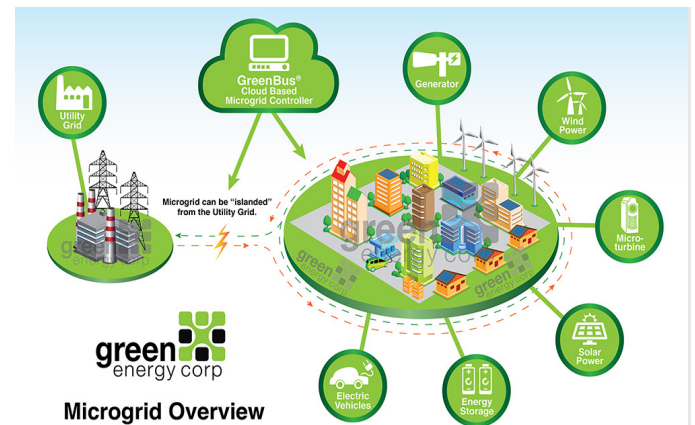


cup from the bean that I planted the wheatgrass in

The conflict between human activity and the environment is far and broad. But I will say, in my opinion, the two largest problems we are facing is the consumer mentality that plagues our cultures and the overpopulation of human species on this wondrous rock.

With corporations and business moguls at the forefront of our economy's direction, it is hard – if not impossible – to convince greedy individuals that they should put morality and ethics before wealth and power. As far as our personal implications within the current

climate conditions, there are things that we as individuals can do aid the environment. For one, something as simple as cutting out plastic bags, water bottles, and any one time use plastic would revolutionize our fight against climate change. Logistically speaking, we need to create incentives for large corporations and business moguls to transform their companies by sustainable means. If managed well, this transformation could boost the economy and save the Earth, which is a win-win for everyone.



Microgrid Overview

<http://www.greenenergycorp.com/about-us/about-us/technology/>

An electric grid is comprised of a generating plant, transmission lines, substation, transformers, and distribution lines that brings electrical power to a consumer. An off-grid energy option is solar power energy generated by the solar panels that accumulate power from sunshine. Micro Grids can operate both with and without

being attached to a primary energy source. In creating a Micro Grid, one must consider creating a detailed electrical model that breaks down how energy flows through, how it is controlled, and its overall dynamic stability. I am focusing on using solar panels as part of the Micro Grid in my studio project.

There are a variety of ways that energy can be produced such as solar, wind, water, fossil fuels, and so on. Solar consists of energy being absorbed by the sun, wind turbines harvest energy from the wind, water energy is yielded by water pushing the mechanism and in turn creating energy, and fossil fuels are pulled up from the earth where they have been fermenting for thousands of years. Energy can be stored in a variety of ways; a most basic example is the universally used battery. Energy is then transferred through the vibrations of magnetic and electric fields. With the development and evolution of energy throughout the century, scientists and activists alike have realized that is imperative that we find better sources of energy in order to mitigate the greenhouse gasses that are produced with the cultivation of oil.



Through the fermentation process, bacteria emits bacteria cellulose and it is this that makes up Kombucha SCOBY (Symbiotic Culture of Bacteria and Yeast). The SCOBY is in fact a living organisms. And like all living organisms, there are conditions that one must consider in order to grow it successfully. SCOBY needs a balanced acidic pH (a pH between 2.5 and 4.5),

a sterile environment, the right nutrients (tea, sugar), filtered water, and a temperature of about 65-80 degrees Fahrenheit. SCOBY can become bio-leather through these specific climatic conditions through the sugar breaking down by the yeast and therefore the bacteria use the sugar as energy to spin nanofibers of cellulose, creating that film on top of the Kombucha.

Wk.1 observations wk.2 observations

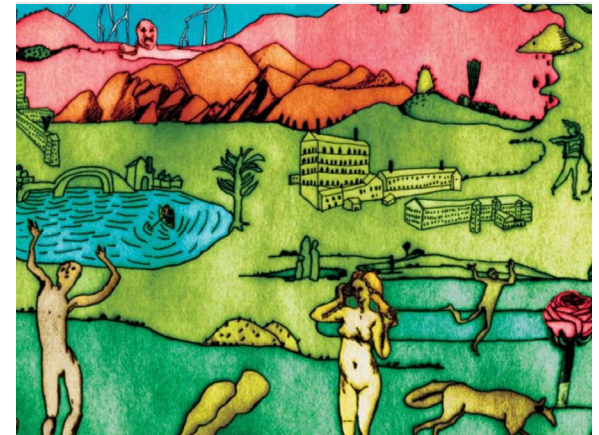
There has been minimal odor with the SCOBY because it is in the corner of my room near the radiator. My roommate and I have our own rooms, so she has not had to deal with the minimal odor that it has produced. The SCOBY has been growing steadily but it is not yet a half of an inch thick. As far as maintenance, it has been pretty straight forward. I just set the container near my radiator that pumps warm air into my room throughout the day. My radiator is especially effective and keeps my room between 75-85 degrees at all time. The lighting in the room, especially in that corner is always quite dim. It is interesting how rich the color of the water is compared to the actual SCOBY.

The SCOBY is now a half of an inch thick. The conditions have not changed since the beginning. The temperature has been weighing between 75-85 degrees Fahrenheit, the room has been dimly lit, and the SCOBY has remained unmoved. I have poured out the liquid and collected the SCOBY. I removed the SCOBY and washed it thoroughly with clean water. I then laid it out on a wood cooking sheet and will start flipping it twice a day to ensure it does not stick onto the wooden surface. I am now going to let it dry so that I can see how I can use the leather in my work.



WATER & MATERIALS

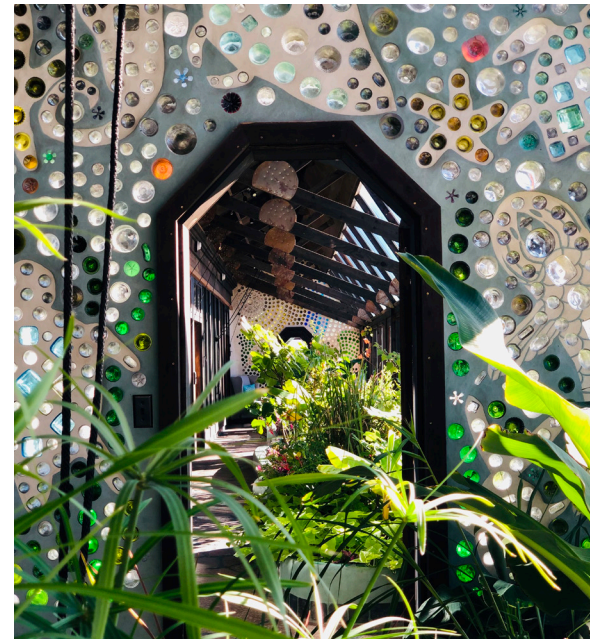
GLUE STRIP



<http://laurenredniss.com>

I found the presentation by Lauren Redniss to be especially provocative. With the unveiling of her new book regarding copper that is soon to be published, Lauren brought a light on a very interesting argument that attests to the downfalls that we have with our current description and realization of sustainable energy alternatives. There are so

many factors that can end up counteracting the initial effort set forth by sustainable researchers and developers that I had not considered before her talk. Paired with the playful, vibrant illustrations, Lauren wove together a provocative environmentally conscious narrative with language that speaks to both children and adults alike. Taking this information



<https://www.earthshipglobal.com/the-vallecito-earthship>

presented to us, I felt quite inspired to integrate some of these ideals into my own work. I am not entirely sure what specific projects this information will be applied to in the future, but it is resting in the back of my mind and something

I have been gnawing on for the past couple of days. I do know that I want to include these findings into my final nomadic structure that is going to be akin to the Earthship Biotecture developed and constructed by Michael Reynolds.

3. 1

Droughts are described as a “creeping disaster” since their impact builds over time yet leave mass devastation in their wake. Fluctuating land and ocean temperatures largely dictate the global weather patterns, the latter being most prominent. In both the north Atlantic and Pacific oceans, prolonged and drastic temperature changes correspond directly with extreme weather patterns that plague our land. On land, the hotter surface temperatures result in faster and greater evaporation of water from the earth. When the soil is dryer, not enough water evaporates into the atmosphere to create rain clouds. With the lack of rain, the surface begins to bake, removing any supplementary moisture which further exacerbates dry conditions. When looking at droughts in reference to global warming, wetter regions become wetter and dryer regions become dryer. Climate change alters large-scale atmospheric circulation patterns which in turn can move storms off their usual paths. This shift can amplify weather extremes. Air circulation



A refugee camp in Kenya IHH Humanitarian Relief Foundation/Flickr

through the atmosphere impacts the distribution of rainfall around the world, “which can throw water supply and demand out of sync.” Deforestation and soil degradation also play a part in the increasing areas of drought and desertification. Without flora coating the lands, less water is available to nourish the fundamental water cycle. Deforestation and other practices on land (such as intense agriculture) can reduce the soil’s ability to absorb water because these practices diminish soil quality.



Getty Images - Namib Desert

My name is Libertina, I am from the country of Namibia near the Southern tip of Africa. Namibia is one of the most arid countries in sub-Saharan Africa. The majority of our lands are covered with desert and unforgiving living conditions. In the desert areas, such as Oshana, water is drying up much quicker than in the past. Our lands are exposed to desertification and prolonged periods of drought. In the north of our country, some years ago, it used to get quite cold and stay like that for a while but now the temperatures are becoming warmer and warmer as each season flows through and the years pile on. My family and I have had to migrate to the coastal areas that are not so arid, but not everyone has been able to flee the encroaching desert. We are lacking water to sustain our population, our agriculture, and overall livelihood.

Water testing is an important tool to make aware of environmental issues because water quality effects every party in this world. Water is the phenomenon of life and a pivotal point of survival. Around the world, water scarcity is a prevalent issue that plagues much of the land. It is important for people, specifically in America, to become cognizant to water's significance and not overlook it because of the ample sources of fresh water on "our" land. As designers, we need to understand how to influence people to deviate from the materialistic and consumerism that overwhelms so many and create an environment in which people are re-immersed into the natural world to then develop a personal bond with the environment which will in turn make it's well-being of personal interest to the individual. I believe that if we as designers are able to look beyond ourselves, we will be able to develop designs from a more pragmatic perspective.



<https://www.newstalkzb.co.nz/news/govt-announces-tribunal-to-determine-future-of-te-waikoropupu-springs/>



<https://geekologie.com/2018/02/trippy-flood-completely-submerges-nature.php>

Combined Sewage Overflow Issues in New York City

In the science lab group, we decided to create a mock-up of a poster that would advertise a free lecture for anyone who was interested in learning about the sewage overflow issues that plague the big apple. Due excessive rain, the New York City sewage system overflows into the Hudson and East Rivers. When this overflow occurs, the sewage pollutes the river and closes down many facilities. Naturally, this problem arises during the rainy season. An example of an affected area would be Coney Island beach. In some severe cases, the government must close off the beaches in response to fecal matter being present in the river waters. During our lecture series, we would be able to introduce innovative potential design solutions as well as giving information as to how a single individual can have an impact on the sewage problems here in the city. One potential temporary solution would be for people to be cognisant of the weather. If it is rainy outside, we could share with them that rather than flushing their toilet right away, they could opt to wait until the rain has cleared up a bit.

SIPPIN' SLUDGE

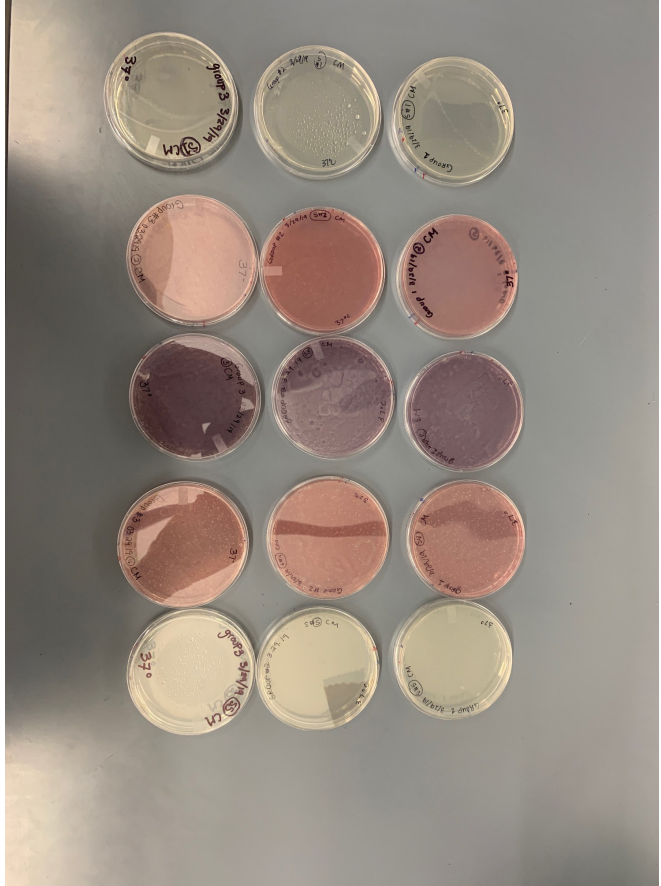


**COMBINED
SEWAGE
OVERFLOW
ISSUES IN
NEW YORK
CITY**

**2PM
@ THE UC
63 5TH AVE
NY, NY**

**LECTURE
THIS TUESDAY**

GLUE STRIP



Science Experiment Results

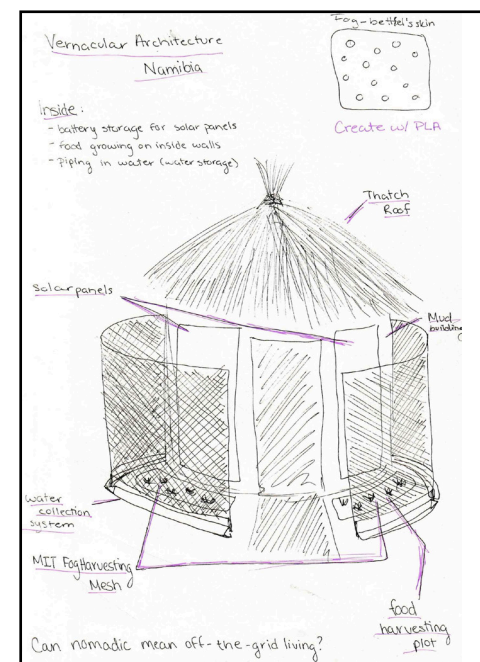
Material Research

Wall Paneling : Made of Air

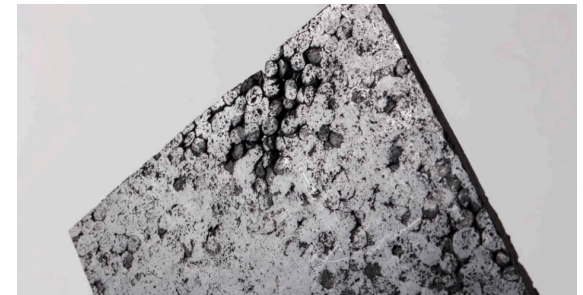
Thatch Roof : Dried Grass

Water Collection Fencing : MIT Fog Harvesting Mesh

Energy Collector : Solar Panels



Made of Air
MC 8493-01



“A carbon-negative building material made of 90% atmospheric CO₂. The material is made from waste biomass that has absorbed CO₂ during its lifetime, such as plants that naturally absorb CO₂ by photosynthesis. Waste streams from surrounding cities are used, such as orchards that are regularly pruned, or agricultural waste after harvest. The company is currently working with a partner supplier who converts the waste biomass into a stable char. Their plan for the next two years is to produce their own char to streamline the production process. This char is baked by pyrolysis (an oxygen-free oven) and is combined with a series of plant-based thermoplastic binders. As a composite, the result is a black, fire-retardant material that can be shaped into panels, reformed, and recycled. It has the potential to replace existing CO₂-producing materials such as MDF boards or thermoplastics in the construction industry. As an additive, it can be applied in existing products to replace fillers such as those in plasterboard or as fillers in polymers for injection molding. Applications include sheathing boards, tabletops, and cladding panels.” - MaterialConneXion

Fog-Harvesting Mesh



“Shreerang Chhatre of the Massachusetts Institute of Technology designed a fog-harvesting material that mimics the fog-harvesting strategy of the Namibian desert beetle. The beetle moves to a spot where the fog rolls in, raises its wings, and the fog condenses on the wings and rolls to the mouth. The wings have bumps that attract water and troughs that repel it; this way, drops collect on the bumps, then run off through the troughs without being absorbed, so that the water reaches the beetle’s mouth. Chhatre’s design started with a mesh, rather than a solid surface like the beetle’s. This is one improvement over nature for the purpose of capturing more water than the beetle would need. Chhatre boosted water output by refining the materials that the mesh is made from, attempting to strike a balance between hydrophilic materials that attract water droplets, and hydrophobic materials that then send them on their way down into the collection container. In some field tests, fog harvesters have captured one liter of water (roughly a quart) per one square meter of mesh, per day. Finding ways for local people without access to enough clean water will help the poor in many nations, and free up time from an often long process of hauling water. Fog-harvesting results in clean water, reducing the need for desalination plants in some areas.” <https://asknature.org/idea/fog-harvesting-mesh/>

Thatch Roofing



Thatch is a natural grass material that is cut, dried, and made into roofing material.

Lower East Side Ecology Center Field Trip

During the field trip, the lady informed us of many issues that they are dealing with at this very moment. The most interesting, and slightly horrifying, topic that she brought up was concerning the effects of medication, with an emphasis on birth control and antibiotics, when people flushed them down the toilet. She explained to us that when there is combined sewage overflow and the medication enters the brackish water estuary that the baby fish mature in, the estrogen - from birth control - can actually change the fish's sex, thus further upsetting the already precarious ecosystem. Delving into the Oyster Project, she informed us that New York was once upon a time home to fifty percent of the world's oysters! The East Side Ecology Center also takes technological goods that are no longer desired in an effort to keep them out of landfills, such as the Fresh Kills Landfill on Staten Island. When technological goods are deposited in landfills, they start decomposing, and what is breaking down can leech into our water sources - having not only an effect on the environment, but also humans.



Lower East Side Ecology
Center

THINK TWICE BEFORE YOU FLUSH



PHOTO BY NILEY LAWRENCE ON UNSPLEN

**DID YOU KNOW
THAT THE
MEDICATION
THAT YOU
FLUSH CAN HARM
AQUATIC SPECIES?**

**IN THE THE NEW
YORK WATERWAYS,
STUDIES HAVE SHOWN
THAT THE HORMONES
FOUND IN BIRTH
CONTROL PILLS CAN
ALTER THE GENES OF
FISH, UPSETTING
THEIR ALREADY
PRECARIOUS
ECOSYSTEM.**