

THE SUSTAINABILITY SERIES:

CREATING VISUAL LANGUAGE FOR SUSTAINABILITY THROUGH ECOLOGICAL ART

BY
ASHLEY L. LIEBER

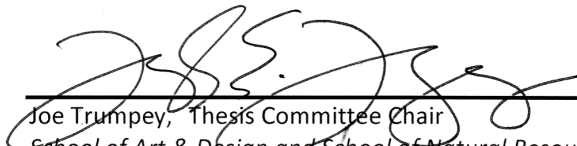
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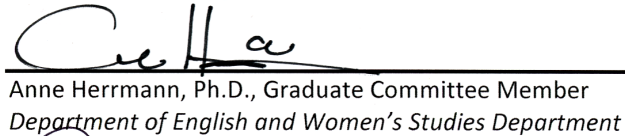
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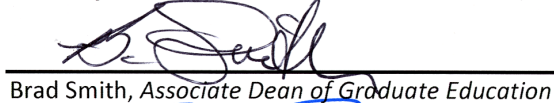
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ABSTRACT

The Sustainability Series: Creating Visual Language for Sustainability Through Ecological Art is an interdisciplinary calling to define sustainability through visual culture. The artist, informed by environmentalism, asks the following questions: *What is sustainability? What does it look like? Why is it so important? How can it be experienced?* With contemporary sculpture at the forefront, three tiers of creative work are presented that provide visual, tactile, and edible experiences. Each tier leads into the other as a series of sculptural installations and events: an ongoing aquatic ecosystem in the artist's studio that produces edibles, and in turn is harvested in 'An Eco-Art Harvest Event: A Simple Salad Social'; a functional ecologically designed hydroponic garden on the wall of a restaurant that the artist teaches the owner how to sustain; and a gallery exhibition of sculptural works in dialogue that question what it is to sustain a mood, a feeling, a living organism, and the notion of self in the urban environment. The series of works provoke ideas about the intersection of art, ecology, eco-psychology and urban agriculture while encouraging the viewer to make the connection between personal and ecological health.

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My deepest thanks to those who believed in my visions, offered their helping hands, time, and skill when my projects became so much bigger than me. And to those who offered words of encouragement and optimism and when I needed you most.

Eternal thanks to my family, for shining infinite rays of love and light upon me, for cultivating creativity and bookishness, and for always encouraging me to aim for the stars.

Respect and gratitude to the planet Earth for providing the ground on which I stand, the air I breathe, the water I drink, the seeds I lovingly sow, the mysterious and powerful ocean I swim within and continually dream about... for the trees and forests, our true elders... for the pure beauty, abundance, and inspiration that has been allotted to me every single day of my life, asking nothing in return.

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FOREWORD

“SOCIALISM FAILED BECAUSE IT COULDN’T TELL THE ECONOMIC TRUTH;
CAPITALISM MAY FAIL BECAUSE IT COULDN’T TELL THE ECOLOGICAL TRUTH.”
-LESTER BROWN

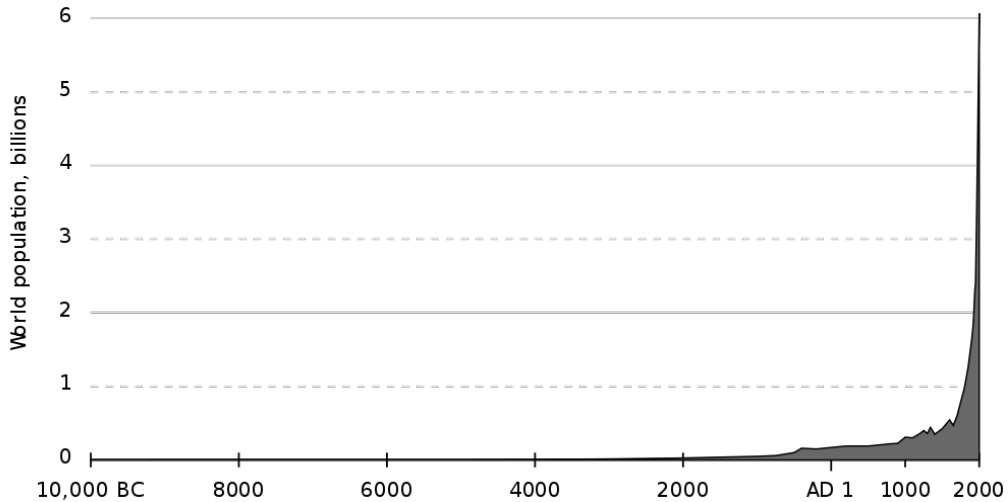


Figure 1 Human population from 10,000BC- 2000AD (Wikipedia Commons)

The Environment & Humankind

Currently there are 6.8 billion people on the planet Earth. The world population is projected to reach 7 billion in early 2012, and exceed 9 billion by the year 2040¹.

Leading scientific and academic institutions around the globe are in agreement about data that describes: soil, air, and water pollution, collapse of fisheries, oceanic dead zones (so large that you can see them from space), rising carbon dioxide levels (in the atmosphere and oceans) causing global climate change such as draught and melting at the poles, unsustainable extraction of natural resources, species extinction, biodiversity loss, and accelerated loss of rainforests, wood and wetlands, all due to human activity. At the current rate of deforestation (1.5 acres per second) the rainforests could be consumed within the next thirty years.² In the U.S. alone, “more than 90% of prairie grasslands, 75% of old growth forests and 55% of wetlands have already vanished under the strain of human expansion.”³ Some of our activities have caused irreversible damage.

There is little left untouched on planet Earth, if not by our hands, our industry. Infants now enter the world with industrial contaminants such as dioxins, phthalates, PCBs, pesticides, polybrominated diphenyl ethers (PBDEs/flame-retardants found in

plastics, textiles, polyurethanes, rubbers, and paints) already in their bloodstream,⁴ and these same contaminants are being found in breast milk around the globe⁵. In the Arctic, scientists are finding alarming levels of industrial pollutants in ice and animal samples⁶. These two facts benchmark the degree of global pollution we are causing. *Our human activities have changed the physical make up of breast milk and Arctic ice.*

Many of us do not see ecosystem loss, species extinction, oceanic dead zones, and certainly not melting at the poles. We cannot see the accumulation of toxic chemicals, rising of carbon dioxide levels, or the unsustainable extraction and depletion of resources. These things become distant and abstract concepts that we too easily separate ourselves from.

Gregory Bateson, British anthropologist, social scientist, and linguist, author of *Steps to Ecology of Mind* (1972) and *Mind and Nature* (1979), began to argue forty years ago that the essential environmental crisis of the modern age lay in *how we think about nature* (as separate from self), and that humankind suffers from what he calls *epistemological fallacy*: the belief that mind and nature operate separately from each other, when in fact mind and nature operate in similar fashion, in an exchange of information that is inter-related and interconnected. He offers an example of this dilemma:

...You decide that you want to get rid of the byproducts of human life and that Lake Erie will be a good place to put them. You forget that the ecosystem called Lake Erie is part of *your* wider ecosystem- and that if Lake Erie is driven insane, its insanity is incorporated in the larger system of your thought experience.⁷

Our inability to see this truth is becoming monstrously apparent. Thus, perhaps humanity's ecological travesty lies in our failure to recognize nature as self.

Economic Truth

Our economic structures are in dire need of re-evaluation. The centuries since Adam Smith^A have been devoted to the dogged pursuit of maximum economic production.

A Adam Smith is author of *The Wealth of Nations* (1776) is considered the magnum opus and first modern work of economics.

“The idea that individuals, pursuing their own individual interests in a market society, make one another richer and the idea that increasing efficiency, *usually by increasing scale*, is the key to increasing wealth has indisputably produced *more...*”⁸ but the market economy, with all its conveniences and social progressions, is a system that thrives by extracting and exploiting (natural resources, land, people, and goods) to capitalize on (for profit). The ultimate goals of the market are growth and expansion (bigger and better), capital and profit (take or make capital and exchange it for money), and efficiency (faster and more, and then more faster). With these goals as the primary drivers the plunder of environmental and social integrity seems inevitable. Planet Earth is a closed and finite ecosystem (meaning: what we have is what we’ve got). The Earth cannot grow to fit a model of continuous growth and expansion, nor can its resources. As Bill McKibben, in his book *Deep Economy* writes “growth is bumping up physical limitations so profound- like climate change and peak oil- that continuing to expand the economy may be impossible; the very attempt may be dangerous.”⁹

To those who are interested in being logical and reasonable, and have the ability to understand this simple yet abstract equation, the market economy may seem increasingly absurd. Social and environmental journalist Jeremy Seabrook, in his book *The Myth of the Market*, writes:

If it had been the purpose of human activity on earth to bring the planet to the edge of ruin, no more efficient mechanism could have been invented than the market economy. Yet the majority of people in the West place their hope and faith in the mechanism of the market as the bearer of promise for the future. This promise, to deliver an ever-increasingly supply of consumer goods, hides a dark reality: the spreading of market values is leading to social disintegration in the West, and in the Third World to the destruction of the indigenous cultures...¹⁰”

Which is one of the few examples of how people can live in harmony with the environment. We have become disconnected from indigenous and ecologic ways of living in the environment.

Westernization (combined with media) sensationalizes the American^B lifestyle as a life of material abundance, leisure, and wealth. Advertisements constantly feed the same message: to have the “the good life”, you have to be a consumer of goods. The cars, the large house, the new clothes and gadgets, the newest cell phone, iPod, computer... we have become acclimated to material wealth, waste and abundance. With respect to the environment it is unfortunate that our lifestyles have become so sensationalized and sought after. North Americans are crappy role models. We are roughly 5% of the global population consuming 25% of the global energy.¹¹

Adjacent to population growth and the market economy, we are witnessing a rise of the middle class on a global scale, especially (in terms of scale and volume) in India and China. Jared Diamond, author of the Pulitzer Prize winning book, *Collapse: How Societies Choose to Fail or Succeed*, calls China the “lurching giant”. China has an economy that is growing 10% a year.¹² And as the economy grows, people rise out of poverty (good for them), but as people rise out of poverty they consume more (they have monetary resources to expend) and they want more. The problem is how we frame development. Should the entire “developing world” develop, we are met with a major problem: five times more energy is consumed by developed versus developing countries.¹³

Additionally, we need new economic models that account for environmental degradation. For example, if a company wants to mine copper they will need to account for the pollution their mining will cause. How much will it cost to clean up the river when they are finished? Will trees and native plants need to be re-populated? How much runoff do they project to cause? Pollution and *environmental costs* need to be accounted for by those producing them, not gifted to future generations or surrounding communities as a burden.

Lastly, society will soon face a reality we have seemingly been shying away from: we’ve built our entire industrial agricultural system and the vast majority of our transportation systems on the assumption of cheap fossil fuel. Oil is non-renewable. As fossil fuels are depleted, prices will inevitably rise. In the United States, food typically travels between 1,500 and 2,500 miles from farm to plate. While this long-distance food

^B I am referring to United States inhabitants. Some peoples of Central and South America also consider and refer to themselves as *Americans*.

system offers unprecedented and unparalleled choice- any food, anytime, anywhere, it often displaces local foods, biodiversity, and agriculture, while requiring a staggering amount of fuel.¹⁴

Barry Commoner, American biologist and eco-socialist, once wrote, “The first law of ecology is that everything is connected to everything else.”¹⁵ Are we connected to everything? We are. If only we could see this connection and our little planet didn’t seem so big and infinitely abundant, we might live accordingly. We have breached the time of extracting, acting, and consuming resources as if there were no ecological or social consequences. May we begin en masse to take responsibility for our human activities, the effects they have on the environment and others. How we take on this responsibility, or fail to, will largely affect the stability of the 21st century- what some have begun to call the *Energy Climate Era*.¹⁶

I make a point of these things because they are precisely what has fueled a steadfastness within me to transition my artistic practice into one that is environmentally informed and informing, one that is led by concern for the health and longevity of the global ecology.



IN EVERY GLASS OF WATER WE DRINK, SOME OF THE WATER HAS ALREADY PASSED THROUGH FISHES, TREES, BACTERIA, WORMS IN THE SOIL, AND MANY OTHER ORGANISMS, INCLUDING PEOPLE... LIVING SYSTEMS CLEANSE WATER AND MAKE IT FIT, AMONG OTHER THINGS, FOR HUMAN CONSUMPTION.
—ELLIOT A. NORSE

INTRODUCTION

Eco is a Greek word meaning *home*. Watersheds are the ecological homes for all forms of life. Eco-art, therefore, engages the intimacy of home (*here*) and the immediacy of time (*now*). Eco-art specializes in the here and now by valuing sustainable materials and procedures, locality, and themes of immediate importance; its goal is to develop functional awareness of proximal and distant impacts of human behaviors on the environment, and the environment's impact on human beings. The philosophy of ecological art is based on the harmonic co-existence of human beings and nature. Thus, it considers the health of our bodies, our local biomes, and the global ecosystem, recognizing the interconnectedness of all forms of life.¹⁷

What would be required of humanity to co-exist, on a global scale, with nature? *Sustainability*. Unfortunately, there is significant evidence that humanity is not living sustainably. Achieving sustainability will require rethinking (re-organizing) our social and economic relationships with the environment. First and foremost, returning human use

of resources in the most basic sense (food and water) will require major collective efforts and these efforts must be swift. At our current rate, by the year 2030 the world will require 50% more energy, food, and water.^{18 19} If we are to avoid global humanitarian catastrophe, efforts to return human use of resources within sustainable limits must be collective and swift. As Lester Brown^C explains, “The pace of the environmental revolution will be faster than that of its predecessors. The agricultural revolution began some ten thousand years ago, and the industrial revolution has been underway for two centuries. But if the environmental revolution is to succeed, it must be compressed into a few decades”.²⁰

Though sustainability is all around us, it just lacks visibility, especially within our urban environments where 50% of the world population and 60% of the U.S. population lives²¹ (and rising). Take for example the chemical cycles that redistribute water, oxygen, nitrogen and carbon that have sustained life for millions of years, *they are invisible*. Or how about biological sustainable systems, such as long-lived wetlands and old growth forests, which are on the outskirts of the city and are being destroyed at unprecedented rates. As a result of the lack or decline in visibility of these ecosystems, we fail to appreciate the importance their contribution has to our own sustainability, especially as we continue to place humanity in the cultural foreground, and compartmentalize “nature” as a separate spatial entity.

The figure on the following page was developed at the 2005 World Summit^D, when it was noted that sustainability would require reconciliation of the “three pillars”. The view is expressed as an illustration using three overlapping ellipses, indicating that the three pillars of sustainability “are not mutually exclusive and can be mutually reinforcing”²². The frameworks in which re-organizations must take place in order to achieve sustainability are divided to three main sectors: the social, the environmental and the economic. These three frameworks are known as “the three pillars of sustainability”. I have come to see and understand this as follows: *The Social* is society,

^C Lester Brown is an American environmentalist, founder of the Earth Policy Institute and Worldwatch. He has authored or co-authored over 50 books on global environmental issues and his works have been translated into more than 40 languages.

^D The 2005 World Summit was a follow-up meeting to the United Nations’ 2000 Millennium Summit, which met in New York City for what the United Nations described as “a once-in-a-generation opportunity to take bold decisions in the areas of development, security, human rights and reform of the United Nations” (Wikipedia).

culture, education, interaction, and humanity. *The Economic* encompasses monetary systems, the market, and trade. *The Environment* is all of planet Earth. Between The Economic and The Environment, we must have feasible (viable) exchange. Currently we are not in a state of feasible or even reasonable exchange.

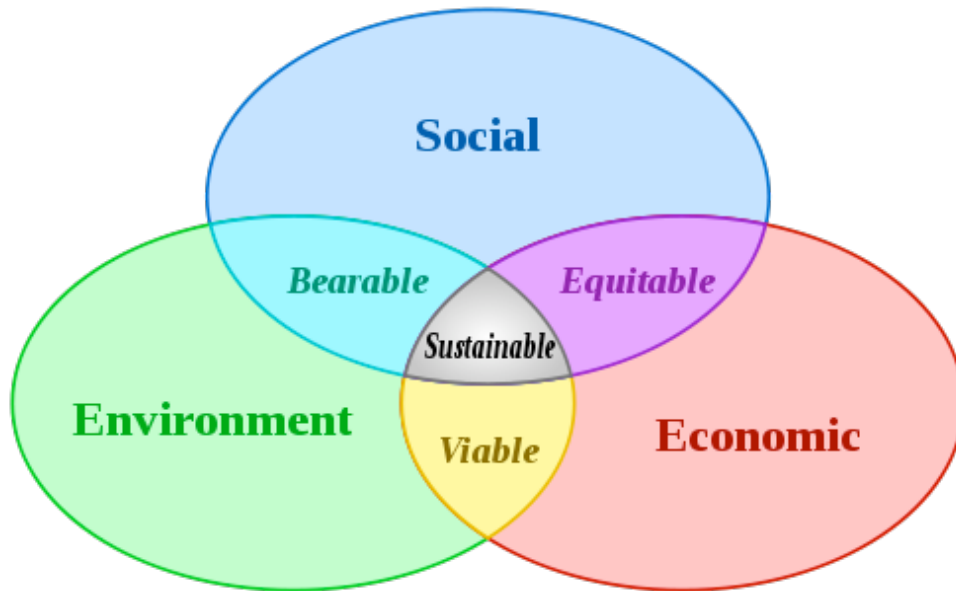


Figure 2 Wikipedia Commons

We are currently extracting natural resources at grossly unsustainable rates and have not implemented realistic models for equitable eco-econ relationships. Current economic models do not even account for environmental degradation (e.g. pollution, pollution clean up costs are missing from the equation). Between The Social and The Economic spheres we must have *equality*. This means that society must form equitable relationships with economics. We currently do not have equitable relationships. There is great disparity between the haves, and the have not-s, between the developed world and the developing world and in order to achieve sustainability we will have to build bridges between these worlds and relieve disparities. Most likely, we will need to rethink Capitalism. It is not fair (equitable) for the rich to get richer while the poor get poorer, or that the rich use the poor as a means to get richer; that we, for example, in America buy Nike tennis shoes for \$130 a pair that were manufactured in China for \$10 a pair, where the factory worker makes \$2 a day. Between the factory worker (a member

of society) and the Nike Corporation (a business designed to capitalize within the economy) there is inequity. This sort of inequitable relationship is unfortunately the modus operandi of Capitalism within the context of the global market. Therefore, Capitalism is a political system that does not create equitable relationships.

Between *The Social* and *The Environment* you will notice the word “bearable”. Bearable means: *endurable, supportable, acceptable, and manageable*, all wonderful words for describing the relationships that must evolve between society and the environment to achieve sustainability. In other words, what we take, extract, demand, and expect from the natural environment, it must be able to *bear*. It is not *bearable* for the stability of an eco-system, if components of it are destroyed or polluted. It is not *acceptable* to clear cut forests and leave behind the ruins. It is not *endurable* to extract water at unsustainable rates. When *The Social, The Economic, and The Environment* meet in bearable, equitable, and viable relationship to each other, sustainability can be achieved. A simple way to think about it goes like this: *The Social, The Environmental, and The Economic* must hold hands, be friends, become like three peas in pod.

Sustainability is expected to achieve many things. It is a call to action, a task in progress, a *journey*, and therefore a political process.²³ On the other hand, it must have practical implementations that can be put directly to use (such as in the practicalities of design, for example). My journey to and through sustainability *has* been political, no doubt, informed by ecological and social concerns and experiences. It is a journey that has been essential to the work itself, as are the circular activities of observing, maintaining, and managing (all physical and functional displays of sustainability). Thus, I find it fitting to convey my journey as a personal narrative so that you become member to it, and in that, you may better understand how it is I arrived at *The Sustainability Series*, what sustainability means to me and what it can mean for you.

THREE TIERS, THREE SPACES, THREE PILLARS

The Sustainability Series was conceived of and created in three tiers, one leading into the other. The tiers are pathways through three different spaces that converge in socio-economic relationships, akin to the “three pillars”. Tier I: takes place in *The Studio*, where the chapter of my ecological art practice begins and eventually where the body of work comes to a close, in ‘An Eco-Art Harvest Event: *A Simple Salad Social*’. Tier II: takes place in *The City*, at ‘Silvio’s Organic Pizza’, an organic and slow food restaurant in Ann Arbor, Michigan. Tier III, takes place in *The Gallery*, as the sculptural installation *Psychosustainium*. Sustainable concepts, metaphors, and functionalities emerge in each tier of the work and may be viewed, framed, and experienced in various contexts of economy, society, and the environment.



Figure 3 Artist transplanting seedlings in the studio, 2009



ASHLEY L. LIEBER
MFA THESIS EXHIBITION
MARCH 12 - APRIL 2, 2010

University of Michigan • School of Art & Design

Psychosustainium (A Sculptural Installation)

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UM School of Art & Design
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TIER I

ACTUALIZING ECOLOGICAL ART

PATHWAYS THROUGH THE STUDIO, THE CITY, AND THE ENVIRONMENT



Figure 4 Bird's eye view of *Circular System II*, 2008

IF FACTS ARE THE SEEDS THAT LATER PRODUCE KNOWLEDGE AND WISDOM, THEN THE EMOTIONS AND THE IMPRESSIONS OF THE SENSES ARE THE FERTILE SOIL IN WHICH THE SEEDS MUST GROW. —RACHEL CARSON

ACTUALIZING ECOLOGICAL ART

My transition into becoming an artist who makes ecological art involved an evolution. It began when I started to visually link the degree of environmental degradation taking place with what I had been reading, thinking and feeling for years. Simultaneously, I observed a severe disconnect between humanity, natural resources, and natural cycles. A feeling of social responsibility welled up inside of me. While I had adopted various environmental stewardship behaviors, they were not encompassed by my professional practice. My professional and personal life appeared as a stark dichotomy: on the one hand I wore a glove of an informed and passionate environmentalist consciously living my life as such (a vegetarian, involved in community gardening and the organic and the

local, and slow food movements, an avid water and land conservationist, a reducer, re-user, and re-cycler, and animal habitat rehabilitator). On the other, I wore a glove of an artistic practice that involved materials containing environmental toxins (polyurethanes and heavy metals). I was traditionally trained. Sculpting with metal and polymers felt natural, but it was anything but. A professor, visiting my studio, picked up a can of liquid polyurethane and asked me, “Do you know what is in this stuff? Its really nasty.” Indeed, it contains contaminants that are directly linked to reproductive harm and neurological cancers, and I had been working with such chemicals for nearly five years. I reflected on Eva Hesse^E and her passing, because of working with such toxins. Recognizing the dichotomy put me in a state of unrest. It was time to begin to blur the line between my art and my life. I began a quest to develop a creative practice that was environmentally informed and safe.



Figure 5 Interior view of GRASS, WORK Gallery, Ann Arbor, MI

^E Eva Hesse (1936-1970) was a German-born American sculptor known for her pioneering work with materials such as latex, fiberglass and plastics.

My first ecological work was developed in collaboration with my colleague (and fellow sculptor), John Walters. In the work, entitled *Grass*, a gallery window was filled with flats of edible organic wheatgrass (a micro-green high in phytonutrients^F). Suspended above this bed of grass, hung three smaller sculptural forms also containing grass. It emanated true green, created a physical presence, and filled the gallery with the sweet smell of earth and dew.

On the eve of the opening reception, John and I systematically cut the grass, juiced it, and served it to visitors in the gallery space. The left over organic matter, a result of cutting and juicing, was returned to its original site, a small local organic farm

(*Garden Works*, Ann Arbor, MI).

Bringing the organic remnants back to the original site completed the cycle; the grass sprouts, grows, is consumed, then composted, and more grass is grown. Monies from visitors on the eve of the opening (as thanks for a shot of wheatgrass) were donated to a local community garden, *Growing Hope*.

The work was socially engaged, experiential and beautiful to look at. It combined ideas about the environment, personal health, and public service, but once complete it left little to be desired in that it was not ongoing- the grass was cut, and juiced, the people gone, money donated, the organic



Figure 6 Artist cutting *GRASS*, WORK Gallery, Ann Arbor, MI

^F A phytonutrient is a bioactive plant-derived compound (as resveratrol) associated with positive health effects.

remains back to the earth, the plot of land still belonged to the farmer. The tear down of this show was emotional (they usually are) in that the experiential relationship had come to an end. I craved processes that would demand continual intellectual and social engagement.

Another work I made around that time was entitled, *Roots: One Renewable Pine*, created to raise consciousness about material consumption required to create art as a material possession. I was mindful of the resource consumption that takes place when making art. I hand drew an image of a tree's root system and transferred the images onto equally cut squares of wood. It was the repetition that kept me engaged. When the square wood panels were piled together, or hung on the wall, they equaled *One Renewable Pine* (a renewable pine tree is one that is propagated, harvested, and processed systematically, as a means of resource management and sustainable forestry). While the work serves as a statement about consumption, materiality, and concern for natural resources, that is all it is: a statement. I needed to develop a body of work that would heighten my ecological consciousness in the very *process* of creating it.



Figure 7 *Roots: One Renewable Pine*, 2008

I began coursework in the School of Natural Resources and Environment, enrolling in a course titled *Ecological Restoration*²⁴. The course, taught by Professor Bob Grese, was a combination of lectures, readings, site visits, and hands-on introduction to field ecology. I witnessed meaningful bonds made between people and land, and an attentiveness that I had previously come to know through gardening. I volunteered for various ecological restoration projects: prescribed burns, planting of native plants along the Huron river, prairie grass seed collection, and invasive species eradication. I envisioned this work as stewardship: restoring land, reclaiming wasteland, and protecting ecological balances that were already in healthy existence.

I had heard of artists engaging in ecological restoration projects, as part of their creative practice. Take for example Mel Chin's *Revival Field*, a phytoremediation⁶ project where Chin collaborated with scientists to use plants to remove toxins from the soil on a post-industrial site. Even more



Figure 8 Mel Chin's Revival Field: Pig's Eye Landfill, St. Paul Minnesota, 1993

so than identifying with the visual formalities of Chin's work (which are industrial, structural, and modern), I began to identify with his process of arrival, a process that he calls artist re-education, "a search for necessary scientific understanding and method," allowing and encompassing free form association and research as creative practice.²⁵ It was clear I was to become an *interdisciplinary*, one who wields and weaves branches of knowledge together in pursuit of personal and scholarly interest.

While ecological restoration continues to be of great interest to me, and I envision it emerging in my future work, at the time I knew I needed more education and experience in field ecology. I felt a responsibility to the spaces of my immediate

⁶ Phytoremediation is the use of plants to remove or mitigate pollutants & contaminants from soil.

proximity, those that I frequent, draw resources from and/or employ, those that are integral to my creative practice, namely: *the studio*, *the city* (urban space), and *the gallery* (which includes the context of exhibition space made available by means of reclaiming sites of post-industry; interiors of industrial buildings, warehouses, factories, etc.).

Utilizing the spaces available to me also encompasses a core continuum of my work, *resourcefulness* (employing, re-inventing, or re-using that which is discarded, ignored, forgotten, or assumed). The studio, the city, and the gallery are members to my practice and converge in rich socio-ecological relationships. They are the relationships and sites investigated throughout *The Sustainability Series*, in my ecological art practice.

A Few Thoughts On Ecological Art in the Landscape

Historically work by artists within the landscape has been followed by critical skepticism from established ecologists (and others). I experienced this to a large degree upon presenting various examples of “ecological” land art to Master’s students in the School of Natural Resources and Environment. The work received skepticism, if not for the artist lacking formal education in ecology, for ecological or social shortcomings. Take for example the dated yet relevant work of Robert Smithson (a cornerstone environmental artist) in *Glue Pour*, where Smithson pours glue (toxic) down a Vancouver hillside. The glue dissipates into the edge of an urban West Coast forest, to make a statement about pollutant runoff and the disappearance of native species. While the work is not ethically ecologically acceptable (it *is* pollution), the act of *Glue Pour* brought attention to the area of Smithson’s concern. The site is now marked, commemorating his act, and lies within the domain of a since created ecological and recreational area named Pacific Spirit Regional Park.²⁶ There are also artists like Andy Goldsworthy, who create natural works of art that seamlessly integrate into the landscape without polluting it, leaving no trace behind (also known as “zero impact” works), but these works do not restore the landscape or necessarily cultivate socio-ecological relationships. They serve as statements on the landscape, political and reflective.



Figure 9 Robert Smithson shown pouring toxic glue on a Vancouver hillside, in *Glue Pour* 1969

RECONNECTING: THE ENVIRONMENT

In the late summer of 2008, I returned from a trip abroad in Costa Rica, where I worked and studied on an all women's owned agro-eco farm, named El Yüe. I learned sustainable gardening and living methods while living with and observing the women on the farm and within the community. I was immersed in rich re-connective experiences: working closely with the land and people who loved and respected it, and depended upon it for their personal and economic livelihoods. I lived in a cabina with no electricity for a month, surrounded by the thick and lush sounds and sights of the rainforest. There were no alarm clocks. There was the sun to wake me. After a week of natural sleeping

patterns, I began to rise with it everyday. There were no “out of season” vegetables or fruits to painstakingly choose from, but there were plenty of whole foods at arms reach. Absent was the constant flow of media, the visual nagging of consumerism that I had become so used to, staring me in the face nearly every waking moment in the U.S. Instead of the steady flow of media, I became acquainted with the steady flow of the river. I learned how to collect the rainwater we used for bathing, drinking and cooking on the farm. I learned how to be humble in relationship to the natural environment, how to wash my clothes in a river and wait three days for them to dry. If I had forgotten my duty to turn on the pump to the water collection system, I might have to go without a shower (depending on how much water everyone else needed), as the water for cooking, cleaning, bathing, and drinking all came from the same place, which we could visibly see.

When I first arrived at the farm I witnessed what I thought to be poverty (very few material possessions, a pantry consisting of only beans, rice and a few cans and salt, limited electricity, no automobile, etc.), but when I left I identified their lives as being much richer than mine. I observed that the less people had, the less they seemed to want.



Figure 10 River near El Yüe Argo-Eco Farm, Costa Rica, Central America

They have more time for leisure, family, and building and maintaining community. They have less stuff to worry about, to clutter their homes, and to distract them. Their diets consist of whole foods, so they do not have to worry about their children (or themselves) consuming too many processed, fatty, sugary, and chemically addictive foods.

I coveted their lifestyle. I ebbed into a way of life that coincided with the natural cycles of the sun and moon. I learned what it felt like to sustain my mind and body in an

environment that did not make me feel depleted, but stronger- more alive, and the environment around me was not being depleted, but was being sustained. I enjoyed the process of visually and physically connecting to the natural resources that had been out of sight, out of mind, for too long. Then, it was time to go home.

REVELATION: THE CITY & THE STUDIO

I returned to the University feeling empowered by my new skills, experiences, and process of reconnection, but I was in a state of unrest. I was thrown back into the North American rat race, the exhausting competitive routine many of us have come to know and acclimate to all too well. It's the predefined go-go-faster-more-bigger-better lifestyle that I began to loathe on a level I never had before. I craved community and the connection I had had. I did not want to "hit the ground running", I wanted to sit by the river and linger in the garden, but for most of us this is just not how our way of life goes here in the States. I understood however, that if it were not for our way of doing things "faster-bigger-better", I might not be writing this now, sitting in the grand Harlan Hatcher Graduate Library, upheld by the prestige of an accredited academic institution that has afforded me a wealth of knowledge, the riches of a study abroad experience, and the freedom to do interdisciplinary study.

The unrest I experienced led me to abandon the bulk of my established material methodologies of making creative work in the studio (fall of 2008). Many things once considered "normal" were normal no longer. Suddenly everything seemed more wasteful, too big, too much, and too easy to acquire- so in effect, easy for many to take for granted. I didn't want to consume anything but what I essentially needed. I studied at the School of Natural Resources and Environment and temporarily stopped "making". In the studio I spent my time doing research on aquatic ecosystems, urban agriculture, and environmental art and literature.

I began to envision gardening as a means to link the ecological and social tribulations that plagued me. My interest peaked while looking at alternative urban agricultural systems that produced food, at little or no cost, and did so without causing harm to people, animals, or the environment. In learning that more than 60% of the U.S. population is living in cities, and less than 1% of our population is farming²⁷ I recognized a stark disparity, a psychological dilemma: the city is "here" and nature

(including farms) is “over there”. *Culturally, we have physically and psychologically constructed the home, the city, and nature as very separate elements in space.*

Psychological compartmentalization of city, home, and nature spaces, is reflected on by Maria Kaika, in her book *City of Flows: Modernity, Nature, and the City*, when a drought near her home causes city water levels to drop. Maria turns on the faucet, but nothing comes out. She writes: “The specter of the drought made me reconsider what I have been taking for granted: namely, the naturalness of the delivery of goods into the domestic bliss of my home, and the clear-cut conceptual separation between my home, my city, and nature. The drought revealed (by disrupting it) the continuous flow of natural elements (water, electricity, gas, etc.) from the countryside into the city and finally into the modern home. What I used to perceive as a compartmentalized world, consisting of neatly, tightly sealed, autonomous “space-envelopes” (the home, the city, and nature) was, in fact, a messy socio-spatial continuum.”²⁸ How we relate, or fail to relate to our natural resources, and “the flow of elements”, lies within these dynamic “space-envelopes” that encompass psychological constructions, culture, and physical spatial disparities between people and the natural environment.

Historically, culture and life were connected to rivers. Only in recent decades have we begun to embark on this cultural, physical, and psychological disconnect. The Huron River, for example was once a favorite venue for contemplation, intimacy, and camaraderie here at the University of Michigan. The Bentley Historical Library has an extensive collection of photographs, diaries, and letters alluding to the river, and people’s relationship to it. In 1924 the University of Michigan Alumni Council undertook a survey, asking alumni to recall the Huron River. Hundreds responded. A few selected responses:

“The discovery that the best way to ‘cram’ for exams was to cram one’s mind full of the peacefulness of drifting down the Huron in canoe and twilight.”

“...We took lots of comfort going up the river canoeing in the summer and skating above the dam in winter... sometimes a bunch of us would get up at 4 o’clock in the morning and watch the sun rise & the birds awakening along the river.”

“... The sun was setting and it glided every thing around us with its golden beams. Before us was the river winding along its shady banks and soothing murmurs and far off stretched scenery diversified with hills and woods and houses and fields all glittering in the setting sun. After enjoying this a little we went down to the banks of the river stripped and went in.”²⁹

These responses serve as reminders of the intimate connections students once *developed* with the river. In my time here I have never heard of nor seen a fellow student swimming in the river. Everyone knows the river is polluted. Culturally and psychologically the river has been pushed out of our collective consciousness. I wonder how different the landscape (city and natural) appeared to those living in 1924. It was a space much different than ours is today. Since then the focus of recreation has shifted from nature to the city (the center), and to distractions in the form of media and technology.

Today many do not know which watershed^H they are member to, where their tap water comes from, or where it goes once it is “used” and flows down the drain.



So many of our goods and resources are, *out of sight out of mind*. How are people to feel environmentally responsible, in pouring toxins down the drain, when they do notice where the pollutants will arrive and do not have a relationship with the aquatic systems that they will affect? Contemporary constructs of culture have forgotten rivers.

^H Watershed (n.): an area or region drained by a river, river system, or other body of water.

THE STUDIO

The studio functions as a hub of creativity. It is expected to achieve many things. It is a space of retreat, to think, draft ideas, and experiment. It is a space that houses tools and materials. It is a space that I transform to host events. Over the span of creating *The Sustainability Series* it has housed a sort of greenhouse (with no lid)- a partition, indoor, open space for aquaculture and hydroponic edible cultivation. Before the onset of the series, the studio took on my inner creation- the cultivation of new knowledge and ideas. On the walls were posted graphs and diagrams of various chemical and life cycles, and plant and animal species. Books on aquatic ecosystems, horticulture, plant and animal identification, hydroponics, and aquaculture began to line my desk and shelves. All that I was consumed with (and still am) began to physically reverberate within the space. In the next stage, I learned aquatics, how to keep and create fresh water habitats and mini-ecosystems. I cultivated aquatic plants, started several fish tanks, learned about invasive species, and formed relationships with local rivers and streams.

In my research I found (and have come to know) Professor Jim Breck, of *The Institute for Fisheries Research* (University of Michigan, and the Department of Natural Resources). We began to share ideas about the Environmental Movement, field ecology, and aquatic ecosystems. He connected me with Brad Utrup, a biologist who works at the *Saline Fisheries Research Station*, where I collected fourteen native Michigan fish from a research pond. I started growing things, using new and old hydroponic technologies. I learned how to clone plants. The studio evolved into a site for creative horticulture and aquaculture experimentation. It was a new sort of creativity, one that was *eco-logical*.

Circular System I was created when I physically merged hydroponic experimentation and my inquiry into local aquatic ecosystems. The result was a convergence of a sustainable urban agricultural method and aquaculture (somewhat non-traditional because being vegetarian I never planned to eat the fish, though Michigan sunfish and bluegill are quite edible). By using a pump to flow nutrients from the fish waste (mostly nitrogen) through plant roots, water in the system is purified while edible plants are grown. The system consists of a 50 gallon fish tank, tap water, Michigan aquatic fish and plants, re-purposed/recycled 2-liter bottles, soil-less substrate (called *hydrotin*- aerated baked clay balls that are light weight and yield surface area for plants roots), a 400 watt grow bulb, #2 plastic tubing, edible heirloom greens, and a pond water

pump. The system allows food to be grown year round for little monetary cost and supplies full spectrum lighting. The soft sound of continuously flowing water and the fluid movement of fish swimming make for a tranquil and meditative environment.



Figure 12 *Circular System I*, First Trial Run, in *The Studio* 2008

Sowing seeds, monitoring, observing, tending, adjusting, harvesting, *sustaining*, are taking place in the studio, and hence have come to inform the physicality of my creative

practice. These behaviors (habits) may be witnessed (and experienced) as circular flows of activity, growth and change. The studio and the work (such as the ongoing *Circular System*) may be witnessed as being in a state of *perpetual flux*, always changing and evolving. And in isolated moments of time, the work and studio may appear as being unstable or “failed” (systems do crash, de-construct, die, and come to an “end” as part of processes in nature). Change and flux are endemic to natural *life cycles*. While there are been de-constructions and the like, there have been no true failures in any of the systems that I have created. All lasted in some form and function and have sustained the living components within them, and in more cases than not, have allowed these living components to thrive. Witnessing and experiencing natural biological cycles on an intimate scale, combined with the dynamic and ongoing nature of the *Circular System* project has lead me to the realization of the following:

1. Close observation, participation in, and experience of natural cycles of biotic and ecologic systems create reciprocal and didactic relationships that are essential to restoring the connection between human beings and our perceptions of nature.
2. The connection/re-connection between human beings and perception of nature is a physical, psychological, and cultural process.
3. Extracting resources from an ecosystem too quickly can result in ecosystem collapse
4. For an ecosystem to be sustainable it requires periods of rest and rejuvenation.

Ethics of The Edibles I Grow

Since the creative horticultural practice began, I’ve made a point of selecting predominantly (almost *entirely*) heirloom varieties and native species to install in all my circular systems³⁰. For one, their “oddness”/degree of difference entices the viewer/consumer. Two, by choosing native species and heirloom varieties I am visually and physically upholding an aspect of environmental sustainability: *biodiversity*. Seeds are ordered from organic and co-op suppliers, traded with fellow gardeners and farmers, or I collect them on my own. Due to the onset of debunked agro-monopolizing, bio-engineering, genetic altering, mono-cropping, conglomerate agriculture companies like *Monsanto*, it is extremely important to mobilize public knowledge of the biologic,

ecological, and personal health harms that big agro-business pose, especially in respect to securing future food crops and bio-diversity for future generations. Sources of seeds, plants, and food are all connected to agriculture and need to be environmentally *and* socially sound. Environmental justice holds the hand of social justice, just as ecological health holds the hand of personal health. As ecologist Barry Commoner reminds us: *the first law of ecology is that everything is connected to everything*. Variety and biodiversity within our ecosystems transfer directly into quality of life. Take for example your diet, and the colors of the foods you eat. The idea is: the more color and variety (in terms of fruits and vegetables), in one's diet, the more vitamins and nutrients one will take in (biologically make use of).

Vegetables and fruits with deep tones and vibrant colors tend to be the most vitamin and nutrient dense. In terms of nutrient density, collard, mustard, and turnip greens, along with kale, watercress, spinach and Swiss chard, rank among the highest.³¹ All of these I have grown in the *Circular Systems*. It has always been of importance, in terms of the *Circular Systems*, that what I grow can provide nutrition, not just aesthetically appease.³²

Circular Systems Ongoing

The project is still going (even now as I write this April 2010). The original system, *Circular System I* has been through various life cycles, and has supplied two years of edible greens nearly year round (I have de-assembled in summer months for two reasons: my absence, and in the summer



Figure 13 *Circular System I*, 1 month of growth, 2008

gardening is transferred out of doors). While the mechanics of the system have never failed me (the design and its ability to physically function), I have had two “failed” crops due to ecosystem imbalance. Once, I unknowingly caused nitrogen in the system to spike, which led to a pervasive algae bloom, due to harvesting too many greens at once. The roots, which had been absorbing nitrogen as fertilizer, no longer were absorbing as much nitrogen when the plants were harvested, creating an abrupt chemical change/imbalance. I physically and visually experienced that *taking too much too fast is not sustainable for an ecosystem. An ecosystem needs time to balance and regenerate itself.* (I didn’t lose the entire crop, since I had harvested only half, but noticed significant flavor change in the remaining edibles- a musky seaweed-y essence that did not suit my palate, or I imagine anyone else’s.)

I had sick fish once (fin rot and other bacterial issues), issues that led me to further my knowledge of aquatic ecology, chemical cycles, and biology, and consult experts in various scientific fields. I learned what it takes to sustain an aquatic ecosystem, and how easily balance can be disrupted.



Figure 14 Interior view of Circular System IV, 2008

The ongoing nature of the *Circular System* project has allowed me to develop, expand, and improve within the frameworks of sustainability, the concepts deepening and becoming more meaningful along the way. The *Circular System Series* has taken on various forms and has been installed in various spaces (namely in the gallery, and re-claimed sites of post-industry within cities).



Figure 15 *Circular System VII*, installed for ArtPrize, Brass Works Building, Grand Rapids, MI 2009

By observing my studio as being in constant flux (changeability, variability, fluidity, instability, fluctuation, shift, metaphors of sustainability emerged. The system is an open ecosystem that acts as a visual metaphor for those that are closed, able to regenerate and sustain life with (careful) management. Just as the Earth has invisible chemical cycles taking place that we cannot see, the system does as well. I learned how to keep something *going*, and *how to endure changes* and shifts in its contained ecosystem. Understanding how sustainable chemical cycles work (e.g., nitrogen cycle) allows one to apply the concept elsewhere.

I witnessed the flux in the space and within the work as being *educationally and experientially rich*. *I didn't want to be the only one observing the riches. I wanted to share. I saw opportunity to employ the studio as a sort of active site for situated ecological moments in time* (the sowing of seeds, the maintaining of the systems, the act of harvesting, and eating). In the field of art, situated moments can be orchestrated as *happenings* (i.e., an experiential event or situation to be considered as art), eliminating the boundary between the artwork and its viewer. I saw this as an opportunity to extend the educational aspects of the work and to give it some *visibility*, since it is after all, housed in the most intimate space of my creative practice, *The Studio*.

Several events have since taken place within the studio. Some as *happenings*: a celebratory experience of harvesting and then enjoying *the edible*. Others have been on a one-to-one basis, extended and personal invitations to become member to the process of teardown, re-building, or *necessary maintenance*. Selected happenings are elaborated on in section V: *TIER I: An Eco Art Harvest Event: A Simple Salad Social (The Studio)*.



Figure 16 Greens in Circular System after 2 months of growth, 2010



Figure 17 *Circular System VIII*, week 2 in *The Studio*, 2010

TIER II: THE CITY

SILVIO'S HYDROPONIC WALL GARDEN

DEMONSTRATING, TEACHING, AND MAINTAINING IN PUBLIC PLACE



Figure 18 First light test run, *Silvio's Hydroponic Wall Garden*, Ann Arbor, MI 2010

“TO LEARN READ, TO KNOW WRITE, TO MASTER TEACH.” —YOGI MALA

THE CITY

The city is amazing in its potential for creating and enabling ecologically productive relationships. People from different social, economic, and cultural backgrounds converge, as goods and resources flow, and exchange in money, goods and services happens. Cities are the hubs of civilization. With more than 60% of our current U.S. population living in cities, it is of great importance that we learn to cultivate harmonic socio-ecological relationships within our cities, especially as we downshift from a fossil fuel economy to one that is presumably more sustainable.

In the last decade we have witnessed a growing number of farmer and artisan markets emerge, as well as alternatives for goods and service exchange, like local currency. These are promising attributes to witness- these avenues foster community, local and sustainable food systems, and the sharing of knowledge.

Because of the population concentrations within cities, they hold the potential to extend ecological consciousness on a large scale. Look at how successful media advertisement is within the city, now imagine that same visibility, but applied to creating socio-ecological relationships, not consumer-corporation relationships.

Stephan Jay Gould, in his essay "*The Golden Rule: A Proper Scale for Our Environmental Crisis*", states:

Last century our environmental efforts were predominately to preserve and conserve nature outside of our cities, this century we must refine and extend ongoing programs of preservation and conservation *into the cultural landscapes of cities*, as well as outside of them.³³

I have witnessed that physical efforts to conserve and restore nature also rekindle humanity's relationship to it. Therefore, if we are to integrate into a new, more sustainable way of living on planet Earth, these efforts should be esteemed as endeavors of great priority- whether they be creative, scientific, or a culmination of both.

“THE SURVIVAL OF MY OWN IDEAS MAY NOT BE AS IMPORTANT AS A CONDITION I MIGHT CREATE FOR OTHERS’ IDEAS TO BE REALIZED.” -MEL CHIN

Introduction to the Work

Silvio’s Hydroponic Wall Garden is a re-evaluation of urban environments on special and social planes of existence. It is a functioning garden on a wall that was once empty. It ensues ideas and dreams about future works, as architects, farmers, food enthusiasts and gardeners interact, observe, ask questions, and study the logistics of the system. Sometimes the viewer will even physically participate in the maintenance of it. Socially, *Silvio’s Hydroponic Wall Garden* is an ongoing, hands-on, learning system that teaches: a method for alternative urban agriculture, the natural life cycles of plants, core concepts of ecology, and sustainability. Functionally, it works. It works better than any hydroponic expert or myself thought it would, producing up to 2 lbs. of basil a week on recycled city tap water and a quarter cup of compost tea, creating economic incentive for the owner, the new sustainer of the work, Silvio. Conceptually and literally, it is a living socio-ecological-sculpture (socio-eco work) in a public space. It is dynamic, shape shifting, responsive, sensual and interactive. It gives and it takes. It demands and it thrives. It lives and dies. It is a circular system, a physical and visual metaphor, as well as a working social and educational tool for teaching, discussing, and learning about sustainability.

Daydreaming & Creating: Eco-Socio-Urban Evolutions

The hydroponic wall garden that is permanently installed at *Silvio’s Organic Pizza*, located at 715 North University, in Ann Arbor, Michigan, began as a daydream. Daydreaming is an inevitable and vital component of my creative process. In the last two years, I have daydreamed more than ever about alternative urban agricultural projects and green spaces within our urban environments. I’m in the habit of passing by shop windows and striding on city sidewalks while imagining sculptural objects that fulfill some epicurean desire and functionality. Lavender and bergamot growing within white curtains hanging in the French perfumer’s window; small slots filled with earth, flowering aromatics emerging. Rows of edibles replace the tall window at the local sandwich shop, greening the interior and exterior spaces. The dirty alley behind the pub, which is always empty (besides a

few trash cans and the occasional line cook taking a smoke break), is transformed into a raised bed kitchen garden (why not?). In the case of *Silvio's Organic Pizza*, with a lackluster interior of misshapen brick walls (formerly), bad poster art, crowded and crooked tables, and all too dim and flat lighting, I imagined an entire wall transformed into rows of basil, emanating clean, white, full spectrum lighting.

These are examples of the visual meanderings that I remember flowing through my mind and into my sketchbook the day I was trying to decide how my current work (*creative inquiry on sustainability*) would transpire in a public space, where it would function physically, conceptually, and socially.



Figure 19 Former interior and proposed site for *Silvio's Hydroponic Wall Garden*

I knew that I needed to be very specific in choosing where the work would go and who would become an active participant with the work since eventually they would have to take full ownership. They would need some experience in gardening and growing things, or they would have to be eager to learn. I began envisioning a sculptural installation that could demonstrate a sustainable, contained and manageable method for alternative urban agriculture that was efficient, highly productive, aesthetically pleasing, and enticing to the senses. It was important from the very beginning that I imagine an “ultimate potential”, a work of art coupled with a social project that would function *and* act as a site [or point of departure] for teaching, learning, and discussing core concepts of sustainability.

Despite the interior space of *Silvio's*, which left much to be desired (formerly), I enjoyed going there. He swears by all organic ingredients and buys from local farms and food co-ops. I also liked (and still do) the people that work there and frequent the space. Best described as a mix of graduate students (predominately from *The School of Natural*

Resources and Environment, which is across the way), Professors, Italians, and foodies¹. The foodies who frequent Silvio's range from the classic gourmet, to the militant food snob and vegan, the easy going and curious, and vegetarians. And Silvio accommodates to those with food allergies and restrictive diets (gluten-free, kosher, dairy free, etc.). And let's not forget those who share esteemed interest in the slow, local, and organic food movements.

In that space, sitting alone, I've overheard conversations about the importance of sustainable and organic agriculture, slow foods, natural resources, and the eco-revolution. I began to experience Silvio's as a hub, a place for those who share a passion for personal and ecological health. Perhaps some of them have an interest in merely one or the other: personal health or ecological health, but undoubtedly within this space, people with these interests converge, sit within close proximity of each other and eat the same foods.

The day I proposed my daydream to Silvio (to turn an entire wall into a hydroponic garden), I learned that he composts all the organic waste from the restaurant on the land adjacent to his home (where he keeps an impressively large kitchen garden), and that he is a gardening enthusiast. He liked the idea of being able to grow basil (one of the most expensive bulk ingredients purchased for the kitchen), indoors year round. I shared with Silvio sketches of my daydream. I explained how hydroponic systems function and shared images of a recent work (at the time), *Oasis in a Desert*. I explained my evolving intentions with this series of works, the *Circular Systems*:

Oasis in an Desert is about reclaiming post-industrial space as much as it is about dreaming future urban potentials. The work is a soliloquy, resting in an emptied, abandoned warehouse of post industry, an interior urban space that had been erased from collective memory (until the opening night of the exhibition, the public had been shut out, the space closed off for over 20 years). The plants stand in stark contrast to the decrepit decay that surrounds them, as living, thriving organisms. *Oasis in a Desert* is a sculptural poem calling to the potential of urban space that has been left as wreckage, commenting on a particular place in time. While the work functions, literally producing

¹ Merriam-Webster defines a foodie as "a person having an avid interest in the latest food fads" (1982). I prefer the updated Mac Dictionary definition, "A person with a particular interest in food; a gourmet" (2008).

edibles, the edibles remain functionally inert. The maintainer of the system and the consumers of the edibles (if any) remain unknown- *ghosts*. The viewer may recognize a dichotomy: something as lost (decaying, wrecked) and something as possible (revitalization, life). Life exists where there has been death.

Oasis in a Desert and *Silvio's Hydroponic Wall Garden* are materialized dreams that call to creating and reclaiming untapped urban space while demonstrating methods of alternative urban agriculture. However, *Silvio's Garden* extends core components of sustainability, these concepts surface in relationships between the "three pillars" (the environmental, the social, and the economic).

After seeing images of *Oasis in a Desert*, Silvio asked me to return with revised sketches and plans. He also informed me that he would soon be expanding his restaurant, by tearing down the wall that separated his space and the recently failed boutique next door. We made plans for me to return within a week. In the meantime I was to research materials and begin consultation with engineers and manufacturers. Straight away I set an unwavering intention for all materials in the project to be as energy efficient, low impact, and ecologically sound as possible.



Figure 20 *Oasis in a Desert*, Flat Iron Building, Grand Rapids, MI 2009

The Health Harms of PVC: A Common Material in our Common Spaces

Surprisingly, most commercial and home hydroponic systems are made of Polyvinyl chloride (PVC).³⁴ PVC is also used for plumbing in homes, buildings and schools. During the entirety of its lifecycle (production to disposal), PVC releases chemicals called phthalates and dioxins, which are biologically and scientifically identified as neurotoxins^{35J} and endocrine disruptors^K that cause serious health harms.³⁶ A growing body of scientific evidence shows that these chemicals are absorbed by and stored within our bodies. While they are toxic to all animals, they are extremely problematic for women and children. Children's bodies are smaller and more sensitive to these chemicals, as they accumulate in higher parts per billion. Because environmental toxicants (such as phthalates and dioxins) are stored in fat tissue, they pose reproductive health risks for both men and women, but "women's bodies are particularly vulnerable as they are sites for creating, growing, feeding, and nurturing the next generation".³⁷ I am alarmed a material linked to birth defects, cancer, reproductive health harms, metabolic disorders, asthma, and learning disabilities is being readily used as a building and transport material in our water and food systems³⁸. Undoubtedly this is largely an economic issue; PVC is inexpensive and highly accessible. I have encountered no economically equal alternatives, alternatives that are available are much more expensive.

Alternatives for Silvio's Wall Garden

Silvio's Hydroponic Wall Garden is intended to be a permanent installation work, in that there are no plans to remove it, or take it down. Out of concern for structural integrity, I sought a more *lasting* material than the re-purposed 2-liter bottles (#2 HDPE- High Density Polyethylene) that I had formerly been using. Although the 2-liter bottles have a material accessibility about them and communicate resourcefulness, I saw Silvio's garden as an opportunity to communicate something new. In searching for alternatives to PVC, I

^J A neurotoxin is any compound coming from an exogenous source that affects neurological development. There are four main leading toxins: lead, mercury, PVC, and PCBs (Polychlorinated Biphenyls). Over the past several decades, it has been hypothesized that rates of neurological diseases such as Autism, Attention Deficit Hyperactivity Disorder (ADD), Cerebral Palsy, and Mental Retardation have been increasing in prevalence to neurotoxins in the environment.

^K An endocrine disruptor is an exogenous substance that acts like a hormone in animal endocrine systems, disrupting physiologic functions of the endogenous hormones. Multiple studies have linked endocrine disruptors to have adverse biological effects in animals, such as damage to reproductive systems, blocking of essential hormones, brain and kidney dysfunction.

came to equestrian fencing (#2 HDPE material). Yes, fencing for horse enthusiasts and breeders. It is strong, eco-friendly, recyclable, low impact and food safe. Why not re-appropriate the fencing for the structural base of the system? The equestrians who seek this fencing are also looking for an alternative to PVC pipe, likely for personal health and/or ecological health reasons since the fencing itself is much more costly than PVC fencing.

Another alteration to Silvio's system is that it does not contain fish (or other aquatic life beyond a biotic scale). Though Silvio wanted an aquaculture system (containing fish and other aquatic life), I was reluctant. I knew then, what I have come to know well through experience: added variables (e.g. fish, bacteria, alga) = increased biological complexity. Keeping a complex biological community in harmonic balance requires a steady hand, watchful eyes, and experience. How easy a small dead fish goes unnoticed, kicking bacterial levels too high for system stability. How uncanny the floating drifting algae spore that lands in the tank, thriving in the full spectrum lighting, causing an algae bloom and overpopulating the system. How unknowing the heavy handed fish-over-feeder, who causes a spike in nitrogen levels beyond reasonable repair.

Since I was not going to be using fish to fuel the system, I decided to have a custom tank designed. The reservoir in Silvio's system is made of virgin food grade #2 HDPE plastic and was made possible with consultation from an engineer, and those working as manufacturers.³⁹ I had the tank put on caster wheels so it can easily be carted (pushed) when weekly water changes are needed. The top of the reservoir is removable, and a small spout rests below the reservoir (rotational, much like a sink spout), to allow water to drain from the system.

The lights are also different from lights I have used in my systems before: full spectrum high output compact fluorescent light bulbs, known as T-5s.⁴⁰

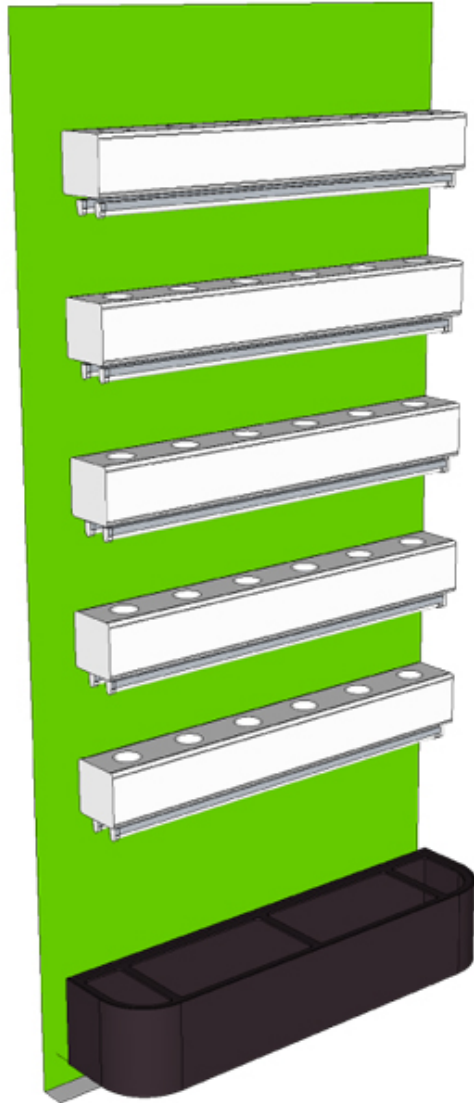


Figure 21 Sketch for construction of *Silvio's Hydroponic Wall Garden*, by Rick Hungerford Jr., January 2010



Figure 22 Silvio installing basil for the first time, February 13, 2010

Eco-Socio-Urban Evolutions

Just as I was about to begin construction of the wall garden, Silvio decided he wanted it on a different wall. I saw this change as an opportunity to expand the work, which I did, adding two rows and several inches to either side. In addition to the consultation I had going with engineers, construction and manufacturing crews, I was in negotiation with *Silvio's* construction crew, family members, and architect. The architect, Sheba La'al (a brilliant man) had his own ideas about how the work could and should be integrated into the site. I learned how to professionally negotiate between these people and also the city officials who were seemingly skeptical of the work, how it would function, and if it could fit on paper, in city code. I started

building with a comrade (Rick Hungerford Jr.), and continued tirelessly till the wall was up and running. It was more difficult and took more time than we anticipated, but everyone in the process was supportive, eager to help, and excited to see what was next.

The first week of the system running (water circulating), there were issues with water pressure (it was high) and with leaking from the hoses, valves and fittings that lined each row. The system had to be taken down and rebuilt, using new valves and fittings that were specially ordered for high-pressure systems, and new hoses were cut. The high pressure of the system is a good thing in that water does not stagnate- it is constantly moving and circulating, but it was much higher than I anticipated, especially considering the pump (a pond water pump) is pushing water through a hose to the first row of the system which is ten and a half feet from the floor. Once the system was rebuilt, plants were installed (February 13th, 2010): three varieties of basil and one row of

“experimental” (Swiss chard, mustard greens and Bibb lettuce). The following statement was posted on the wall of Silvio’s (where it still hangs):

SILVIO’S HYDROPONIC WALL GARDEN

ASHLEY L. LIEBER, MFA CANDIDATE 2010
School of Art & Design, University of Michigan

•••

LIVING VEGETATION, 20 GALLONS OF CITY WATER, FULL SPECTRUM COMPACT FLUORESCENT LIGHT BULBS, LIQUID NUTRIENT SOLUTION (COMPOST TEA), WATER PUMP, FOOD GRADE HDPE WATER RESERVOIR, EQUESTRIAN FENCE POSTS, PLASTIC TUBING AND BASKETS, TIME

Silvio's Hydroponic Wall Garden is member to a body of work within *The Sustainability Series*, a set of three sculptural installations created as part of my Master of Fine Arts Thesis, at the University of Michigan. The work within the series exemplifies creative inquiry on the visual and cultural meanings of sustainability. I began by asking the questions: *Where is sustainability? What does it look like? Who is practicing it? And why is it so important?* Here, in *Silvio's Hydroponic Wall Garden* I have incorporated site-specific installation art with alternative urban agriculture, ecological design, water recycling and material re-purposing.

This installation is a hybrid NFT (Nutrient Film Technology) and drip irrigation system, utilizing both new and old technologies. The edible vegetation you see is being grown in recycling water that contains liquid organic nutrients. The edibles are clean, contained, and free of pests and contamination. The system uses very little energy, and is performing better than expected; producing high yields in half the time it takes to grow outdoors (and here we can grow year round).

I was inspired to create this installation specifically for Silvio's in light of what I see this establishment to be: a hub for those who share a passion for wholesome, local and organic foods. It is my aspiration that within this context, we come together to enjoy the harvests of this work, dream and create bright futures that reconnect us to nature within our urban environments, and progress in the dialogue about the vital link between personal and ecological health.

I have slowly shifted Silvio into maintaining and sustaining the garden on his own. Many of his employees have also taken ownership- assigning themselves to various tasks of maintenance, which they seem to enjoy. But this was not always so. For the first month of the project I was there nearly everyday. There were moments when I was uncertain if it was going to work, that is, the shift in maintenance and ownership. I have received phone calls at 1:00AM: “Bella!” (As Silvio calls me) “It’s LEAKING!” I arrive to find a puddle of water as result of someone bumping one of the hoses on the system (an easy fix and temporary problem). Shifting ownership of the system to Silvio was like a weaning process. I have gradually made myself less available, gently reminding Silvio that eventually I will graduate and most likely move to a new city. Overall, he has been accepting and eager to learn how to sustain the system on his own. I hypothesize that Silvio is on the high end of the “learning curve” with regard to learning hydroponics, because of his prior experience in gardening and his deep passion for fresh local foods. Recently, a customer asked Silvio, “Silvio do you like your wall garden?” “No,” he replied, “I love it.”

Silvio has heeded my warnings and always made himself available for various “lessons”, which I have offered to give him. We’ve covered topics like: pruning for optimal harvest (yield) and plant growth, the dynamics of drip irrigation and flood and drain hydroponic systems, and fertilizer combinations and sources.

But there has also been some resistance. I’ve stopped in for visits to check on the system to find the water level *far* below what’s recommended for optimal plant growth and sustainability. The system holds 20 gallons and I have seen it with less than 7 gallons in the system, the pump only half submerged in water. This is a major problem. It could run the motor out on the pump (and when not fully submerged the



Figure 23 basil roots

pump gets really hot, causing water temperatures in the system to rise). Too little water circulating in the system can also cause root rot and disease, as bacteria and nutrients in the system rise (and there is not enough water to dilute). *The water is the eco-system: the bigger the ecosystem, the larger the buffer (more room for small error). You cut the eco-system in half, or thirds, and a small error can take the eco-system down (collapse).*

When faced with such a discovery, I find myself in the position of the “re-educator”, reminding Silvio of all the reasons why he needs to check the water levels, and all the things that can happen if he fails to. But then I have an internal battle, cognitive dissonance; while I don’t want to see the system develop any of the stated issues (ones that could cause a collapse or failed crop), I am faced with a reality: I learned A LOT when I unknowingly made mistakes in my other systems, much more perhaps than what could have been verbally relayed to me by an “expert”. *There is a hands-on, experiential, trial and error quality to the work that is required to really come to know, and in turn, respect the dynamic and sensitive nature of it.*

To my surprise, Silvio has also displayed a strong visual and verbal resistance to the recommended dose of fertilizer put in the system; insisting on putting *half* of what is recommended for optimal plant growth and health. The amount, as I assured Silvio, was what was recommended to me by several experienced hydroponic experts (and the label on the back of the container). At first, Silvio’s resistance infuriated me. I wanted to see the full productivity of the system straight away. I didn’t want to experiment with “starving” the plants; my interest was in seeing them grow to their fullest potential! Plus, his resistance made no sense to me: per week, fertilizer for the system costs approximately \$3.50. A pound of basil costs between \$9 and \$14 (depending on season and availability). Silvio and I were harvesting over a pound of basil a week at the time. He faced no economic loss.

I was then met by a big surprise. After the system had been running for about a month (end of March, 2010), while Silvio and I stood next to it, cutting and pruning basil from the plants, he made a confession: he had been adding only half of the recommended dose every single time he changed the water. It was then, as I listened and looked at the heaping pile of basil on the table next to me that, any fury I had remaining melted away. What I perceived as frugality and stubbornness in Silvio was no longer an issue. Silvio had his own agenda, his own ideas about what was possible. Just



like me, Silvio wanted to let potential emerge from the system and our interactions with it.

When I relayed what Silvio told me to fellow hydroponic enthusiasts, some were shocked, others were not. It is not supposed to be *possible* to grow that much basil on that little fertilizer. I

learned of a system that a hobbyist ran as an experiment: it contained tomato plants and water, no fertilizer added, but somehow the plants still produced fruit. One theory is that the plants “evolved” in the system, shifting their metabolic processes to accommodate to the lack of nutrients. This was news to me.

There are some other things to take into account here, in terms of *Silvio’s Hydroponic Wall Garden*, which is currently producing 1.5 to 2.5 pounds of basil a week. For a system this size, it is yielding highly prolific crops (especially when considering Silvio was skimping on fertilizer- I have since “helped” him correct the problem). I hypothesize a few things: 1. High CO₂ levels in the space, due to the pizza oven, which is constantly running (plants love CO₂) 2. Pressure (caused by the pump) pushing water quickly through the system, in effect, aerates it (and roots love O₂). 3. Ample close contact full spectrum lighting (which some customers seem to like as much as the plants- inching their way closer and closer). In recognizing this Silvio moved a table right next to the system, where customers now sit regularly, some of them plucking off basil leaves for a taste).

Through my interactions with Silvio and the wall garden, ideas have developed about future projects: an extension of the current system on the adjacent wall that would enable Silvio to propagate and clone his own plants, a rainwater collection system in the back of the restaurant, a drip irrigation system for his kitchen garden, learning to make compost tea, and more. These are all projects that I’m interested in pursuing. Between Silvio, the public, the wall garden and me, there is *co-evolution*: successive change, adaptation, acclimation, education and *re-education*. I have been as humbled by this project, as I have been uplifted and impassioned to continue creating socio-ecological art.



Figure 24 *Silvio's Hydroponic Wall Garden*, March 2010



Figure 25 *Silvio's Hydroponic Wall Garden*, March 2010

Sustain (verb)

1. To support, hold, or bear up from below.
2. To undergo, experience, endure without giving way
3. To keep up or keep going, as an action or process
4. To supply with food, drink, and other necessities of life
5. To support
6. To uphold as valid or correct as a claim

Sustainable (adjective)

1. Able to be maintained at a certain level or rate
2. Conserving ecological balance by conserving resources
3. Able to be upheld or defended



TIER III: THE GALLERY

PSYCHOSUSTAINIUM
ECO- PSYCHOLOGY MEET INSTALLATION ART



Figure 26 *Lie Down (Rest, Restore, Revive)*, 2010

INTRODUCTION

Psychosustainium was a sculptural installation consisting of five works in spacial and conceptual dialogue. The installation was housed in the *Slusser Gallery* (School of Art & Design, University of Michigan) and was open to the public six days a week March 12th through April 2nd, 2010. It was conceived of following research, course work, and creative inquiry in Ecopsychology (also known as Environmental Psychology), a fairly new field of study that combines analytical, behavioral, and social psychology with the expertise of ecologists and the ethical energy of the Environmental Movement.

The Five Sculptural Works, *Moss for Meditation*, *Template for Cultivation II*, *Lie Down (Rest, Restore, Revive)*, *Hydro-Triptych* and *Relationships 1-7*, present themselves as literal, physical, and psychological metaphors that exemplify various mind and body relationships. Some of these include: emotional attachment and physical attentiveness to living vegetation, innate desire for restorative and green spaces within institutional

and urban environments, and percepts of the physical and psychological sustaining of the mind, the body, and elements of nature.

Though not visible once the exhibition was open to the public, the process of installation became pivotal in understanding what sustainability means on a personal and emotional level while sustaining hundreds of living components. *What is it to sustain a mood, a feeling, a living organism, and the notion of self in the urban environment?*

THE GALLERY: *ENTERING THE SPACE*

The Gallery is an amazing space in that it allows the viewer to meditate. The cleanness of the white walls combined with the expansiveness of the space offer up breathing room, an openness to calm and quiet the mind.

Before you enter *Psychosustainium*, you can smell water. Walk closer, you can hear it... soft sounds of rainfall on a body of water. To the back left of the *Slusser Gallery*, you enter a room that is partitioned from the main gallery, *Psychosustainium*.



Figure 27 Partial installation view of *Psychosustainium*

FIVE SCULPTURAL WORKS

The five sculptural works in this installation functioned individually, but are intended to *speak* to and of each other (not in words), but through planes of concept, spacial relationships, and time.

A small black cart on casters was at the entry of the space. It contained the necessary supplies for sustaining the works: rubber boots, liquid organic fertilizer, water, pH stabilizers, fish food, water testing kits, soil, a notebook, plant reference books, etc. I called it the “*Cart for Sustainability*”, eventually adding components that aided in my own self-sustaining, especially during installation while operating on no or very little sleep.



Figure 28 Installation View *Psychosustainium*, 2010

1) MOSS FOR MEDITATION

My intention in *Moss for Meditation* was to create an expansive green space within the context of the gallery. I wanted the work to possess a timelessness. A field of moss large enough to make the viewer feel small, and in that smallness able to take in nothing but expansive emanate green, if for only a moment's time. There is nothing but moss

and a solid red oak frame, a modernity that wakes in the absence of stylistic distraction, akin to a Rothko. The eye searches for subtlety in tonal shifts and texture, in the process being drawn in. Coming closer one may notice small wiry stems shooting forth (the sex organs of the moss), reaching for light. If the viewer touches the moss, they arrive at the façade. Its not actually alive, it's preserved. *There is tension between what is expected and what is possible.*

To actually sustain a living painting of moss on that scale would be an all-consuming life project. It would need constant environmental control, a specific drip irrigation system, watchful eyes and attentive hands. More so, moss does not what to be removed, re-planted and trained to grow vertically up the wall. This is not natural. In such a condition the moss would eventually die, most likely falling to the floor in sage-brown clumps and crumbles. *Moss for Mediation*, in a preserved state, succeeds notions of death and dying. The work is about the vitality and restoration made possible by experiencing and dreaming potential green space(s) within urban and institutional environments.⁴¹

In recent years many studies have emerged that show improved vitality, mind and body restoration, and more expedient healing processes through viewing and experiencing nature and green space. Designated green space and gardens are increasingly incorporated into the designs of medical facilities because of their restorative effects. In one controlled experiment, involving 112 young adults who carried out stressful activities, "sitting in a room with tree views promoted more rapid decline in diastolic blood pressure than sitting in a viewless room."⁴² Reading studies, such as the one above, led me to think about how nature, and percepts of nature, may be integrated into our interior, institutional, and urban spaces for purposes of mind and body restoration.



Figure 29 *Moss for Meditation*, sustainably grown & preserved moss in a red oak frame

2) TEMPLATE FOR CULTIVATION II

The materials (medium) of this work consisted of: plant & animal matter, artificial & natural lighting, glass, clay, and time. The living elements included: forced forsythia branch cuttings, edible watercress and arugula, pansy, heuchera, English ivy, and bog grass (*Carex elata*). Throughout the exhibition *Template For Cultivation* was in a state of change (flux). Buds bloomed, micro-edibles were harvested and consumed, the red beta fish (named DARTH) was fed, water changed, and plants maintained and sustained. Some plants died, and were removed, others added, and/or restored. The work demonstrates a continuum of life and death, and is a metaphor for the tending that is required to sustain various living components.



Figure 30 One shelf of two: *Template for Cultivation II*



Figure 31 Aquatic habitat & watercress in soil, *Template for Cultivation II*



3) RELATIONSHIPS 1-7

Plants, as separate elements, stream along the full length of a long linear wall. Resting on simple wood shelves, contained in earth or water.

In order of appearance (Right to Left):

Long-Term Relationship II, English Ivy (Hedera helix): 9 years

Long-Term Relationship III, Wandering Jew (Tradescantia zebrina): 5 years

Long-Term Relationship I, Ficus benjamina (Mother Plant): 13 years

Developing Relationship, Ficus benjamina (Clone Plant): 2.5 years

Temporal Relationship I, Forced Forsythia Branch Cuttings (Forsythia): right now

Potential-Temporal Relationships I & II, Moth Orchids (Phalaenopsis), 2 months

*R*elationships within this work are implied, literal, and physical. The plants are in dialogue. In that which is implied: the emotional, the attachment one feels and may come to know long-term relationships. The physical relationship between me and the plant, and the length of that physical relationship, is stated on the wall on each title tag (9 years, 13 years, 2 months, etc.). Then there are the plant's relationships to each other: a mother plant and a clone, the length and form of the wandering Jew plant commenting to the extended length and form of the English ivy, its purple trailing much shorter, as is its length of time in my care.

My intention in this work is to encourage the viewer to reflect on their relationships to plants (and the length of time they have been under their care, or the plant's origins, or their emotional attachment to that plant). How much time has passed since they have tended, forgotten, or loved a plant of their own? How do these long,

developing, and potential relationships translate to emotions? The plant's life, coinciding with our own, embedded in our being, within our memories of people, places and time—the potential and reality of co-evolutions between people and living vegetation emerge.

At the far end of the wall, two moth orchids face each other creating shadows that intermingle. One small, one large (both in full bloom), they comment to each other in space and time. Their delicate ambiguous forms emanate, orient from some exotic land, where their ancestors thrived- in rainforests. They have been expropriated and re-appropriated into this space. They are a reminder of a foreign nature unknown in this place. They are a reminder of delicacy, that which needs a watchful eye, a tender hand, and skillful touch. The large white moth orchid was given to me as a gift. The giver said to me: "If I didn't see you again soon, to give you this [the orchid], I was going to take it back." "Why?" I asked, "Its so beautiful." "I wouldn't want to take care of that myself," he replied. I was to be the caretaker of an exotic plant, whose same species I had epic failure with before. The orchids were as a new acquaintance, processing an unknown temperament to learn to navigate, a temperament in the form of



Figure 32 Temporal-Potential Relationships I & II

living vegetation. It is yet another organism I choose to learn how to sustain, and make my circular rounds of tending to. I knew from the beginning that the relationship with the gift giver and the plant were potentially temporary, non-lasting. While they both held potentials for the future (the orchid is still in healthy existence), this potential lies within my abilities to sustain them. They are volatile. In the face of arduous labor and misunderstandings, is it easier to throw in the towel than to learn to sustain and maintain. But, throwing in the towel will not strengthen a relationship, be it plant or human.



Figure 33 Wandering Jew, *Long-Term Relationship III*, 5 years

Ficus Benjamina: Long Term Relationship I

My ficus needs pruning, but I am reluctant,

Afraid to further stress the woody plant.

To save space in my small apartment I bring the ficus to the studio one evening.

Well water, tended and sunned, thriving.

Ficus holds my longest standing non-familial relationship, *thirteen years*.

As I have moved from city to city the ficus has accompanied me,

Ambient cheer in my domestic space

Pruning, re-potting, watering, fertilizing, observing, I have come to *know you*.

In the morning I return to the studio space to find ficus has dropped eighty percent of its' leaves.

Piles of dead lie on the floor and branches barren

I cry. I weep.

Please don't die. Please don't die. How did this happen?

If you look at a ficus benjamina the wrong way and it may drop leaves.

The slightest change in environment can be crippling. This time, it was an issue of humidity.

It was my fault. But how could it be so sensitive? *It was just one night.*

The studio drier than my apartment, a large vent blows hot air into the space.

How could I overlook this?

After that, I ignored you for three days ficus.

I was too heart broken to pick up the pieces

Leaves you left in piles on the floor

You have betrayed me.

You almost died.

I wait two weeks

I decide to prune

Remove the dead

My hands shook as I held the razor blade,

Usually steady,

Usually calm, in these matters

This time I wasn't.

I am in love with you.

Protective even.

I go in, remove the dead.

Missing twice, I sliced my hand and a branch wide open

We bled simultaneously; me red, you white.



Figure 34 Ficus benjamina, post pruning, in Relationships: *Long Term Relationship I*, 13 years



Figure 35 *Lie Down (Rest, Restore, Revive)*

4) LIE DOWN (REST, RESTORE, REVIVE)

Lie Down (Rest, Restore, Revive) is about notions of mind and body sustainability. It exists as an island of refuge. Through the form and function of the work, the viewer is encouraged to *Lie Down*. It will require time, as resting, restoring, reviving, (all components of sustainability) do.

Our modernized lives often do not allot time, in our daily routines, to make proper use of the benefits of sunlight and its vital, health preserving radiation. “The ever-increasing industrialization has forced us to restrain our activities to enclosed rooms into which the sunlight can enter only through filters or not at all. This affects not only adults but especially children since the blanket of smog which is spreading in an alarming way over our cities and industrial areas, absorbs the most important rays of sunlight.”⁴³ Lack of sunlight leads to what German health practitioners have coined *vegetative dystonia*: a disruption in the rhythm of the autonomic nervous system, which governs biological phenomena such as blood pressure, pulse, breathing rate and digestion.⁴⁴

The light bulbs selected for this work are medical grade sunlamps, designed specifically for medical conditions that require a “substitute sun”. The bulbs (made by Osram, called

the “Ultra-Viatlux”) are produced only in Europe, and are what I was told to be “the only true sunlamp” (by a man who has sold light bulbs for forty years). The bulk of the orders for these bulbs come from doctors who prescribe them to patients suffering from various medical and psychological ailments, such as seasonal affective disorder (SAD).

During the last twenty years many medical publications have been released on the subject of the biological effects of these specific sunlamps, including: improved capability to recover from strenuous work or illness, prevention of infectious diseases on account of bacterial effects, reactivation and distribution of Vitamin D, raising or helping to regulate calcium levels, improved blood circulation of the skin which becomes more elastic and smoother with a suntan as a cosmetic side effect, and positive results in the treatment of acne.

This information was available to the viewer, written on the title tag, on the wall next to the work. In my maintaining and sustaining visits I would observe gallery visitors, “viewers” of the work, participating- entertaining the function of the work. Some approached cautiously, perhaps uncertain if it was safe. Others walked up to it with familiarity- they had been to the work before, this had become a routine visit, as had my own. Approaching with certainty or uncertainty, I took note of one similarity they all shared- after a few moments beneath the warm light, facial expressions waned and fell away- with closed eyes they remained mostly motionless, still. Limbs loosened, relaxed and fell to the sides.

Lie Down (Rest, Restore, Revive), provides a parcel of sunny space indoors, in the institution, the gallery, in the city.

In the larger context of place and time, *Lie Down (Rest, Restore, Revive)* is about questioning how we might evolve our urban spaces, our work places, our institutions, and perhaps even our culture to make some time and place in our daily lives, to think and act on behalf of sustaining our most basic self- the body.

If we are to create a more sustainable way of living on planet Earth, then we must act as stewards, and in order to act as stewards, we must first take care of ourselves.

5) HYDRO-TRIPTYCH

Three pools nestled together along the back wall of the gallery. Pumps draw water up through tubing, and circulates it through tiers of steel and plastic bottles, returning back to the pool, creating circular patterns on the surface of the water. Bog plants and vivid green grasses, planted in black circular containers catch some of the droplets.

The work opens up to the viewer, like a traditional carved wood triptych, consisting of three parts. The center work is the most grandiose, in scale and presence. Its highest point is fifteen feet. It is a green wall of plants. The two adjacent works are not walls, but open as spirals to the viewer, whimsical yet precise arrangements of vegetation.

This work is an extension of the *Circular System* project, but draws attention (instead of the edible) to the tensions between the indoors and out of doors, change in perception from day to night, the natural and the artificial, reality and seemingly fantastical permutations of living vegetation.



Figure 36 Interior view of *Hydro-Triptych*

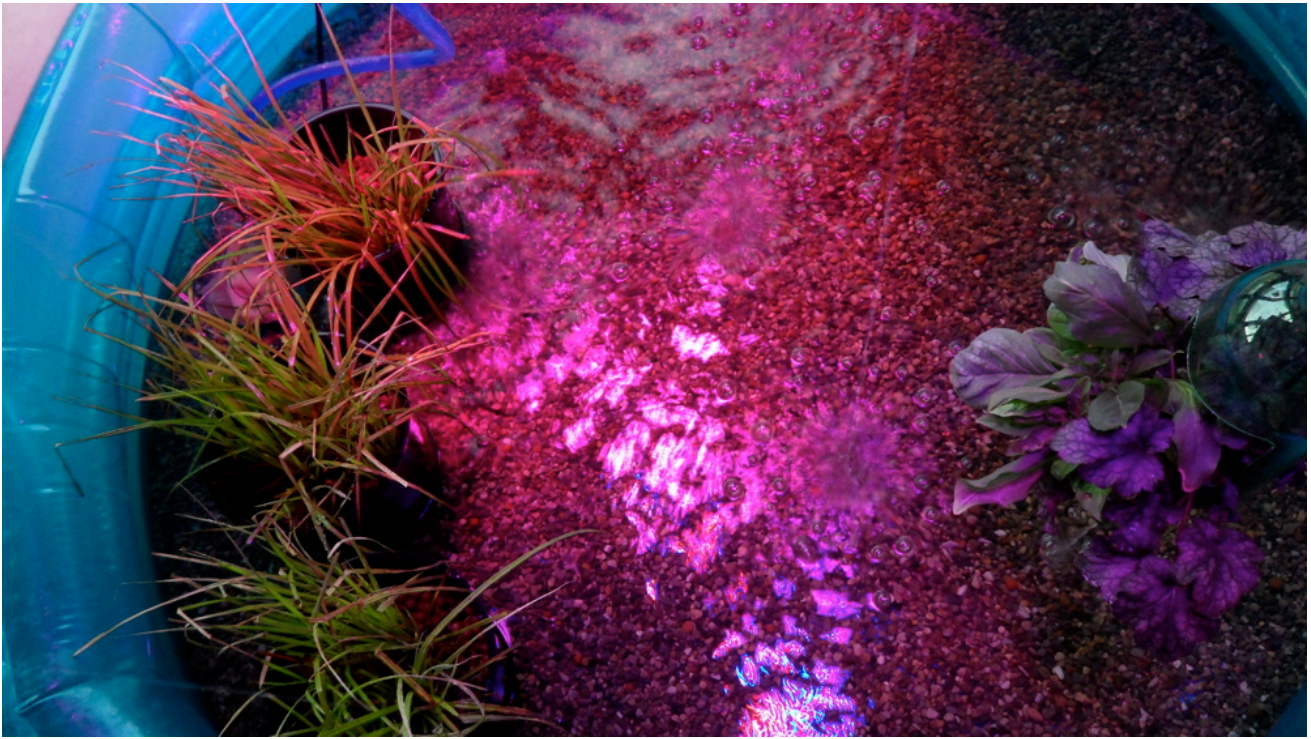


Figure 38 Bird's Eye view of one of the pools in *Hydro-Triptych*, 2010



Figure 39 Artist resting, *Lie Down (Rest, Restore, Revive)*, 2010



Figure 40 Artist in late night sustaining/maintaining visit, *Psychosustainium*, 2010

Sustaining the Self

There were several times during the installation of *Psychosustainium*, and in the process of maintaining it that I reflected deeply on what I was doing... what my life had become, and what it felt like.

Acquiring Vegetation

I drive three hundred and thirty six miles to *Walters Gardens*, one of the largest indoor greenhouses in Michigan, housing over six acres of indoor space for plants. I'm meeting Kevin Hurd, a plant geneticist. He has offered to help me select plants for *Psychosustainium*. My car is empty, soon to be filled with living vegetation. Two hours later, we have selected the plants, carefully boxed and stacked them, and fill every possible space in my car. There are over 400 plants (where will my luggage fit? I'll figure that out later). When I drive away, I roll the windows up and breath deep. The smell of earth and musk fill my lungs. I'm not returning to Ann Arbor yet, I'm driving to Grand Rapids. Tomorrow morning I meet with a hydroponics expert. The following day I will shift these plants from soil to water. They are to be installed in *Hydro-Triptych*, a three-paneled hydroponics system, newly designed. These plants will be suspended above inflatable kiddie pools, floating in space, in the gallery.

Routine

Standing in a sea of exotic and native plants, roots bubbling in oxygenated water... I was wondering how I was going to actually keep over 400 plants alive before installing them in *Hydro- Triptych*, and these were just what lay in view. I had spent six hours delicately removing compacted soil from these plants roots. They were to be transferred into the new system. There cannot be dirt and debris, since it would clog the intake and drip lines. If that happened the whole thing would have to be re-plumbed. I was really tired. It took the entire day to unload the plants, which were enough to completely fill my car, unpack them, de-dirt them, set up temporary hydro stations, connect air pumps (so that root rot does not occur), fill them with filtered water, lay them out, then hook up some grow lights. I knew it would take at least three days to get *Hydro- Triptych* installed. Moving over 150 gallons of water, 300 pounds of pea gravel still needed to be washed (by hand) and transferred into the bottom of the pools. It's 11:30PM.

In the studio, the fish need to be fed, in *Circular System IV*. I also need to test the water for nutrient levels. I think the nitrogen might be high. If so, I'll hold off on harvesting. Also, water the seedlings (back up for Silvio's wall garden). And the clone-box... the water still needs to be changed. And the compost needs to be taken out.

When I get to the studio, two of the drip lines aren't working. The greens are wilting. I suck water through the lines with my mouth and spit it out- yuck, fish water. This doesn't work. I have to shut the pump off and re-plum the lines (cutting small pieces of black tubing, and re-inserting them where I have pulled the old ones out). I begin what I came here for, but adding to the list: re-potting of the philodendron, and the succulent garden needs water.

I have to stop by Silvio's because today is 'water change day'. He does this in the evening, once the pace of customers has slowed. I'm tired, but I have to go; he has only completed the task once on his own. I need to be sure it runs smoothly, that he adds enough fertilizer and that the fresh water we add is the right temperature. When I get

there he requests a demo on how to prune the plants. Okay. I show him. We change the water. I walk home.

At home I need to refill the humidifiers, soak the roots of the orchids (its been 7 days), and fertilize (feed) them. This is a delicate process. I wait for the water to drip through the Britta filter... orchids don't do well with chlorine. I realize tomorrow I need to do a water change in the betta habitats. I notice one of my aquatic plants is flowering! Small white globes of puff suspended underwater, how cool. I've never seen anything like it. I de-thaw some bloodworms for the betas, its 3AM.

In the morning I see my advisor and she tells me to take it easy- I need sleep.

In all this sustaining, I had begun to question what it really was to sustain myself.

How little sleep could I go on for how long? How many plants could I sustain in this fashion? I did a tally- I was sustaining over 700 plants.



Figure 41 Plants being prepared for installation in *Hydro-Triptych*

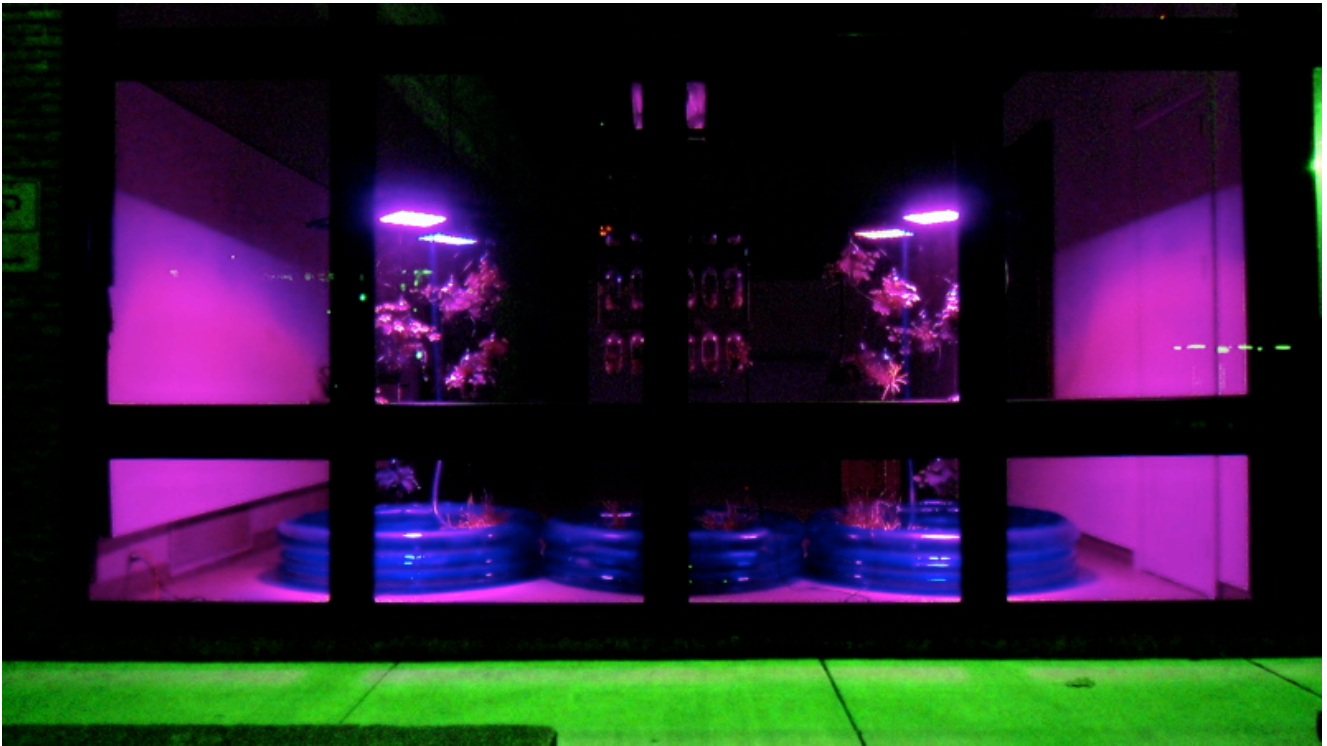


Figure 43 Exterior view of *Hydro-Triptych* in *Psychosustainium*



Figure 42 Exterior night view of *Psychosustainium*

TIER I: THE STUDIO

ECO-ART HARVEST EVENT: *A SIMPLE SALAD SOCIAL*

THE INCREDIBLE EDIBLE



Figure 44 Artist plating harvested greens in her studio for *A Simple Salad Social*, 2010

“OUR BODIES ARE OUR GARDENS,
OUR WILLS ARE OUR GARDENERS.”

-WILLIAM SHAKESPEARE

Happening (*n.*): a performance, event or situation to be considered as art. Happenings can take place anywhere, are often multi-disciplinary, with a nonlinear narrative, and the active participation of the audience. Key elements of happenings are planned, but the artist usually retains room for improvisation. Happenings eliminate the boundary between the artwork and its viewer. Henceforth, the interactions between the audience and the artwork make the audience part of the art.⁴⁵

Horticulture (*n.*): the art or practice of garden cultivation and management.⁴⁶

The first *Simple Salad Social* was November 21st, 2008. At the time, I had been growing edibles (via *Circular Systems* and other various hydroponic experimentations) in my studio for nearly a year. As my horticultural skills developed, the systems began producing more edibles than I could comfortably consume, so I made a habit of

harvesting every Friday, or every other depending on the productivity, and gifting the surplus to colleagues, friends, and neighbors. I'd hand over an overflowing paper bag full of specialty edibles, and was continually met with expressions of delight (especially in winter months). Most people's faces noticeably brightened. I envision this process (harvesting, packaging, gifting) as an artistic interaction, it was after all fruit of creative labor, and the audience (or *viewer*) was provided an experience, of *looking, smelling, accepting*, and presumably, once returned to their domesticity, *tasting* and *consuming* the edibles.

While the harvest may be witnessed as a *product* of creative practice, arguably this notion is overshadowed by the *service* provided and the context in which it has been provided (i.e., the art studio).⁴⁷ The acts of *cultivating, growing, sustaining, harvesting*, and sharing are encompassed *as* modes of creative practice. This recognition marks the point of departure in which I began to envision how the breadth of experience allotted to the "audience" might expand. How much of what takes place within the studio (sowing of seeds, tending, adjusting, sustaining, harvesting, etc.) can and should be witnessed? I wanted the viewer to experience the context of the studio, to witness or somehow participate in the *Circular System* project. This desire led to 'An Eco-Art Harvest Event: A *Simple Salad Social*.

I held off harvesting for three weeks. I planned the happening as a harvesting followed by a celebratory sharing of it. In the three weeks leading up to the event, the edibles began to command the space, overflowing from within their containers.

I distributed invitations that read:

A Simple Salad Social

An Eco-Art Harvest Event

Friday, November 21st, 7PM-9PM

Location:

The Art & Design Graduate Studio of Ashley Lieber

1631 S. State Street (Map Attached)

Ann Arbor, MI

What?

It's time to harvest! Come experience my culinary art skills, enjoy delicious heirloom greens, drink organic blueberry green tea, be social, check out the project, and if you like I'll teach you how to grow micro-greens in winter.

Menu:

Red Oak Leaf Lettuce Salad

Dried cranberries, toasted walnuts & whole-grain mustard seed-apple cider vinaigrette

Purple Mesclun Salad

Rosemary-garlic roasted Michigan potatoes & Michigan red wine vinaigrette

About this Project:

The ongoing studio project, which I have titled *Circular System I*, began with hydroponics experimentation and inquiry into local aquatic ecosystems. The result: a convergence of a sustainable urban agricultural method and aquaculture (but we won't eat the fish), demonstrating that in a healthy ecosystem, there is no waste! By using a pump to flow nutrients from fish waste through plant roots, water in the system is purified while edible plants are grown. The system consists of a 50-gallon tank, water from the Huron River, recycled 2-Liter bottles, soilless substrate, Michigan aquatic plants and fish, a grow lamp, and edible heirloom greens. *Circular System I* allows food to be grown, even in winter, at little cost, improves air quality, while supplying a full spectrum of light. The soft and continuous sound of flowing water and the fluid movement of fish swimming make for a tranquil and meditative environment; creating a symbiotic relationship between edible plants, fish, and humans.

The evening of the event students and friends watched as I harvested *Circular System I*, and made salads to order. I taught several students how to grow micro-greens using wheat and rye. We talked about the significance of knowing our watershed, about how pollution from streets, parking lots, and buildings affects the health of ecosystems. It was very informal; paper plates (real forks) and students on benches. I closed the evening feeling satisfied with the outcome and level of engagement; it felt good to share the harvest, especially in an educational way, met by the curiosity of visitors as they inquired about the functionality of hydroponics.

Horticultural skills are often coupled by epicurean skills, heightened sensitivities to sensual pleasures of food and drink, and I am no exception. I have become a fetishist of food. This is fitting: I've spent the last two years attentively growing edibles, carefully choosing which ones to grow and how to grow them. I can tell you, by taste, if the lettuce has been grown in soil or hydroponically. I can tell which foods will pair best with a spicy mustard green, how to sauté Swiss chard, and what wine will accompany it nicely. Even before these two years of selectively growing edibles, and politically and physically venturing into the slow, local, and organic food movements, I was groomed a foodie: I trained as a chef, am a hunter of wild edibles (morels, dandelion, berries), and have spent as many delightful hours in the kitchen as I have in the garden.

The second *Simple Salad Social* was planned in similar fashion as the first, but of course, with more attention to detail. The last event in *The Sustainability Series*, I planned to once again open the most intimate space of my creative practice in the sharing of edibles. It was to be celebratory, and it was: the harvesting and sharing of carefully cultivated and prepared edibles, and a live culinary demonstration, as a series of salads with specific pairings were served. All of which took place in the environmental ambiance of my studio, which I had transformed into a bistro (with help of my sister who has a kindred sensitivity for transforming spaces, informed by study in interior design).





Friends,

This Saturday, March 27th you're invited to *A Simple Salad Social*, an 'Eco-Art Harvest Event'.

Come watch and taste as I harvest *Circular System VIII* and *Clone Box II*, edible sculptural works that are brimming with delectable exotic and heirloom greens.

What: A Series of Salads, Food & Wine Parings, Music & Conversation.

When: 7PM - *Till We Are Satisfied*.

Where: The Studio, located @ 1631 S. State Street, Ann Arbor

RVSP requested, not required.

Hope to see you.

Soon,
Ashley

A relaxed steady easy flow of friends, colleagues and advisors entered *The Studio* with grace and openness. I was met with helpful hands, curiosity, and words that described delighted palates and intrigue for living things. The aesthetic of the space was rustic meets modern, simplicity meets elegance, moody meets bright. Greens growing under growlamps, candles and ambient music met by the sounds of trickling water and the intellectuallist conversation of academics. Above all, *good food, good beer, and good wine*. The edibles were served in a succession, a planned series, each with a short introduction and explanation. For the finale I harvested large bunches of ‘Green Wave’ (a spicy hierloom mustard green), washed and chopped them in real time, tossed them with garlic-rosemary roasted red potatos and whole fire roasted tomotoes (old world style), and a rich and earthy roasted garlic vinaigrette.



Figure 45 The 'Old World Salad', *A Simple Salad Social*, 2010



Figure 46 The Anti-Oxidant Salad, *A Simple Salad Social*, 2010

ANTI-OXIDANT SALAD

Greens. Blueberries. Strawberries
Carrot & Toasted Almonds
Lemon-Cayenne-Honey Vinaigrette

Ortrugo, Santa Giostina (Italy)
Oro de Calabaza, Jolly Pumpkin (Dexter, MI)

A FAVORITE

Arugula. Purple Shallot
Purple Shallot. Parmigiano-Reggiano
Whole Grain Dijon Vinaigrette

Tempranillo Organica, Santa Julia (Argentina)

OLD WORLD

Green Wave Heirloom Greens
Whole Roasted Red & Gold Potato & Tomato
Roasted Garlic Vinaigrette

Gigondas, Domaine de Fontsane, 2006 (France)



Figure 47 Guests enjoying edibles at A Simple Salad Social, Artist's Studio 2010

The happening was a way to bring people into the intimate space of my practice, where ideas and plants are cultivated, *The Studio*. In entering and lingering, the viewer witnesses the project while partaking in a rewarding and nourishing aspect of it—consuming the edible. The source of the edible (the system) is visible, as are the harvesting and preparation of it. It is my intention that metaphors of sustainability emerge within the work in this context, and that actual concepts of sustainability are made visible and experiential (e.g. home gardening, sustainable systems, ecosystem balance, recycling, re-purposing, biodiversity, resourcefulness). In witnessing and participating in the event, symbiotic relationships between natural resources, plants, animals and humans become apparent and visible. It is my aspiration that in experiencing this, one comes to a feeling of interconnectedness with all things.





♥ ANTI-OXIDANT SALAD

greens · blueberries · strawberries
 carrot · tst. almonds
 lemon · cayenne · honey
 vinaigrette

WELCOME
 TO MY SIMPLE
 SALAD SOCIAL

A FAVORITE ♥

arugula greens · purple
 chlorella · parmigiano · reggiano
 whole grain dijon mustard
 vinaigrette

♥ OLD WORLD

green wave heirloom greens
 roasted red + gold potatoes w/ rosemary
 roasted tomato
 roasted garlic vinaigrette

↓
 santa julia
 tempranillo
 (argentina)

↓
 domaine de Font Sane
 "Gigondas" 2004



SENSE & SUSTAINABILITY

Sustainable: (adj.): 1. Capable of being sustained 2. a: of, relating to, or being a method of harvesting or using a resource *so that the resource is not depleted or permanently damaged* b: of or related to *a lifestyle involving use of sustainable methods*.⁴⁸

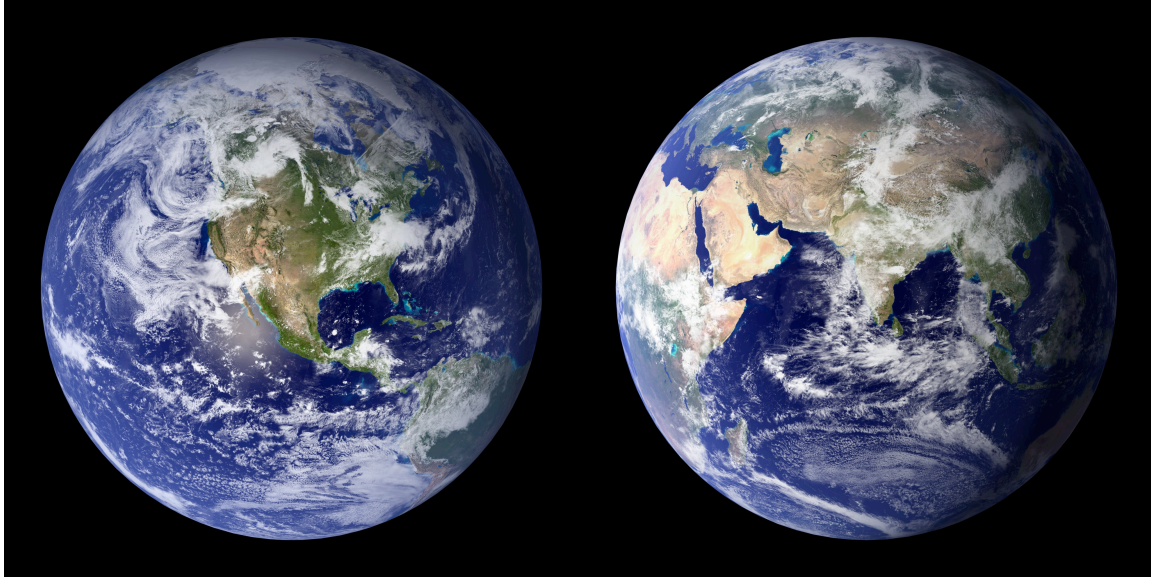


Figure 48 “Blue Marble” NASA composite images: 2001 (left), 2002 (right)

“ENVIRONMENTAL MOVEMENTS CANNOT PREVAIL UNTIL THEY CONVINCED PEOPLE THAT CLEAN AIR AND WATER, SOLAR POWER, RECYCLING AND REFORESTATION ARE BEST SOLUTIONS FOR HUMAN NEEDS AT HUMAN SCALES- AND NOT FOR IMPOSSIBLY DISTANT PLANETARY FUTURES.”
-STEPHEN J. GOULD

You may have read this entire document and still be wondering, “*So what is sustainability?*” The best I can give you is this: sustainability is studied and managed over varying frames of reference in time and space and in many contexts of environmental, social, and economic organization,⁴⁹ so the answer depends on the framework enabled to answer the question. Even then, what concisely answers the question one day, could be different the next. Just a month ago, *Wikipedia* warned readers who arrived at the site for a definition of ‘*sustainability*’: “This article may be too long to comfortably read and navigate,”⁵⁰ and in the time that I have been writing this paper, the webpage has been completely revamped. The once unorganized cluster of disputed statements is now a cohesive web base of organized categories that include: a history, principles, concepts,

scales, contexts, scientific data on consumption, human population, carrying capacity, biodiversity, resource management, economics (including information on the decoupling of environmental degradation and economic growth, and nature as economic externality), and society (which includes discussion on sustainability and social justice, resource security, peace, and human relationships with the environment). Whew.

The beauty of sustainability is that it is fluid, dynamic, and possesses the ability to evolve with us. It is timeless, yet keeps pace with technology. It is pivotal, uplifting, and mobilizing for society, and is embedded in the most quintessential of ecologic principles. Though the definition can flex, we need to be careful that the consumer market does not misconstrue core concepts. In the year, I have witnessed sustainability become an all-encompassing buzzword. It makes things sound good (especially to the ecologically conscious and green savvy). In the same way that “*Going Green*” has become consumer-chic, sustainability is being unfairly used to sell and market business models and material goods. While many environmentalists are relieved to see a mass market pull towards going green, there is skepticism about ill intent (using the words member to the environmental movement as a means of self service, namely by capitalizing on the concepts with the advent of goods and services). We must ask ourselves: What are the *intensions* of those employing the terms *green*, *sustainable*, and *sustainability*? Take interest in those intentions. *At the very core of those claiming sustainable and “green” practices, we should find environmental and social justice.*

The issues lie not only in the language and concepts being misconstrued by consumerism, but in the lack of collective understanding of what sustainability really means. This is due to: 1. Naturally occurring visuals of sustainability are in decline and are not integrated wholly integrated into urban environments, 2. Sustainability is a broad and complex concept that is easily de-habilitated by disputed language and conflicting ideologies (e.g. hard science vs. ecology), 3. The tools needed to teach, discuss, and integrate sustainability into everyday life are absent in mass culture. In fact, mass culture currently runs counter to sustainability.

Achieving sustainability will require an increase in public visibility (*especially within* urban landscapes) and education. Sustainable behaviors need to be re-introduced

into popular culture (e.g. resourcefulness, conservation, and self-efficiency).⁴ There needs to be significant reorganization: of living conditions ((from those that are highly unsustainable (e.g. suburbs, mansions, high rises), to those that are sustainable (e.g., eco-villages, eco-municipalities, sustainable cities)), economic sectors, work practices and our interpretation of them (e.g., trades and services), new technologies and science (renewable energy, biomimicry, wind turbines), and adjustment in individual lifestyles (predominantly in the developed world, aka those who consume the most natural resources).⁵¹ Thus, returning humanity to a sustainable existence with the environment will require *major* effort.

Do I think achieving sustainability is possible? Yes, I do. But only if we work collectively, loose the blinders of greed, uphold environmental and social integrity, and mobilize the market to enable sustainability (not counter act it). The groundwork has been laid, more books are being published than ever, and arguably the Eco-Evolution is the largest global movement that we have ever witnessed on the planet (estimated to involve more than 100 million people⁵² and growing). It is a movement that has no distinct name, leader, or set ideology, yet it is mobilizing millions regardless.

To help facilitate sustainability we can begin with ourselves, in our own front yards (e.g. rainwater collection, organic kitchen gardens, solar panels, etc.), and in the way we live our lives (supporting the local economy, discussing and advocating a non-consumer driven lifestyle, resourcefulness, and resource conservation, for example). We can create visibility within our cities (e.g. organizing and enabling material exchanges, urban gardening, local currency and economies, grey water and run-off collection and purification, etc.). Mobilizing sustainability doesn't have to be difficult. It can be as easy as deciding what to eat for breakfast. And the ability to visualize one's interconnectedness with the living whole. Any sincere and persistent effort can add momentum. Also, at the core of our species you will find ingenuity. When faced with an obstacle, a question, or dilemma, the human being innately desires to solve, answer, remedy, and invent. It is *our* nature. It is how *we* have evolved.

⁴ Behaviors like resourcefulness, self-efficiency, and conservation need to be portrayed and perceived as *hip* and *cool*, not frugal, in popular culture. I reflect on the many *modus operandi* behaviors I have observed by those who have lived during and survived severe economic depression, poverty, and/or war (e.g. ingenuity in the re-using and re-purposing of materials, developed home gardening and canning methods, close monitoring of resource consumption, food security and storage).

There is hope? Of course there is. Humans can live sustainably, in harmony with the environment. I've seen it and I can envision it, daydream it. And if one daydream can turn into a reality, so can another. A more sustainable future is already in the making.



Figure 49 Concept design for *Hantz Urban Farm*, Detroit, Michigan 2010 (www.hantzfarmsdetroit.com)



Figure 50 *Dragonfly Urban Farm* concept design for a 100% self sufficient urban farm for New York City's Roosevelt Island, 2010 (<http://inhabitat.com>) by Vincent Callebaut



Figure 51 *Seawater Vertical Farm* concept design for a self-sufficient sustainable farm for Dubai, 2009 (<http://inhabitat.com>)

AFTERWORD

If I were to say that all aspects of *The Sustainability Series* are sustainable and exemplify sustainability, I would be pigeon holing myself. Sustainability is too broad and complex to entirely encompass and address in one body of work, in one person's life. What I have done is employ core concepts of sustainability as a springboard to propel forward in social, ecologic, and economic planes of reality in a way that I know how: through visual arts and education. The core concepts of sustainability emerge when the work is viewed, discussed, experienced, maintained, and participated within. The concepts are further addressed in the actual socio-psycho-eco-relationships that emerge. My efforts to make sustainability more visible to the public, to share it, exemplify it, teach it, and question it, stem from an innate desire to see humanity achieve sustainability in my lifetime.

Hydroponic technology is an ongoing thread in my work for good reason: it offers real solutions. If we continue at our current rate of population growth, the world will demand 50% more food and water by 2030⁵³. Vertical hydroponic farming can produce up to 20 times more food in a fraction of the space (what is produced in 1 acre of indoor hydroponic farming would take 10 to 20 outdoor acres of farmland) and time. Hydroponic technologies also offer special applications for producing food in compact spaces (like cities), and in harsh environments (like deserts) that might otherwise not be possible. In terms of water, hydroponics only uses 5% of the amount of water required in conventional farming methods (because instead of water evaporating in the air and dispersing in the soil, it is recycled and contained).

Dr. Dickson Despommier, Professor of Environmental Health Sciences at Columbia University, states:

The vertical farm is a theoretical construct whose time has arrived, for to fail to produce them in quantity for the world at-large in the near future will surely exacerbate the race for the limited amount of remaining natural resources of an already stressed out planet.⁵⁴

Agreed. My undying interest in hydroponics is also embedded in the process the technology presents: I am able to visually and physically engage in a sustainable practice while sharing and teaching the technology to others (*Silvio's Hydroponic Wall Garden*). There is an inevitable exchange of knowledge and methodology, and relationship with living vegetation and natural life cycles. In the most personal sense, this work encourages an innately rewarding and nurturing act: *feeding* and nourishing others.



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