Note: This portfolio document is meant to provide a visual overview which can be quickly browsed with accompanying short text. Additional links are provided for supplementary project specific media. A selection of written work can be found here.

design
futures
lab

the future of design is not design.

Nicole Koltick, Founding Director & Principal Investigator

Speculative Design.

Design Research.

Student Work.

design
futures
lab

the future of design is not design.

Work from the Design Futures Lab

Bio/Digital Fabrication, 2015-18

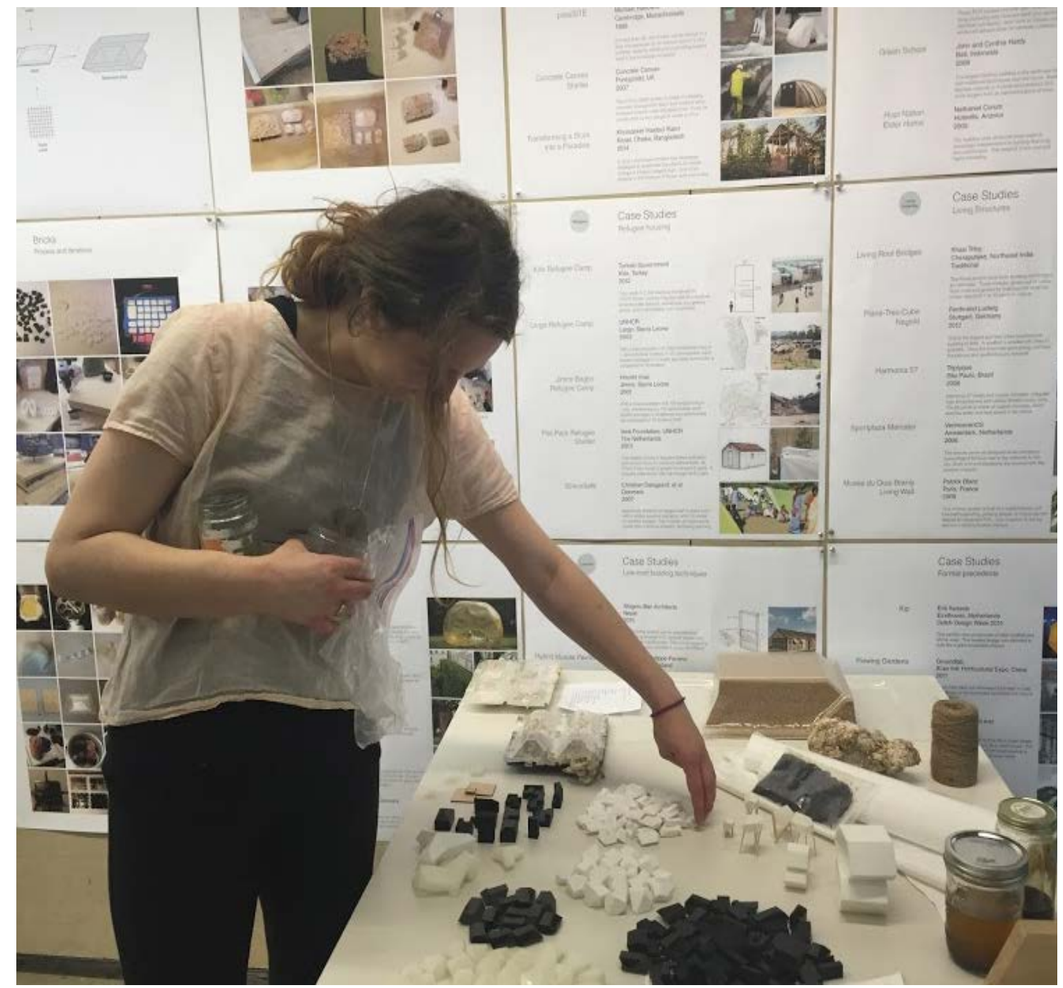
One of a series of projects exploring the potentials of Bio/Digital Fabrication Methods .The project below, *Nourishing Dhaka,* explores the potential of refugee housing solutions in Dhaka, Bangladesh and proposes the deployment of materials found outside of the cash economy including textile waste, locally grown materials and the production of low cost mushroom bricks. This work explored extensive material research into the potentials of mycelium grown architectural substrates. Custom-developed genetic algorithms were developed to optimize the geometry of each component of the structure taking into account sun exposure, and the structural limitations of these highly novel material assemblies. This work also incorporated extensive digital modeling and fabrication to develop custom molds for the production of full scale mycelium bricks.

Design Futures Lab, Project Lead, Nicole Koltick,
Design and Production Team, Neha Basajarav, Jordan Solomonic and Elena Sabinson

Design Research into Mycelium Based
Architectural Materials (2016-2018)
Cast Bacterial Cellulose and Mycelium Panels

Design Research (2016-2018)
3D printed molds cast with Mycelieum Material

Design Futures Lab Research Assistant Elena Sabinson,
Putting the final touches on Nourishing Dhaka public presentation,



3d printed and CNC Milled Prototypes for Nourishing Dhaka

Bio/Digital Fabrication, 2018
Continuing Mycelium Research combined with Bacterial Cellulose
Project Lead Nicole Koltick, Design & Production, Neha Basjarav

Metagenomic Field Kit, 2018

The Metagenomic Field Kit offers a series of democratic communication potentials opening up new channels of resistance meant to facilitate biologically encrypted information exchange within a near future landscape that is monitored and manipulated by increasingly pervasive digital surveillance dominated by various corporate and governmental interests.

Within molecular biology we find an astonishingly complex language medium, embodying a highly flexible, contextual and efficient multi-scalar system enabling communication through the deposition, encryption, replication, accumulation, persistence and distribution of large amounts of information utilizing nucleotide coding, regulatory genomic processes, and biotic/abiotic interactions.

We propose intercepting the mechanisms of genetic communication through environmental metagenomics, by which DNA sequencing can be deployed to identify specific loci, patterns, and concentrations of multiple genetic communities in relation to each other and their environment, allowing encrypted communications through the alteration of the biome by methods including insertion of edited DNA and amplification of microbial populations.

Using the density and perspective of metagenomics as a communication channel harnesses the ubiquity and complexity of genetic information, providing mechanisms for message encoding, cloaking and dissemination, offering a strategy of stealth through visibility, one in which the incredible complexity and diversity of biomes are used as a highly effective camouflage strategy to embed signals within an incredibly noisy field.

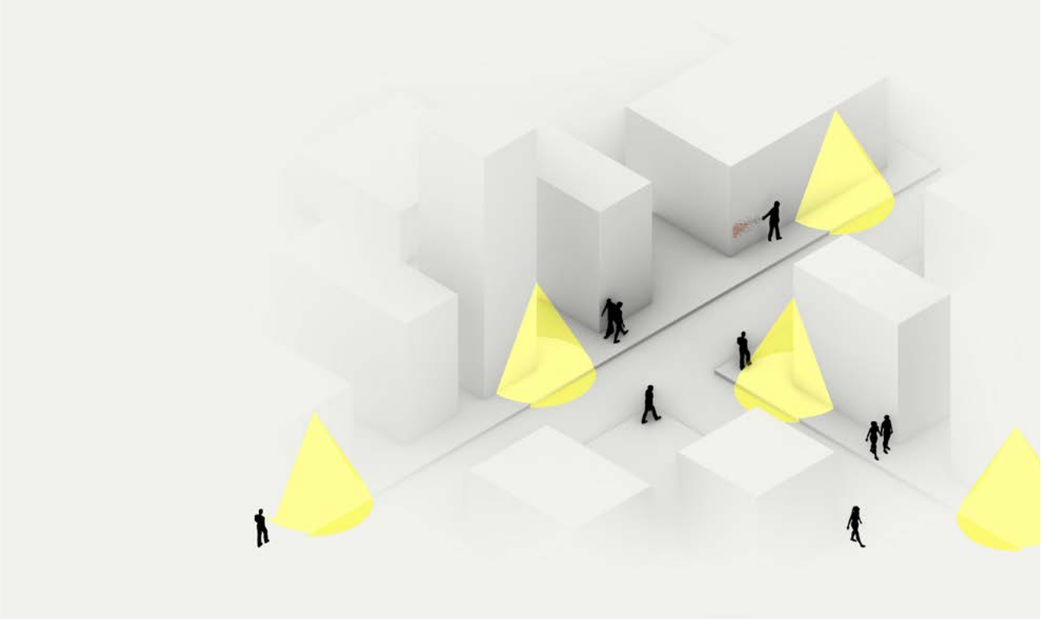
This project was presented at the BioDesign Challenge Summit held at the MOMA, in June, 2018. It was subsequently on exhibit at Parsons The New School. The project includes a short film, tangible artifacts and extensive visual assets.

Project Lead: Nicole Koltick
Project team: Alyssa Klein, Uk Jong, Elise Krespan & Greg Siebert

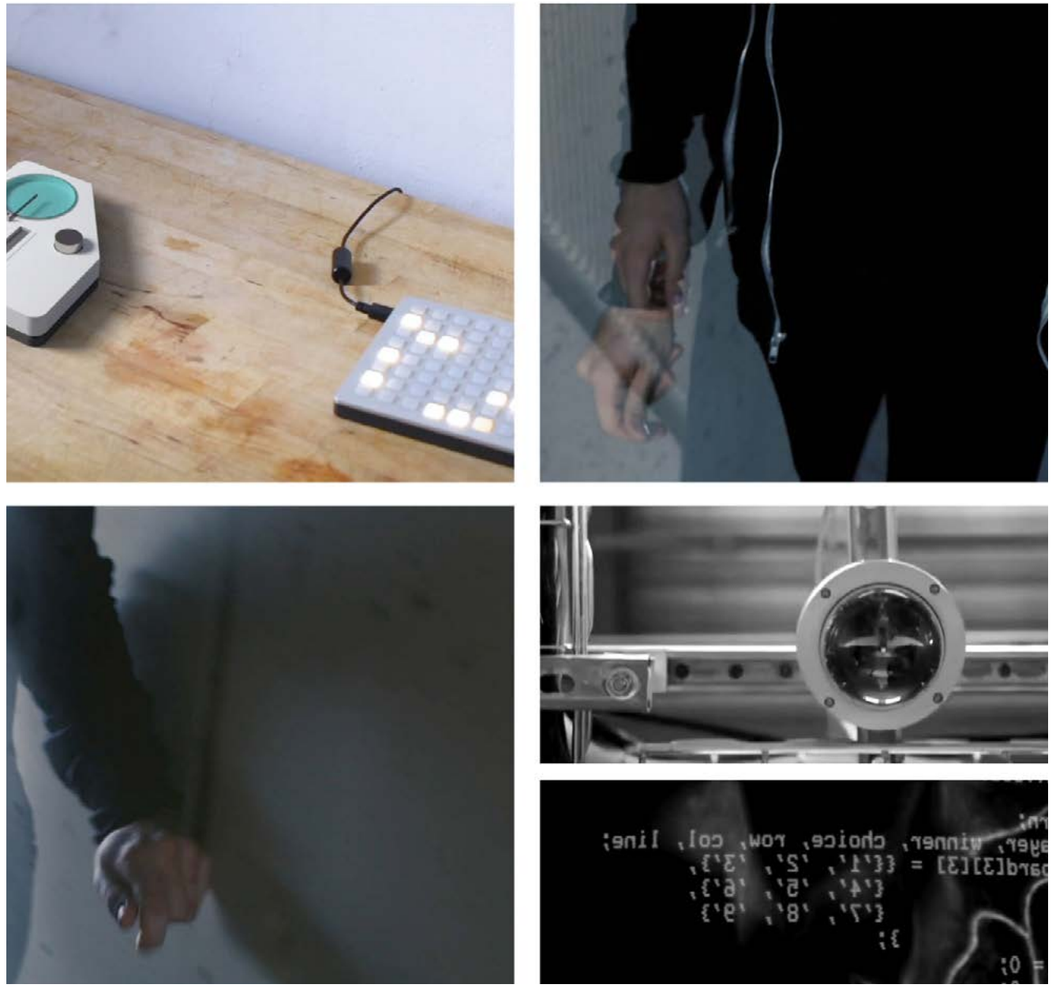
Short film can be viewed *here*

Metagenomic Field Kit Transcoder

Diagram of Urban Biome with Human Agents Depositing Genetic Messages



Stills from the Metagenomic Field Kit short film,
Film can be viewed here



Stealth through noise.
By depositing genetic material into a very crowded biome, we can harness the incredible complexity and diversity of biomes. Metegenomics are used as a highly effective camouflage strategy to embed and then extract signals within an incredibly noisy field

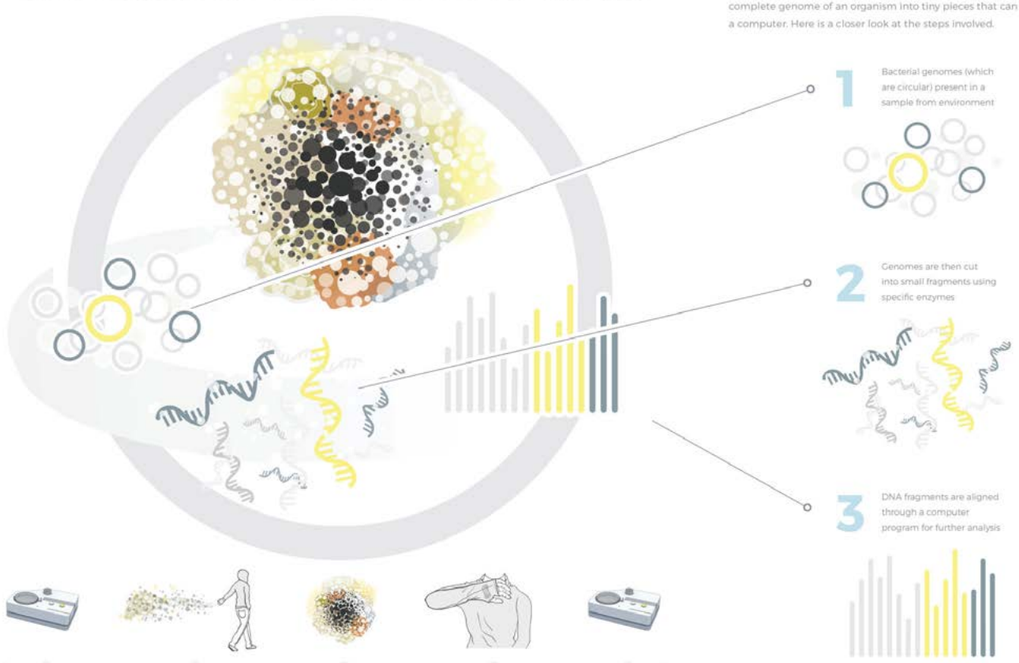
The Metagenomic Field Kit: Garment is designed to surreptiously deposit key genettic material on urban surfaces. The codec encodes and decodes genetic messaging for seeding the biome.

DECODING MESSAGES

Messages can be encoded using technologies like CRISPR, while messages can be decoded through DNA sequencing (below)

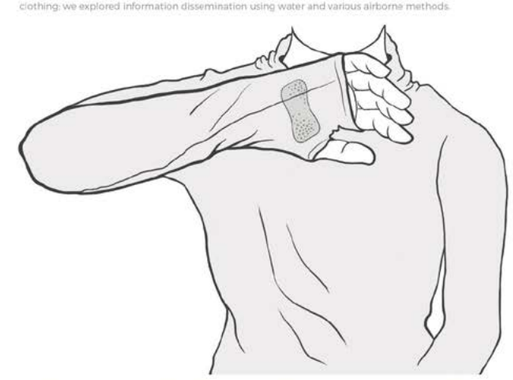
DNA SEQUENCING

DNA sequencing is a complex process that requires breakin complete genome of an organism into tiny pieces that can a computer. Here is a closer look at the steps involved.



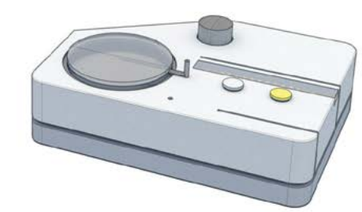
THE GARMENT

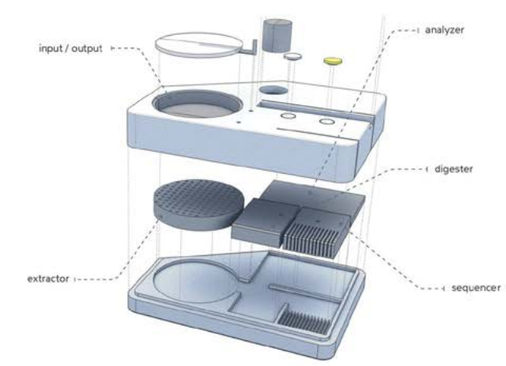
This is an example of how genetic information would be spread and propagated. The design isn't limited to clothing; we explored information dissemination using water and various airborne methods.



The garment acts as the transmitting agent, spreading and collecting genetic material through physical touch with the environment. The Velcro-like texture is single-use to prevent cross contamination.

THE CODEC





While it has all the components needed for the device to work, it is not yet possible for a sequencer to be scaled down to this portable of a size, but the technology is developing.

Phenomenal Machines

View the short film featured in the Technosphere Project(HKW, Berlin) : Phenomenal Machines

Our most recent multi-year project involves the development of a new species of robots exploring computational creativity. within synthetic ecologies. We developed several new species of robots who interact and garden crystals. The underlying philosophical motivation borrows heavily from recent post-human philosophical thought including speculations on computational phenomenology. This includes speculation on how a computer might sense the surrounding world. In this project we speculate on several distinct sensate embodiments entangled together. How does one object perceive or sensate? In line with speculative realist philosophies, this project presupposes that all things mineral, biological, human and non-human hold equal claim to interactions, perceptions and sensations. In this project we sought to produce several distinct non-human agents (technological, the mineral, the biologicsl) with differing methods of affecting and sensing. The resulting assembly and the discrete systems embedded within comprise imprecisely located cognitive machines. The locus and outcome of this cognition produce diverse effects which are made visual in this project.

Each of the composite parts of this ecology embodies their own set of behavioral features which interact in varying degrees. Of primary interest are the interactions occurring between systems and the emergent effects produced which explore causality and aesthetic implications across systems. The robots in the project have machine vision capabilities and utilize basic vision algorithms to discern color and rough geometric features. Their programmed mechanics enable them to interact within the landscape influencing crystal formation and growth in both form and color. The landscape presents a more abstract agency with sensing abilities more obscured and behavior seemingly randomized in response to crystal proximity and robot behavior. The crystals in the project embody their own set of behavioral characteristics in terms of growth yet they have been "tuned" through design by manipulating their substrate geometry and influencing their colors and architecture through chemistry. They are "sensed" by robots and the landscape and are subject to perturbations both beneficial and negligible by the external agents. Their growth can be facilitated, amplified or disturbed by both the actions of the dynamic terrain (through secretion of salt solution or expansion and contraction of the dynamic surface) or the interventions of the robots operating within the terrain (through placement, movement and disruption).

The transfer or translation of effects from one entities' behavior to the next produces a blurred narrative. Issues of perception and phenomenology are foregrounded against this backdrop. The project involved extensive design research into small scale autonomous robotics, material effects (extensive modeling, digital fabrication and material experimentation) and chemistry (crystal performance tuning).

Phenomenal Machines (2015-18)

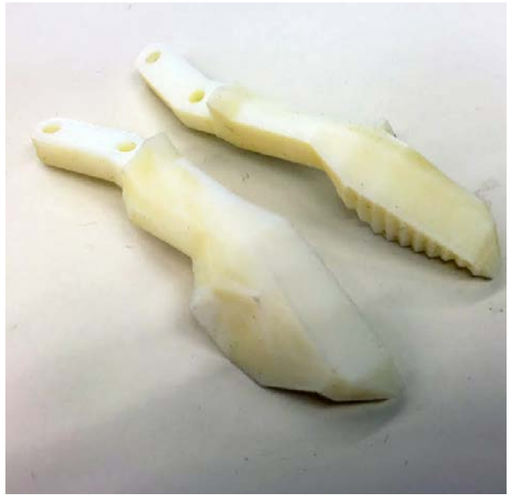
In this project we have set up a compositional experiment allowing a robotic arm, mineral crystals, and an interactive landscape to co-evolve, mutually producing an ecological space of their own, away from human incursion. Outcomes include two short films and multiple exhibits. was a short film edit commisioned by the HKW in Berlin. The original short film, NESL won first prize award in first Annual International Robot Fiilm Festival, held in Eliche Spain, 2016. Work in progress shown below.

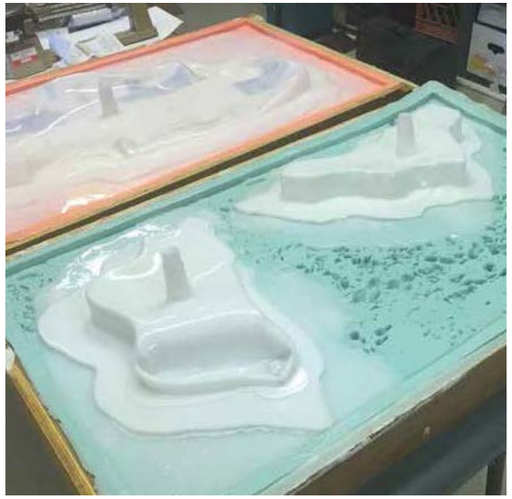
Project Lead, Nicole Koltick, Design & Production: Elena Sabinson, Jay Hardman, Mike Hogan

Prototyping at multiple scales within the Lab

3D Printed Flexible Robot Skin,

NESL Habitat (Soft Robotic Landscape) in Progress
(Digital Mold making & Casting Procedures
(CNC mold making, Silicone Casts)

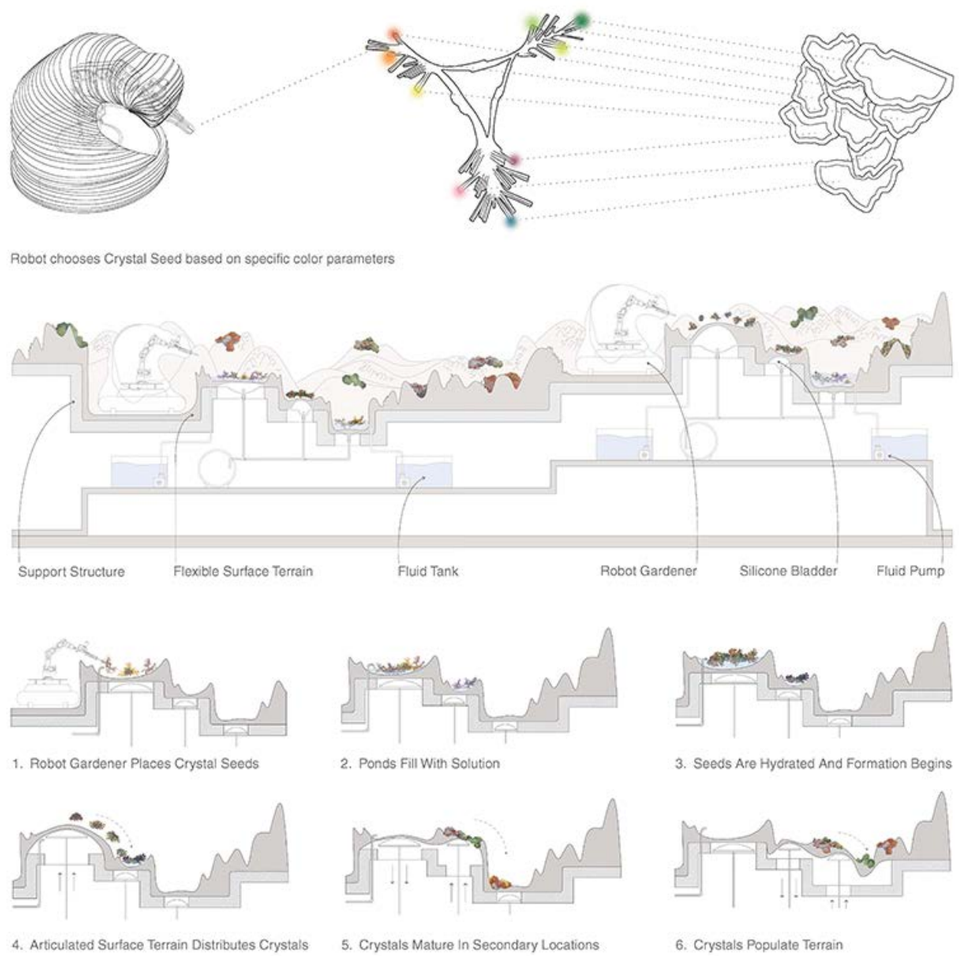




Two forms of Robots: NESL's (top) and Landscape as Robot (bottom)

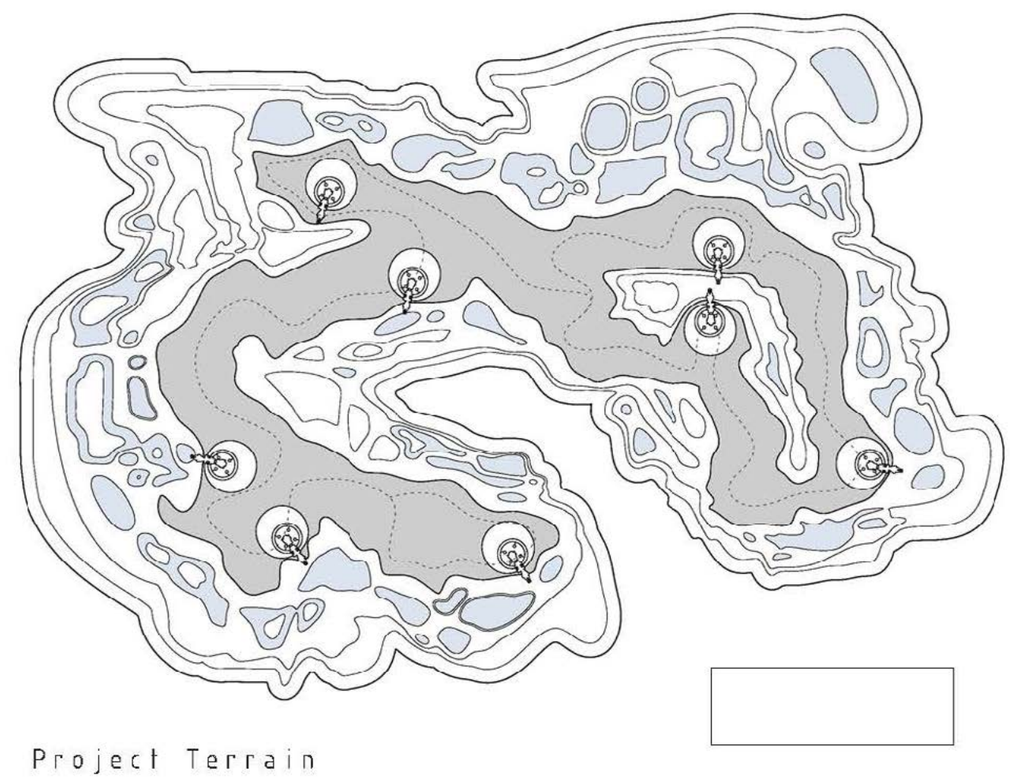
Film Stills

NESL Habitat and Behavioral Diagrams



Plan Drawing, NESLs in Habitat

Drawing

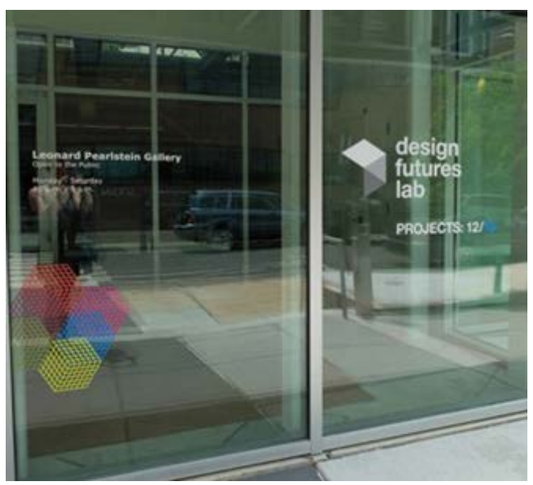


Design Futures Lab, *Projects: 12/13 Exhibit*
Pearlstein Gallery, Philadelphia PA, 2015

Project Team: Project Lead & Director, Nicole Koltick. Design & Production: Katie McHugh, Tashia Tucker, Kim Brown, Laura Nejman, Sarah Moores, Mega Mitchell. Collaborators: Mike Hogan, Colin Twomey, PJ Santoro

I delivered a TEDx talk on this work in 2013.

This exhibit featured a body of work including a scent based emotional communication device, a future showroom featuring embedded synthetic biology surfaces for domestic environments, a highly personalized robotic sleep surface and a new interior threshold which allows users to disconnect from their technology in a seamless meditative fashion. Each full scale interactive project was also accompanied by a series of research materials which served to educate the public on the emerging technologies embedded within the work. Each Master's Thesis student was asigned he design lead on a project and the Design Futures Lab with additional collaborators under my direction, worked together to design and fabricate the objects, environments and experiences for exhibition.

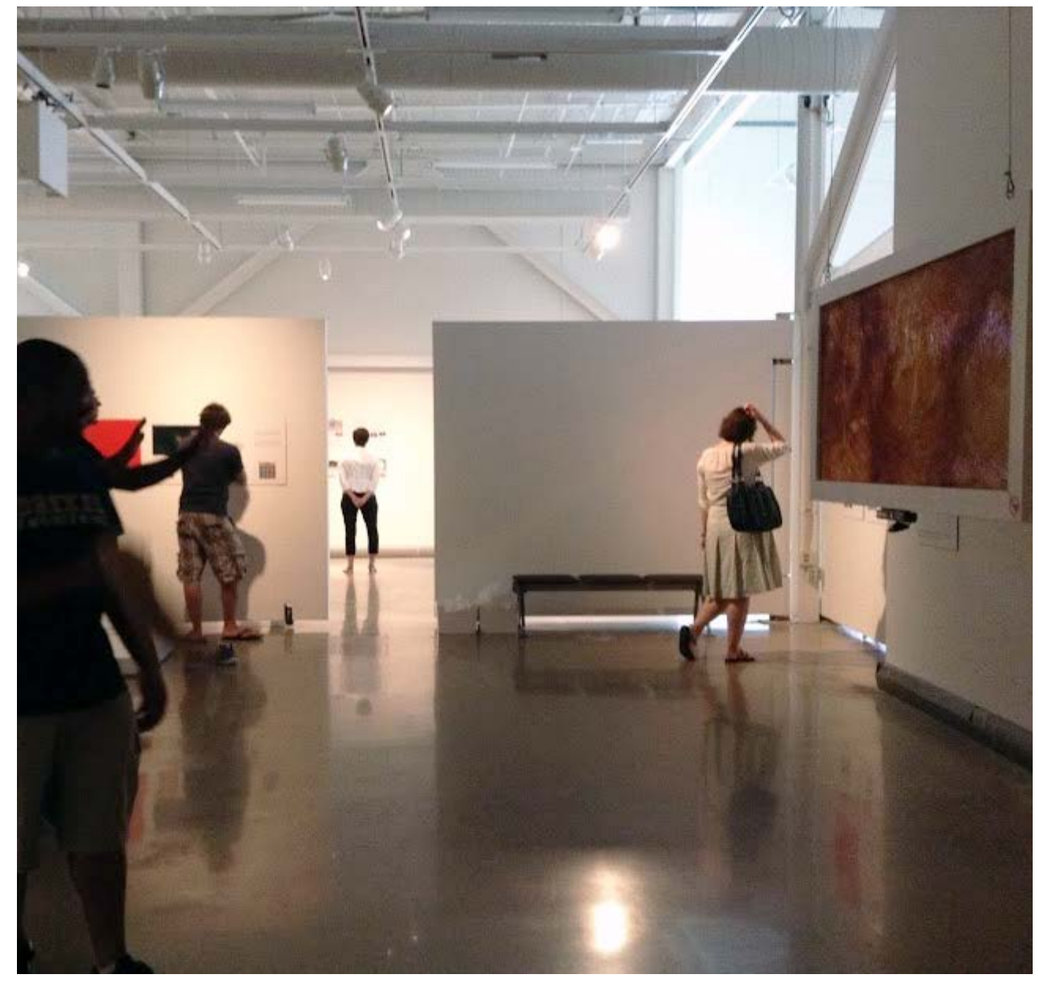


ReSurface (Synthetic Biology and the Future of Adaptive Living Environments)

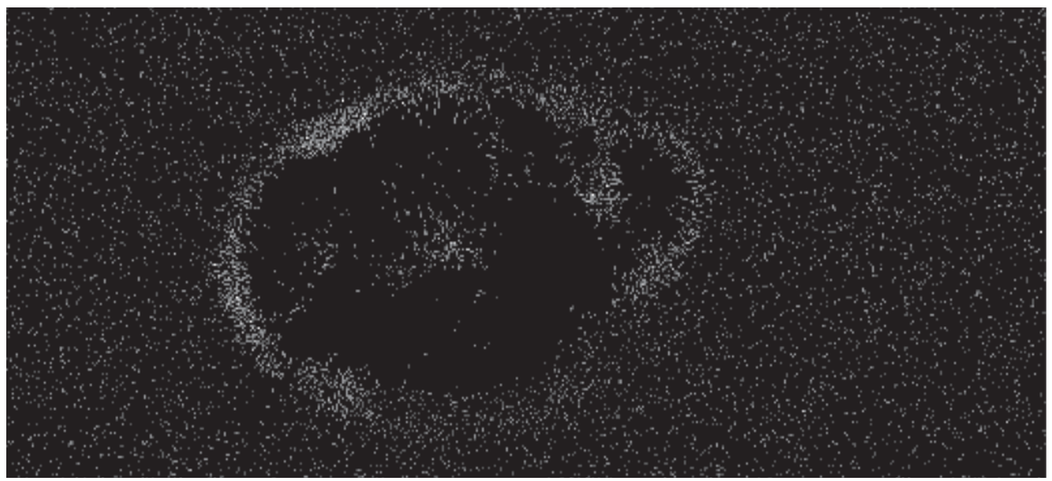
This project speculates on the aesthetics and interaction possibilities of a countertop, floor or wall surface that are embedded with programmed bacteria. These bacteria have various capabilities including the ability to detect pesticides, pathogens and allergens and then alert us to their presence as well as react to light and form swarm based apertures. The collection of three dynamic surfaces offers a glimpse into the interdisciplinary field of synthetic biology and the future evolution of living materials. The collection of three dynamic surfaces offers a glimpse into the interdisciplinary field of synthetic biology and the future evolution of living materials. It examines how biologically embedded materials could look and function in the future through the use of micro-processing, depth imaging, a multi-pedal sensor map and silicone casting.

Design Futures Lab, Tashia Tucker, Design Lead

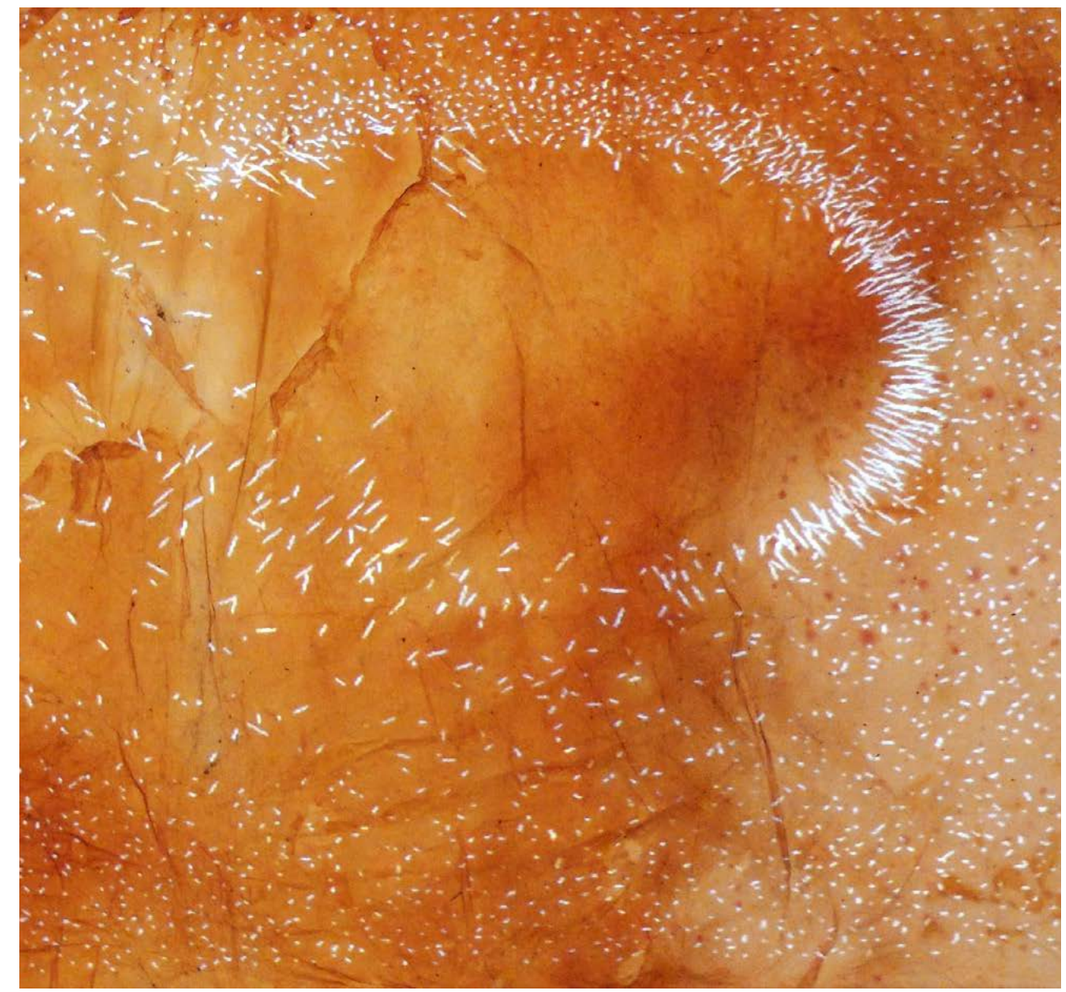
Design Futures Lab. Projects: 12/13 Exhibit
Pearlstein Gallery, Philadelphia PA, 2013



For this interactive wall surface we worked with a collective behavior swarm scientist (Colin Twomey of Princeton University) who collaborated a realistic interactive swarm behavior algortithm that responds to users hand gestures. Here you can see an opening forming. When an occupant waves their arm, the swarm coalesces to reform around these openings. In a future wall covering these swarms of bacteria could be modulated to respond to light and movement.

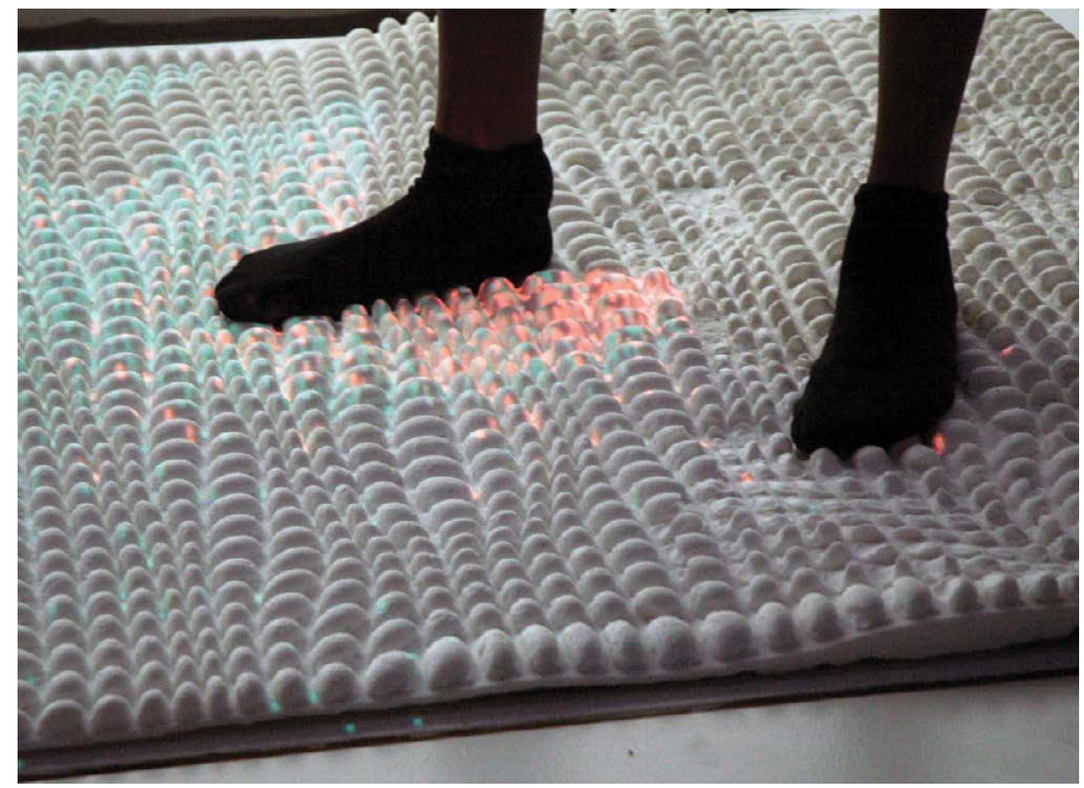


Detail, Interactive Swarm projected onto
Bacterial Cellulose Substrate



Gallery Visitors tryinginteracting with Microbial Floor Surface

Floor surface with Responsive Swarming Projection



Thres(hold) , 2013

In this spatial decompression chamber, visitors experience true reprieve from their over-scheduled, over-connected lives as the colored, shifting lights and flowing air provide a refreshing, cleansing experience. The project simulates a Faraday cage, which is an enclosure that blocks electromagnetic signals, including cell phone and wireless information, from being transmitted. Shedding layers of stress, digital connection and distractions of the outside world, this entry processional experience re-orients the participant to the present time and place. This research addresses the ability of an interactive threshold space to assist individuals in transitioning from one set of experiences, expectations and activities to another

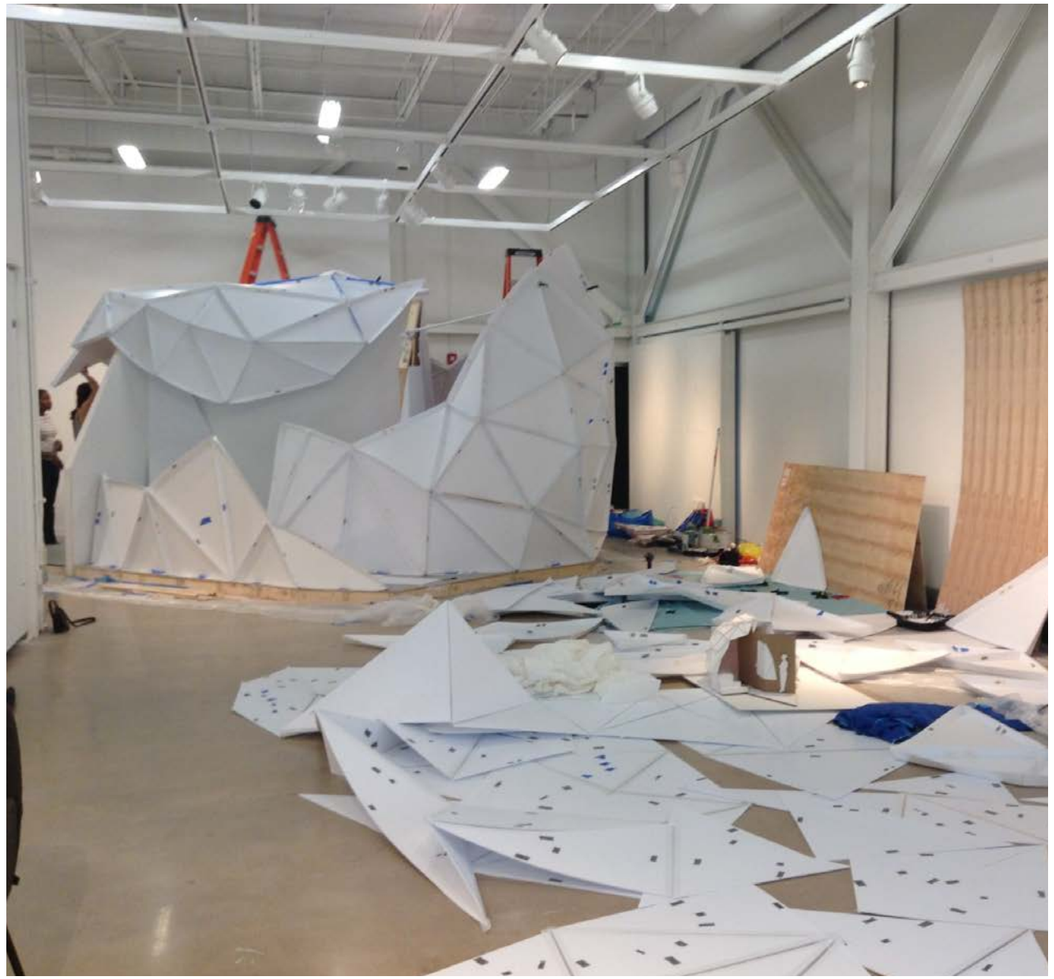
Design Futures Lab, Megan Mitchell, Design Lead

Thres(hold) Prototypes
Parametrically Modelled and Laser Cut

Threshold Scale Prototype
Laser Cut

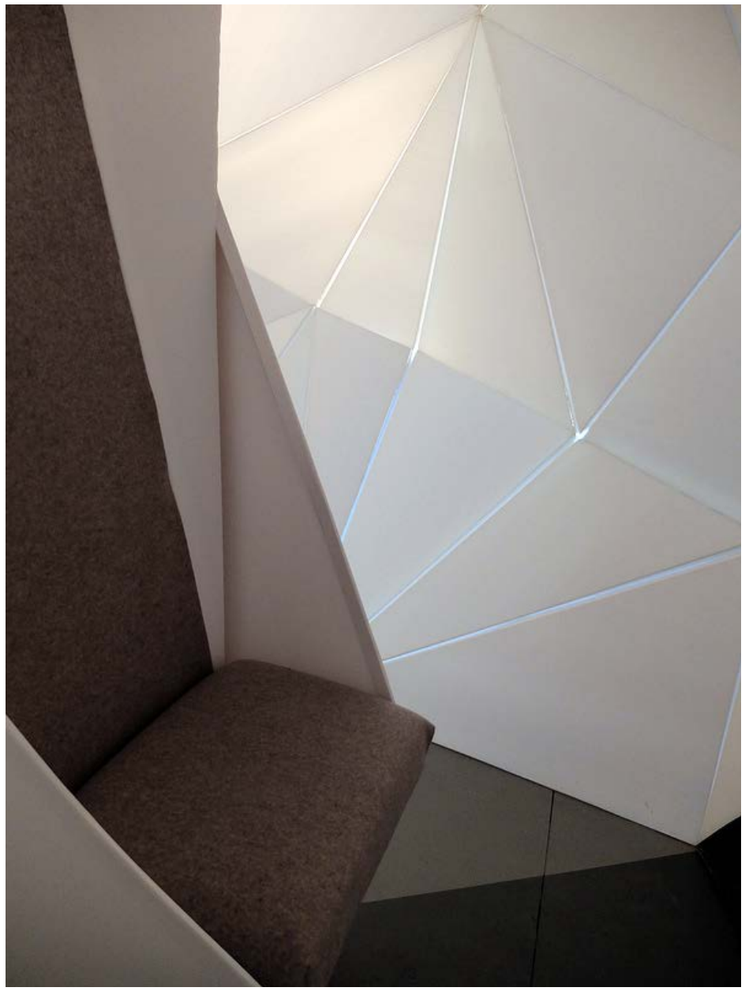
Full Scale Gallery Installation of Thres(hold)

Gallery Installation, Thres(hold)



Thre(hold) Interior View

Thres(hold), Interior View



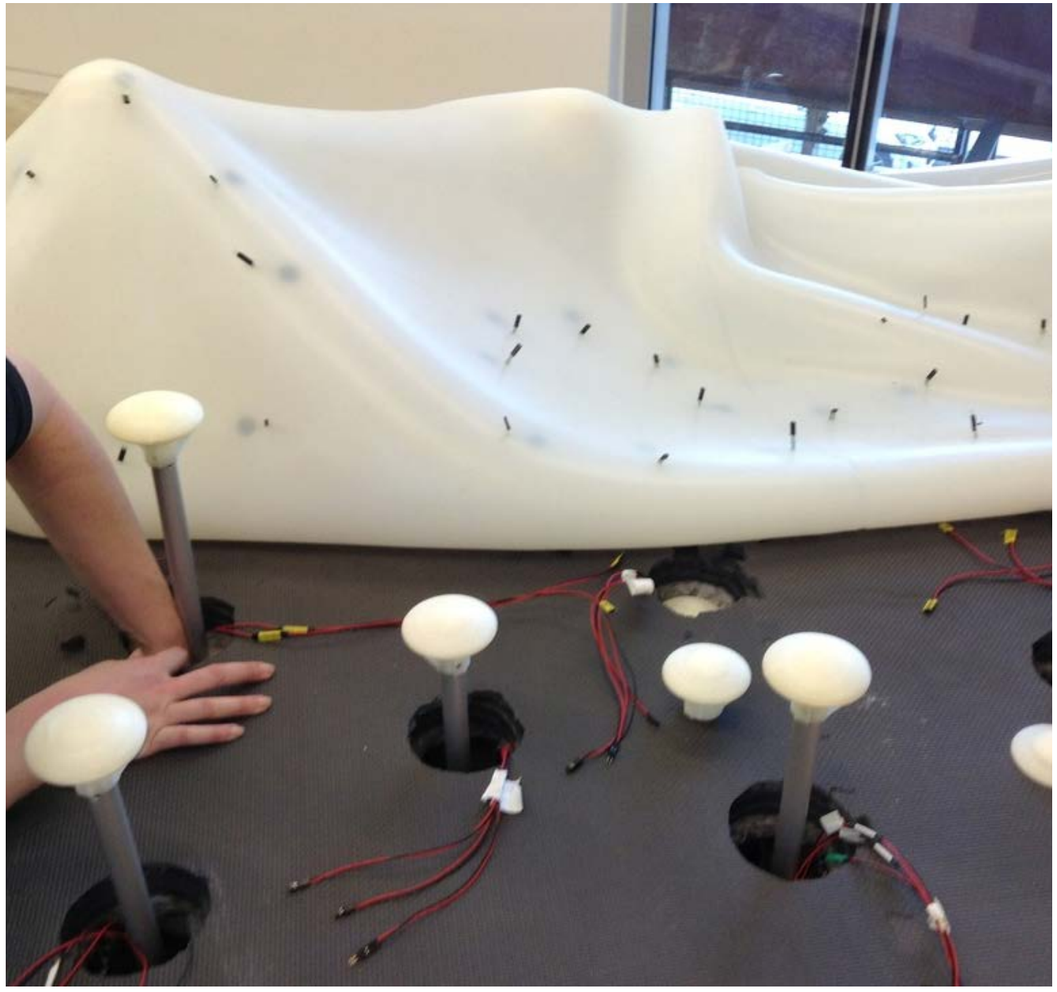
Situated Interactive Terrain, 2013

This sleeping terrain takes an integrated approach to exploring a number of potential connections between human experiences and technological advances within one's sleeping environment. The project synthesizes novel fabrication and material processes in addition to a highly customizable user centered algorithm that works within a specialized reactive sensor network. This project involved custom engineering of robotic actuators, custom modeled and printed 3D components and material innovations. The overall synthesis of material, technical and formal concerns results in a highly sophisticated working prototype of a new terrain for sleep.

Design Futures Lab, Katie McHugh, Design Lead

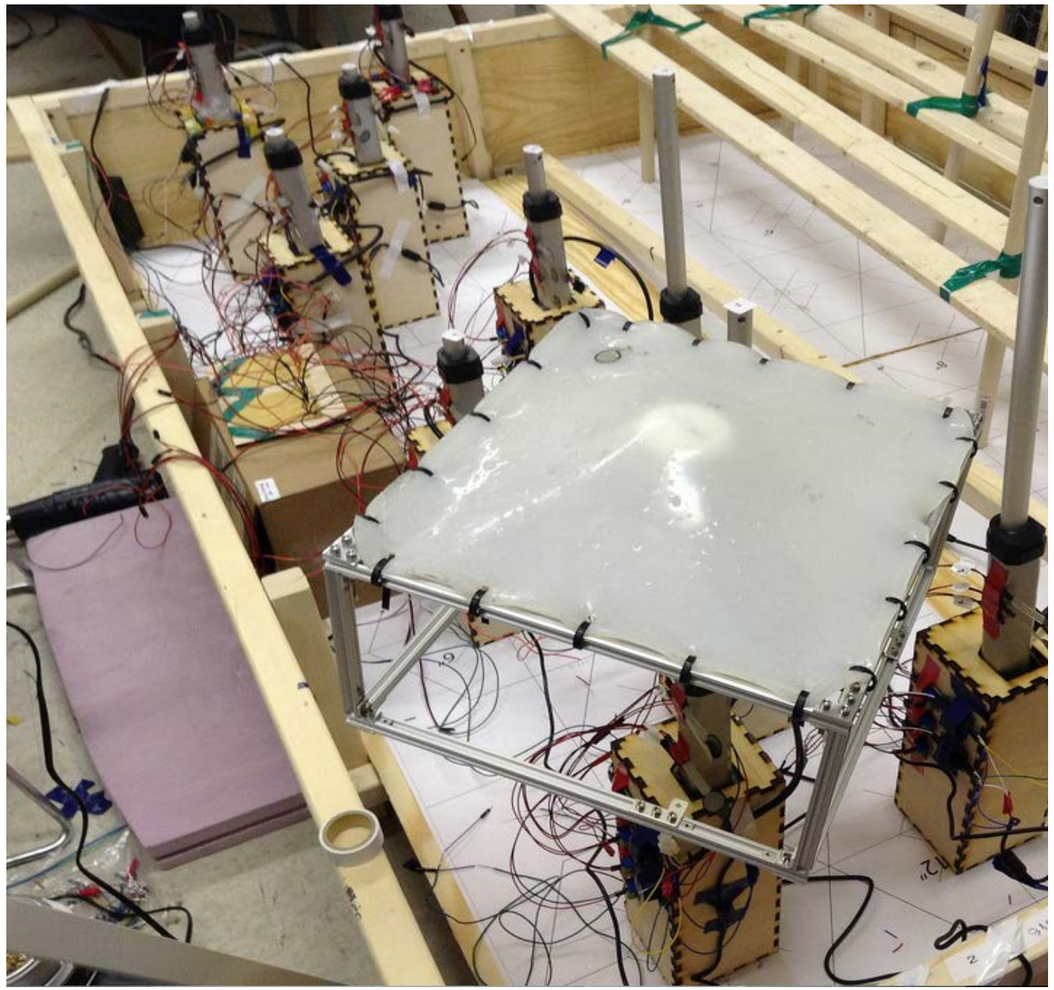
Visitors interacting with the Sleep Terrain

Work in Progress,
SIT (Situated Interactive Terrain),



SIT (Situated Interactive Terrain)

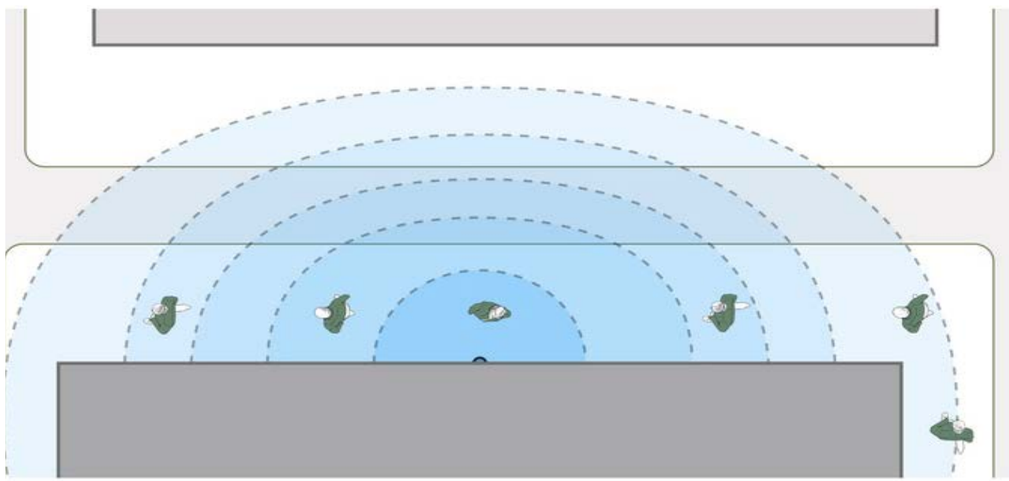
Prototyping of Material and Mechanis for the
Situated Interactive Terrain Project



Deviant Wear, 2013

The pervasiveness of hand held computing has shifted how we experience and interact with our environment, filtering the physical world through a digital screen. This project explores strategies for encouraging ambulatory exploration through experimental prototyping with environmental sensors, micro-processors, physical feedback, wearable devices and audio graffiti. The project broadcases site specific audio throughout an urban landscape to encourage participatory investigations of narratives entwined with location.

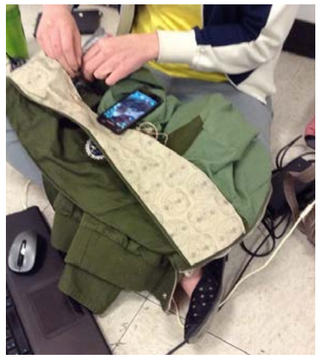
(Design Futures Lab, Kim Brown, Design Lead)



(Top) *Deviant Wear*
(Bottom) *Thres(hold)*

Exhibit View, Deviant Wear

Garment with embedded sensors and audio

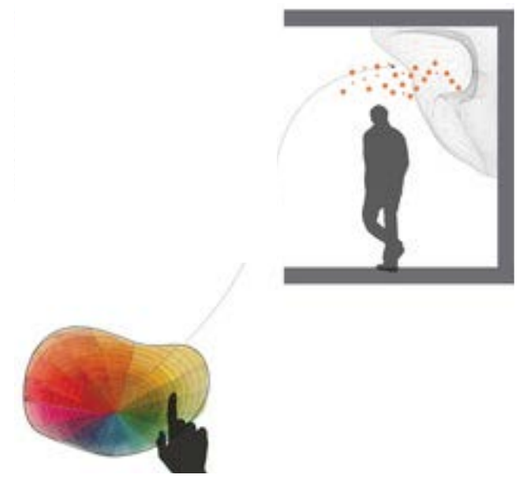


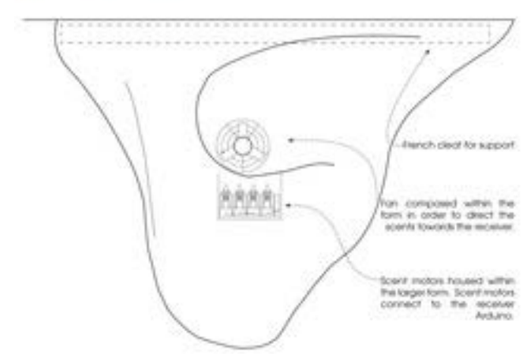
S(c)ent Message , 2013

This scent communication device explores the use of scent to enhance human communication and elicit more resonant emotional states. The prototype explores how we can manipulate our emotional connections to one another through the use of scents that are linked to positive memories. By using the subconscious reaction to scent and pulling communication away from the screens of computers and phones, the prototype explores a more nuanced way to communicate within our environments.

Design Futures Lab, Design Lead, Laura Nejman, 2013

Scent Library, Project Prototype and Operational Diagrams





Speculative Design Autonomous Systems

Nicole Koltick
Speculative Design, Writing, Computational Design, Design Fiction

Agentware
Synthetic Caves, 2011

Synthetic Caves was a speculative design proposal that pairs computational design processes, autonomous robots deployed envisioned as enacting ecological scale operations. The final output was a speculative design proposal for the Istrian region of Croatia involving repurposed rock quarry sites and agent based ecological reclamation strategies. This project was structured around a narrative of ecological remediation, applying agent-based simulation techniques to inform autonomous robotic methods for intervening in a given landscape.

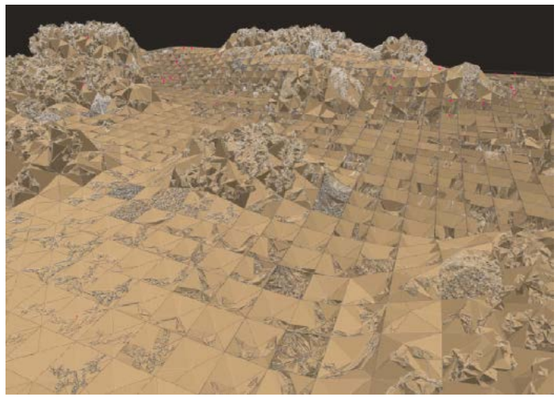
The Istrian Region of Croatia has a dense network of underground caves which intersect at times with abandonded quarry sites. These underground caverns are sites of incredibly rich biomes with rare underground species of flora and fauna proliferating. Unfortunately these sites are often times the site of illegal waste dumping and are under serious threat. This proposal involves the repurposing of existing abandoned limestone quarry sites for synthetic caverns. The process of devloping the very sterile and blocky existing topography of the quarries into the highly articulated surface conditions of the caverns requires a series of mineral operations of depositing material.

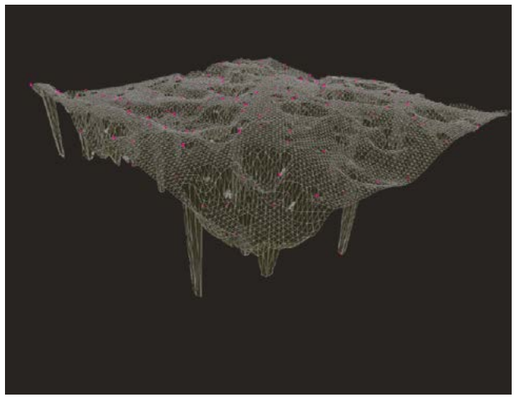
The use of autonomous small scale swarming botswas proposed. These bots were able to survey the existing quarry condition, determine underlying mineral compositions and begin a process of surface deposition of mineral solutions. After a series of surveillance operations within the quarry the bots were then redeployed to perform surfacing operations. The end result of these interventions results in a highyl articulated cavern typology which is suitable for flora and fauna transportaion and implantation.

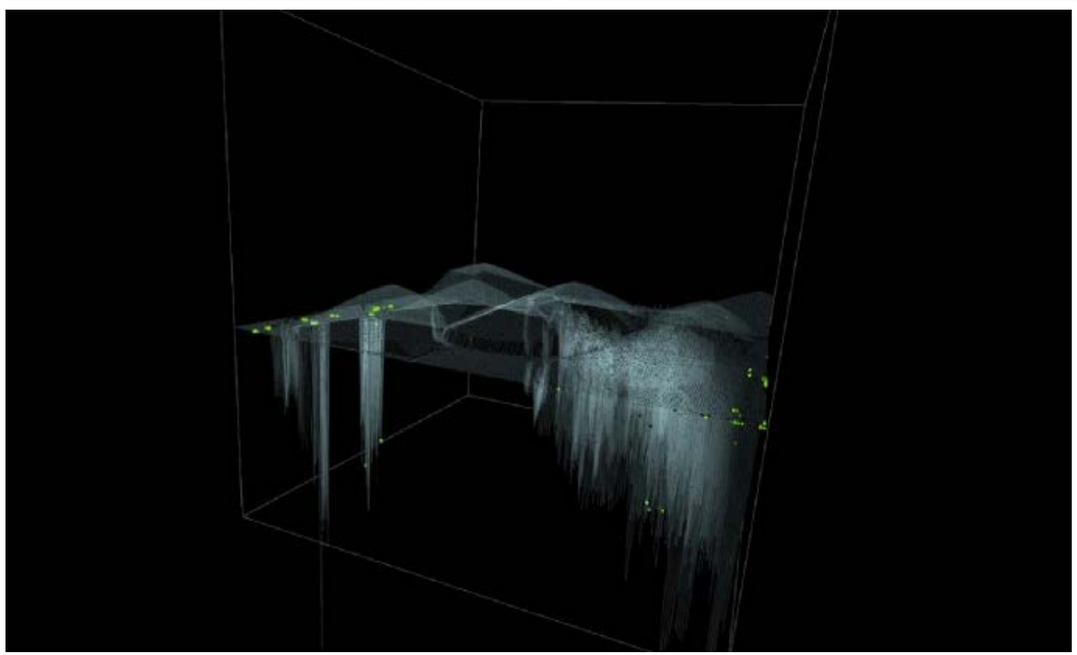
I presented this work at the Proto/eco/logics: Speculative Materialism in Architecture symposium in Rovinj, Croatia. This symposium gathered a group of internationally relevant practitioners in philosophy, architecture and design. Prior to the Proto/eco/logics symposium, I participated in the agentware workshop, offered by the Architectural Association in London. This workshop was held in Rovinj, Croatia and explored agent- based modeling of atunomous systems.. These workshops operate as intense design research incubators where highly skilled participants gather and collaborate on novel approaches to the deployment of software tools and methods. This project resulted from a collaborative investigation (T. Wegener and J. Diles) of multiagent computer simulations using Processing, a java-based programming environment, in combination with 3D modeling and rendering software. This aspect of my research into advanced computational design methodologies then filters back through my further research and coursework development.

Nicole Koltick, Agentwware (Synthetic Caves) 2011

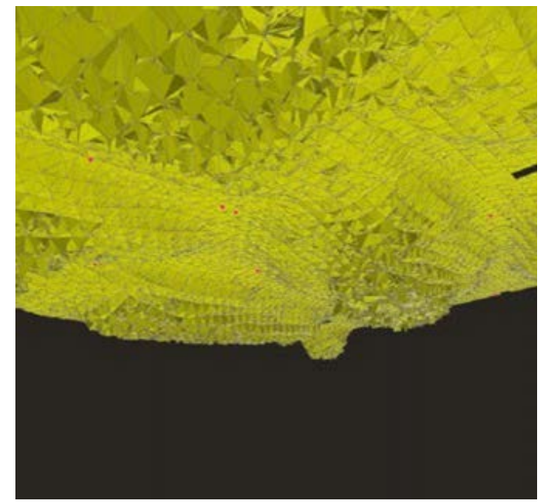
This speculative design proposal that paired computational processes with ecological scale operations was presented at the Proto/eco/logics: Speculative Materialism in Architecture symposium in Rovinj, Croatia. This project resulted from a collaborative investigation (T. Wegener and J. Diles) of multi-agent computer simulations using Processing, a java-based programming environment, in combination with 3D modeling and rendering software. The final output was a speculative design proposal for the Istrian region of Croatia involving repurposed rock quarry sites and agent-based ecological reclamation strategies. This symposium gathered a group of internationally relevant practitioners in philosophy, architecture and design. This project was structured around a narrative of ecological remediation, applying agent-based simulation techniques to inform autonomous robotic methods for intervening in a given landscape.

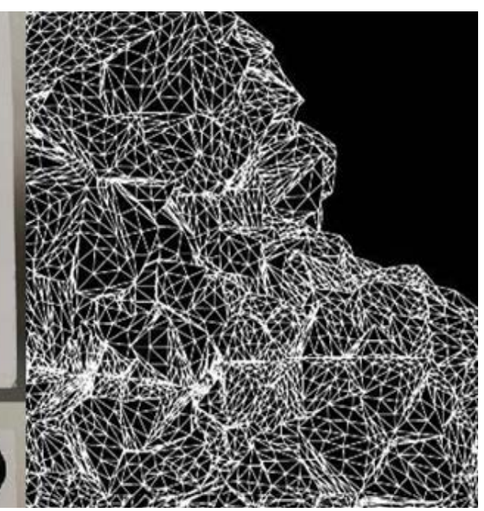






Images from Synthetic Caves and Agentware,
Rovinj, Croatia, 2011

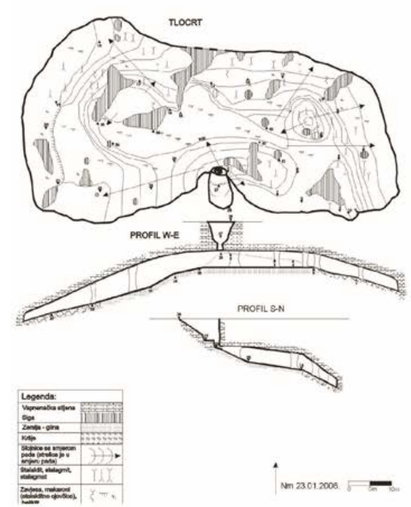


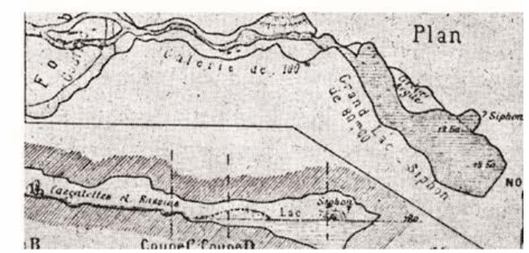


Karst Cave Formation

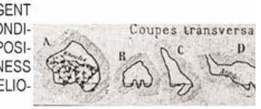
AGENTWARE_
JUSTIN DILES // NICOLE KOLTICK // THOMAS WEGENER

Existing Cave Typology



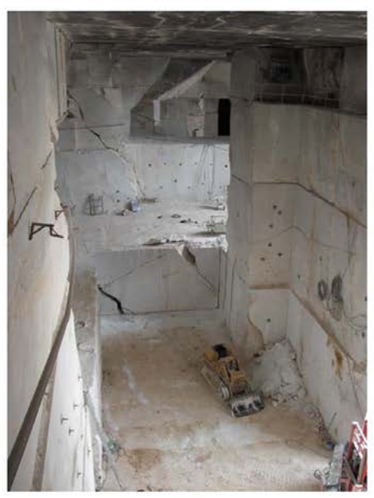


WE EXAMINED THE EXISTING CAVE CONDITIONS AND SPECULATED ON THE POSSIBILITY OF VAST AMOUNTS OF DATA SETS PERTAINING TO CAVE CONDITIONS. THESE INCLUDE GEOLOGICAL CONDTITIONS, SPECIFITY OF ROCK COMPOSITION, DEPTH FROM SURFACE AND WILD LIFE CONCENTRATIONS. OUR AGENT BASED SYSTEM REACTS TO MINE CONDITIONS; SPECIFICALLY ROCK COMPOSITION, MINERAL CONTENT AND HARDNESS AND FORMS A NEW NETWORK OF SPELIOLOGICAL FEATURES.



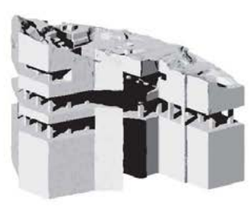
AGENTWARE_
JUSTIN DILES // NICOLE KOLTICK // THOMAS WEGENER

Existing Quarry Sites Available



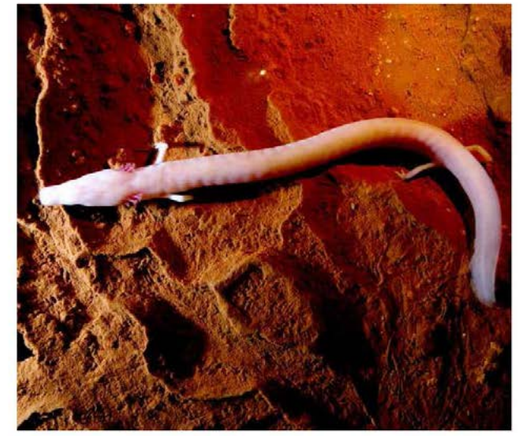
EXISTING TYPOLOGY//

THE EXISITNG STONE EXTRACTION SITES OFFER POTENTIAL FOR INTERVENTION AND REUTILIZATION. THE SPACES HAVE SMOOTH WALLED CHAMBERS NETWORKED TOGETHER WITH A VARIETY OF HEIGHTS AND SPATIAL CONDITIONS.



AGENTWARE_
JUSTIN DILES // NICOLE KOLTICK // THOMAS WEGENER

Proposed Habitat Restoration (Synthetic Caves) for Endangered Species



PROPOSED HABITAT RESTORATION//

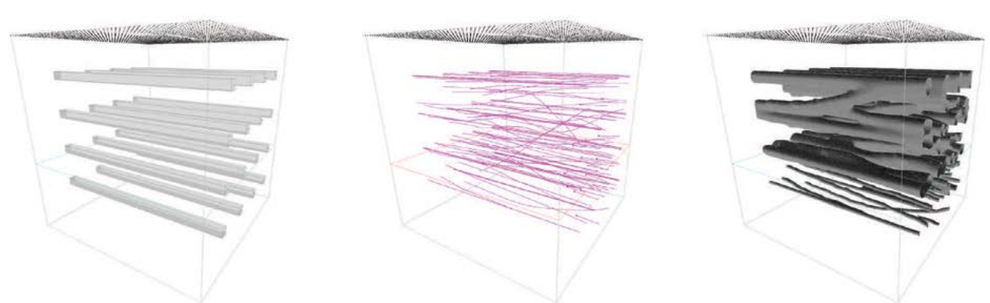
Speleological objects, particularly on Karst, are habitats of numerous endemic, rare, endangered, and protected animal species: (Proteus sp., Istriana mirnae, Chiroptera sp. div., etc.)

Unfortunately, despite prohibition, quite a few caves are used as waste disposal areas. To prevent such practices, they have to be actively protected and defined, with a controlled use in compliance with all measures of protection

Our proposed cave intervention will provide new habitat for these species and provide a protected area for community education and study of these species.

AGENTWARE_
JUSTIN DILES // NICOLE KOLTICK // THOMAS WEGENER

Cave Analysis Operations by Swarm Bots

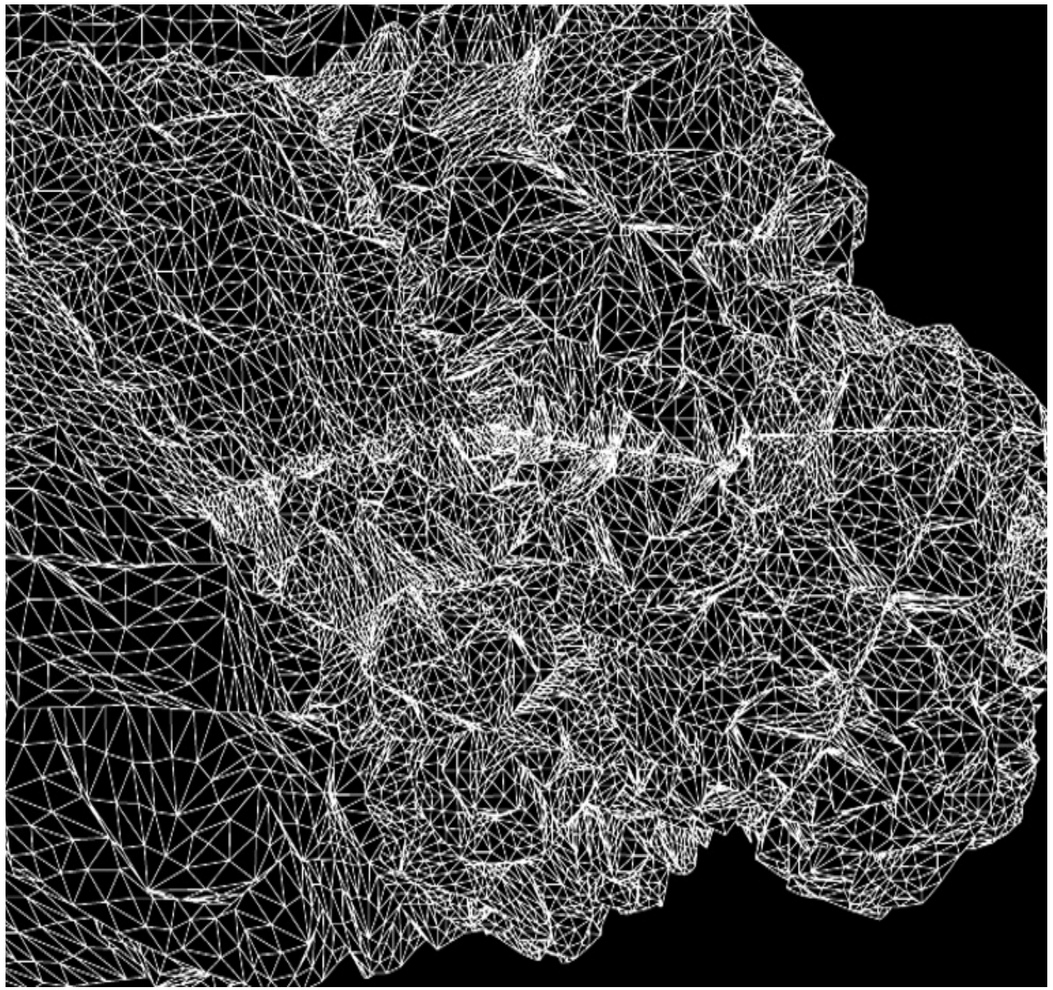


// STEP 1 - EXISTING MINE

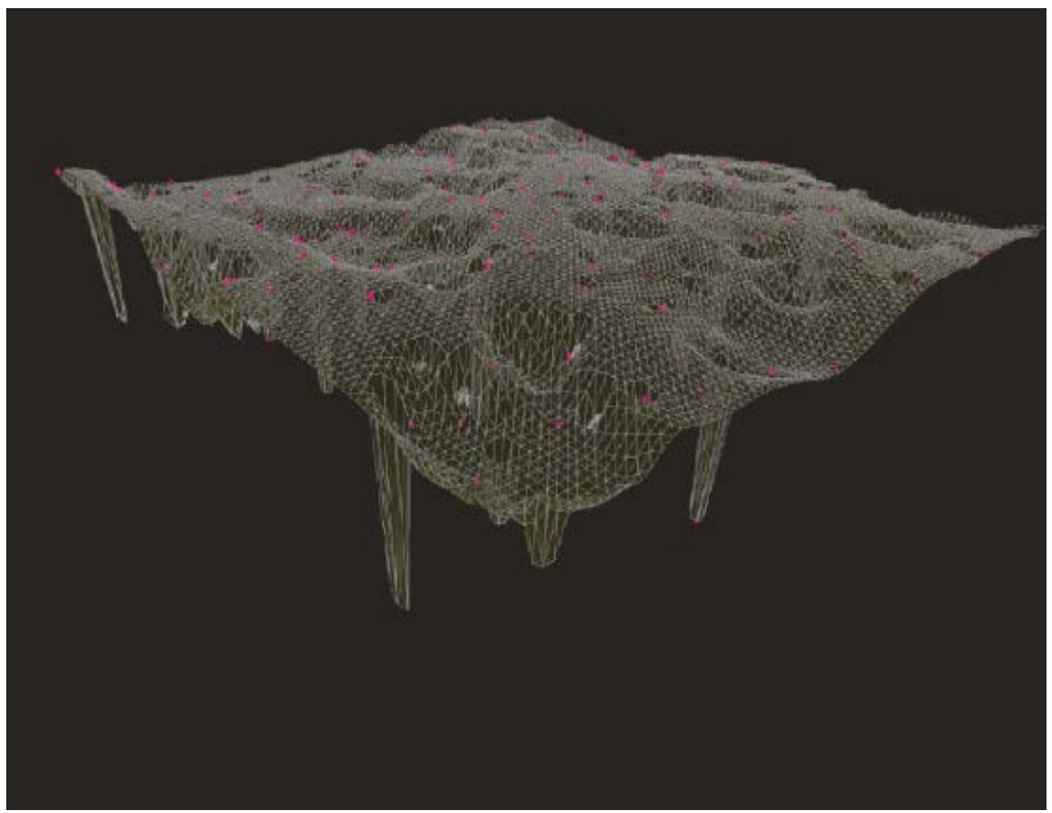
// STEP 2 - ANALYSIS BY AGENTS

// STEP 3 - MODIFIED STRUCTURE

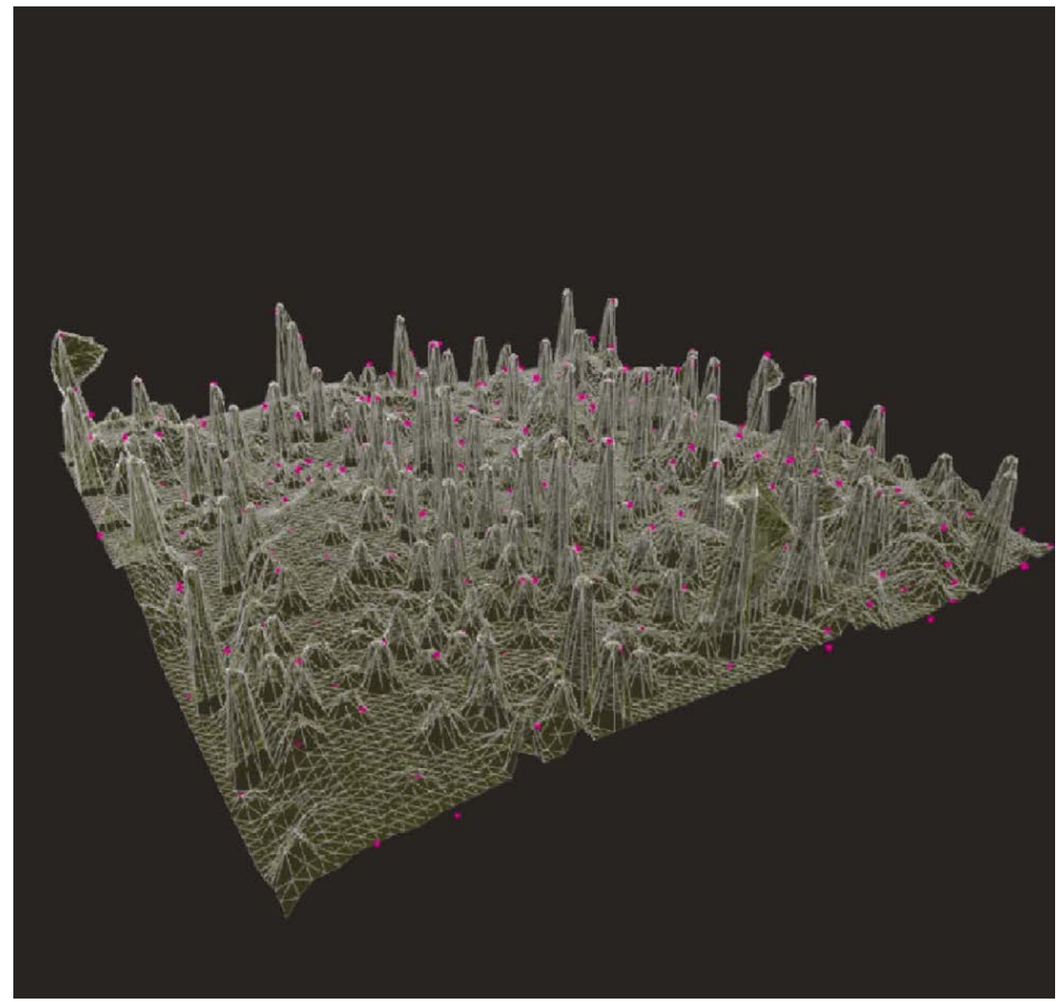
Micro surfacing geometric otucomes.



Macro based surfacing behavior (Stalactite)



Macro based surfacing behavior (Stalagmite)



NASF
North Atlantic Server Farm, 2010

The NASF (North Atlantic Server Farm) was a design proposal (with M. Lutz) for a large-scale ecological intervention. The NASF seeks to inject itself into the oceanic climate feedback loop and provide a disruption, an upgrade in performance for multiple systems. The project examined the issue of melting arctic sea ice and sought to provide an ecological upgrade through the development of a synthetic iceberg, made up of thousands of autonomous floating robots that formed collective aggregations, and en masse provided a highly reflective surface to counter the loss of albedo (solar reflectivity) from missing sea ice. Instead of simply being an ecological engineering proposal, the project had a deeper philosophical and critical narrative as well.

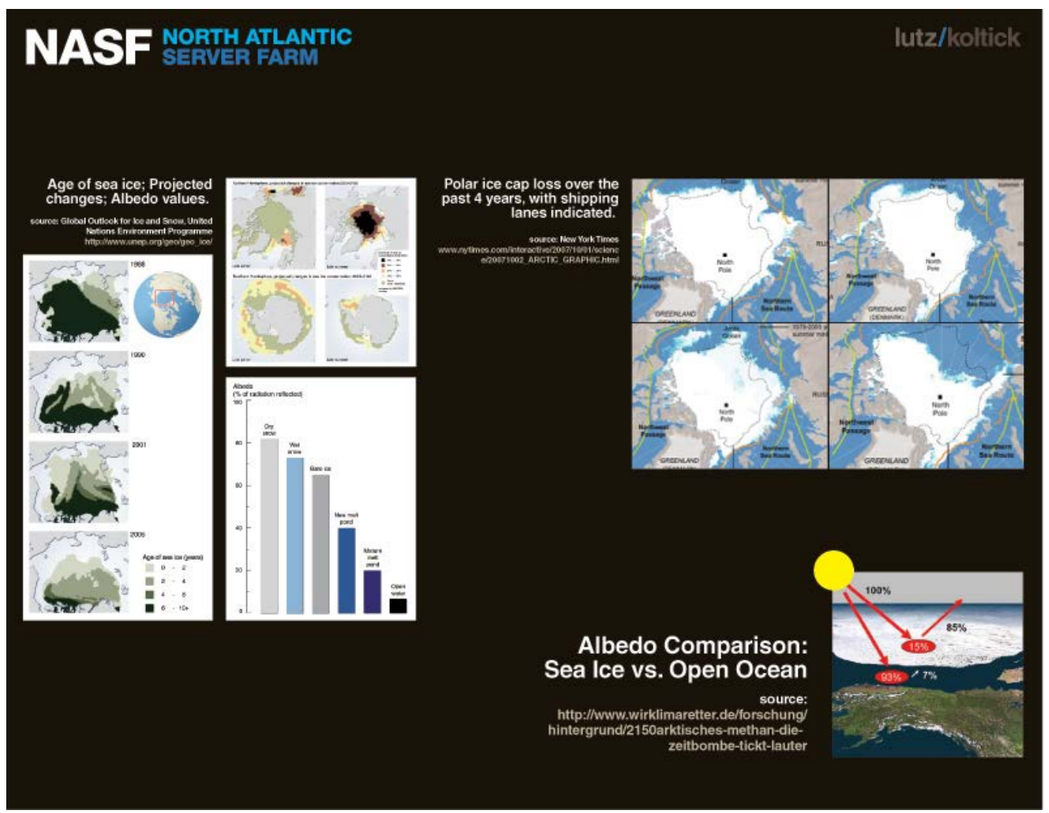
With the ownership of data increasingly concentrated among large corporations like Amazon and Google who own the massive server farms that run the Internet, we designed a narrative that posited connectivity and access to communication outside of these controlled interests.

This hybrid ecology offers data processing and storage capabilities for public usage, free from commercial interests. The massively distributed surface area of the floating network provides a reflective synthetic landscape, offsetting the ocean's decreased albedo due to loss of sea ice. As the physical embodiment of an ever-increasing aggregation of data, the project raises questions regarding the nature of manufactured landscapes, future infrastructural necessities and the status of large-scale ecological intervention. The project consists of a massive aggregation of floating server units – self-organizing autonomous agents, which reconfigure in response to environmental factors.

Taking recent developments in computing involving new small-scale ARM-based server units, we proposed that this new autonomous robotic swarm would also function as an independent server farm. This speculative design scenario has aesthetic implications within its environmental context. This project demonstrates research and techniques borrowed from multiple fields, including collective behavior animals, small scale computing, robotics, climate dynamics and ecology.

Conventional models of design, which operate in a hierarchical, top-down fashion, are not well suited to dealing with the vast new spatiotemporal scales with which designers, architects and engineers will be engaged with in the coming years.Whether in the case of large-scale ecological intervention and geoengineering efforts, or in yet-unimagined new modes of energy and technology infrastructure, the sheer scale and complexity of these projects would seem to demand an alternative approach

Research into Surface Albedo and lower reflectivity of Earth's surface contributing to increased warming of sea water termperatures which in turn hastens glacial ice melt.



Defined Problems and Existing Remediation Strategies

Issue 1: **Loss of Sea Ice**
Response 1: **Geoengineering**

Usually public-sector based research projects (Governments, Universities, etc.)

Current approaches involve various schemes to increase Earth's albedo value. The goal is to provide more reflective, light-colored surface area in order to reflect back more of the sun's heat.

The most commonly discussed of these schemes involves increasing the albedo of clouds or the atmosphere by spraying particles. This may have unintended consequences, however, such as causing severe droughts due to shifts in weather patterns.

Issue 2: **Data Centers**
Response 2: **Google Patents**

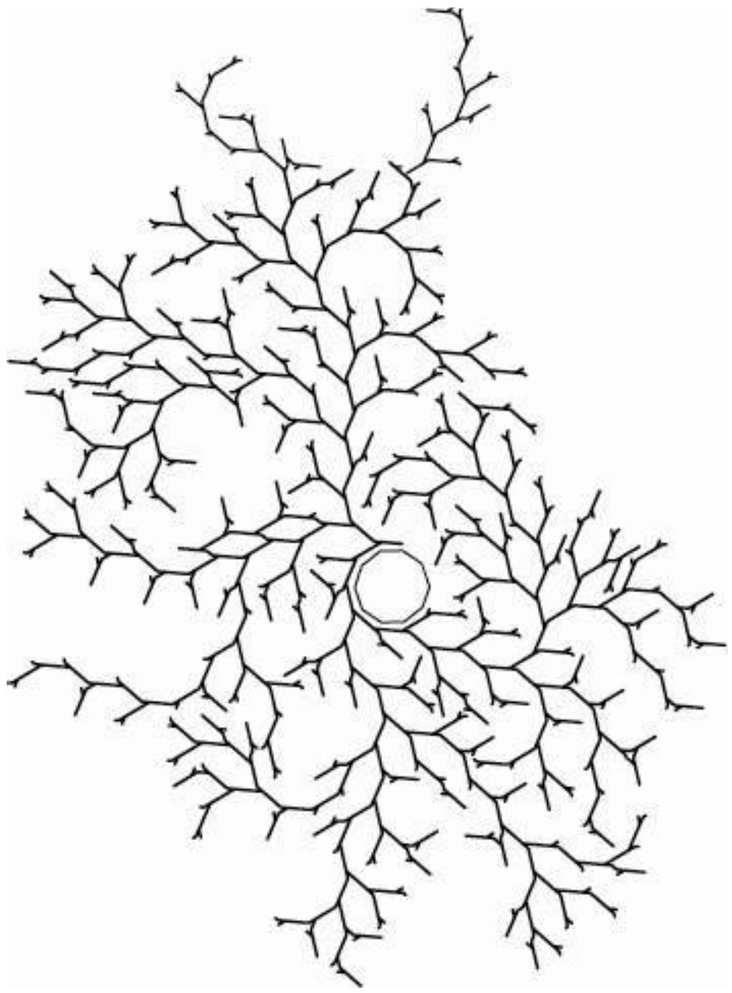
"Call it Google's data navy.

The search and advertising company has filed for a patent that describes a "water-based data center." The idea is that Google would create mobile data center platforms out at sea by stacking containers filled with servers, storage systems and networking gear on barges or other platforms."

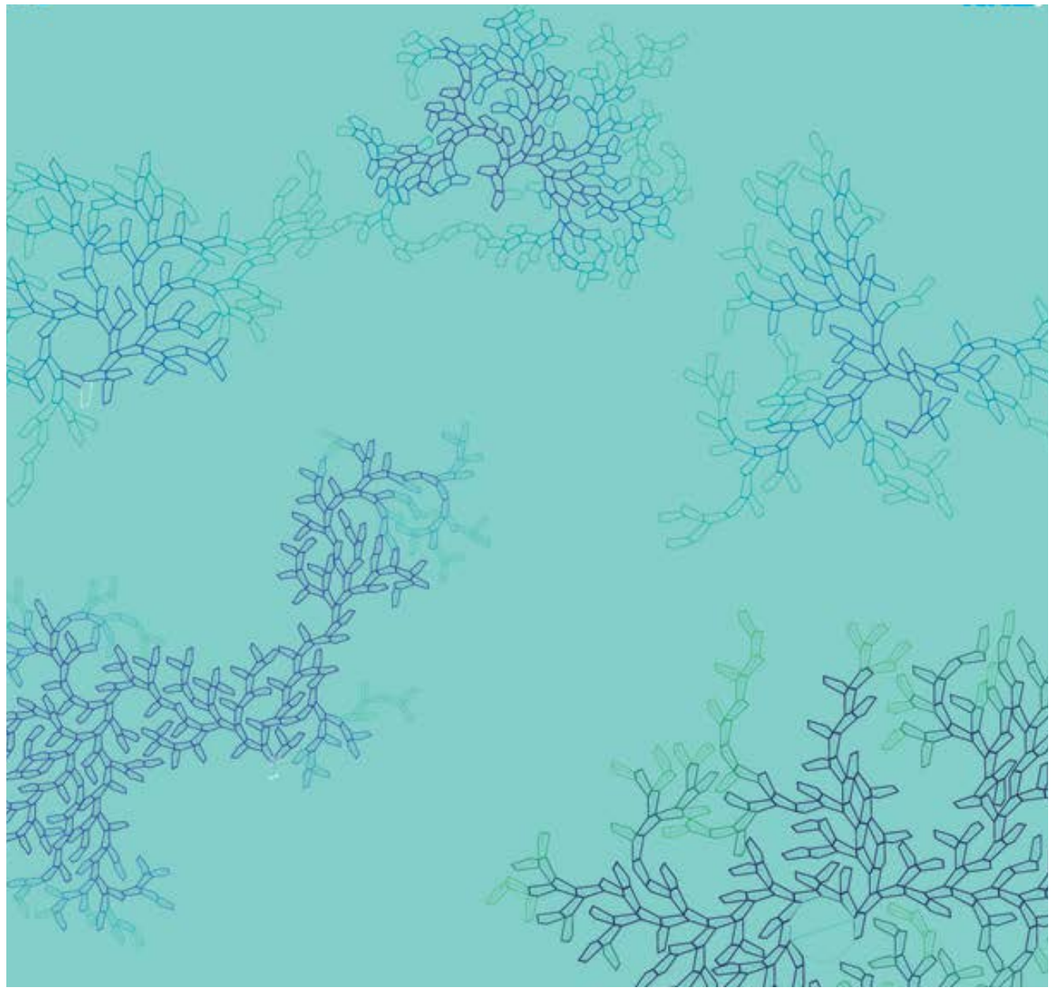
http://bits.blogs.nytimes.com/2008/09/07/googles-search-goes-out-to-sea/

Computational Methodology:
Diffusion-limited aggregation model

Criteria such as inaccessibility, the need for a distributed network, and the massive scale of the project led us to investigate models of self-organization as a primary means of structuring the system. Diffusion Limited Aggregation (DLA) is a simple model of aggregative growth that generate s fractal branching patterns.It has applications in biology, but is more of a physics-based model in that its particles do not possess any local intelligence other than adhering to one a nother when contact is made.

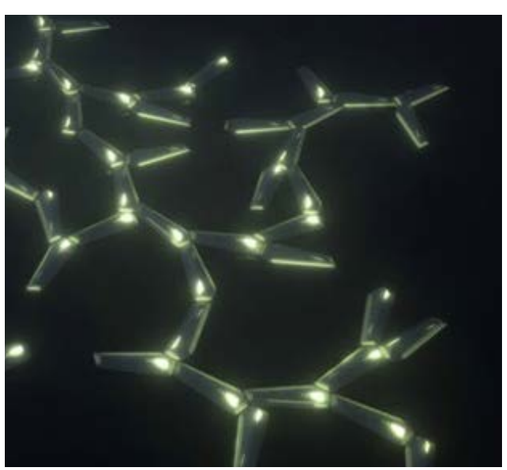


A DLA-inspired model was the ability of such a system to maintain connectivity and cluster around a central hub. This led to the design of a system for pumping and circulating the cooling water throughout the network. The DLA-style structure also allows for consistently open nodes around the edges, where new units can join the network



Two key factors were addressed:

1. Loss of Polar Sea Ice due to Climate Change
2. The exponentially-increasing energy and land use demands of Data Centers (Server Farms)



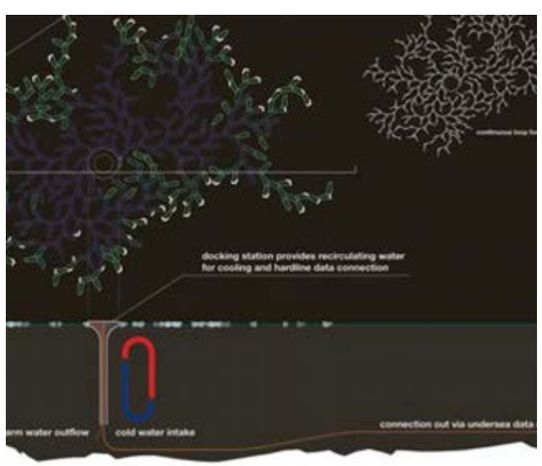
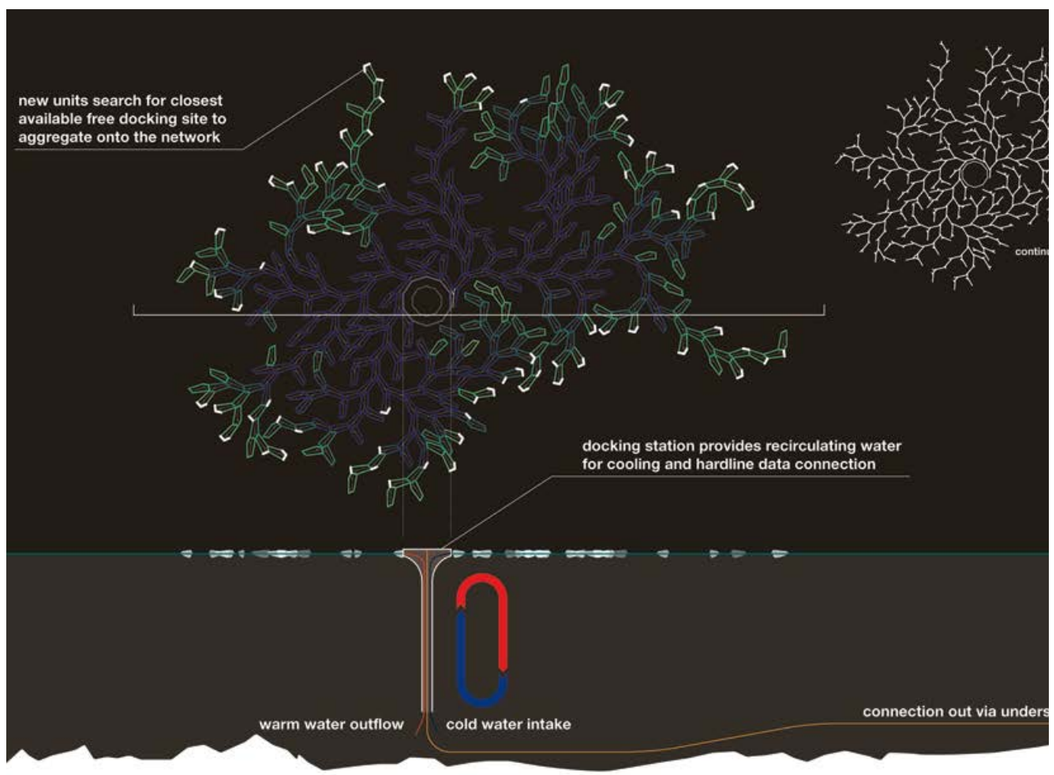
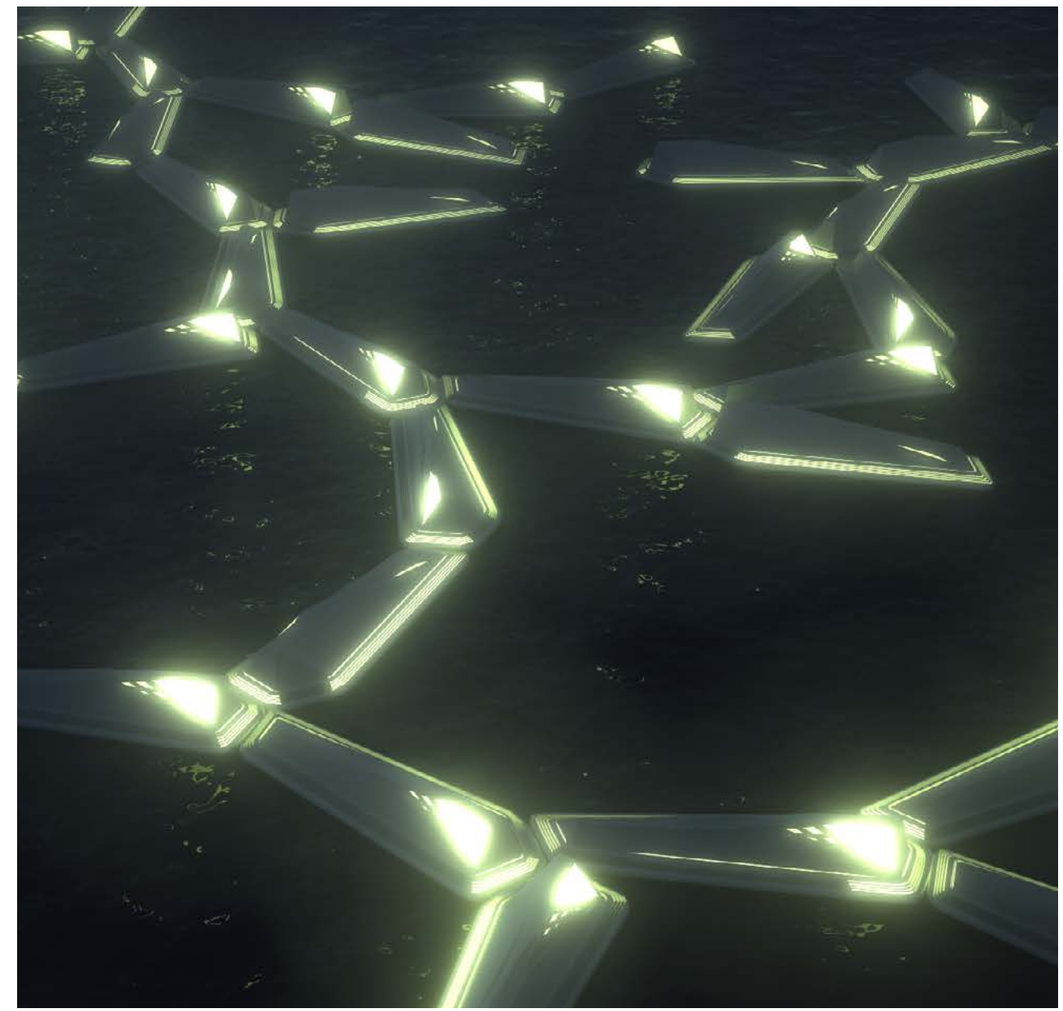


Diagram (Plan & Section)
Detailing the connectivity of autonomous units, recirculating cool water system and undersea docking and cabling for data transfer to land.



The autonomous robots coalesce and form a glowing surface at night. They are easily visible to passing ships and can and can move apart and reform according using the Diffusion Limited Aggregation model of formation and growth.



Guilty Landscapes
Entropic Ecologies, 2011

My research has involved field work to document ecologically fraught landscapes in both the cultural as well as environmental dimension. In 2011, I traveled with the London-based Architectural Association's Unknown Fields Division to the Chernobyl Exclusion Zone in Ukraine, and Baikonour, the Aral Sea and Almaty in Kazakhstan. The trip was an opportunity to survey a variety of ecologically damaged landscapes and document their current states. Based on my observations of existing flora and fauna in the affected regions and further precedent research upon my return, I developed a speculative framework for ecological prosthetics.

Owing to the permeating effects of radiologic fallout in the Chernobyl Exclusion Zone, male birds which typically display bright orange colors are much less colorful and plentiful due to a lack of the available antioxidant GSH used in phaeomelanin production which provides their color. These antioxidant molecules had been exhausted from the birds' continual long-term exposure to radioactive decay. Thus the birds did not have extra available antioxidants to allocate for pigment production of colored feathers. These birds use their colorful feather displays in attracting female birds for mating, a prime example of sexual selection, an important mechanism of evolution found in many bird species.

While mitigating radiologic damage on a meaningful scale is implausible, the prosthetic seeks a more modest solution. The mating behavior seems to be crucial to the birds' aesthetic and cultural behavior. In proposing a behavioral prosthetic I looked to other avian strategies in sexual selection behaviors. Bowerbirds, most prevalent in New Guinea, utilize a strategy to attract mates that does not involve their own color or personal characteristics. Bower birds create bowers to impress females, highly specific and ordered creations incorporating both natural materials and manmade artifacts. A behavioral prosthetic might seek to teach the birds of Chernobyl a similar behavioral strategy. Whether through videos, demonstrations by robotic birds or perhaps even genetic means, might it be possible to inject a new behavior into a species as a way to ameliorate a physiological deficiency.

This seeding process can take many disparate forms. The use of bioengineered interventions and unconventional combinations of existing flora and fauna are possibilities. A given ecosystem can be viewed as a full scale real world lab in which various theories can be tested. The Chernobyl Exclusion Zone offers the potential to enact multiple ecological prosthetics on a large scale. This landscape could transition to an ecological incubation zone for the deployment of a wide variety of experiments in seeding a landscape with prosthetics.

Field Work with the *Unknown Fields Division* in Chernobyl, Ukraine, 2011 for *Entropic Ecologies*

Field Work, Chernobyl

N. Koltick. *Entropic Ecologies*, VOLUME, Vol.31, no. 1, p.150-1, 2012.
Gulity Landscapes Issue
Edited by: Arjen Oosterman
Contributing editors: Ole Bouman, Rem Koolhaas, Mark Wigley
Co-editors for this issue: Liam Young and Kate Davies, Feature editor: Jeffrey Inaba

Growth and Deterioration
Master's Thesis Fashion Collection:
Sheri Shui Hui Chang
Winner, CFDA+ Fashion Award, Spring 2015

This collection returns body to the ancient organism and resembles cloth as an external shell or "vest" of Foraminifera, which is made of various materials and constructed in diverse forms. Sheri studied the morphology of the natural creatures and mimiced the pattern, shapes and transparency by using parametric digital techniques to create iteration. Considering clothes as the second skin as Foraminifera producing a shell by itself.

Student Work

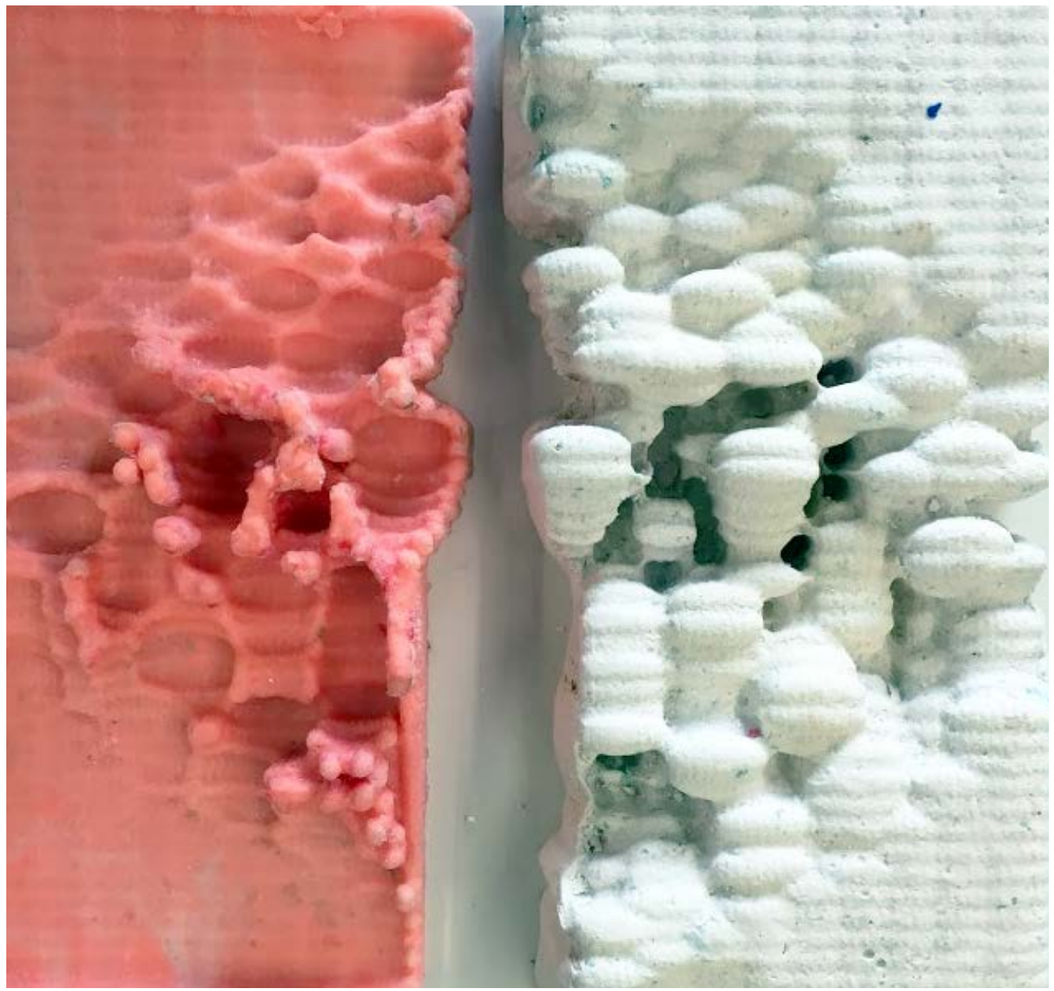
Associate Professor, Nicole Koltick
Work Produced within Coursework
Westphal College of Media Arts & Design,
Drexel University, Philadelphia, PA

(This page and opposite)
Master's Thesis Fashion Collection:
Growth and Deterioration, Sheri Shui Hui Chang
Winner, CFDA+ Fashion Award, Spring 2015
(Thesis Co-Supervised with Renee W. Chase & Erik Sundquist: 2014-15)

Master's Thesis Fashion Collection:
Growth and Deterioration, Sheri Shui Hui Chang
Winner, CFDA+ Fashion Award, Spring 2015

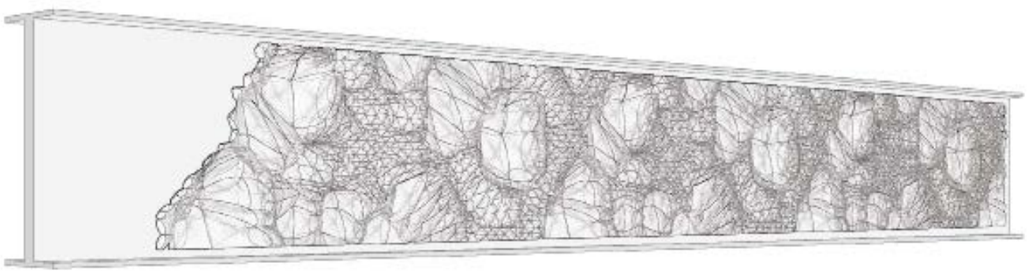
Final Project, Cast Silicone from
CNC Molds and 3D Printed ExoSkeleton
Digital Fabrication Seminar, Sheri Shui Hui Chang, Fall 2014

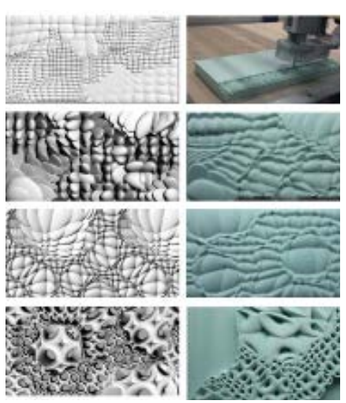
Silicone and Plaster Casts from CNC routed molds
Digital Fabrication Seminar Jack Luo, Fall 2015

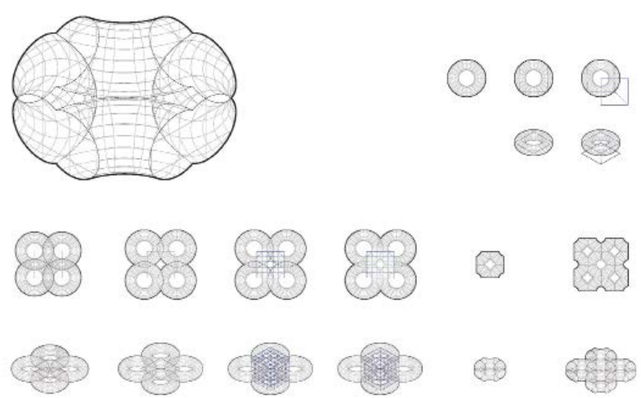


Process CNC Routed Foam
Digital Fabrication Seminar
Sheri Shui Hui Chang, Fall 2014

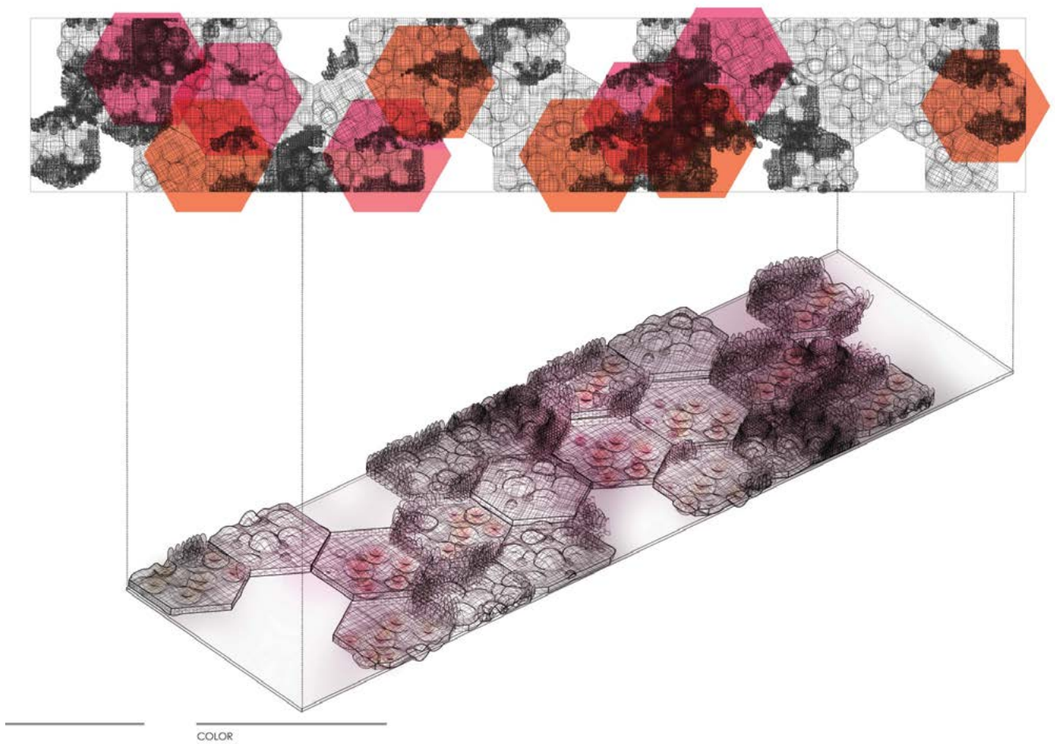
Final Project (Drawings and Process)
CNC routed foam inset into beam
Digital Fabrication Seminar, Jay Hardman, Fall 2013







Process Drawings
Digital Fabrication Seminar Courtney Robinson, Fall 2015



CNC Foam Panels
Digital Fabrication Seminar, 2015

Students Casting into CNC'd Foam Molds
Digital Fabrication Seminar, Fall 2015

Mold and Plaster Cast, Sophia Mendez
Interior Prosthetics, Digital Fabrication Seminar, 2015

Mixed Media Piece Cast from CNC Routed Foam
Digital Fabrication Seminar, Zhufou Zhou, Fall 2015

Narl Chair by Carl Durkow,
Winter 2016 Furniture Design Student

Narl Chair by Carl Durkow,
Winter 2016 Furniture Design Student

Bookshelf by Justin Lewis
Winter 2012 Furniture Design Student

Final Interior Studio Project Rendering, Mineral Repository
Laura Peppler, Fall 2015

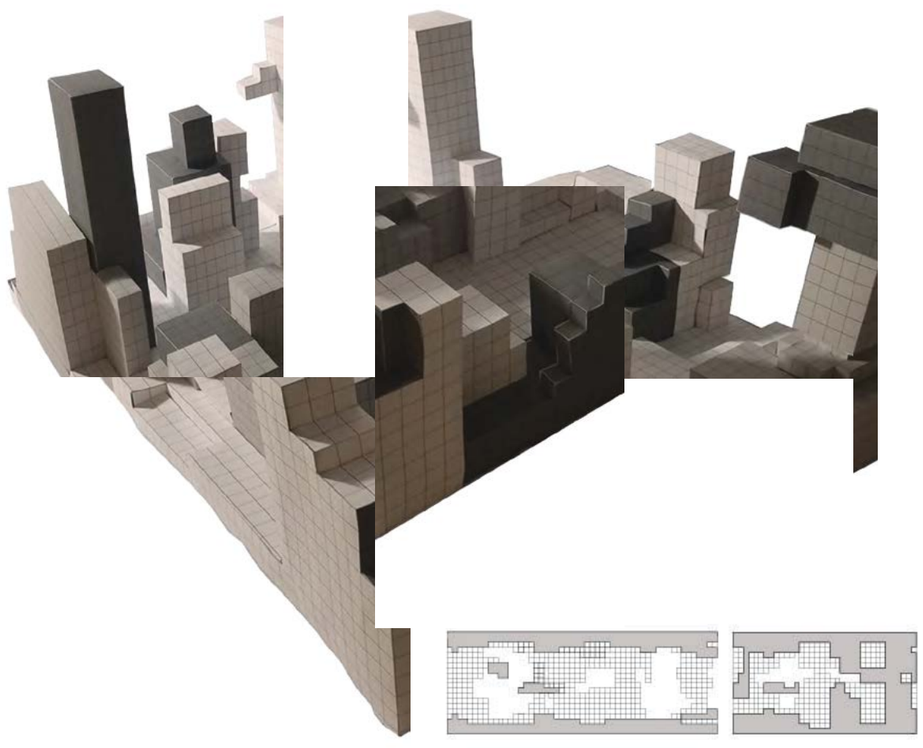
Final Project Rendering, Mineral Repository
Laura Peppler, Studio B, Fall 2016

Repository Project,
Rita Truongcao, Spring 2015

Interior, Composite Rendering, 2017, Leah Stone

Interior, Composite Rendering, 2017, Leah Stone

Diagrams, Plan , Section, Axomometric



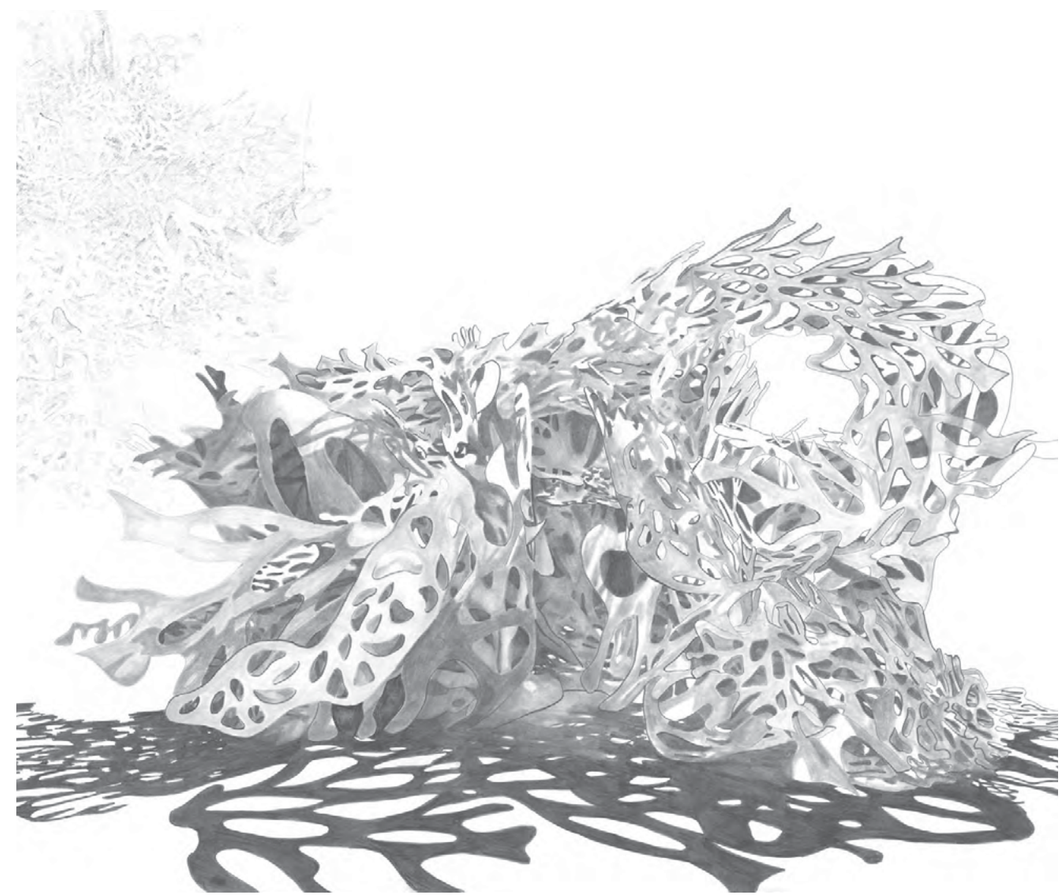
Interior Rendering

Laser cut Model and Hand Drawing
(additional models and drawings in background)
Spatial Atmospheres Studio, Fall 2017

Form Generation Studio Exercise, 2017
Laser Cut Models, Leah Stone

Formal Exploratiion Models, Leah Stoner 2017,
Spatial Aymospheres Studio

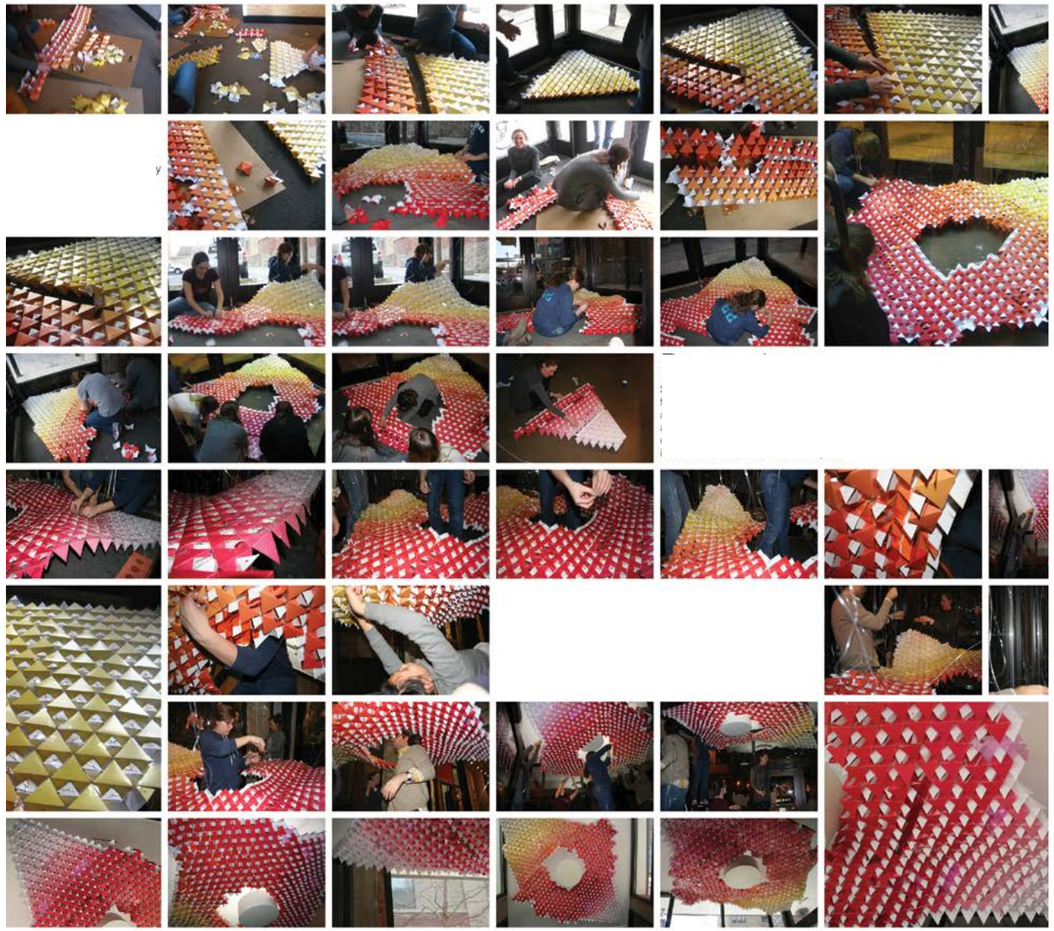
Graphite Drawing, Leah Stoner 2017



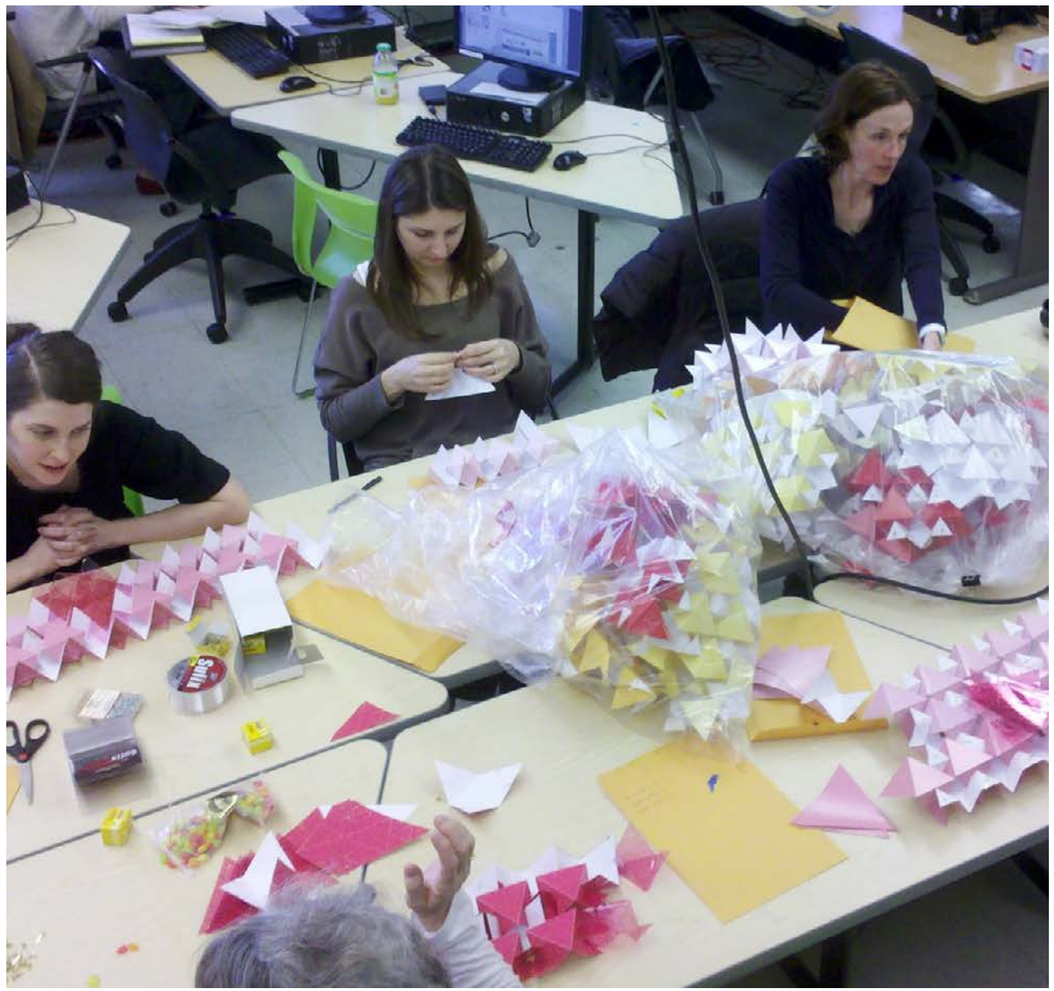
Interior Modelling & Renderings in 3dsMax, Christopher Hansen

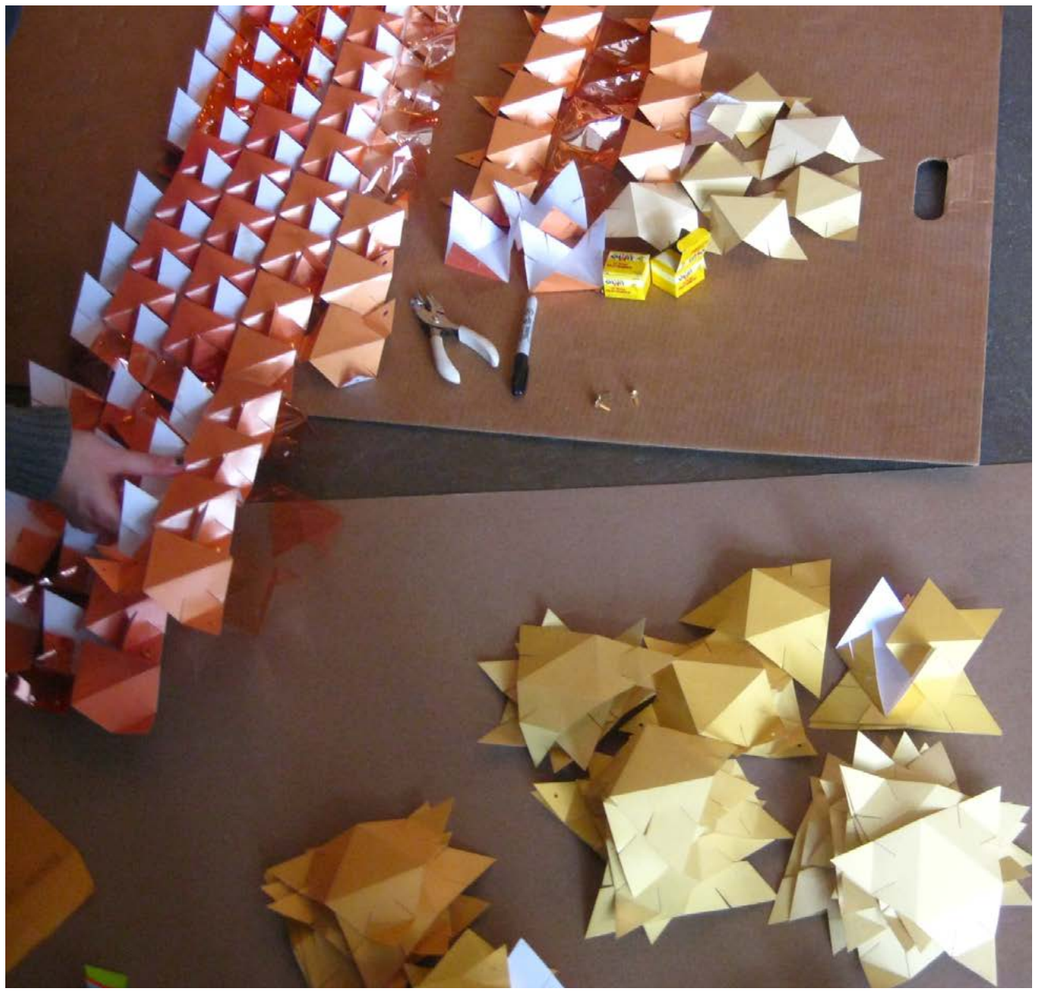
Installation, *Paper Cloud, 2011*

Process , *The Paper Cloud*



Process, *Paper Cloud*
Custom Gradient of 50 opaque colors and 25 acetate colors,
laser cut and hand assembled. Over 3000 individual pieces.





Assembly, Paper Cloud