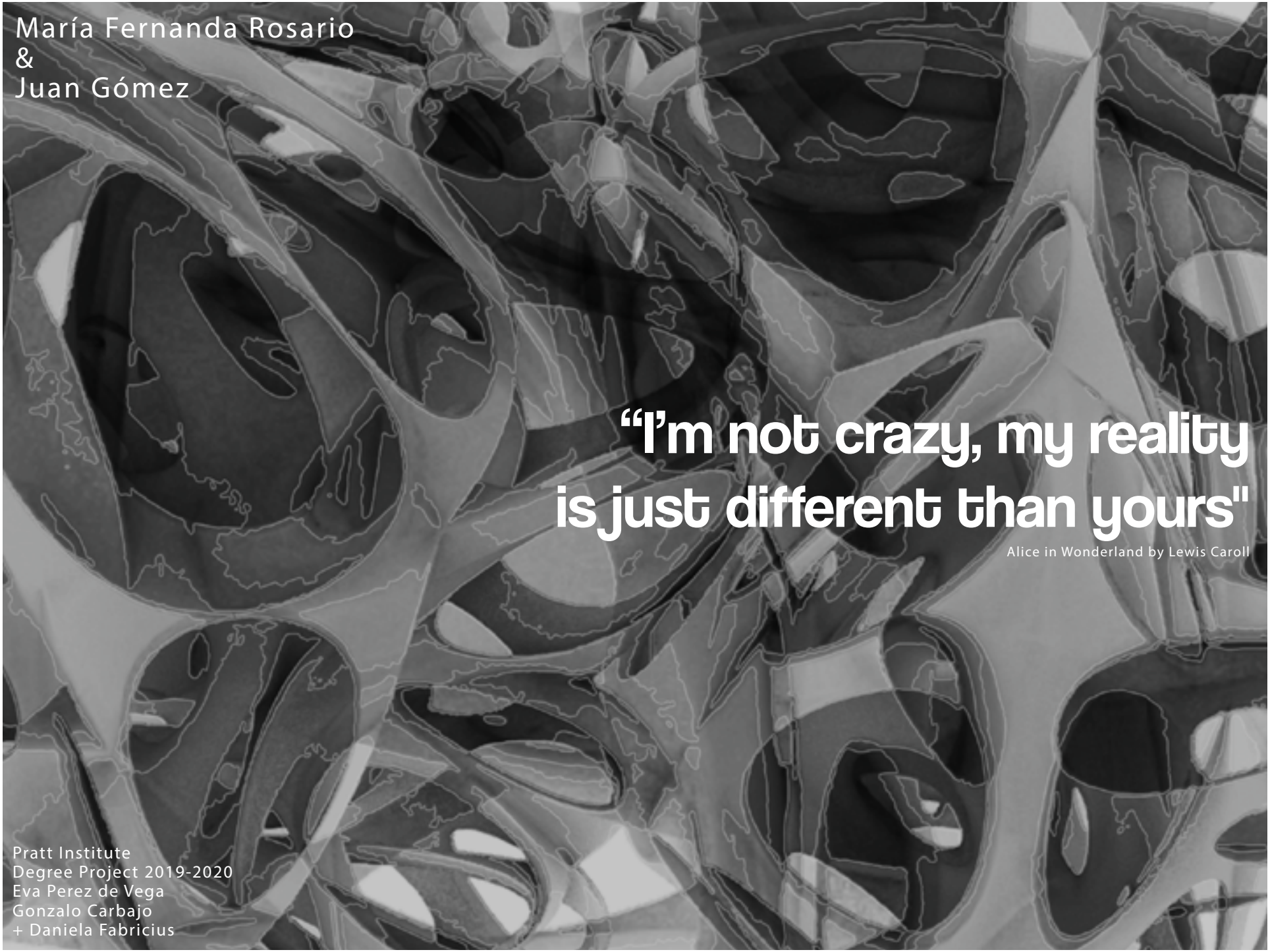
María Fernanda Rosario
&
Juan Gómez



"I'm not crazy, my reality is just different than yours"

Alice in Wonderland by Lewis Caroll

Pratt Institute
Degree Project 2019-2020
Eva Perez de Vega
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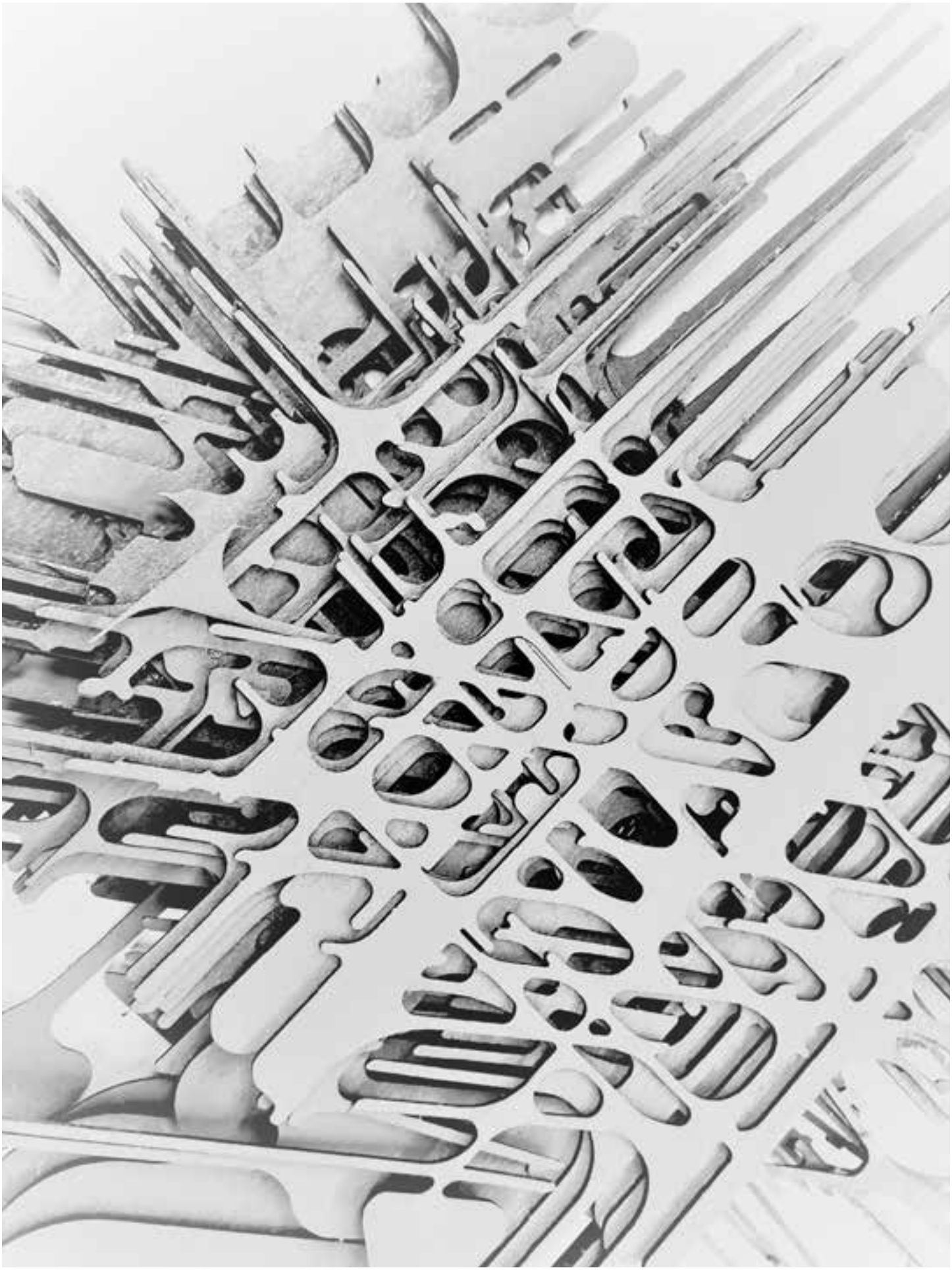


“I’m not crazy, my reality is just different than yours”

Over the next 100 years, climate change will have resulted in an accelerated speed of evolution, forcing species to find new ways to survive. Humans, unable to evolve fast enough to keep up with the changing climate, will have to rely on adaptable technology and architecture. Kabwe , Zambia provides a glimpse of the common future conditions of planet earth. Its mining exploits have made it into one of the most toxic places on the planet, poisoning its people and its soil with lead. That poison has turned the town into a scorching desert wasteland with little to no vegetation and animal life. The mines and smelters located just across from the local towns spread pollution and toxic particles into the air and soil for nearly 100 years, before closing in 1994, leaving this area unlivable and extremely dangerous. The concentration of lead surrounding these mines are 25 times the legal limit, making it one of the most toxic places on the planet, and its desert-like atmosphere makes the dry heat and deadly soil a death sentence for anyone who lives there. That is precisely the home of the project . Assuming that the conditions in Kabwe will be a future global condition, the project attempts to answer the question: “What will we do if saving the planet fails?”

The project looks at the current conditions of the site and projects them 80 years in the future, where those conditions will have become global and will have fundamentally changed all living things. The spread of the toxification will mirror the deserted way of life mentioned in Michael Marder’s “Being Dumped”. We’ll have accepted the toxicity of our surroundings and will be influenced and affected by it, deteriorating our physical bodies and forcing us into an even larger reliance on technology. Not having had an adequate solution to deal with an extremely harmful atmosphere, by the year 2100 humans will have gone through many life-altering changes. The toxicity will cause extensive damage to internal organs, causing things like Crohn’s disease, asthma, heart disease, a decrease in fertility, and cancer of the lungs, kidney, bladder, etc. This internal damage will require a heavily prosthetic interior, and will weaken the state of the human body as a whole. Infertile, surviving on significant decrease in calorie intake, and living to an average age of 65, the human will once again become more vulnerable to the outside world. The project becomes a sanctuary for this new human. The project provides a buffer from the outside conditions and becomes a cradle for the new human, maintaining the level of safety and comfort humans have grown to expect over the years of excessive consumption.

The design of the dwelling is made up of a series of layered veins that provide the enclosure and connect the systems of one dwelling to another. . The neuron-like veins are divided into a

system of energy, water, and of waste. The systems are layered to provide an increased degree of protection from outside conditions as one moves closer to the core. The exterior system of veins collects rainwater and morning dew and are easily accessible to any animal living on the outer layer of the dwelling, or any traveling human that needs it. The middle layer is the energy veins, they provide the new human with a source of energy for their technological augmentations, whether they're deeper within the dwelling or on the outer spaces. The innermost system is for waste; it is not only for garbage and bodily waste but is also where the humans decontaminate themselves. The central core is the first place in the dwelling that is accessible from the outside, so the human must first decontaminate itself - that waste is filtered and is released .

Extreme Environment

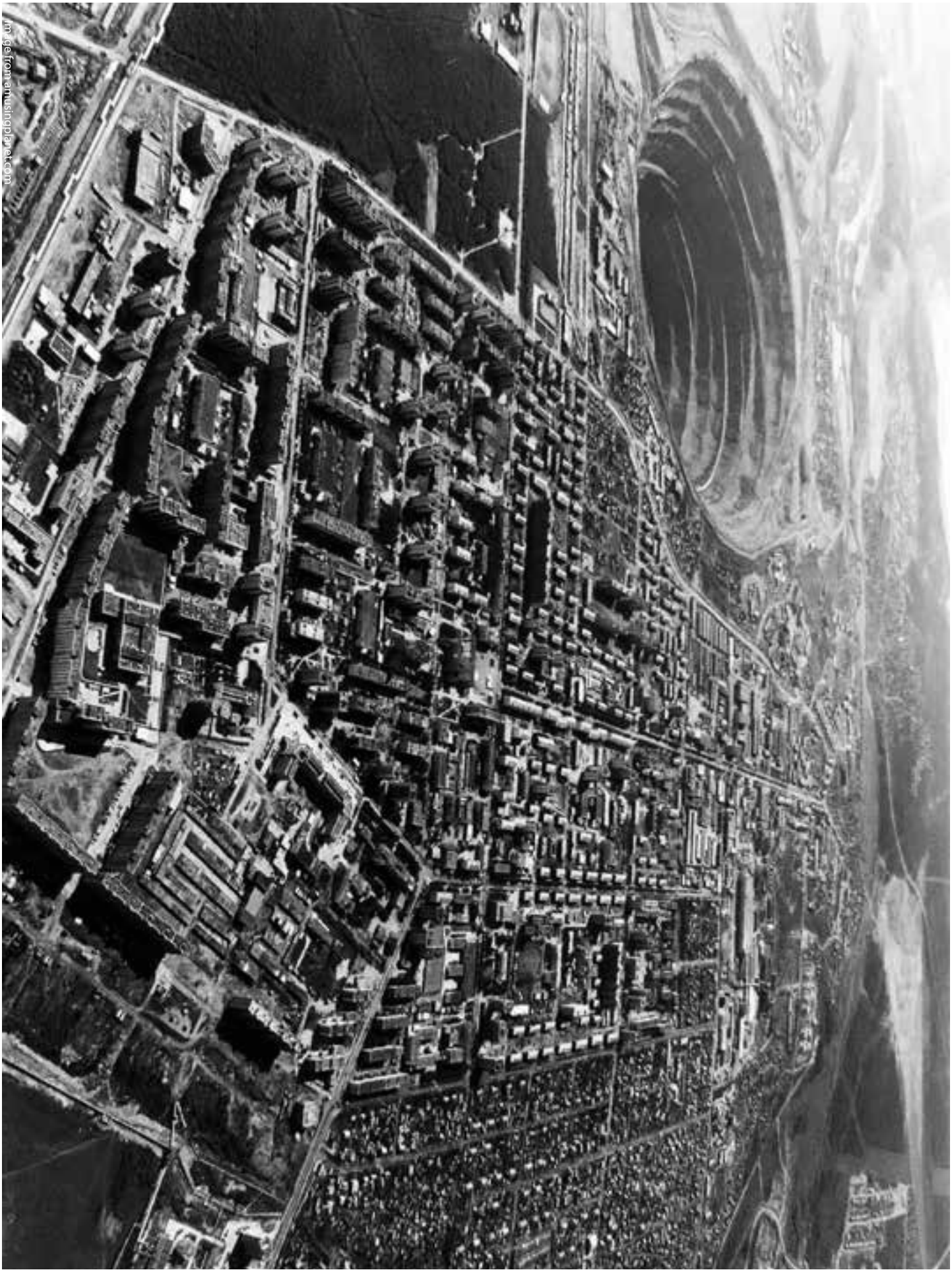
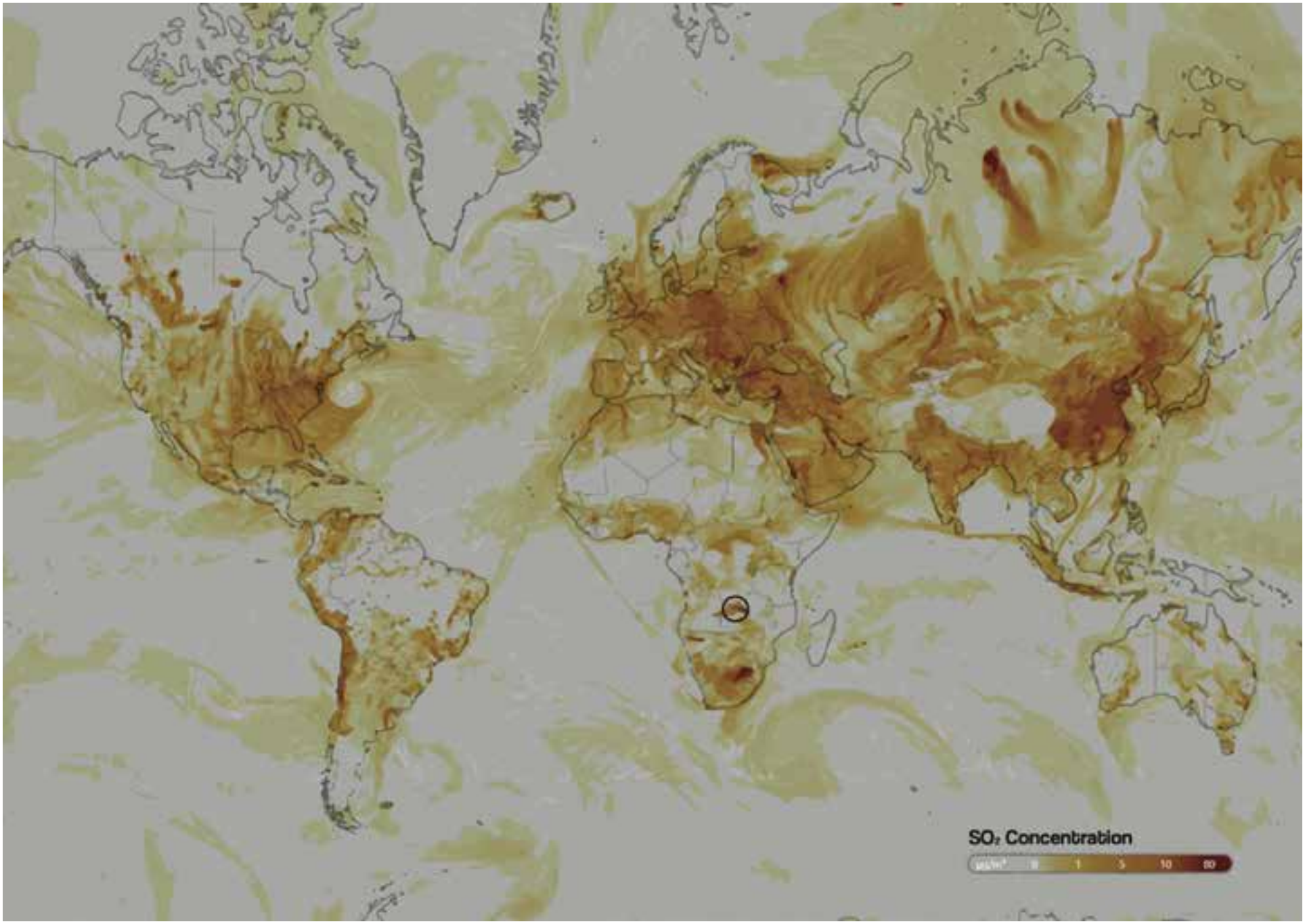
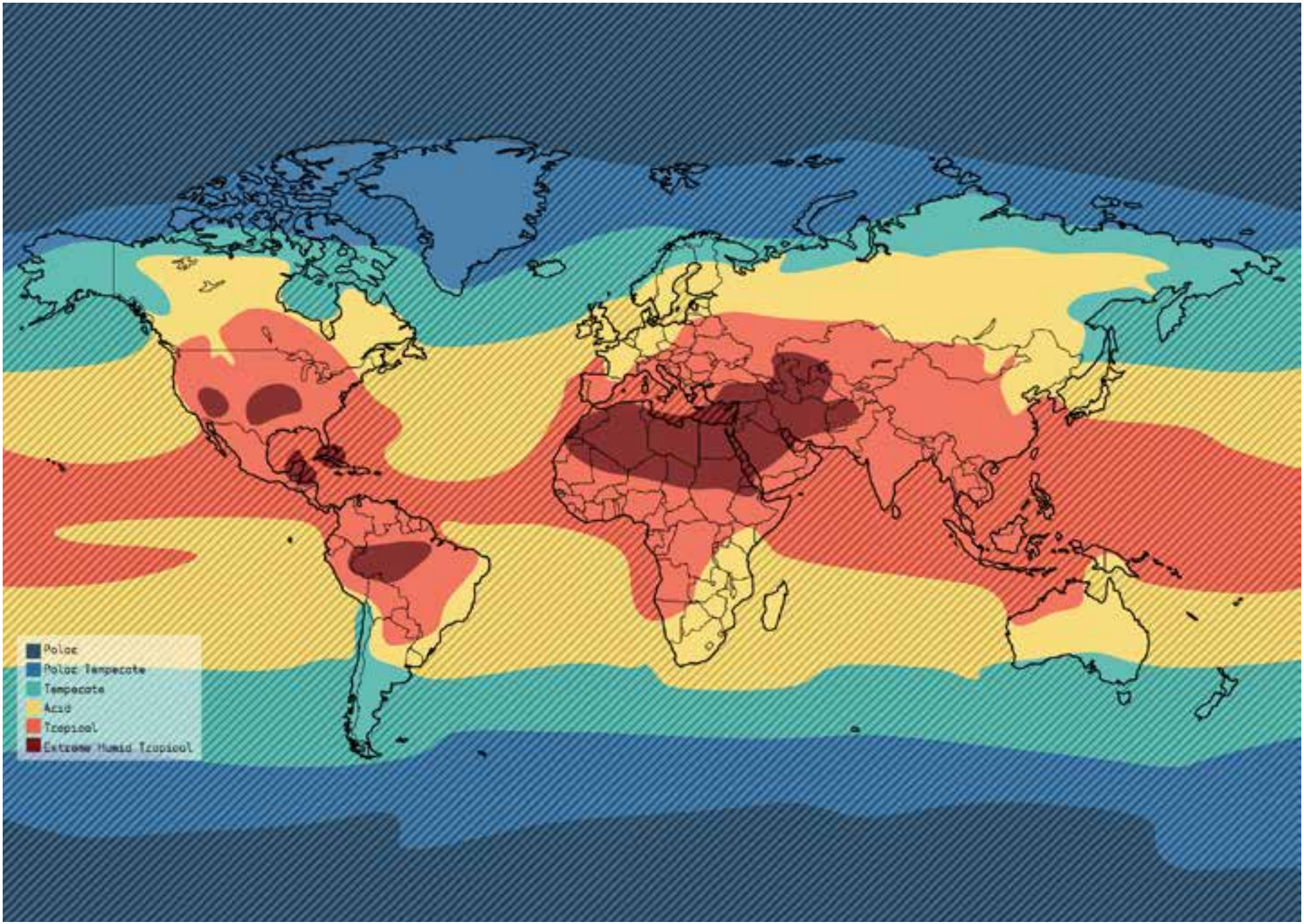


Image from anunsinoplaneta.com

Exploration of Earth Conditions




Polar
Polar Temperate
Temperate
Arid
Tropical
Extreme Humid Tropical

Extreme Environments

In the next 100 years the Earth will not be what it is today. Due to the massive destruction of the human being, we have reached a point of no return. Today, we already have examples of places that due to human intervention have become uninhabitable. The three types of climates that are going to take most of the planet will be tropical, desert and ocean. We take an example of each of these environments that have also been intervened by humans as our sites. The tropical is a neighborhood in Port-au-Prince, Haiti called Cite Soleil. Haiti, being the poorest country in America, has been the most vulnerable to climate change; Due to their unstable government and terrible economy, they have been a country that until today has not managed to get out of the poverty. Cite Soleil, being a neighborhood of extreme poverty, people live in garbage, and due to lack of health there are epidemics of mosquito-borne diseases. The second place we chose was the Kabwe desert in Zambia, which has deposits of lead and other minerals such as zinc, silver and manganese, but its exploitation has resulted in the contamination of water from the heavy metals region. It is estimated that children who inhabit this place have in their blood a concentration of lead between 5 and 10 times higher than the maximum acceptable. And finally, the city of Norilsk in Russia, blessed with a cornucopia of precious metals buried under a desert of snow, but so devoid of sunlight that the nights during winter never end. It is the most polluted and coldest industrial city in Russia, and the richest for its mining industry. Donate companies intend to solve environmental problems, while citizens suffer from lung, respiratory, cardiovascular and digestive diseases.

Image by Tom Hegen: The Quarry Mine Series (http://tomhegen.de/fotodesign/the-quarry-series/)

Norilsk, Russia

Norilsk is home to 170,000 residents and workers, who don't see the sun for several months a year and spend several times more on goods than Russians elsewhere in the country.

Number of people potentially affected: 134,000
Type of pollutant: Air pollution — particulates, sulfur dioxide, heavy metals, phenols
Source of pollution: Major nickel and metal mining and processing

Norilsk was founded in 1935 as a Siberian slave labor camp, and life there has pretty much gone downhill since. Home to the world's largest heavy metal smelting complex, more than 4 million tons of cadmium, copper, lead, nickel, arsenic, selenium and zinc are released into the air every year. Air samples exceed the maximum allowance for both copper and nickel, and mortality from respiratory diseases is much higher than in Russia as a whole.

Image from themoscowtime.com

Cite Soleil, Haiti

Cite Soliel is home to roughly 300,000 residents, all of whom live in extreme poverty. No proper infrastructure exists to protect them from the disease that are found in tropical climates and are made entirely out of scavenged material. It is known as one of the most dangerous places in the entire western hemisphere. It is located towards the outskirts of Haiti's Port-au-Prince and it's where the sewage system ends. Because of that, it has no proper sewage system making the spread of disease very high. Mosquito born illness is common and the commune doesn't have the proper infrastructure to prevent that spread. More than half of the population is made up of children. The open and stagnant canal is the perfect breeding ground for mosquitos.

Image from theguardian.com

Kabwe, Zambia

Kabwe is the world's most toxic town, according to pollution experts, where mass lead poisoning has almost certainly damaged the brains and other organs of generations of children – and where children continue to be poisoned every day.

Almost a century of lead mining and smelting has left a truly toxic legacy in the once-thriving town of 220,000 people in central Africa's Copperbelt, 100km north of the capital Lusaka. But the real impact on Kabwe's people is yet to be fully revealed and, while the first steps towards a clean-up have begun, new dangers are emerging as desperately poor people scavenge in the vast slag heap known as Black Mountain.

The fumes from the giant state-owned smelter, which closed in 1994, has left the dusty soil in the surrounding area with extreme levels of lead. The metal, still used around the world in car batteries, is a potent neurotoxin and is particularly damaging to children. But it is youngsters who swallow the most, especially as infants when they start to play outside and frequently put their hands in their mouths.

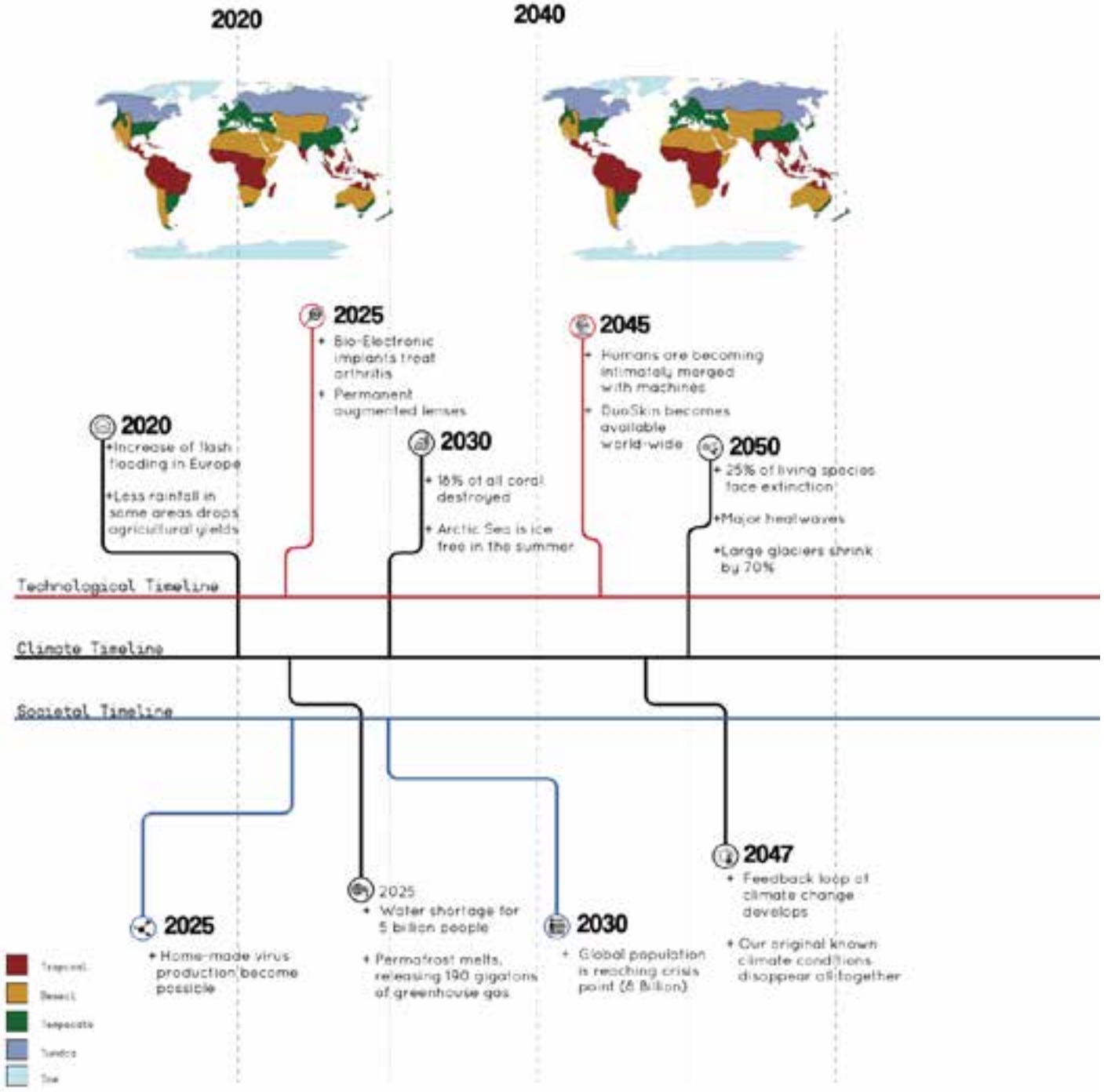
Image from theguardian.com

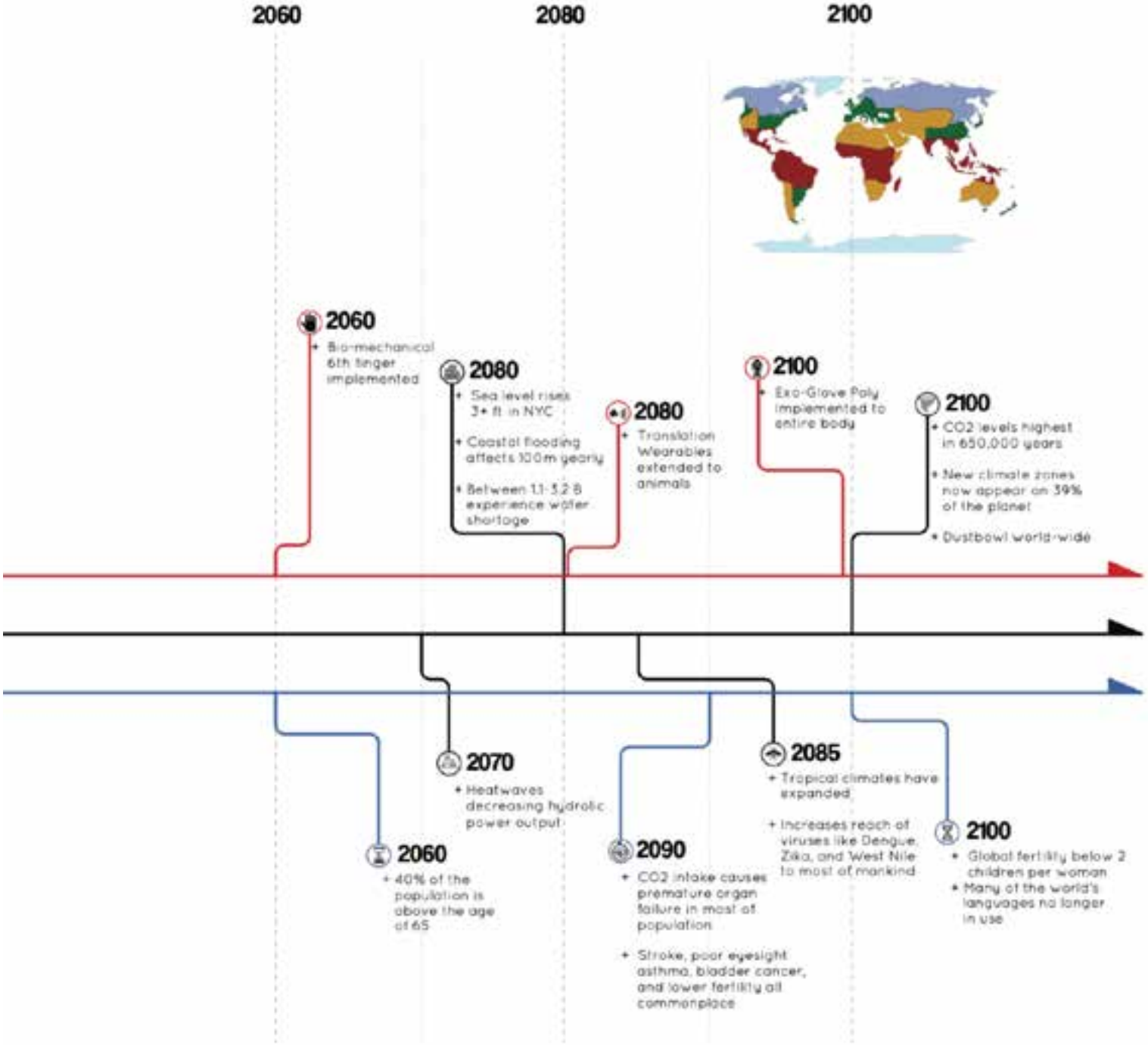
Future Timeline

We believe that, given the ongoing climate crisis, the hubris of human nature will cause irreparable damage to our planet in a way that will force us to drastically reinvent our way of life.

The devastation caused by climate change will force all living species, especially humans, into a new process of evolution, for better or worse. We claim that climate change will force rapid changes in human anatomy and behavior, and that humans will need to develop technologies to make up for their new evolutionary shortcomings.

We've created a timeline showing how the progress of our planet will be moving forward. Based on our research, we have concluded that over the next 100 years, climate change will have resulted in an accelerated speed of evolution, forcing species to find new ways to survive.

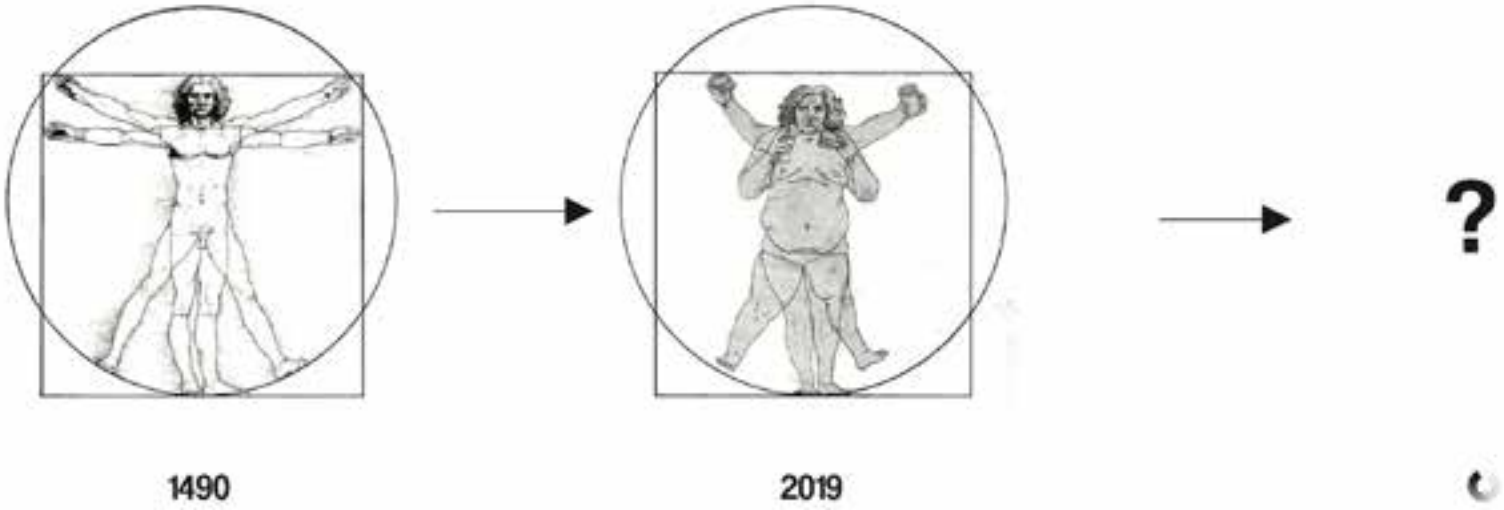



2060
2080
2100
2060
+ Bio-mechanical 6th finger implemented
2080
+ Sea level rises 3+ ft in NYC
+ Coastal flooding affects 300m yearly
+ Between 1.1-3.2 B experience water shortage
2080
+ Translation Wearables extended to animals
2100
+ Exo-Glove Poly implemented to entire body
2100
+ CO2 levels highest in 650,000 years
+ New climate zones now appear on 39% of the planet
+ Dustbowl world-wide
2070
+ Heatwaves decreasing hydrolic power output
2060
+ 40% of the population is above the age of 65
2090
+ CO2 intake causes premature organ failure in most of population
+ Stroke, poor eyesight asthma, bladder cancer, and lower fertility all commonplace
2085
+ Tropical climates have expanded
+ Increases reach of viruses like Dengue, Zika, and West Nile to most of mankind
2100
+ Global fertility below 2 children per woman
+ Many of the world's languages no longer in use

Evolving Species

Image by Edward Burtynsky: Shipbreaking (https://www.edwardburtynsky.com/projects/photographs/shipbreaking)

New Mission



“Our best machines are all light and clean because they are nothing but signals, electromagnetic waves, a section of a spectrum, and these machines are eminently portable, mobile... People are nowhere near so fluid, being both material and opaque. Cyborgs are ether, quintessence."
(Haraway, pg. 153).

“Machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines.
(Haraway, pg. 152).

Our level of consumption and influence has made it so that in just a few centuries, the world as we know it will be drastically different. Where there used to be multiple vast and unique climates will soon become one of three: Desert, Tropic, or Ocean. In response to that situation; Zambia's Kabwe (desert), Haiti's Cite Soleil (tropics), and Russia's Norilsk (ocean) have each been identified because of their climate's proximity to those future climates and the degree of man-made influence that each area has experienced. Ultimately, these sites will be used to inform us of future conditions at a future city location.

The focus will be to address this in a future urban location that will exhibit all three environments.That city being San Francisco, California. The city already exhibits the beginings of a sub-tropical and dry environment and its adjacency to water and to the equator means that under this phase of climate change, the coast of the city will flood and become a super-tropical zone.

When looking at sites that pose a threat to life and are a means to speculate on a future reality, the two primary programs that need to be addressed are housing/sanctuary and transportation. We must reimagine howto live and maneuver in this new version planet. It cannot be a traditional dwelling because to survive we cannot continue to be the same humans we've always been.

For the year 2100 the requirements of a dwelling are drastically different. To survive these extreme environments, a fundamental evolution will occur. The living subject will become a hybrid of technology and biology. Our new human is not a hybrid between man and machine, but a hybrid between a living subject and technology. In a world full of enhanced individuals, the living quarters themselves much respond to that enhancement and must be capable at serving the same function to all kinds of cyborgs.

In the last couple of years, we have seen the rise of digital fabrication like CNC machines, 3D printers, and robot arms among others. Each of these advancements have been developed to the point where, even today, can function with minimal human input or influence. We want to take these sites to develop a new way of living in which different species can adapt in order to avoid extinction, a new city. In addition, to account for the static nature of a city, the design of a single subject's relationship to the environment will also be developed. After considering these different typologies, The next step would be to merge the solutions in order to form a fusion that can be versatile to the different sites, at the city and single user scale.

Future Condition Effects

Research by Juan Gomez

Michael Marder's essay, "Being Dumped," had a lot of influence on the project and was key in developing the future scenario where the project is sited. Behind climate change and the inevitability of a future where climate conditions will become toxic, there are the human beings who created it. "There is probably no other creature in existence more adept at poisoning itself and its lifeworld than the human" (Marder). The project is grounded in anticipation. Because of humanity's destructive nature, the world might not be lost right at this very moment, but it will be, regardless of our efforts to redirect its course. The world might be saved if humans suddenly vanished off the face of the planet, but the fact that they exist solidifies that harsh future.

Marder argues that humanity's detachment from nature has contributed heavily to its carelessness. Since becoming the dominant species on the planet, humans have done nothing but dull their senses with the constant input of things like light and sound pollution, as well as living in excess. It is difficult to envision a time where humans were actually vulnerable to nature and would seek safety in things like fire, caves, and trees to protect themselves from nature's predators and weather. That vulnerability will be part of every person's life again by 2100. The global toxicity will physically handicap all living things causing an increasing reliance on technology to be able to function. J.G. Ballard's 1962 novel The Drowned World shows how vulnerable humans become because of extreme climate change. Humans are once again at the mercy of nature, to the point that even their sleep cycles will adjust to match common climate events, similar to how giraffes sleep in intervals to minimize their risk of being attacked in their sleep. Both Marder and Ballard's texts help frame the reality in which we have sited the project, and give context to the state of humanity in the near future.

The site for our proposal has been derived from a scenario where climate change prevention plans have failed. We researched current climates that most closely resemble those of future conditions. Kabwe, for example, is the second largest city in Zambia, and currently one of the most toxic cities on the planet. For almost 100 years, Kabwe has been a hub of lead mining and smelting. In spite of the closure of the mine and smelters in 1994, significant harm to the city's economy and damage to the environment had already been done. The soil is a toxic mixture of red and black sand mixed with lead particles that get into the air every time the soil gets disturbed. The lead levels in this scorching soil frequently reads over 10,000 parts per million (ppm)(for context, the limit in the United States is 400ppm). The inhalation of the soil is the culprit for rampant brain, liver, and hearing damage; some people even have lethal levels of lead in their system.

The mines are in close proximity to the neighborhoods of people that are just north-west of them, as are the smelters, which do the most damage in the metal process. The main contributors of the process being the furnaces, the stacks, the roasters, and the mill;

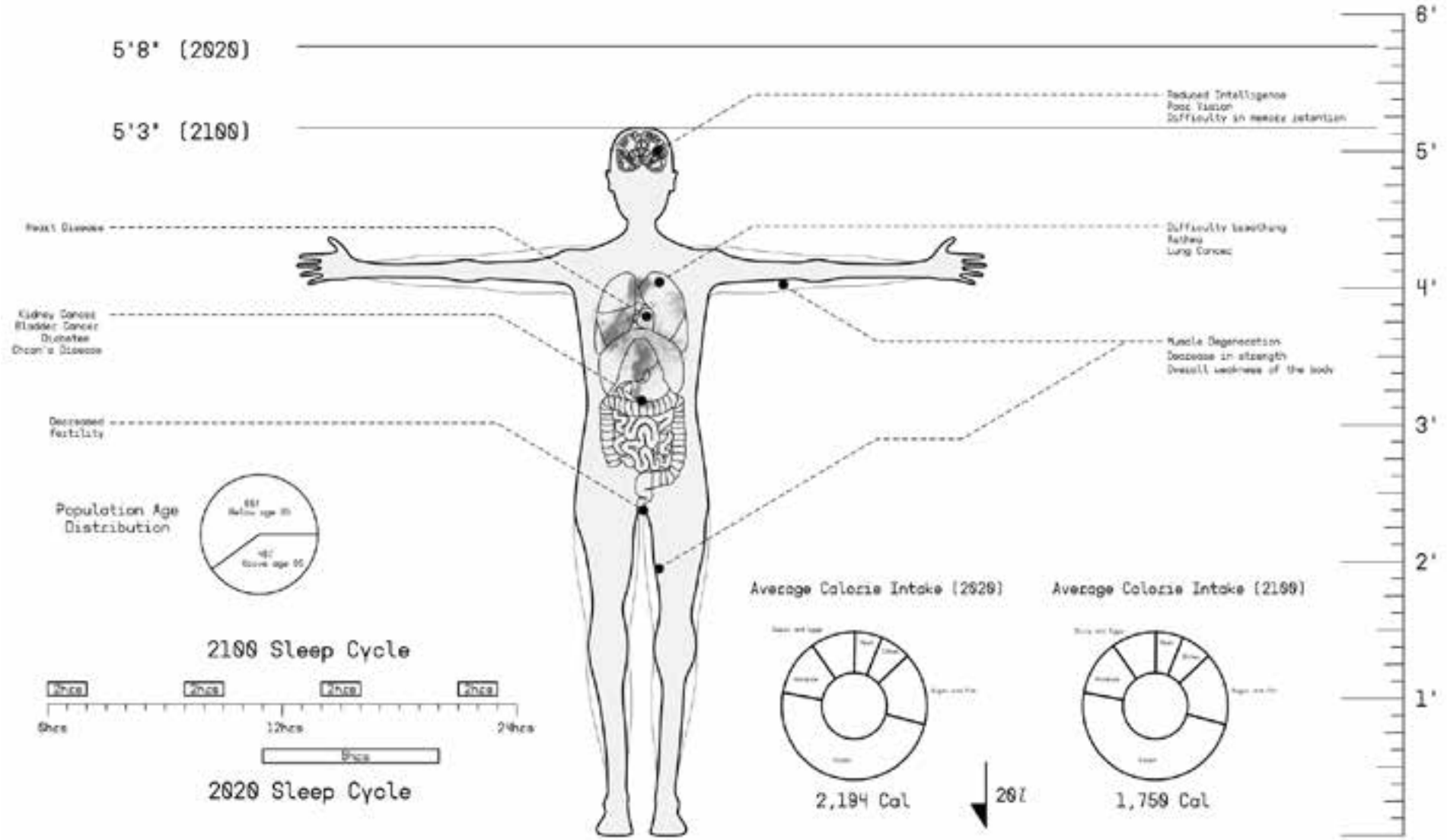
the project embeds itself right in the middle of those locations to provide a sanctuary in a place that has been robbed of life. Without having a specific goal in terms of remediation, making the nearby water sources potable again and seeping water out of the morning atmosphere is something that the project does attempt to do.

When the future scenario of the project is so incompatible with the human's current way of life, the relationship between a home and a sanctuary becomes paramount. Similar to present day Kabwe, the effects of these extreme conditions will cripple the entire population. By the year 2100 humans will have gone through many life altering changes due to an extremely harmful atmosphere. Many professors from the University of Illinois are predicting that pollution and toxic chemicals in the atmosphere will cause extensive damage to internal organs, causing things like Crohn's disease, asthma, heart disease, a decrease in fertility, and cancer of the lungs, kidney, bladder, etc. damaging their insides requiring a heavily prosthetic interior as well as weakening the state of the human body as a whole. Infertile and with an average age of 65, along with a significant decrease in calorie intake, the human will once again become vulnerable to the outside world.

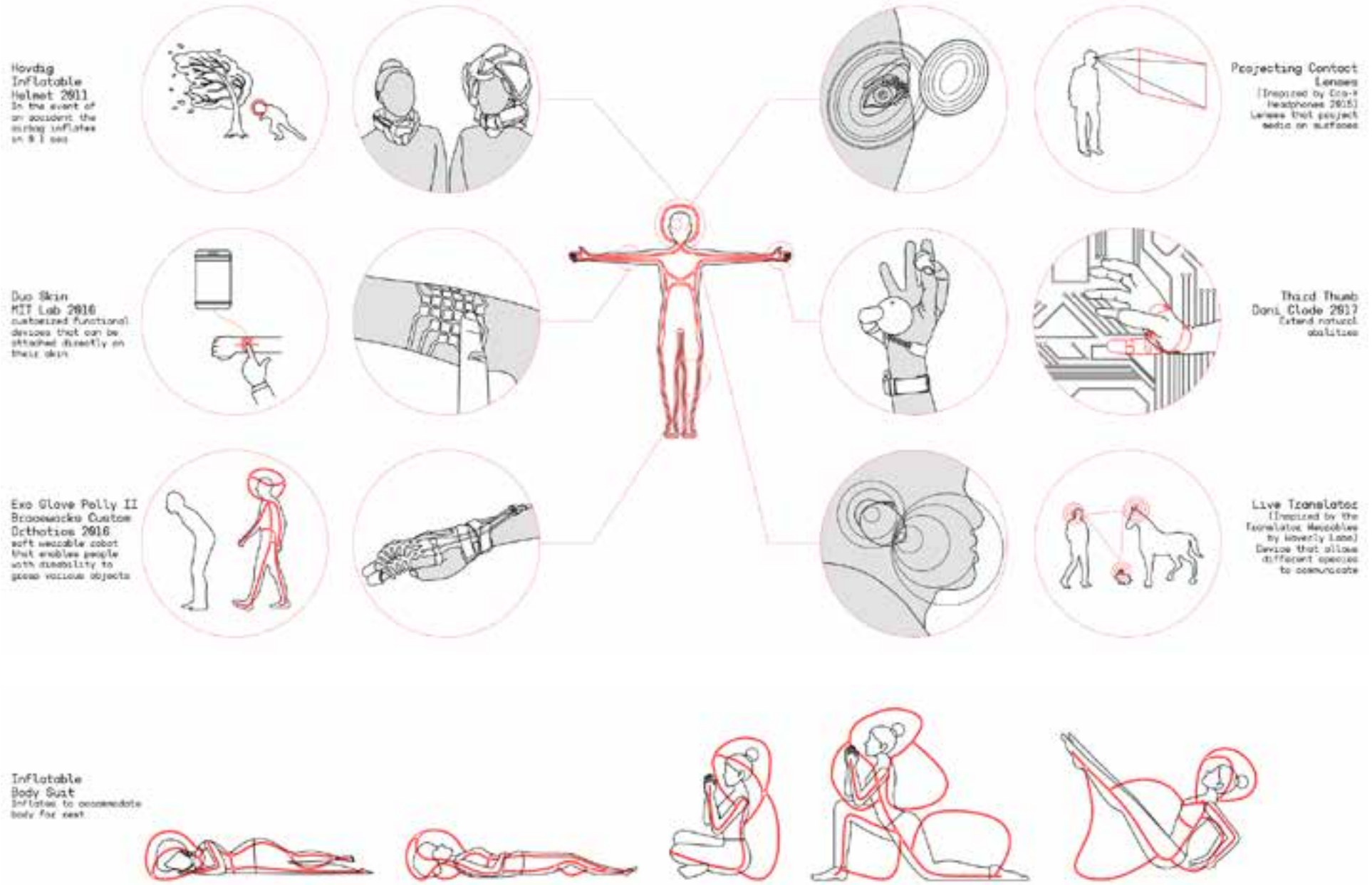
The project takes this present situation and applies it at a more global scale. It asks the question, "With all our land exploitation and selfishness, is this the environment that awaits us in the future?" In this future scenario, today's home is not enough. The home as a shelter - a mentality humans had as cavemen, where protection from the dangers of nature was a real threat - has to be re-considered to design for the climatic dangers that are now present. The dwelling or sanctuary we are designing for addresses food and water collection, sleep, reproduction, work, and leisure all in one structure, a self-sustaining home that assists this new vulnerable subject. If the subject needs a coat of armor to navigate the new terrain, the function of the new dwelling is to provide that same level of safety to a home again . The dwelling is made up of a series of layers that provide protection and amenities, making space technology a rich vein of investigation. Projects like Clouds AO's Mars Ice Home and Apollo's space suit x-rays give insight as to how to manage and separate two spaces that can't come in contact with one another. Layers for water transportations, insulation, various types of fabrics, provide the user with the amenities he/she needs to be safe in space. The dwelling similarly provides layers of protection that also provide necessities like water, waste, and energy. In terms of materiality, the system is essentially 3d printed from the abundant soil. It would work similarly to the work of Markus Kayser , who developed a 3D printer that uses sunlight and sand to 3d print glass structures. The material of the system would come from using the soil from the site and using it as a type of filament for a 3d printer.

Human Conditions Due to Extreme Environment

The new conditions will alter our bodies, it will force us to adjust our sleep to coincide with the frequent toxic dust storms and climate events rather than by sunlight, destroy our internal organs and weaken our bodies to the point of needing certain types of prosthetics to move. Being half human and half machine, the cyborg requires less nutrition by relying more heavily on his mechanical systems for strenuous activity and not burning as much energy, but it also requires a different kind of maintenance than a full biological body.



Enhanced Human

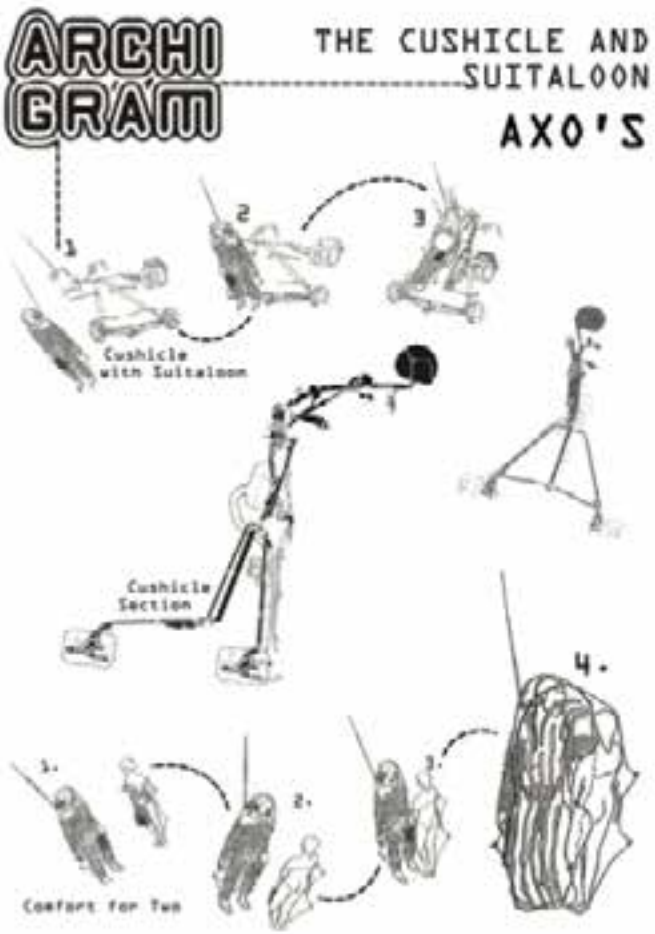


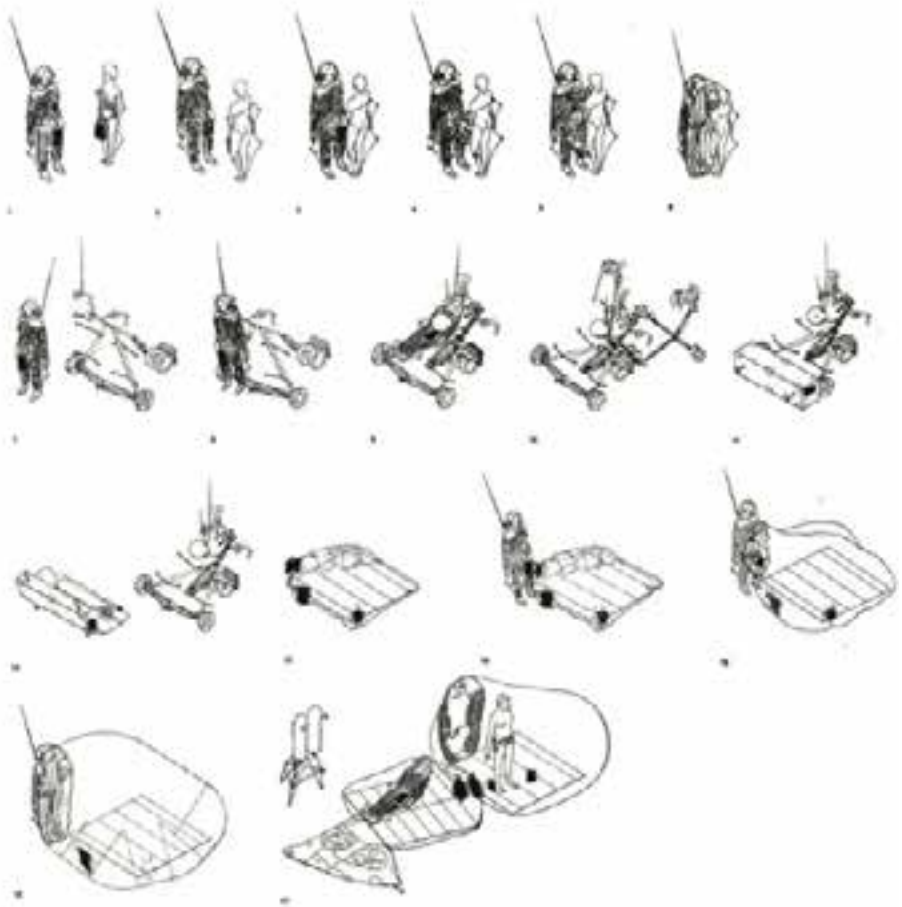
Domestic Specifity

Archigram's Cushicle and Suitaloon, 1967

The Cushicle was a type of mobile structure made up of two parts: a frame with appliances and personalized gadgets and an inflatable envelope. The skeletal frame is structured like a spine and would include a heating system. The helmet would include a radio and mini-TV. Food and water modules could be equipped to the frame as attachments. The two skins would serve as envelopes for the rider, which would be covered with screens. The two systems could be used independently or together. It was envisioned as eventually being part of an urban system of personalized enclosures, and was conceived as usable in any environment.

The Suitaloon was thought of as an improvement of the Cushicle's fluid membrane, to be a more complex wall surrounding the essential technologies of the house. It would ebe something the subject would wear, but the capacity to be erected anywhere through pneumatic inflation or by simply pushing the membrane into shape from the inside. Each suit has a plug. The plugs would allow the Suitaloon to connect to friends' Suitaloons and create a larger single envelope or even plug into another envelope so the rider could step out of their own Suitaloon and leave it like if it was parked.


ARCHI GRAM
THE CUSHICLE AND SUITALOON
AXO'S
1
2
3
Cushicle with Suitaloon
Cushicle Section
4.
1.
2.
3.
Comfort for Two



Domestic Specifity

Archigram's Living Pod, 1966

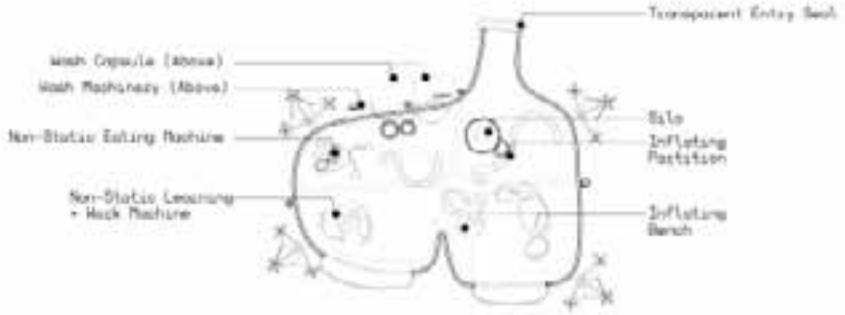
Description:
Part One, a Pod … Colour, bonded white. Twelve support nodes (six tension, six compression). Four apertures (25 per cent surface). one access aperture, all with vacuum fixing seals, inner bonded sandwich of insulation and /or finish. Multi-purpose inflating floor 45 per cent area.

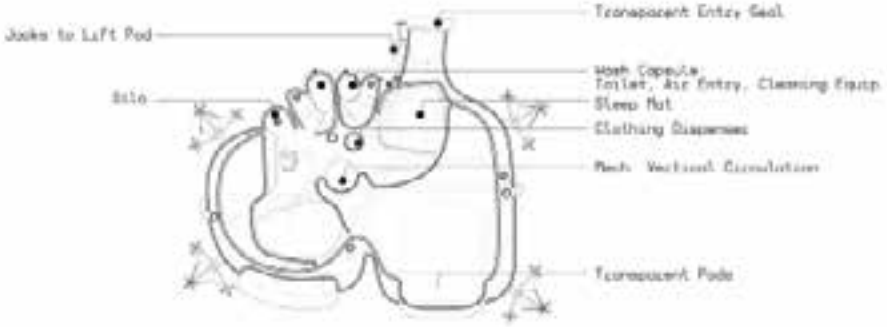
Part Two: Machinery, four automatic self-levelling compression legs for maximum 5 feet of water or 40-degree slope. Two transparent sectionalised sliding aperture seals with motors. Transparent entry seal with ramp and hydraulics. Two wash capsules with electrostatic disposal, air entry, and total automatic body cleaning equipment. One only with total body water immersion possibility. Two rotating silos for disposable toilet and clothing objects, etc. Vertical body hoist. Climate machinery for temperate zone (with connections to inflating sleep mats and warm section of inflating floor). Non-static food dispenser with self-cook modifications. Non-static media, teach and work machine with instant transparent cocoon ring. Inflating screens to sleep mats.

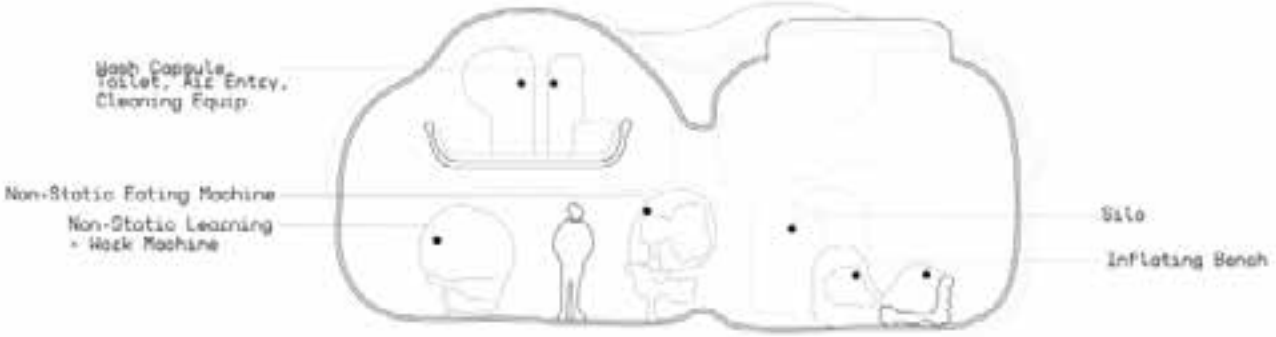
Appraisal: Although this capsule can be hung within a plug-in urban structure or can sit in the open landscape it is still a 'house'. Really one is left with a zoomland trailer home. Probably a dead end. A basic assumption that must be reassessed in terms of the possibility of increasing personal mobility and technological advance. Anything is probable. The outcome of rejecting permanence and security in a house brief and adding instead curiosity and search could result in a mobile world – like early nomad societies. In relation to the Michael Webb design, the Suit and Cushicle would be the tent and camel equivalent; the node cores an oasis equivalent: the node cluster communities conditioned by varying rates of change. It is likely that under the impact of the second machine age the need for a house (in the form of permanent static container) as part of man's psychological make-up will disappear.

With apologies to the master, the house is an appliance for carrying with you, the city is a machine for plugging into.

David Greene
(Source: The Funabilist)

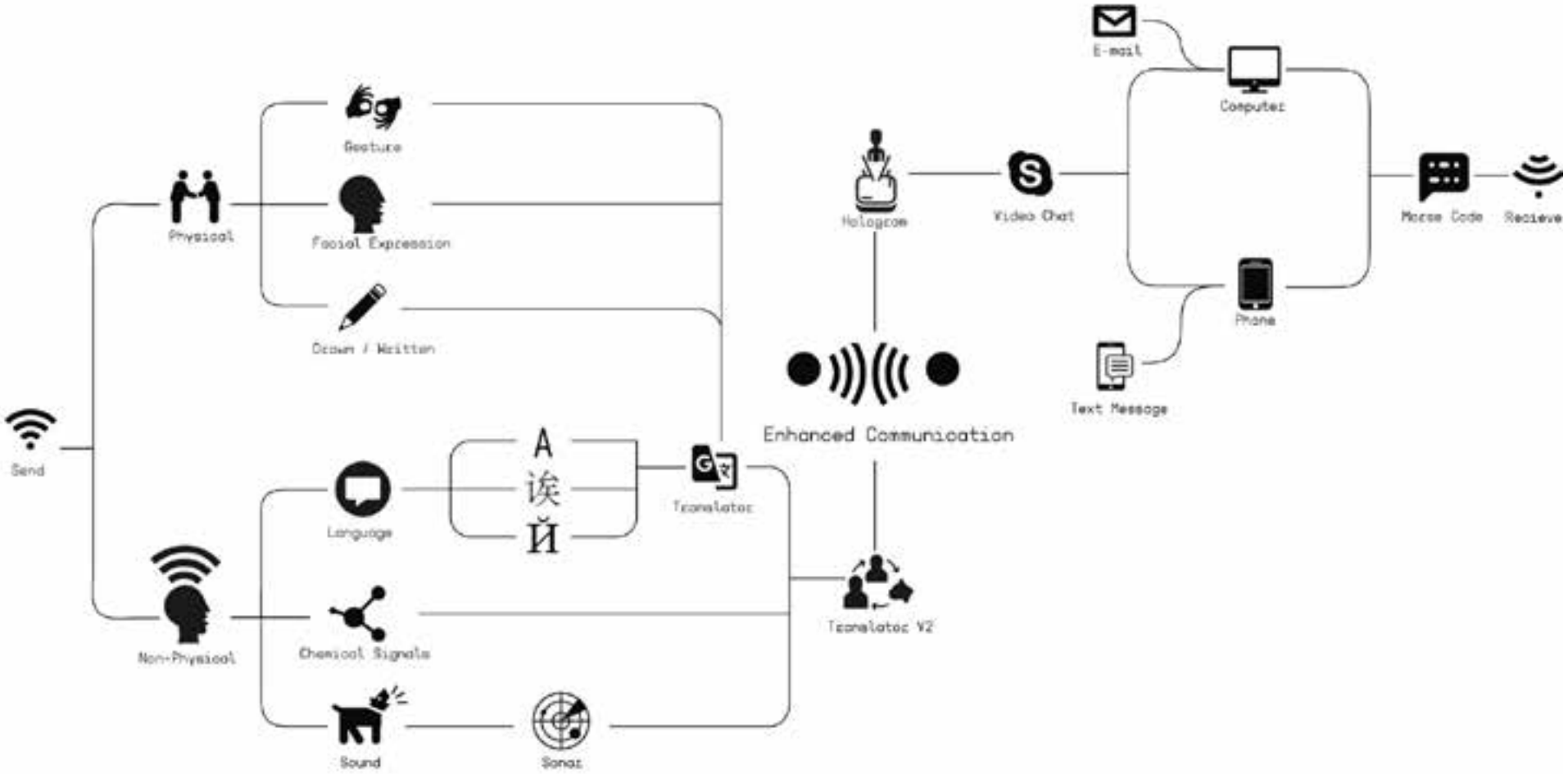

Transparent Entry Seal
Wash Capsule (Above)
Wash Machinery (Above)
Silo
Non-Static Eating Machine
Inflating Partition
Non-Static Learning
+ Wash Machine
Inflating Bench


Transparent Entry Seal
Joins to Lift Pod
Wash Capsule
Toilet, Air Entry, Cleaning Equip
Silo
Sleep Mat
Clothing Dispenser
Mech. Vertical Circulation
Transparent Pods


Wash Capsule
Toilet, Air Entry,
Cleaning Equip
Non-Static Eating Machine
Non-Static Learning
+ Wash Machine
Silo
Inflating Bench

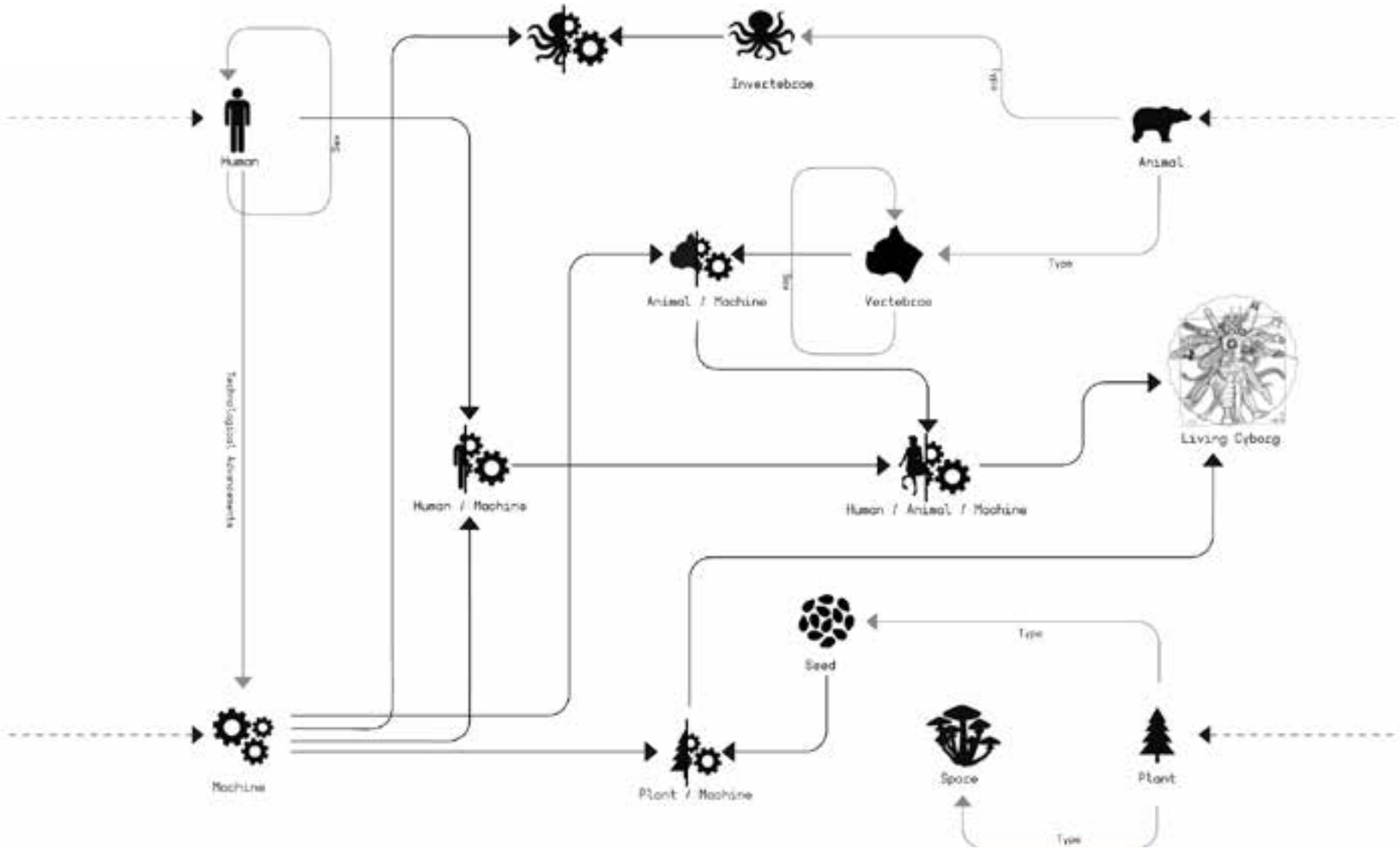
Communication Systems

New method of communications to develop inter-species relationships and generate new technology that can mutually protect all living species.



Reproductive System

New methods of reproduction due to the increase in average age and infertility



Reimagining the Future

Research by Maria Fernanda Rosario

Our project is responding to what will happen to the Earth's condition if we do nothing about climate change. Through our research, we discovered that the three major conditions that threaten the Earth are sea level rise, expanding tropical climates, and extreme arid and desert environments. This is in addition to toxic pollution. Following this research, we have selected three sites as our case studies: the toxic city of Norilsk in Russia for sea level rise, the slum in Port au Prince in Haiti called Cite Soleil as a tropical site, and finally the Kabwe Desert in Zambia as a desert site. With these three case studies we have investigated what the living conditions would have to be like to survive in these extreme environments.

Our proposal takes place in the year 2100. Using the case studies as investigative methods, we have selected the Kabwe Desert in Zambia as the most dynamic and diverse site in terms of pollution, toxicity, and climate change. Kabwe, an old mining city, is extremely toxic due to the lead mining that took place for decades, which have infected the soil and air of the people who live there. Zambia's climate is tropical with a hot, humid rainy season filled with terrible hurricanes and a dry season of hot scorching desert (Human Rights Watch). Homo sapiens, along with other living organisms, will have to evolve into an enhanced species in order to survive in these environments. Technological advancements have developed in a way so that the difference between what is natural and what is artificial can and has been blurred. The engagement between a living creature and a machine will continue to become more intertwined, to the point where every species will be hybridizing with technology. Our day to day way of life will have to adapt beyond typical human needs to address the needs of a fluid, human-machine hybrid.

When studying the sites that help us reimagine the future, the main programs that need to be addressed are housing and transportation. Humans will not be able to live in the traditional housing that we know of today; these new dwellings will have to be able to support the extreme environments that they will live in. Even though humans in this future will be enhanced, they will need homes that are accustomed to the new lifestyle. The new human will be parallel to its home, where all living needs will accommodate the designated species. In terms of the city scale, when the new human needs to travel from one environment to another there will have to be extreme regulations, checkups and medical analysis so there is no threat of a disease or poison moving from one place to another. The new human will need an exoskeleton that will aid its movement through the harsh condition that the Earth is now in.

We will never stop being human, but biology and technology will end up absolutely mixed with nature. It will start with genetics. In 2100, a person may design their baby based on a catalog of genes that have been approved by the government. The parent can decide the color of their hair, their height, their complexion and even some personality traits. There

could also be a program that analyzes a baby's DNA and shows what her face would look like, the structure of her body and her personality (Kaku). That is the landscape that scientist Michio Kaku describes in The Physics of the Future.

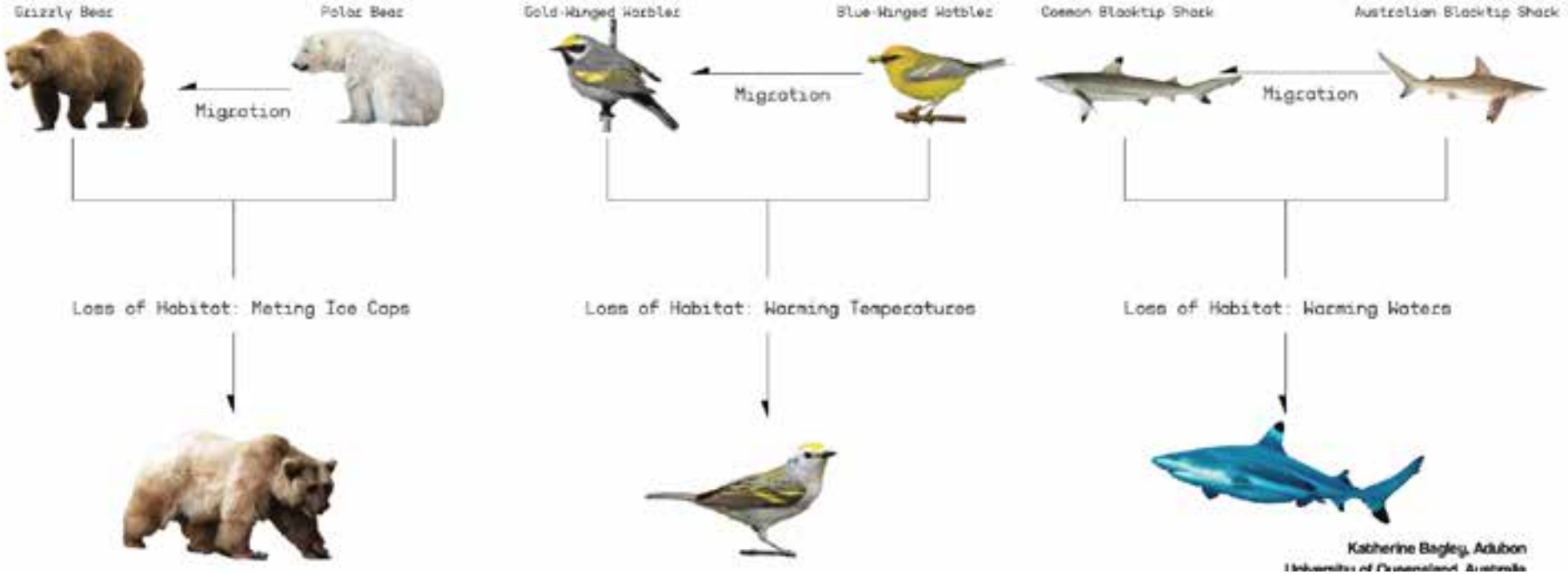
The SENS Foundation and gerontologists such as Aubrey de Gray have spent years investigating how to repair human organs and tissues to lengthen the time of their functioning. The first steps are taken and this will extend human existence to unthinkable ages. In just a few decades, life expectancy can be doubled (Hill). Before, such advances required thousands of years because evolution occurred in a linear fashion. Now, instead, it is exponential. Technology will help prevent and cure many diseases that today are impossible to cure. A non-functioning organ will be replaced by a new one constructed from healthy patient cells. The impression of human organs is already undergoing experimentation. Regenerative medicine specialist Anthony Atala has even printed a kidney live in a TED talk in 2011 (Atala).

In the last couple of years, we have seen the rise of technologically enhanced ways of making, like CNC machines, 3D printers, and robot arms among others. Each of these advancements have been developed to the point where, even today, it is feasible to build things like houses at a fast pace and more importantly, with minimal human input or influence. Based on the emergent ecological scenarios, not every type of material is ideal for each individual climate. Something as primitive as compressed earth blocks are ideal for tropical climates because of their permeability towards insects and mosquitos, their abundance, and because they are less subject to overheating and dampness when compared to concrete. Similar to clay 3D printers, the earth solution used to make these blocks can be reworked chemically to be 3D printed as well as manufactured into bricks (Rabie). For a desert climate air filtration from dust storms is very important -- thermodynamic principles can be used to filter dust and pollutants from air. Where there are toxic particles in the soil and frequent dust storms, a building made up of this filtration system would benefit from these conditions. The winds from the storm that are now freshly cleaned can be used for wind-powered energy and to breathe (Peckham).

The German designer Markus Kayser has developed a very special 3D printer that works by taking advantage of sunlight and desert sand to build glass objects and figures. Glass is the resulting solid after heating and melting the minerals that make up the sand at high temperatures. Handled properly, the sun's rays can melt it. 3D printers work by melting some type of material, usually plastic, which is placed layer by layer successively until completing a solid three-dimensional object. The material used can be injected in a similar way as a conventional printer does, by injecting liquid ink onto the paper. 3D printers can also work by projecting a highly accurate laser that heats and melts plastic powders and similar materials such as liquid resins or metal powders that melt with great accuracy and solidify as desired (Kayser).

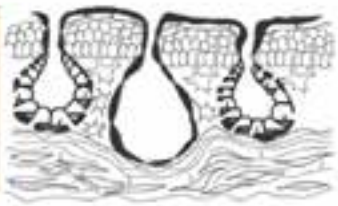
Hybrid Species Analysis

Our understanding of the fundamental change that humans will go through was based in part on our investigation of possible hybridizations of species that thrive in extreme conditions. We isolated the anatomical qualities that help them survive, and performed a hybridization exercise to generate possible dwelling or suit enclosure conditions.



Ochre Sea Star

Dyeing Dart Frog



Side-Blotched Lizard

Skin System Hybridizations

Shinigami

Xenomorph

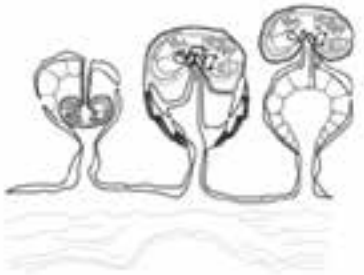
Pan's Pale Man

Medusa

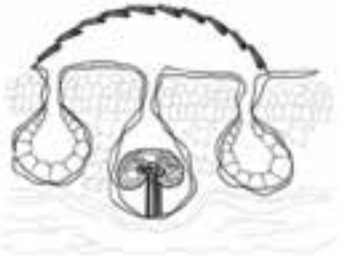
The Predator

Yomi

King Ghidora

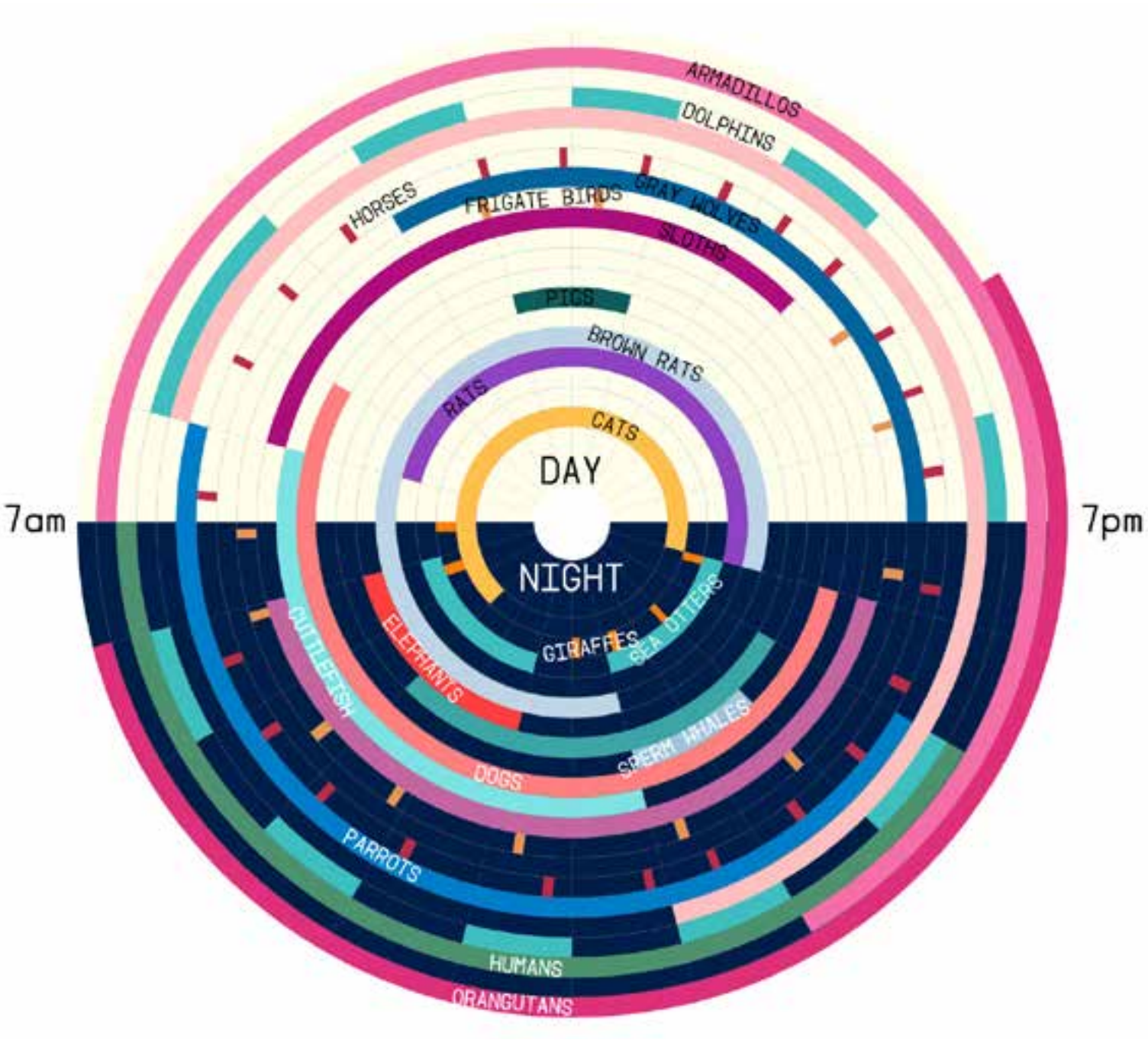


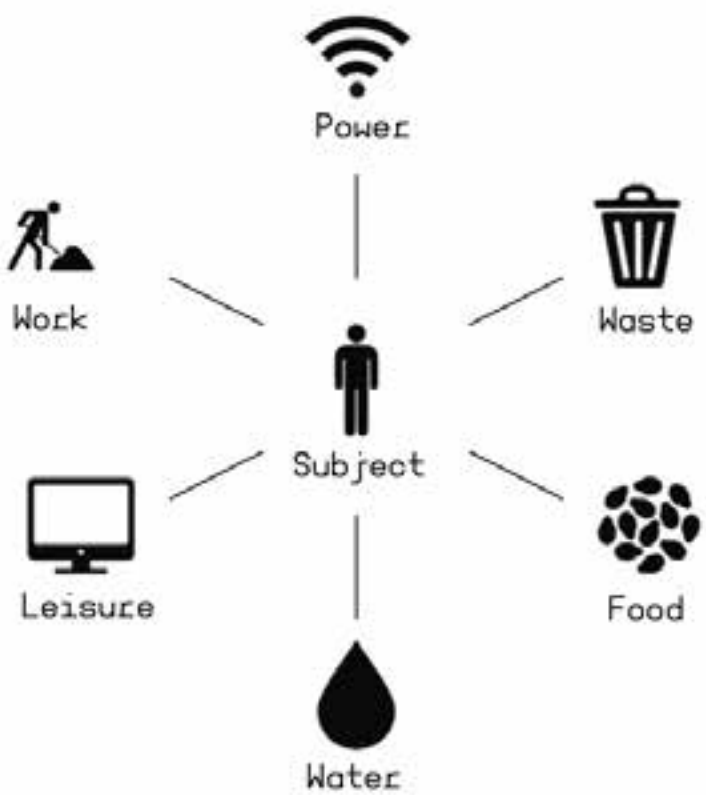
Clover

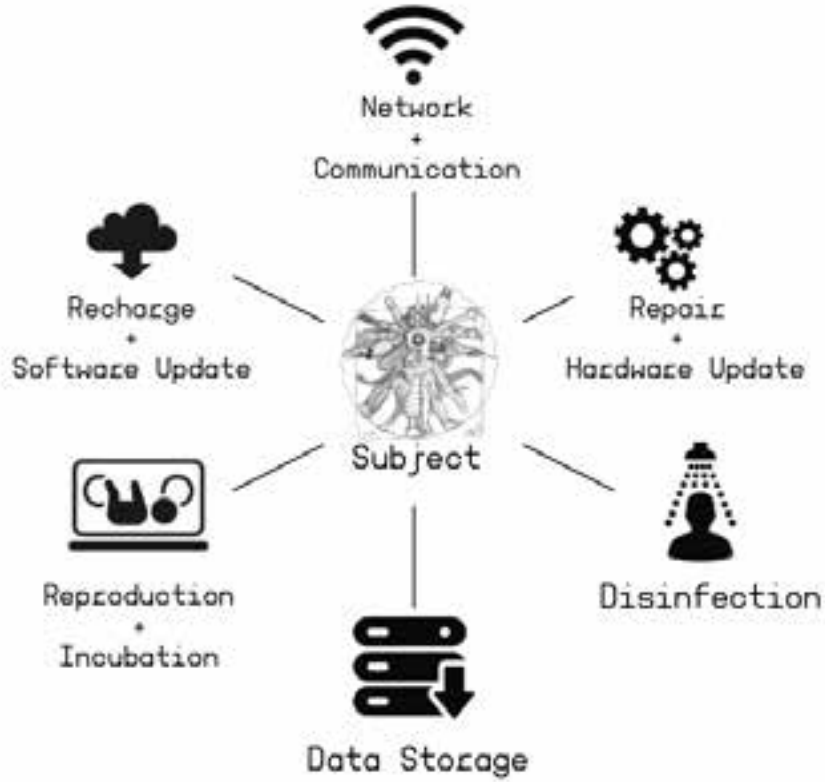


Kaiju

Living Requirements




Power
Work
Waste
Subject
Leisure
Food
Water


Network
+
Communication
Recharge
+
Software Update
Repair
+
Hardware Update
Subject
Reproduction
+
Incubation
Disinfection
Data Storage

Toxic Landscape

Image by Tom Hegen: The Coal Mine Series (http://tomhegen.de/fotodesign/the-coalmine-series/)

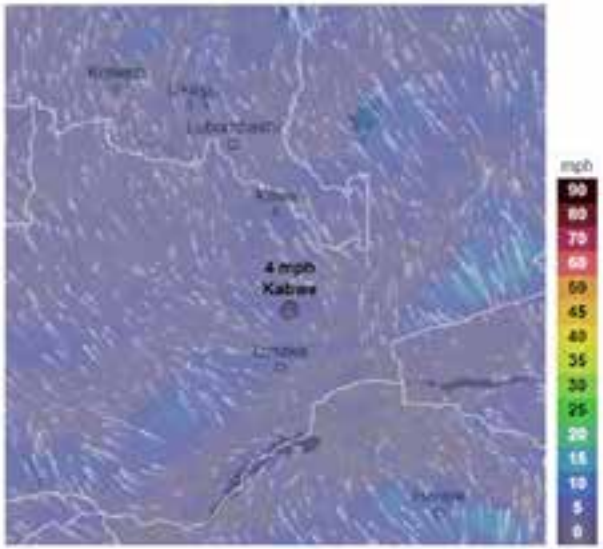
Selected Site: Kabwe, Zambia

Image from lifegate.com

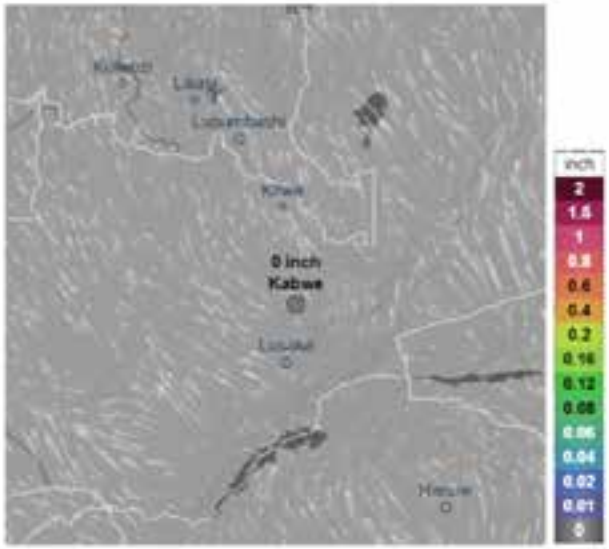
Kabwe, Zambia

Kabwe, Zambia provides a glimpse of the common future conditions of planet earth. Its mining exploits have made it into one of the most toxic places on the planet, poisoning its people and its soil with lead. That poison has turned the town into a scorching desert wasteland with little to no vegetation and animal life. This site creates the perfect combination of things to test what our future will look like. It combines a tropical climate filled with diseases and hurricanes with a toxic desert where the soil is poisoned with lead from the mining exploits of the town.

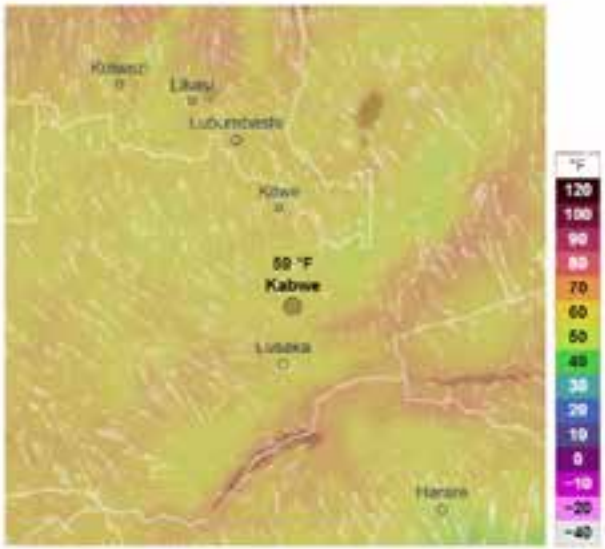
Wind



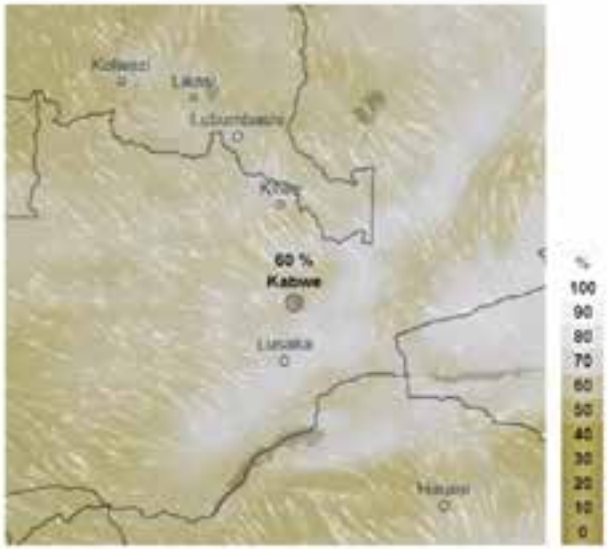
Precipitation



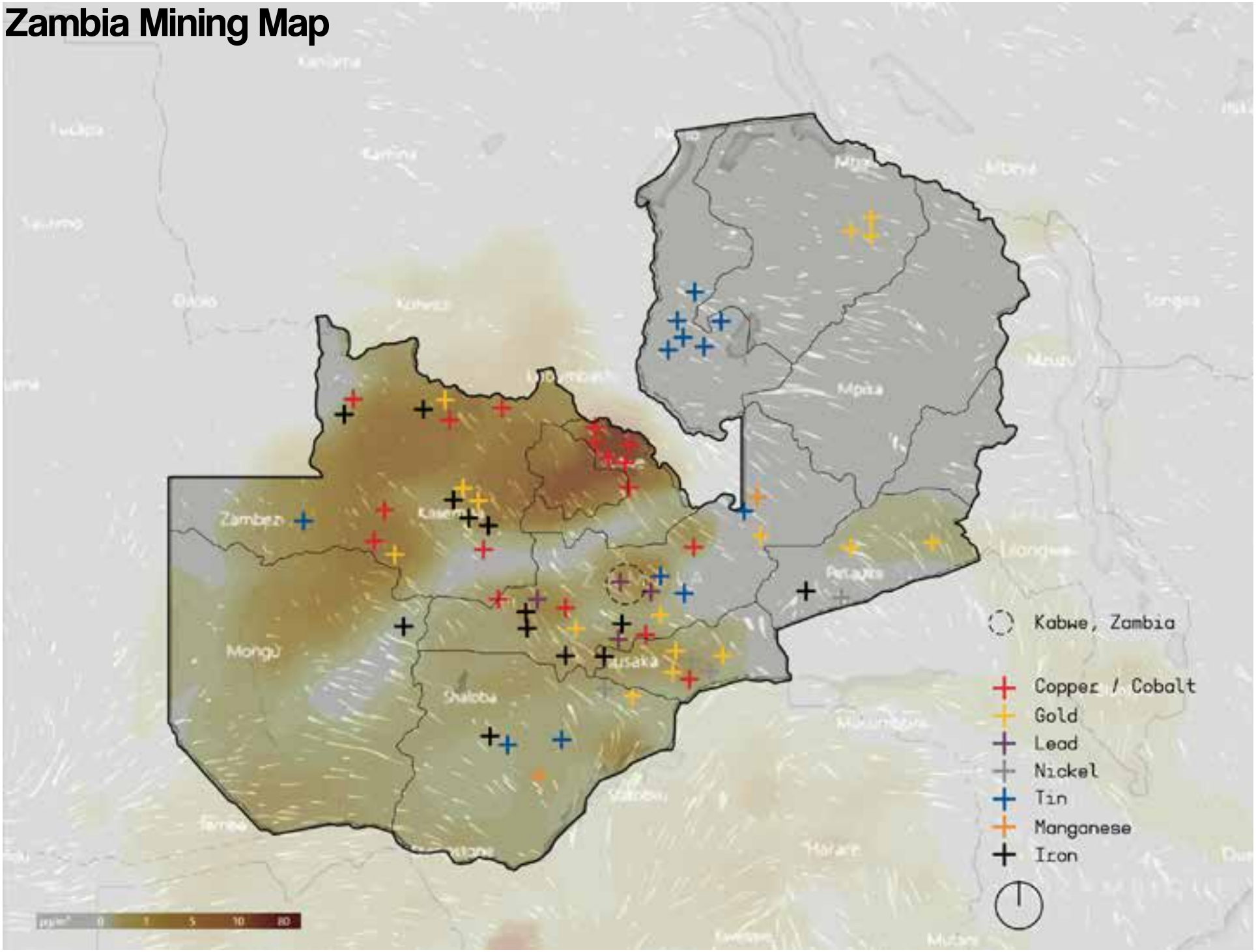
Temperature



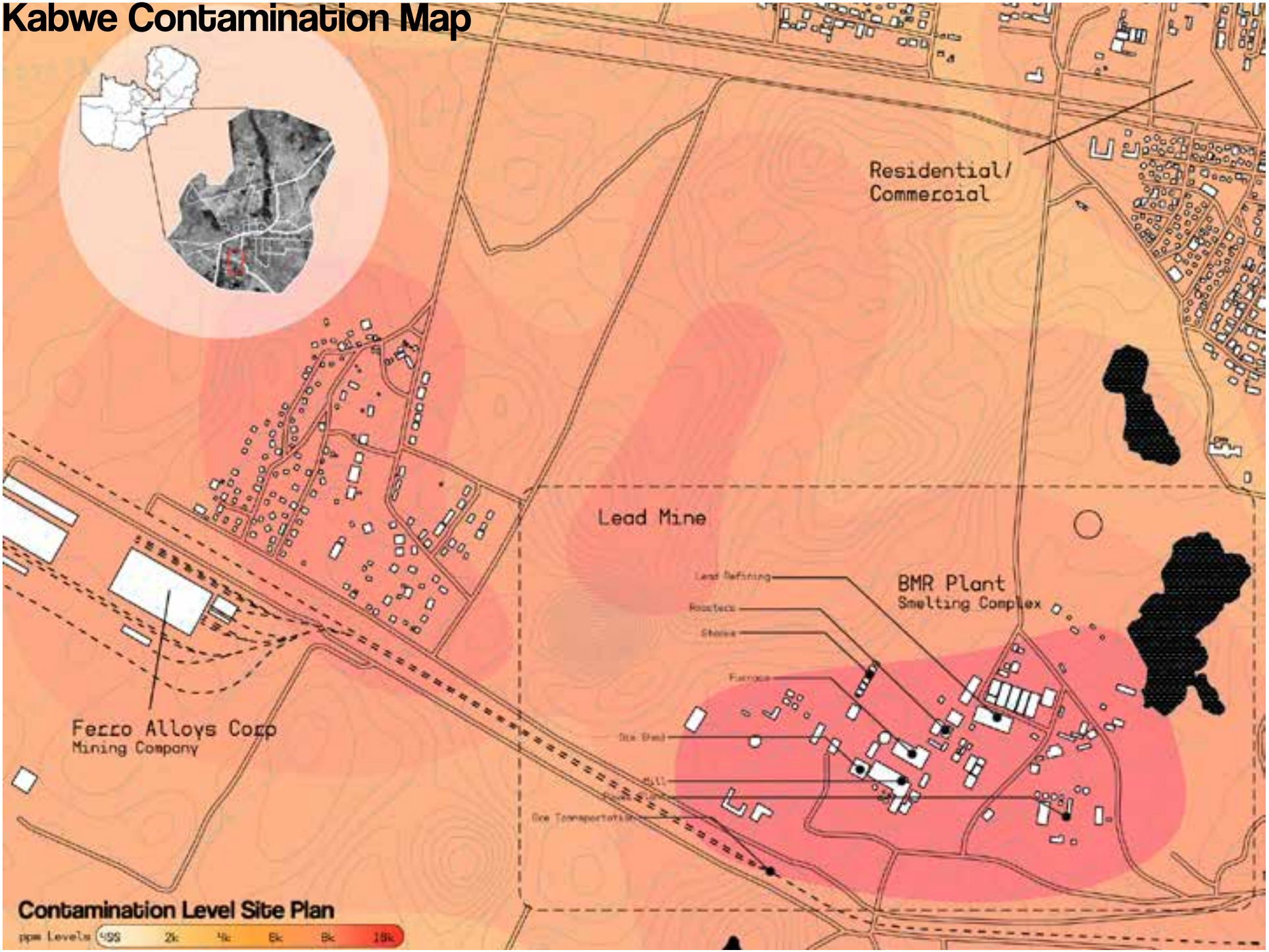
Humidity



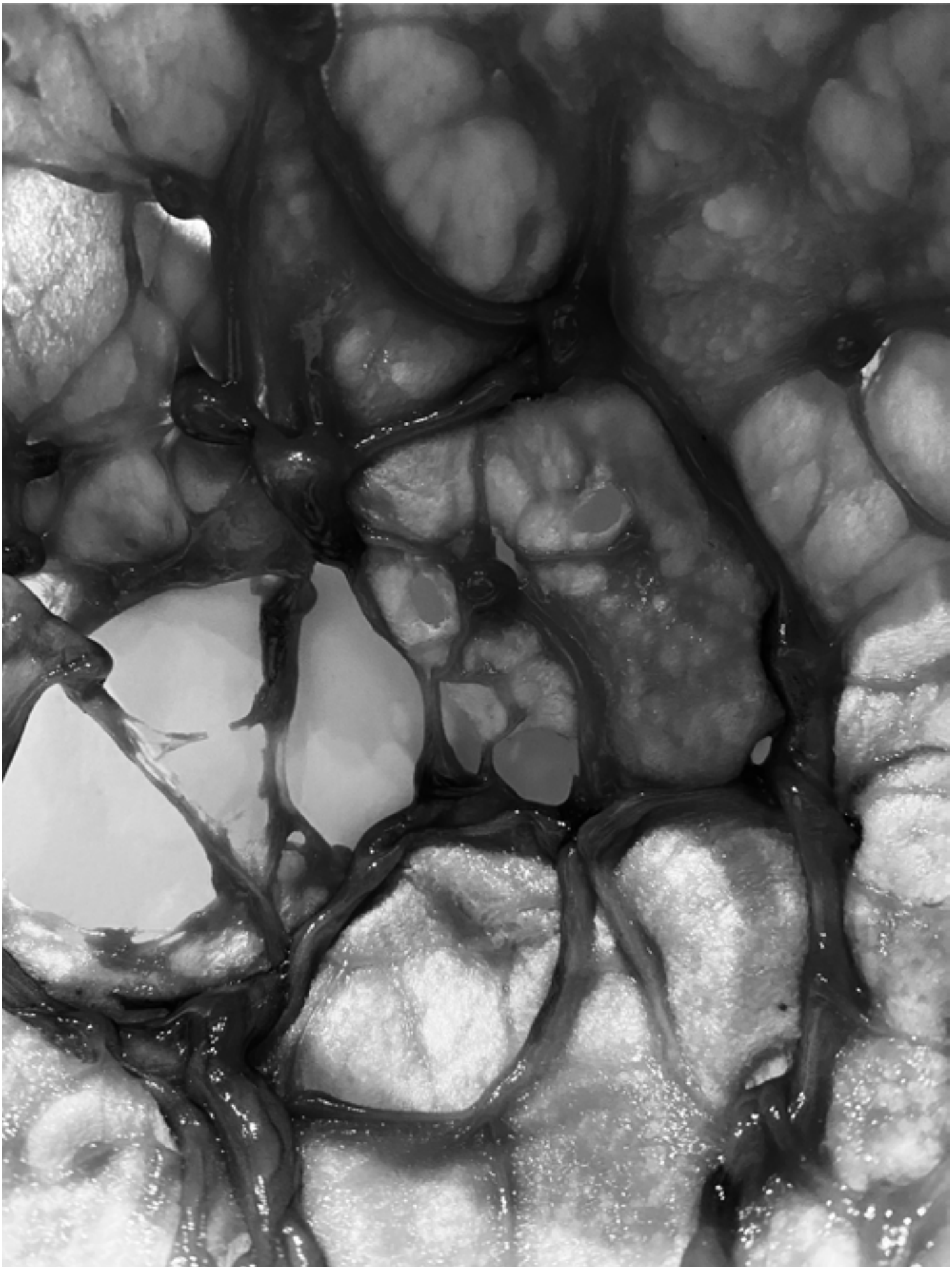
Zambia Mining Map



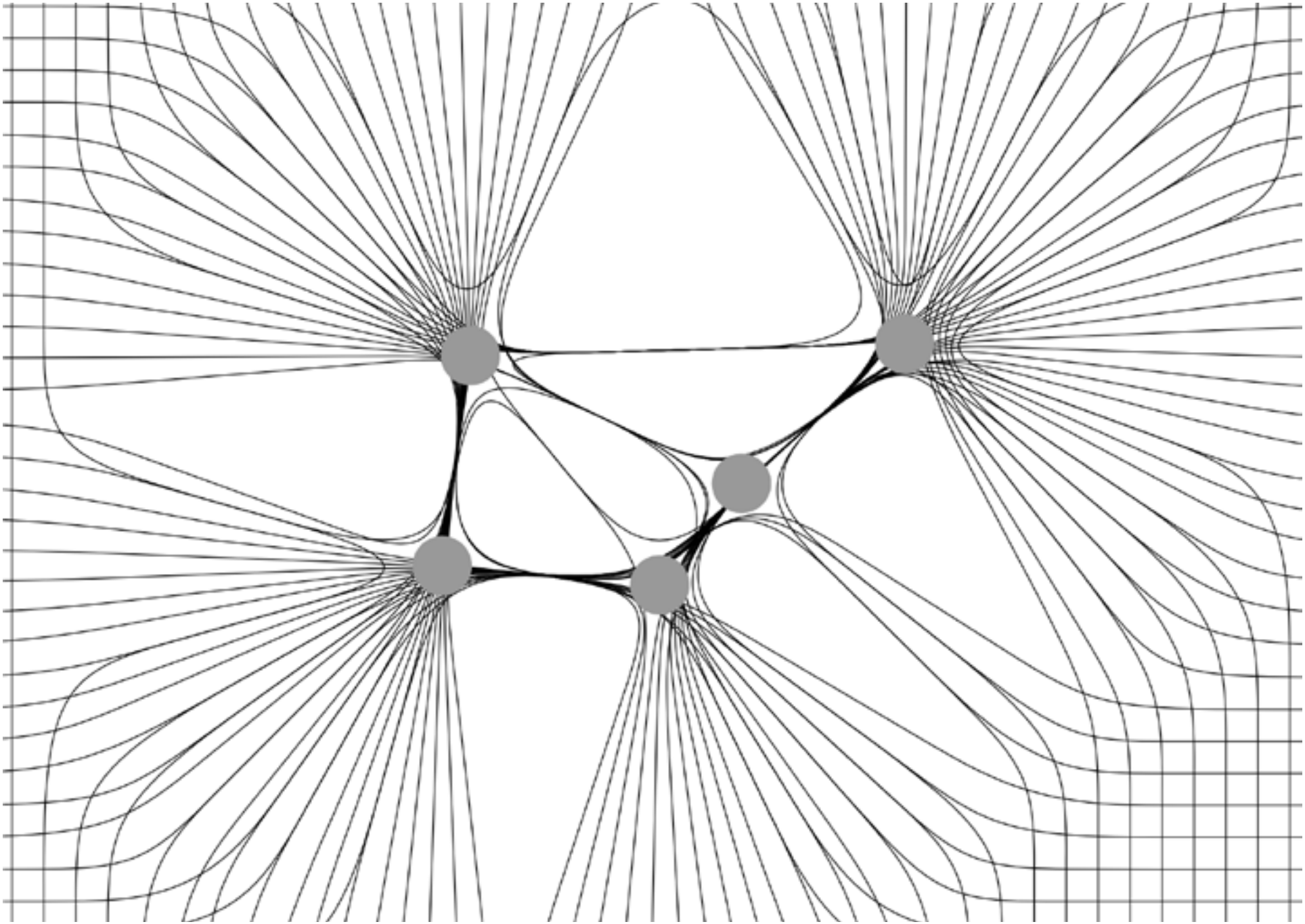
Kabwe Contamination Map



Interconnected Systems



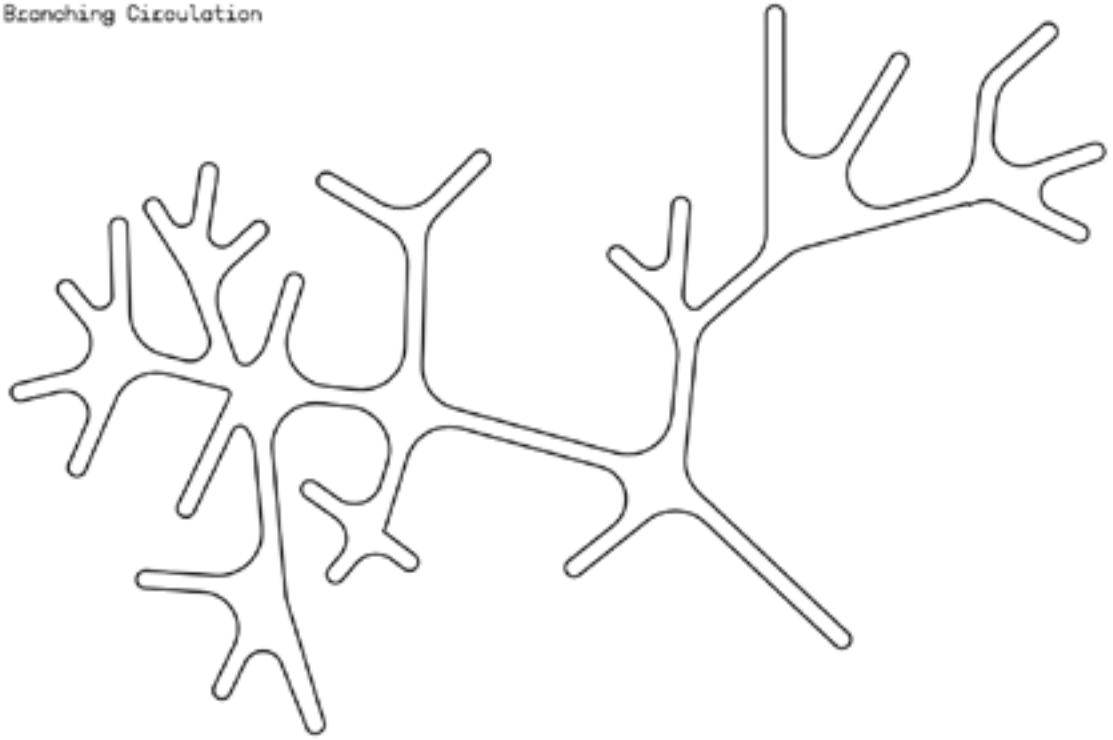
Transformation and Growth



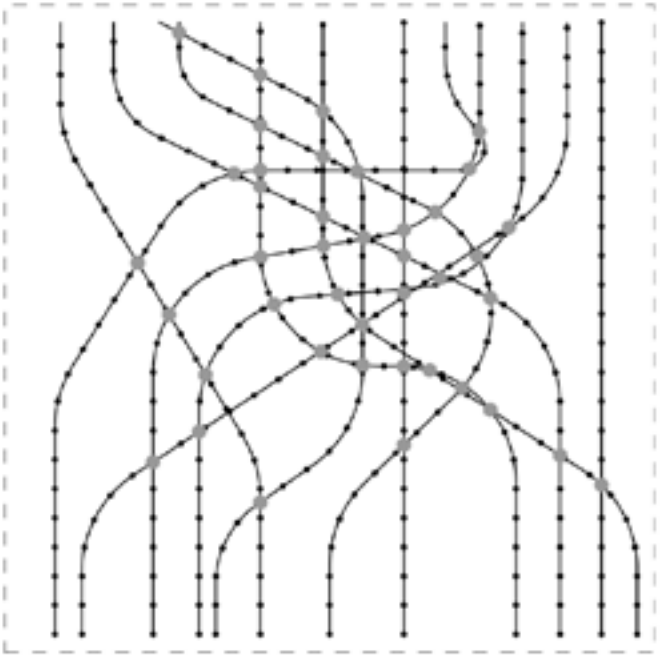
Time/Use

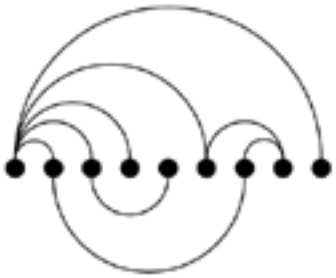
Conceptual anaylsis of interconnectivity

Branching Circulation

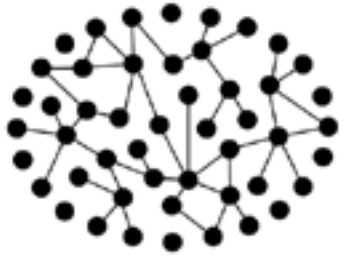


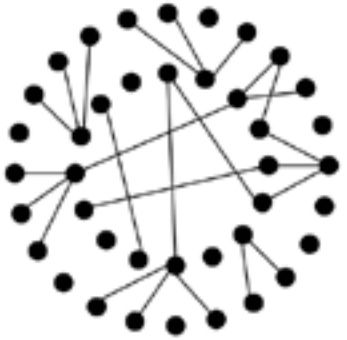
Flow Chart





Connections Between Habitats





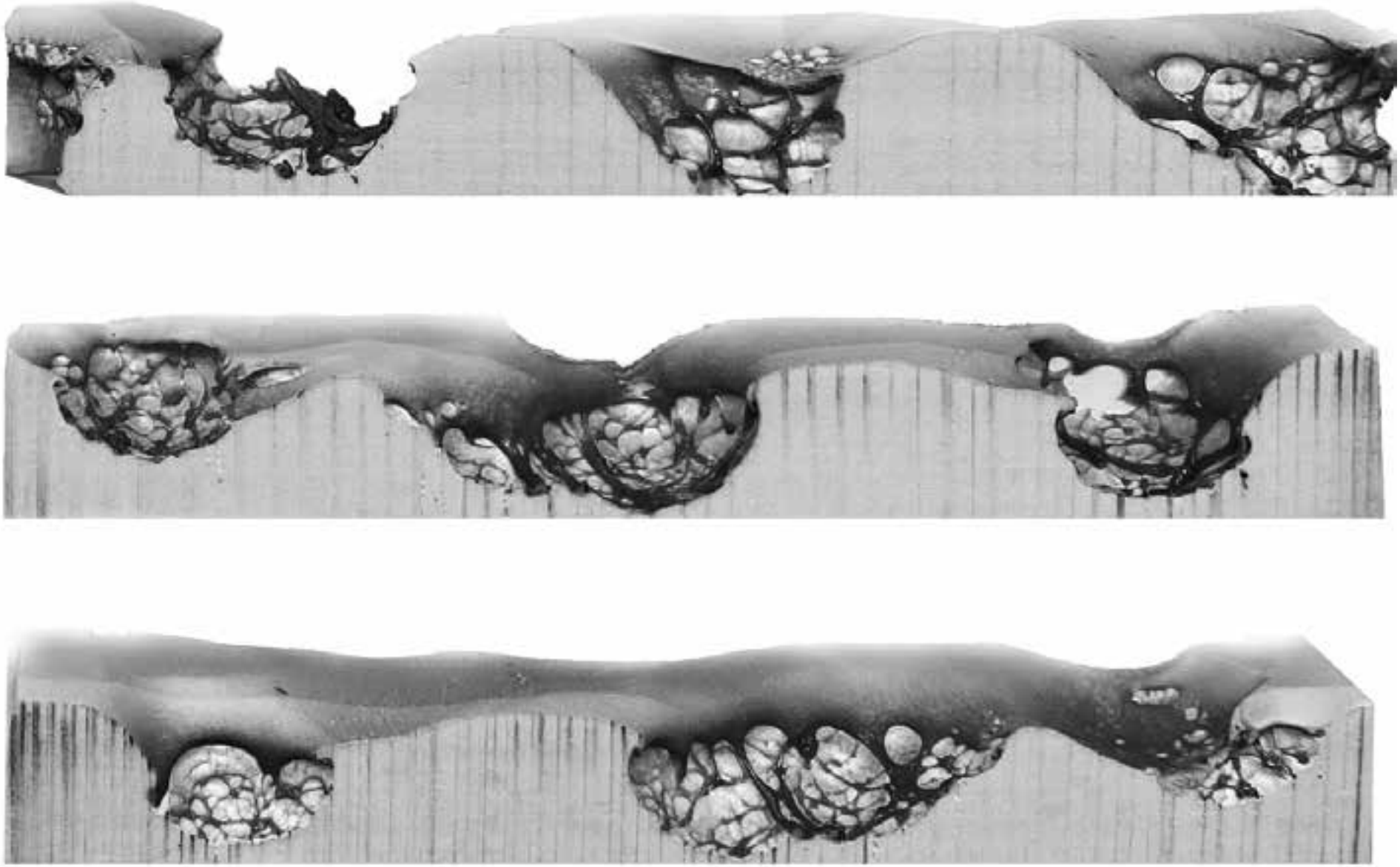
System Studies

Interested in interconnected relationships between humans, non-humans, nature and technology we studied ways of developing a system of growth and connectivity for this developing community. (page 54-55)

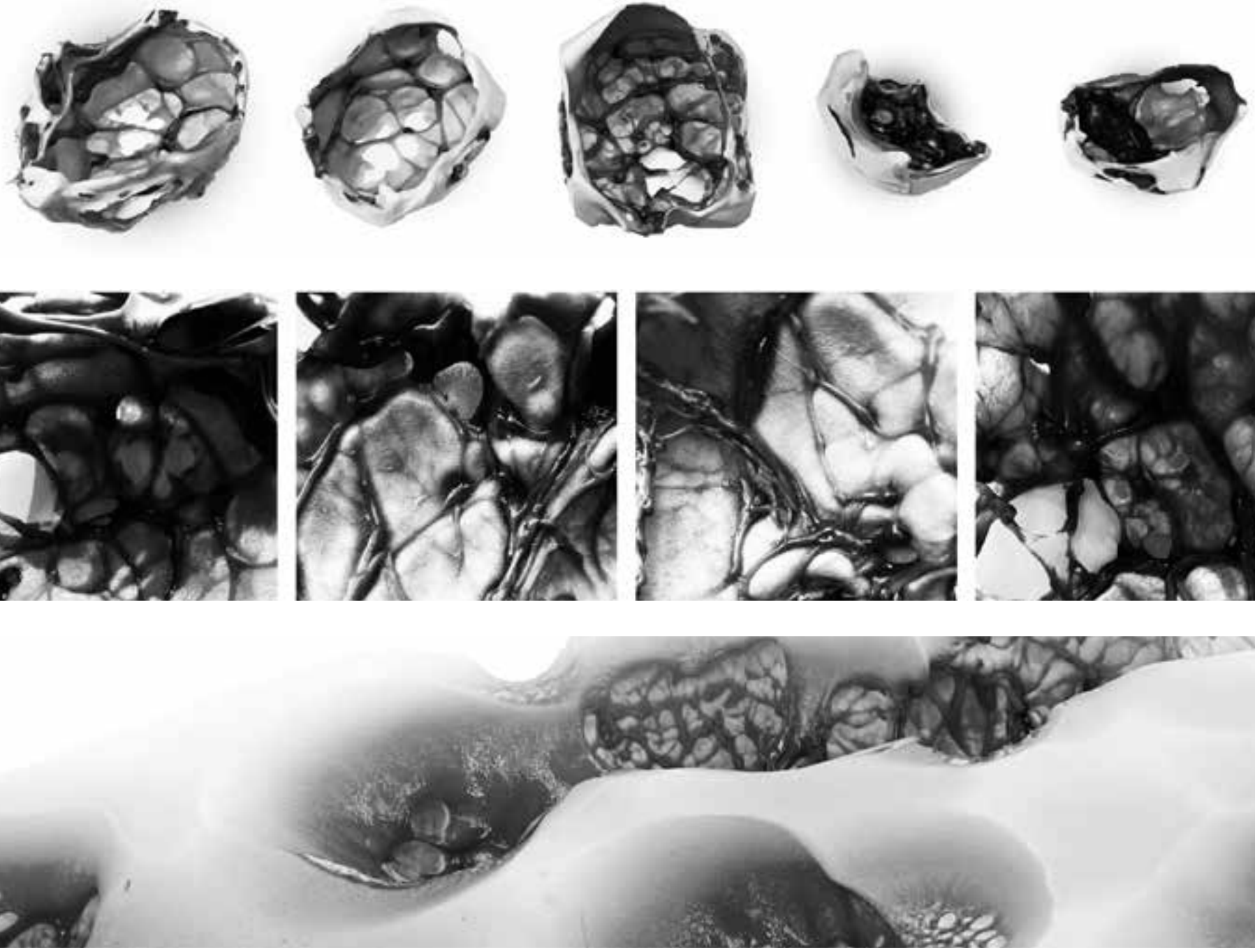
We look at different possible relationships between each dwelling and how one related to the rest maintaining an ideal balance between distance and connection

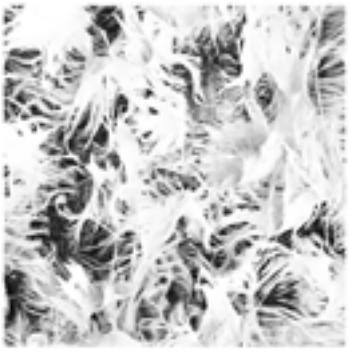
These models were made by using blue foam and using a heat gun to melt it. The foam studies helped further develop that variation of density with the added variable of three dimensionality that our site could have. It helped see how the system would handle terrain and how well it could stretch and adapt.

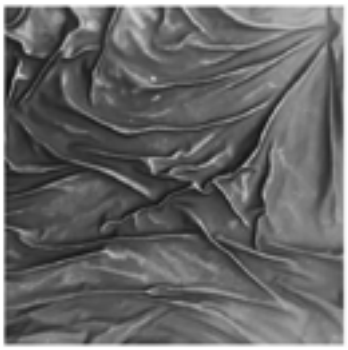
Sectional Studies of Craters



Material Studies



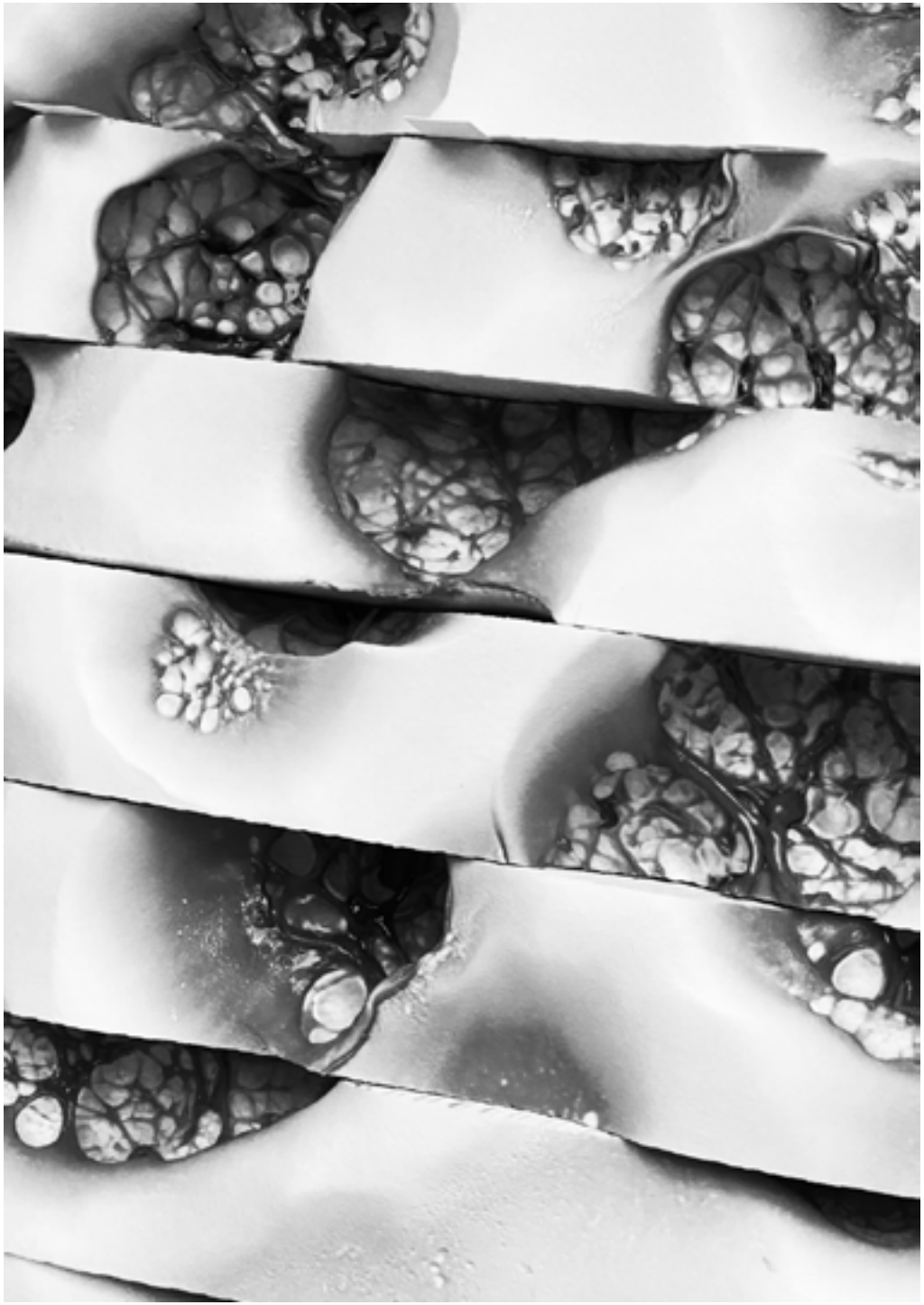




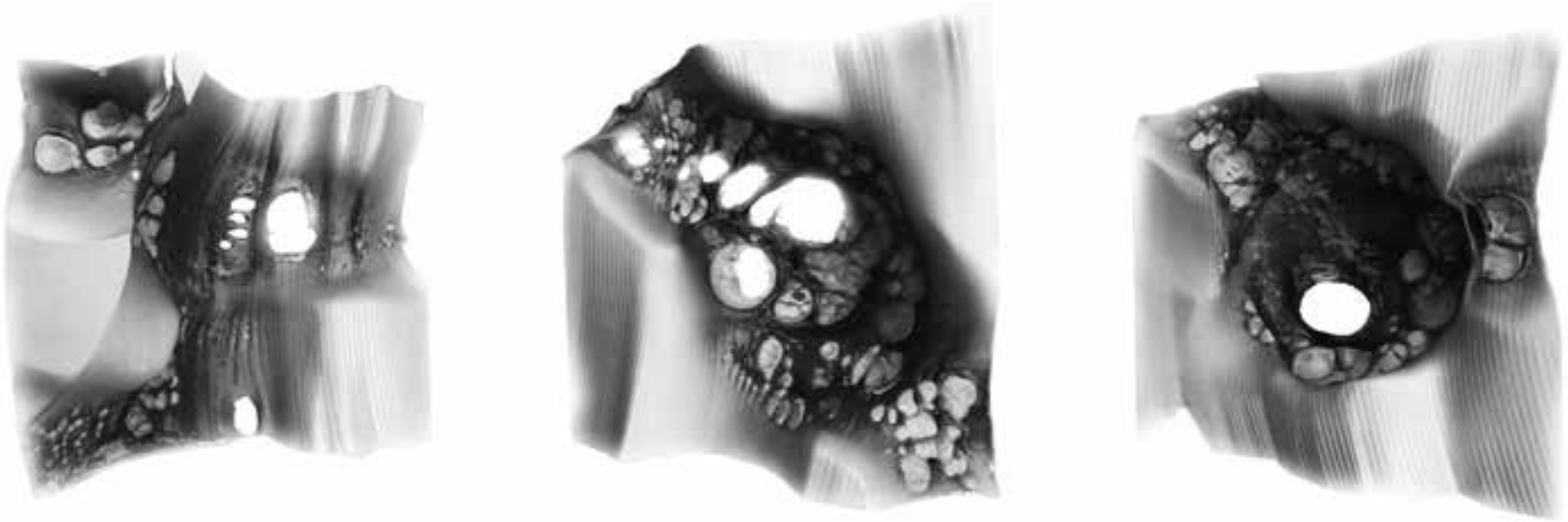
New Dwelling

With traditional architecture no longer being suitable for this vulnerable hybrid subject, our architecture provides an interconnected series of systems that creates a suitable and more supportive enclosure for the new subject to inhabit.

The introduction of the new subject requires us to rethink the traditional dwelling into a series of layered fluid systems that suit the needs of both the biological and mechanical aspects of the new subject. The architecture not only will provide protection from the new elements but it is formed specifically to minimize the enhanced subject's limitations and maximize its efficiency. It introduces a new programming that serves multiple purposes while also being hyper-specific to the new subject's physical and non-physical make-up.



Landscape studies



Virtual interpretation of landscape becoming architecture

New Dwelling

A Response to the Crisis

We believe that, given the ongoing climate crisis, the hubris of human nature will cause irreparable damage to our planet in a way that will force us to drastically reinvent our way of life. The devastation caused by climate change will force all living species, especially humans, into a new process of evolution, for better or worse. We claim that climate change will force rapid changes in human anatomy and behavior, and that humans will need to develop technologies to make up for their new evolutionary shortcomings.

Our project does not aim to undo the damage that humans have done to the planet, but to help humans survive in the toxic environment that we have created. It provides a sanctuary at multiple scales to support the new state of users in a new hostile environment. Humans, unable to evolve fast enough to keep up with the changing climate, will rely on adaptable technology and architecture. They will need a suit to provide that safety and protection in the exterior and in the new home that has adapted to that new climate. This home being a system of veins that grow into occupiable dwellings that provide the new vulnerable subject with clean water, air, energy, waste disposal, and protection.

Kabwe, Zambia provides a glimpse of the common future conditions of planet earth. Its mining exploits have made it into one of the most toxic places on the planet, poisoning its people and its soil with lead. That poison has turned the town into a scorching desert wasteland with little to no vegetation and animal life. The mines and refineries of Zambia are the hotbed of the area's toxicity where the project attempts to provide safety and support for the new occupants of these extreme conditions.

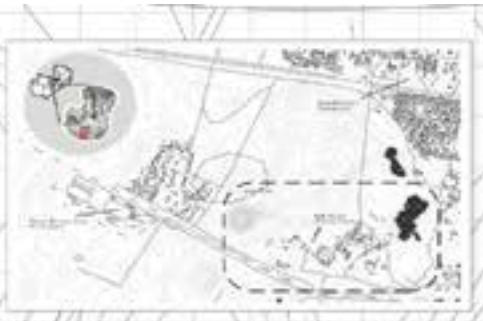
As a response to the contamination, we created a landscape of veins that carry systems and spread out throughout the site, and in specific places growing into enclosure to provide a suitable and supportive enclosure for the new subject to inhabit. The dwelling is made of a system of layers, where each provide specific amenities and functions while also increasing the level of protection from the outside conditions with each added layer. The dwelling is divided into four layers. The core is the first accessible place where the human decontaminates before entering the rest of the building. The next layer is where waste gets filtered, from garbage, bodily waste and exterior pollution. The third layer is the energy veins, that provide a source of energy for technological augmentations. The outermost layer is a water system that collects rainwater and morning dew and is easily accessible to other species and traveling humans.

In terms of technology, the growth of the system stems out from multiple 3D printers that use the available soil as material to print the veins. It grows by scanning the immediate context and building towards the most toxic areas. The outer system transports water and the cavities filter the toxic air for the building while the next layer uses that air to generate energy.

With this new type of dwelling system, we hope to provide a new means of survival that was lost as a result of this altered state of the planet by developing a dialogue with other species and implementing their adaptable methods of survival to our technology. We are going to have to accept the fact that things can't go back to how they were and that the destructive habits of humans can't be so easily changed. We question the notion of technologically advanced utopia where all our problems are fixed and choose to prepare now for the looming hostile environment that will consume our world and that us, as humans, have mapped out.


Water Collection
Toxin Filters
Smelting Complex
Energy
Water
Food
Waste
I'm not crazy, my reality is just different than yours

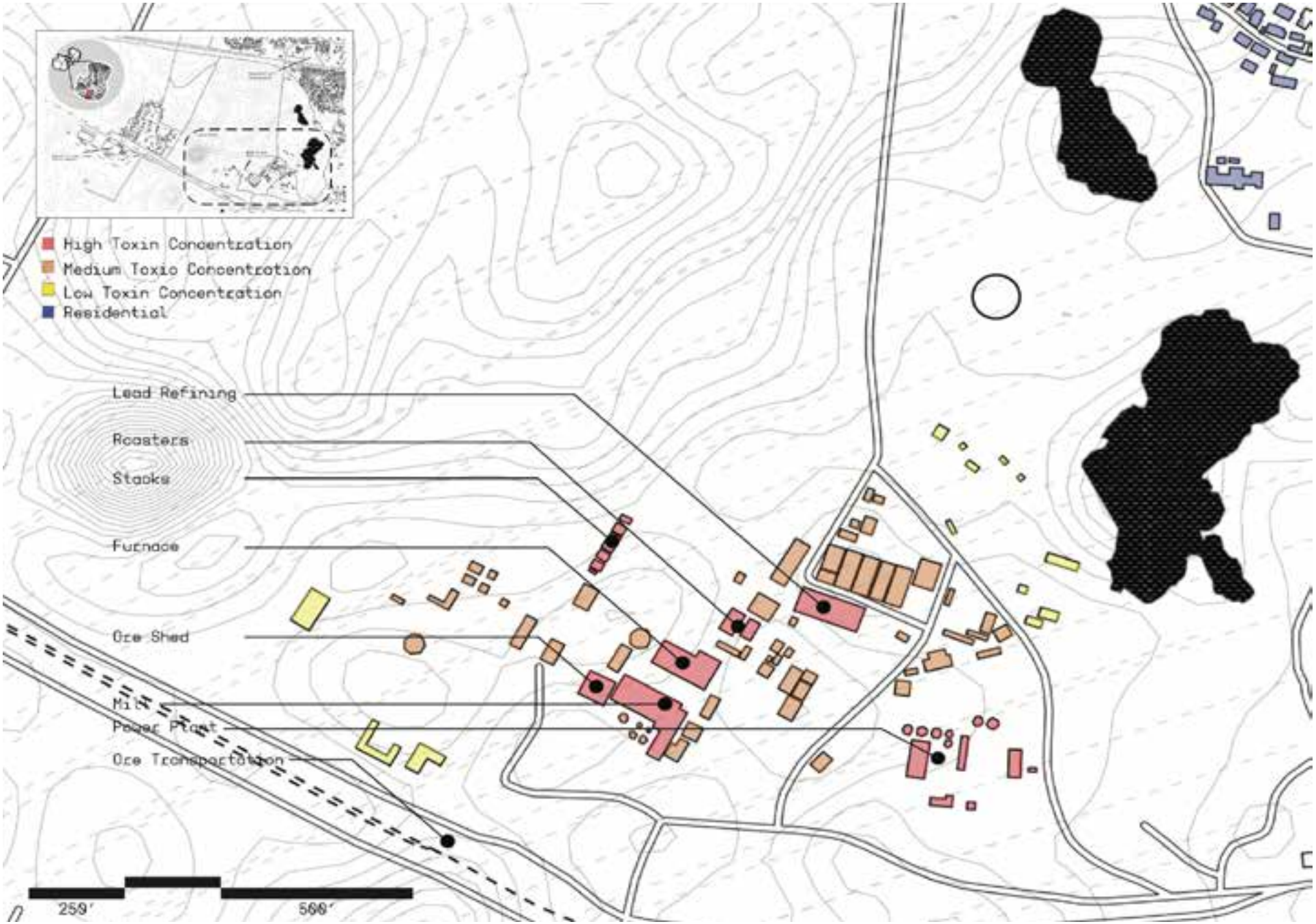
Selected Site: Kabwe



The mines and refineries of Zambia are the hotbed of the area's toxicity where the project attempts to provide safety and support for the new occupants of these extreme conditions.

This site plan shows the densities of contamination located within a mining and smelting complex in Kabwe. Toxins here are 25x higher than the legal limit, the culprits can be these three main entities: The mining company station, the mine, and the smelting plant. The smelting plant being the main source of toxicity.

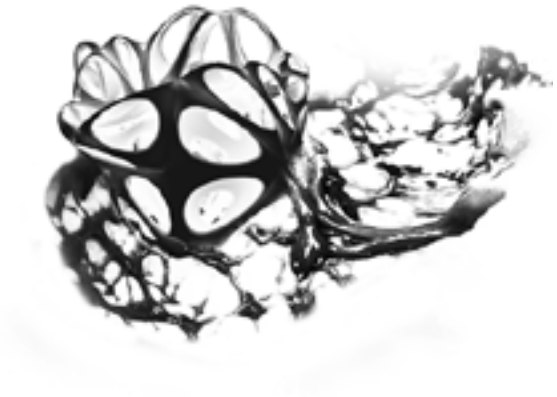
Kabwe: Main Entities

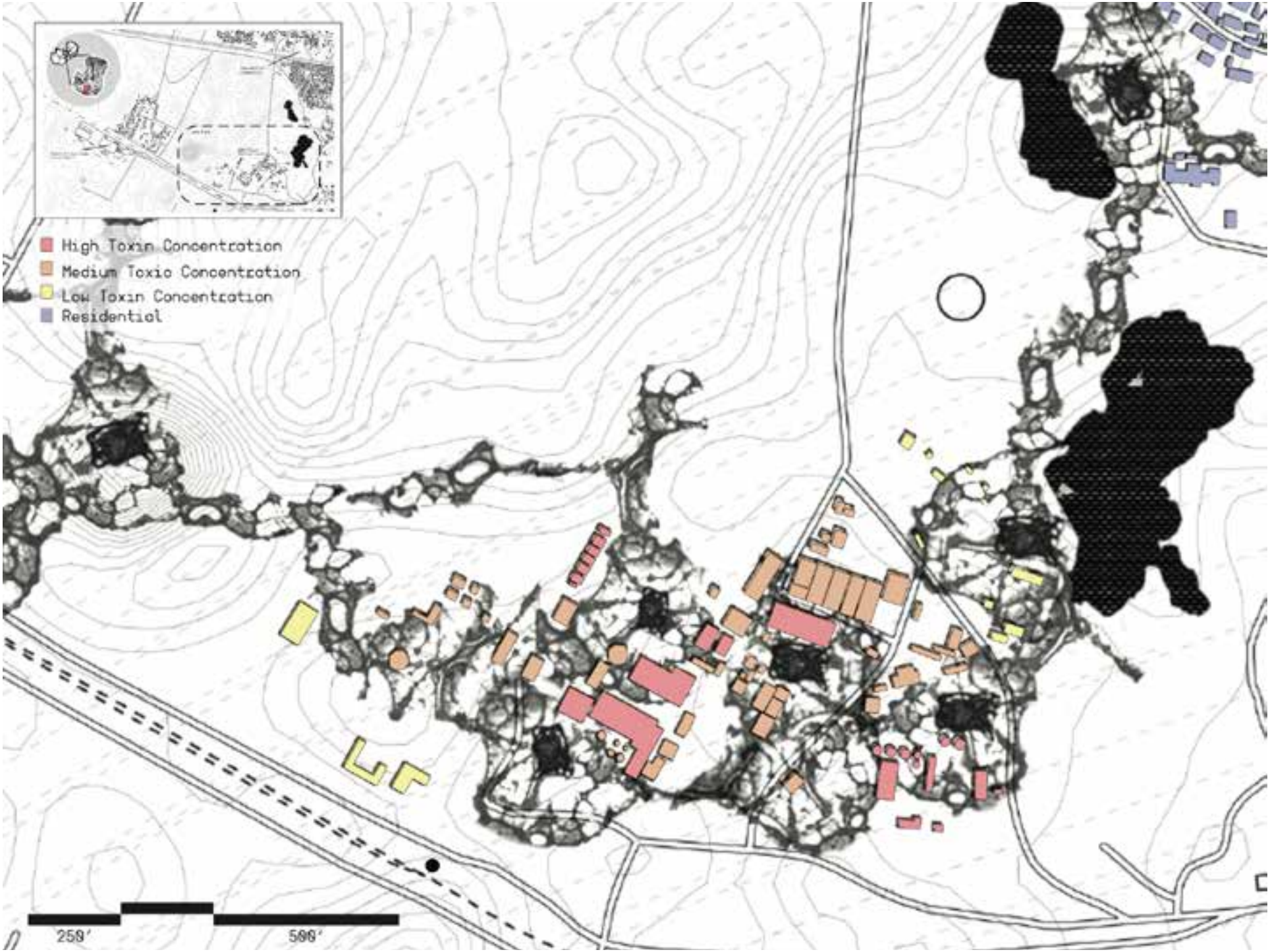


Interconnected Habitat

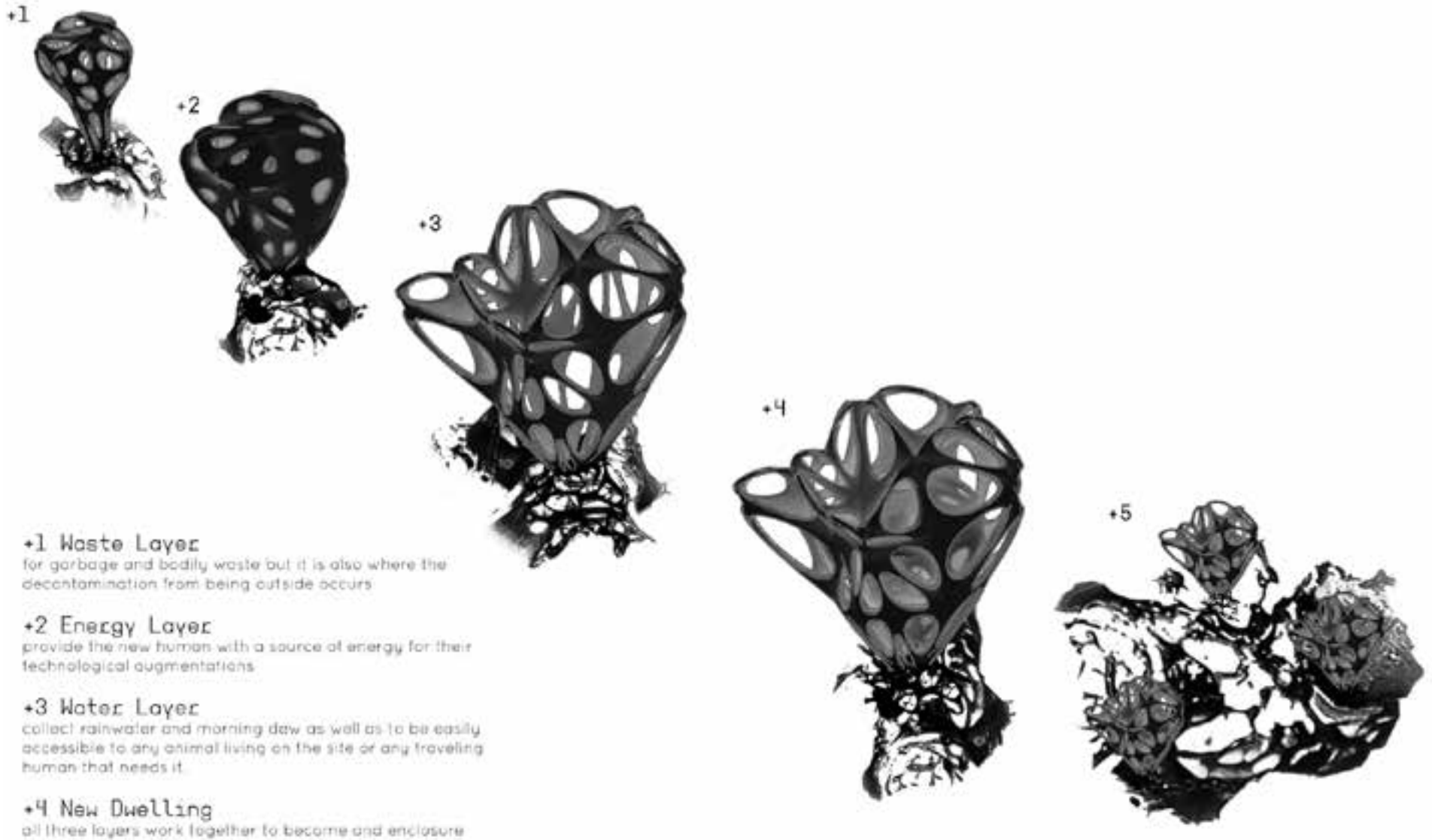
As a response to the contamination, we created a landscape of veins that carry systems and spread out throughout the site, and in specific places growing into enclosure to provide a suitable and supportive enclosure for the new subject to inhabit.

Series of sequential diagrams explaining the expansion of the vein system. Starting with 3D printing tech, developed by Markus Kayser, that uses the sun and the existing soil to "grow" and build the veins into one dwelling and then into two, etc. until eventually growing into a community.




High Toxin Concentration
Medium Toxic Concentration
Low Toxin Concentration
Residential
259'
598'

Systems Performance



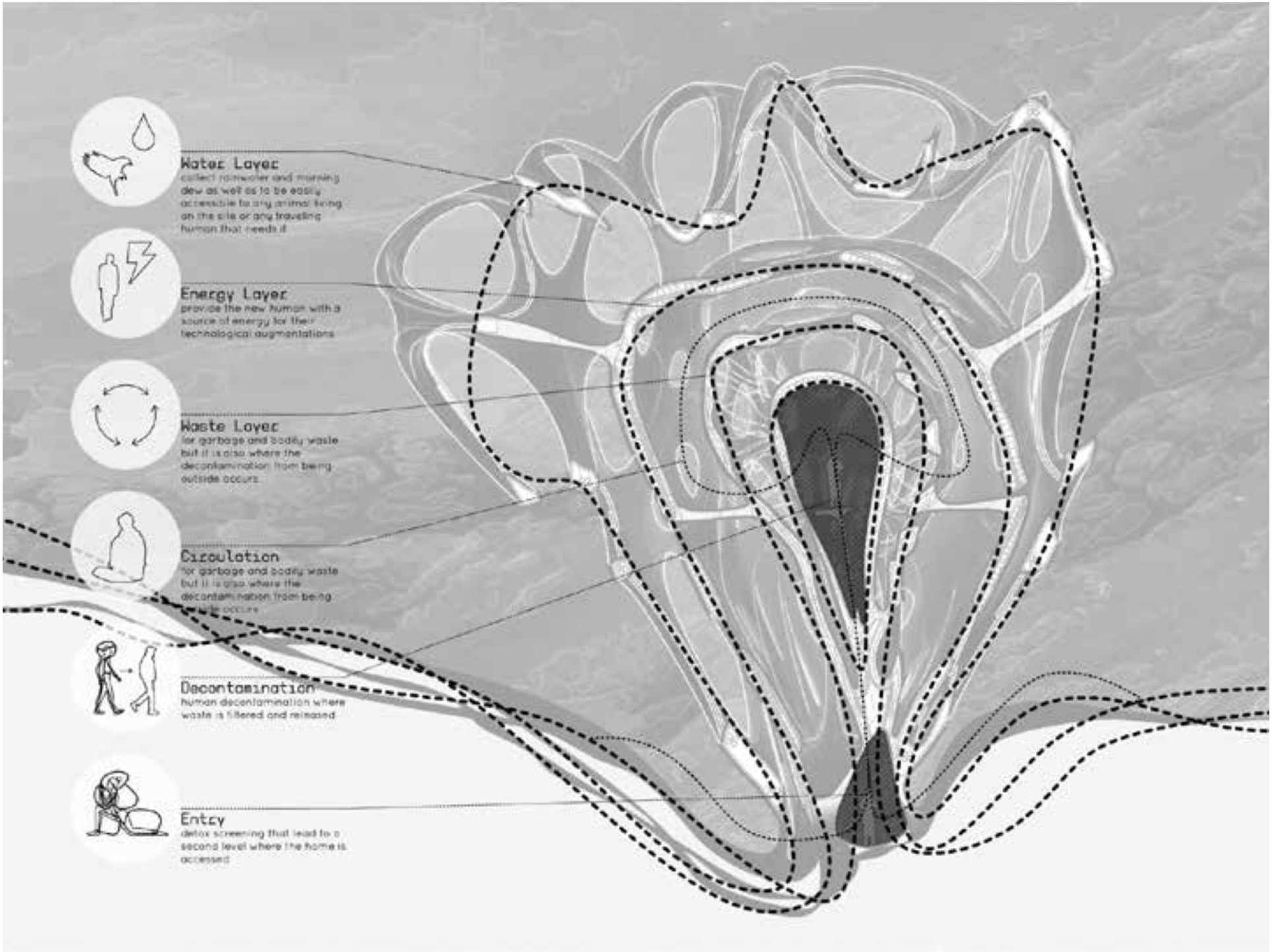
+1 Waste Layer
for garbage and bodily waste but it is also where the decontamination from being outside occurs

+2 Energy Layer
provide the new human with a source of energy for their technological augmentations

+3 Water Layer
collect rainwater and morning dew as well as to be easily accessible to any animal living on the site or any traveling human that needs it

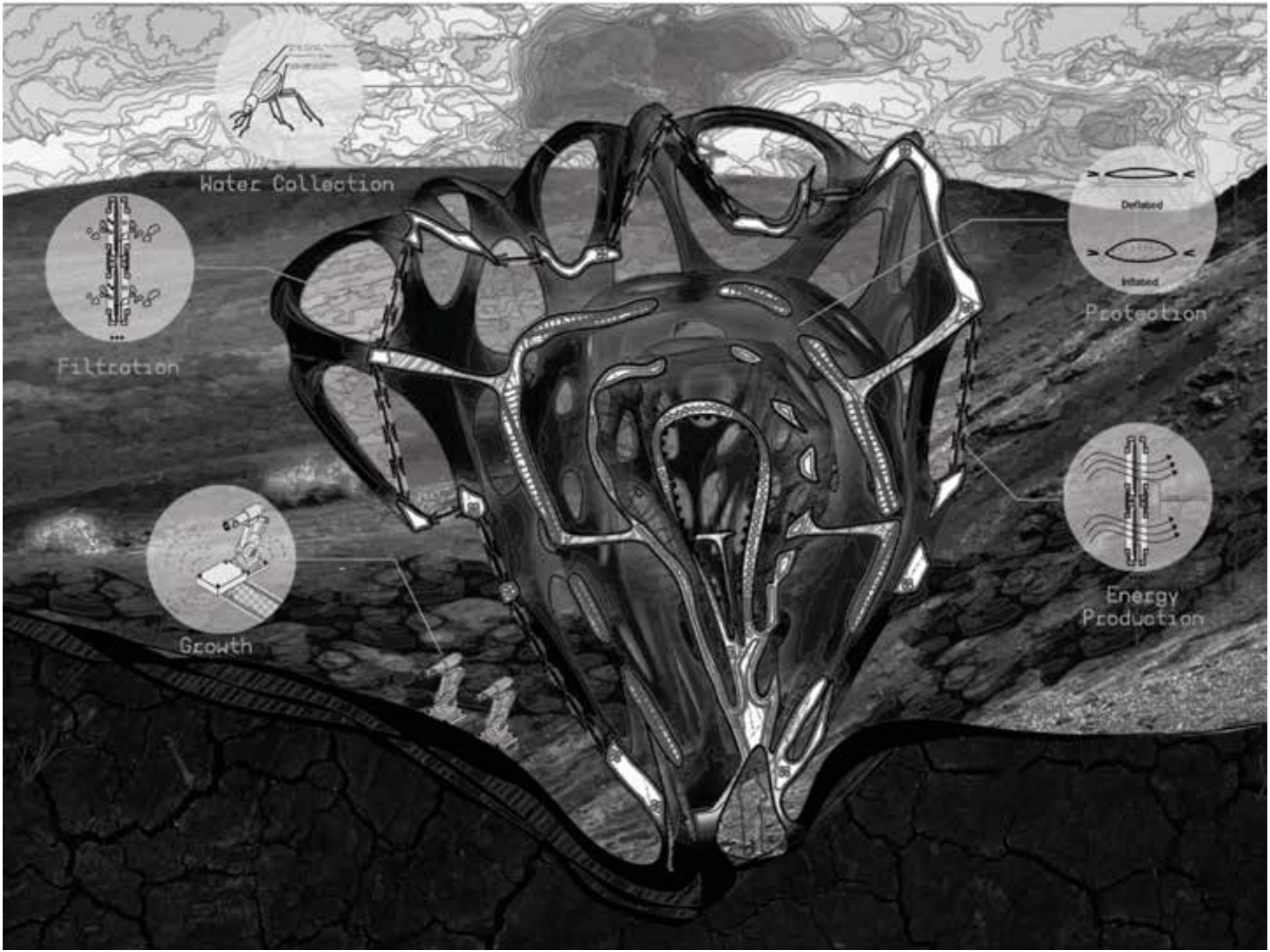
+4 New Dwelling
all three layers work together to become and enclosure and protective space for new human

+5Habitat
the veins spread out using AI to occupy the landscape and interconnect with eachother

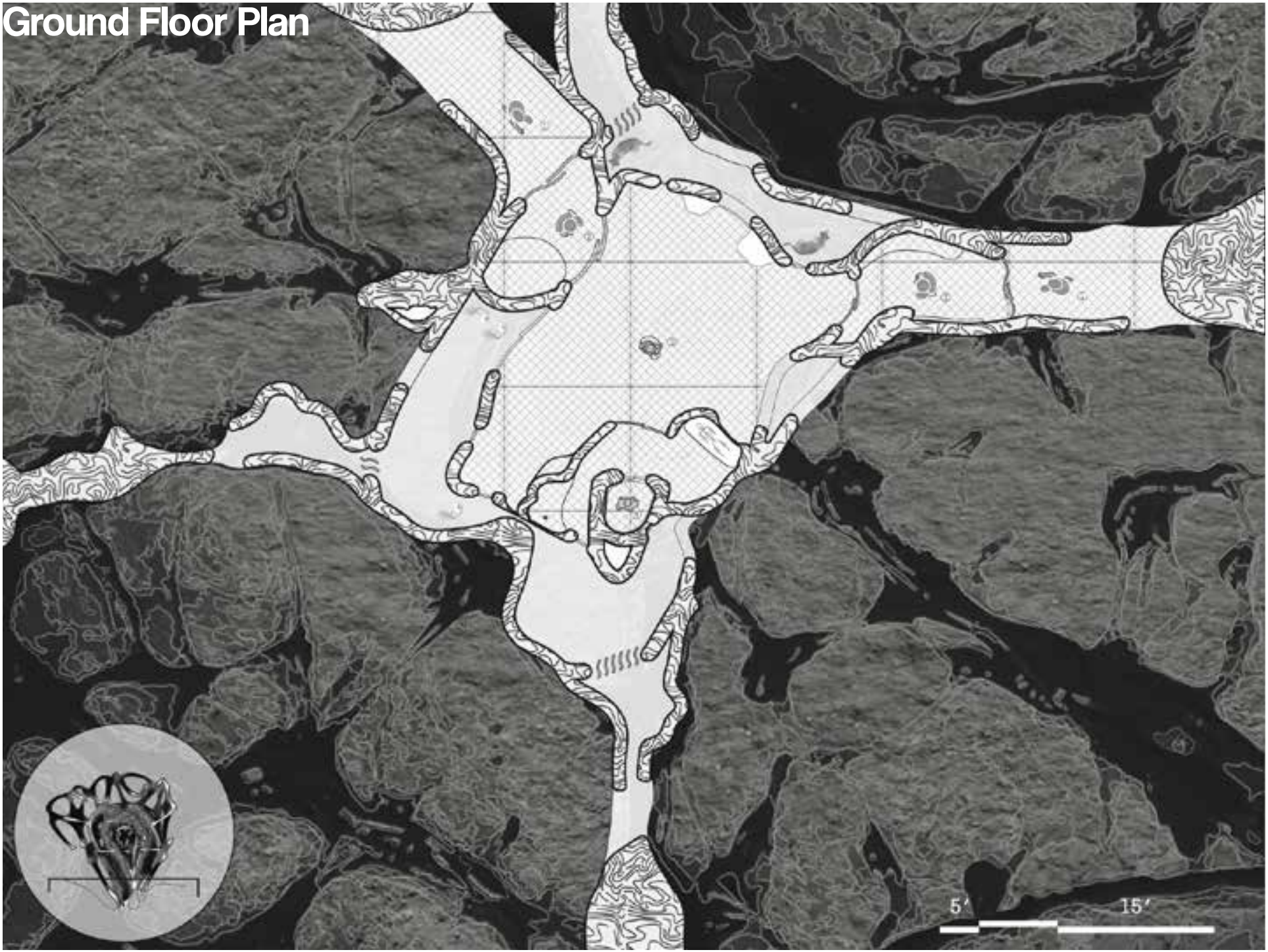

Water Layer
collect rainwater and morning dew as well as to be easily accessible to any animal living on the site or any traveling human that needs it
Energy Layer
provide the new human with a source of energy for their technological augmentations
Waste Layer
for garbage and bodily waste but it is also where the decontamination from being outside occurs
Circulation
for garbage and bodily waste but it is also where the decontamination from being
Decontamination
human decontamination where waste is filtered and released
Entry
detox screening that lead to a second level where the home is accessed

Technology Enhanced Habitat

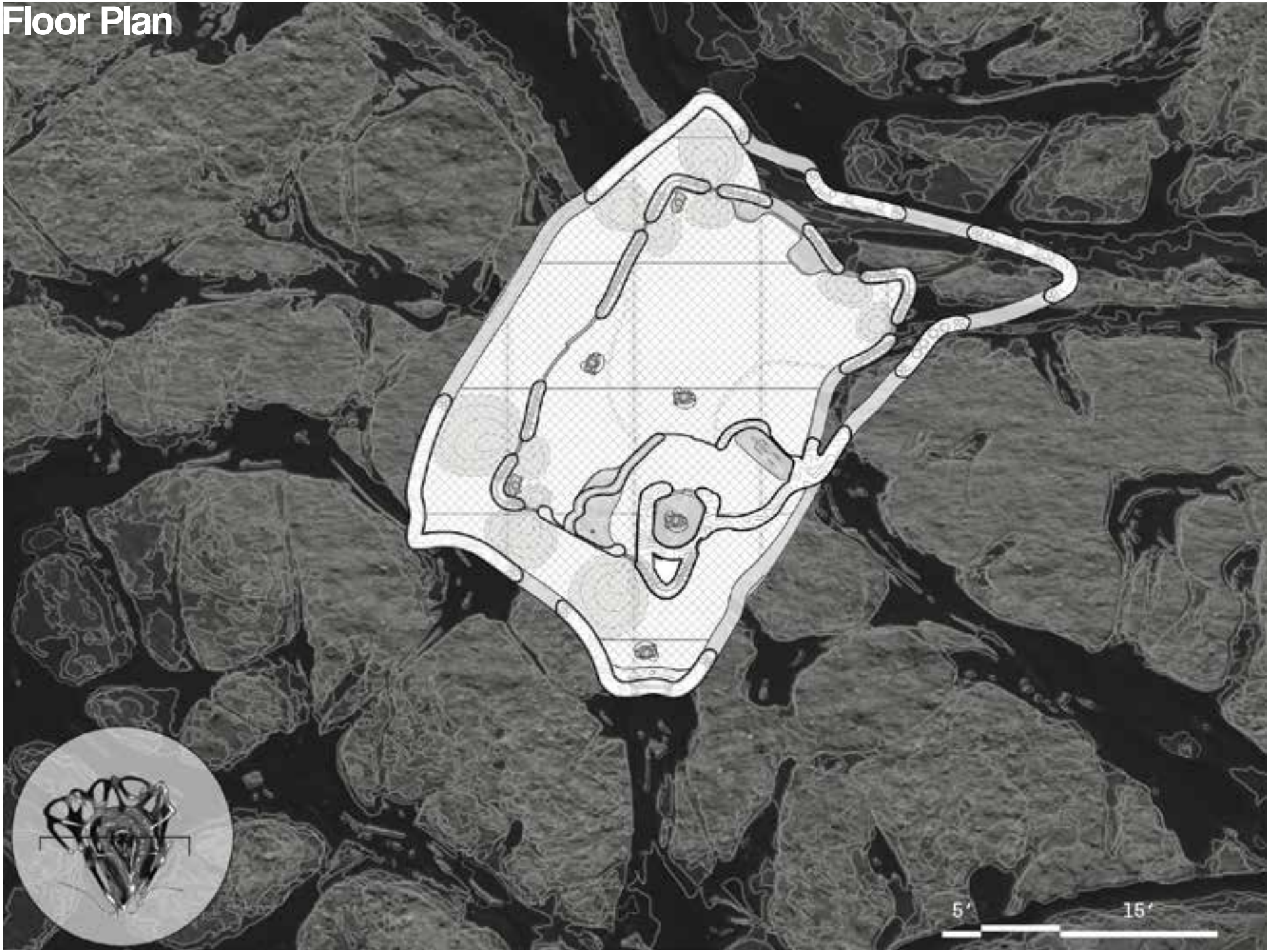
In terms of technology, the growth of the system stems out from multiple 3D printers that use the available soil as material to print the veins. It grows by scanning the immediate context and building towards the most toxic areas. The outer system transports water and the cavities filter the toxic air for the building while the next layer uses that air to generate energy. The top of each dwelling contains ridges to catch moisture from any morning fog or dew while the innermost layer of cavities can inflate to provide the subject with a safe space to rest.


Water Collection
Filtration
Growth
Deflated
Inflated
Protection
Energy
Production

Ground Floor Plan



Floor Plan



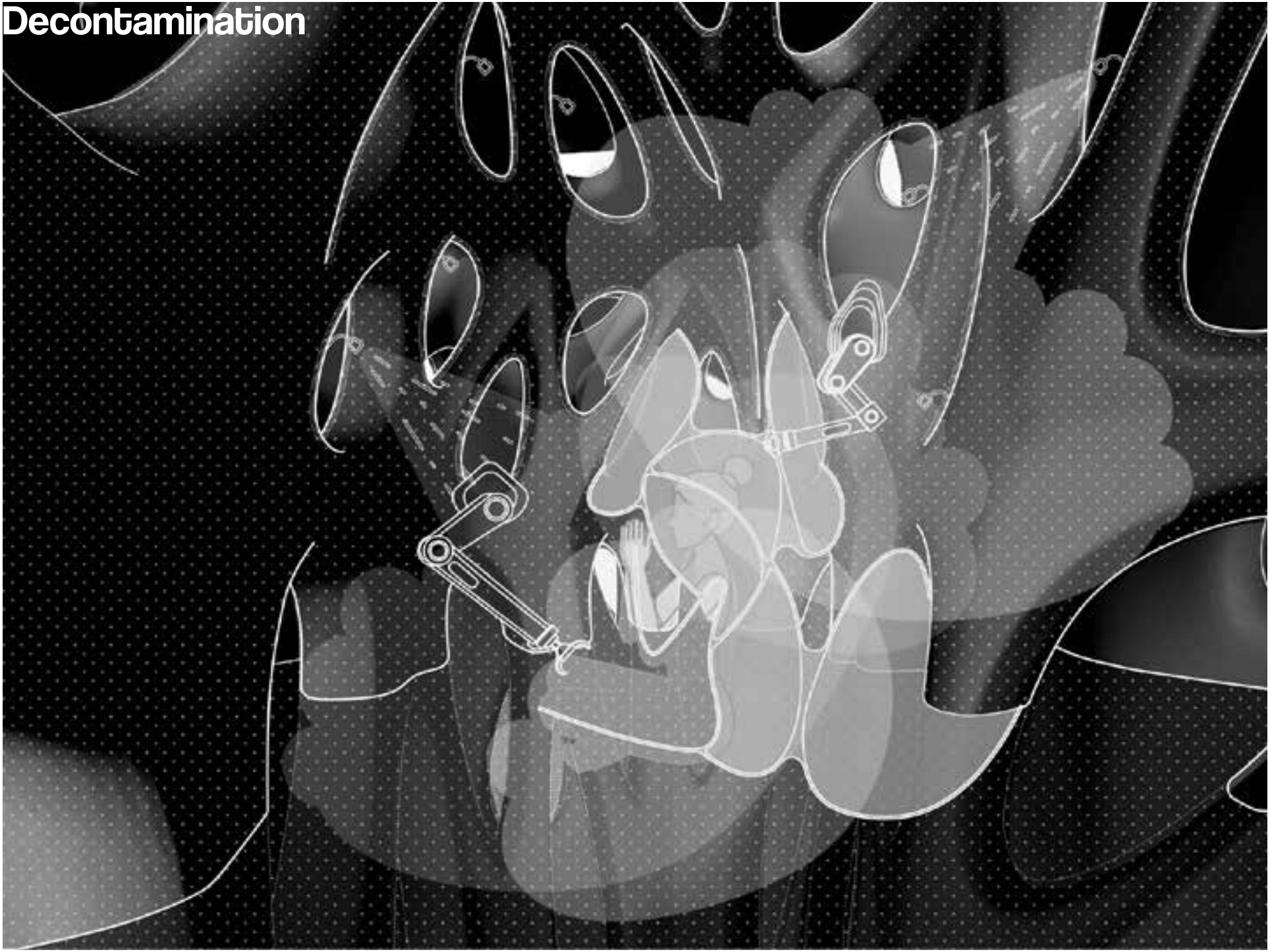
Accessibility and Performance

GROUND FLOOR PLAN (page 72)
The ground floor plan describes how the building is accessed. Human entry is located on either side of the dwelling and after going through a series of detox screenings, leads to the central area where they can go up and access the home. The other entrances are for the native species, like desert foxes, rabbits, and various reptiles where they are able to access certain portions of the outermost layer of the dwelling after being disinfected. The entrances for the animals vary in size to allow different animals like desert foxes, bearded dragons, different insects etc. to seek shelter in the dwelling.

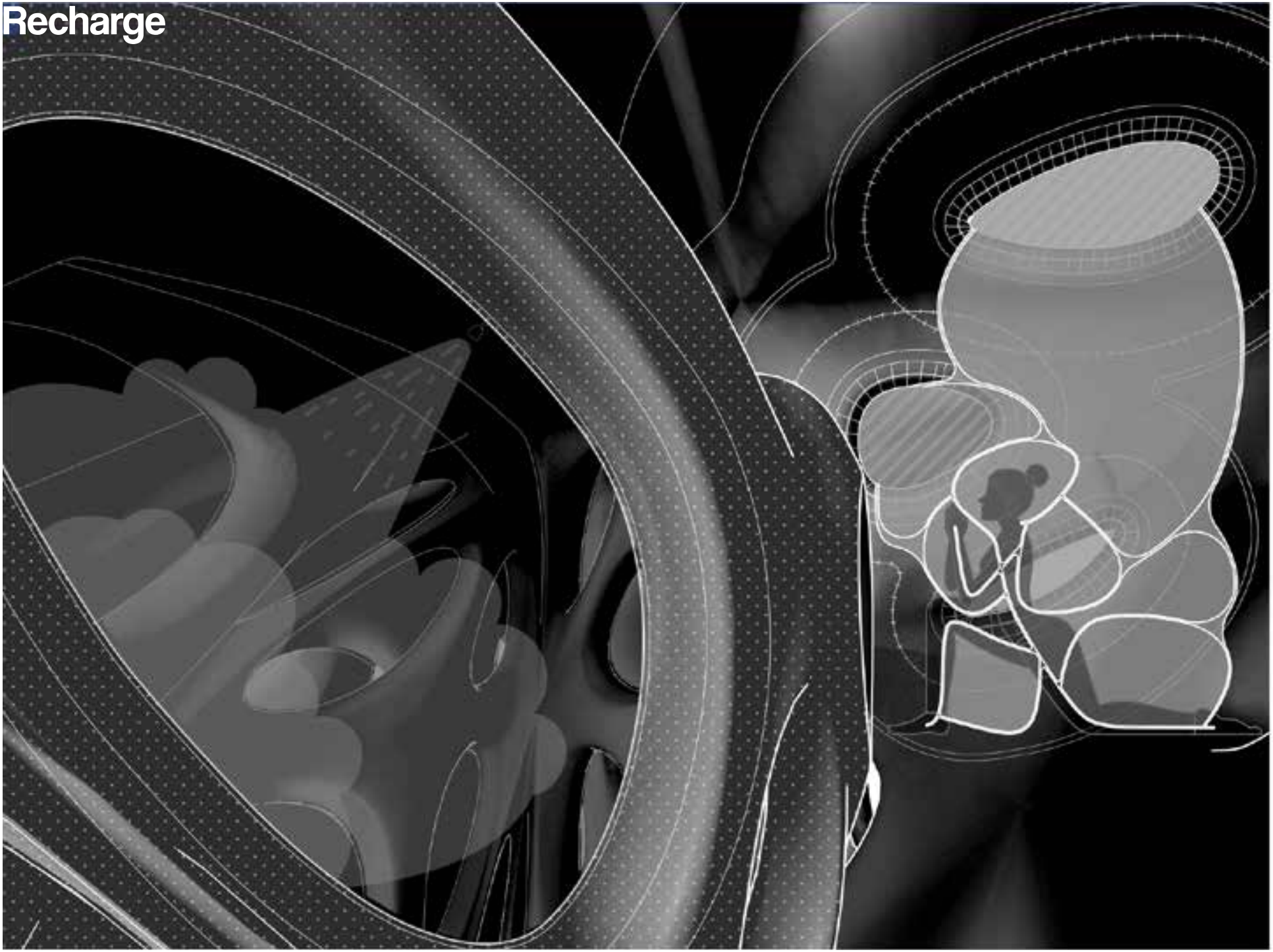
TYPICAL FLOOR PLAN (page 73)
This floor plan shows the new subject's living space. After exiting the vertical circulation there is one more minor layer of disinfection where the subject can remove its protective suit. At the corners of the central space there are pockets which will inflate to give the subject comfort while it rests as well as provide stability to the entire structure during a strong storm. These inflatable partitions create levels of privacy for the subject.

SECTION (left)
In the section we can see the space where the human enters the dwelling and circulates vertically. The close relationship between each layer provide a continuous protection for the user from the extreme environment.

Decontamination



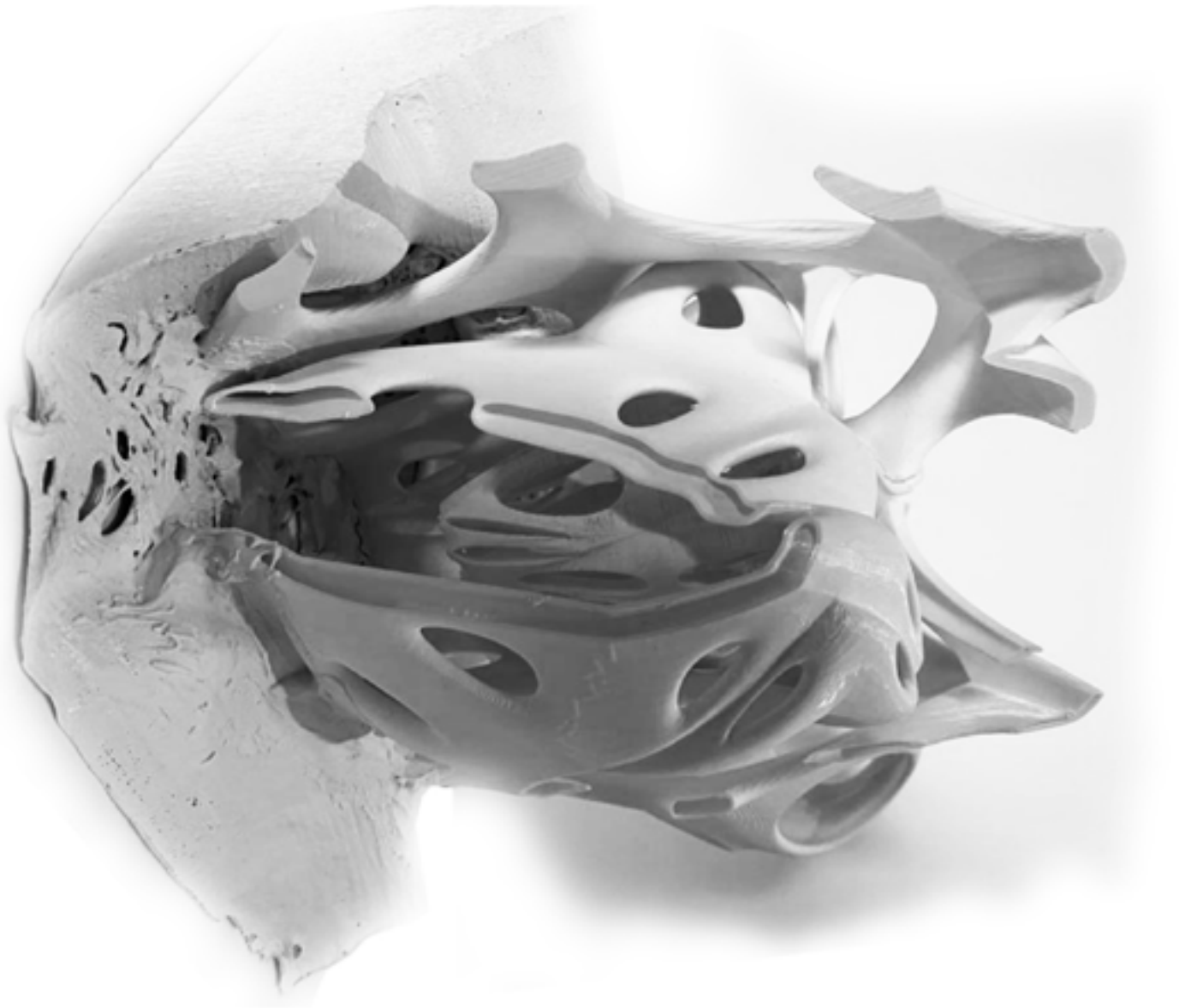
Recharge

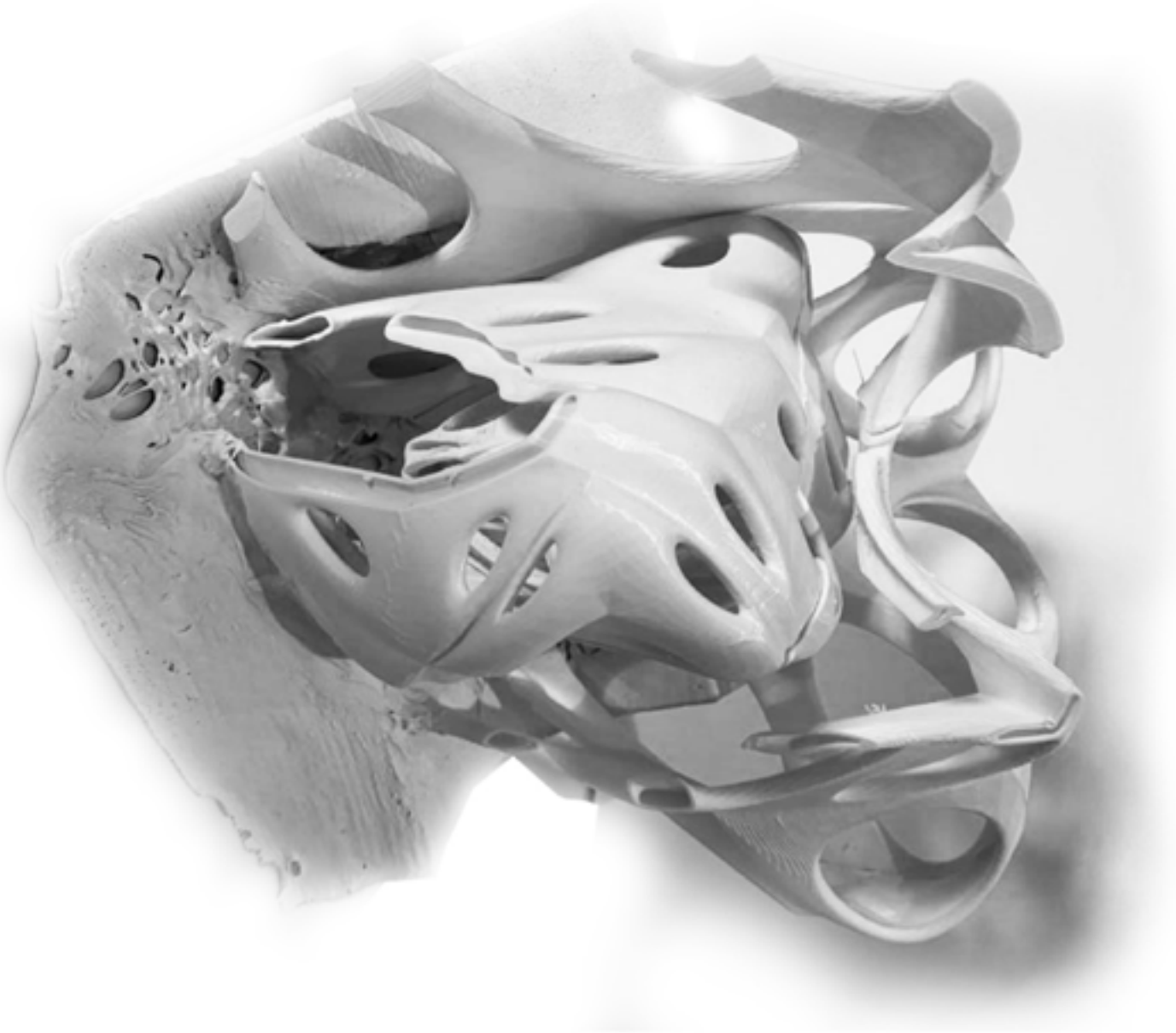


I'm Not Crazy, My Reality is Just Different than Yours

With this new type of dwelling system, we hope to provide a new means of survival that was lost as a result of this altered state of the planet by developing a dialogue with other species and implementing their adaptable methods of survival to our technology. We are going to have to accept the fact that things can't go back to how they were and that the destructive habits of humans can't be so easily changed. We question the notion of technologically advanced utopia where all our problems are fixed and choose to prepare now for the looming hostile environment that will consume our world and that us, as humans, have mapped out.


Water Collection
Toxin Filters
Smelting Complex
Energy
Water
Food
Waste





Materials

Image from researchgate.com

Material Studies

These are selected material studies that will be able to survive in the three different climates; desert, tropical and ocean.

In the last couple of years, we have seen the rise of technologically enhanced ways of making like CNC machines, 3D printers, and robot arms among others. Each of these advancements have been developed to the point where, even today, it is feasible to build things like houses at a fast pace and more importantly, with minimal human input or influence. Based on the emergent ecological scenarios, not every type of material is ideal for each individual climate. Something as primitive as CEBs or Compressed earth blocks are ideal for tropical climates because of their impermeability towards insects and mosquitos, abundance, and are less subject to overheating and dampness compared to concrete because of its superior insulation qualities. Similar to clay 3D printers, the earth solution used to make these blocks can be reworked chemically to be 3D printed as well as manufactured into bricks like it is currently. In terms of a Desert Climate, water would be the primary building material funnily enough. In reality, it wouldn't be just water, its water within a filter that can use thermodynamic principles to filter dust and pollutions from air. So in a desert climate that has toxic particles in the soil and has frequent dust storms, a building made up of this filtration system would benefit from the conditions. The winds from the storm that are now freshly cleaned can be used for wind-powered energy and to breathe. Due to the abundance of discarded plastic in the ocean, repurposing it to a building material for ocean settlements is almost a no brainer.

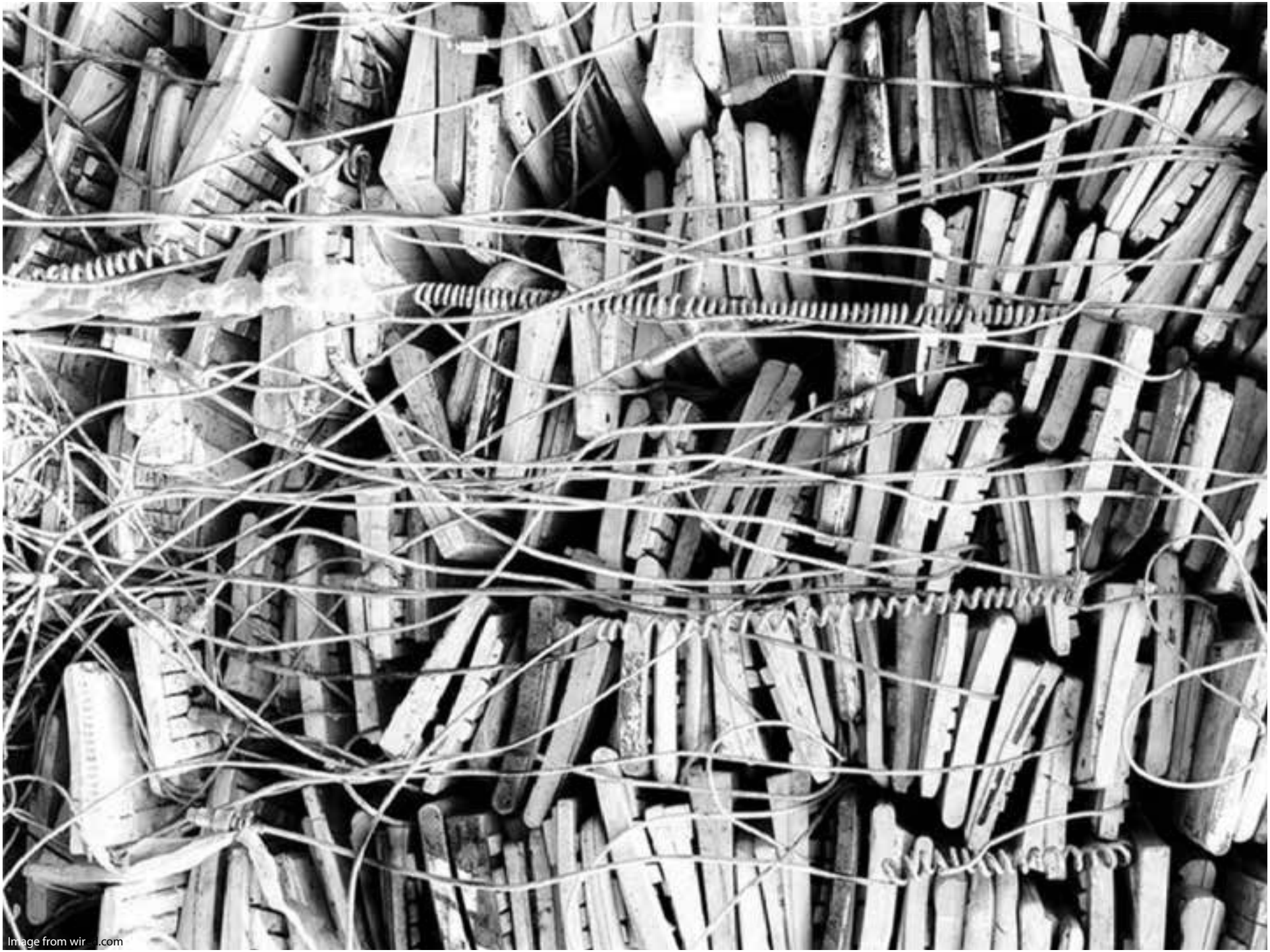
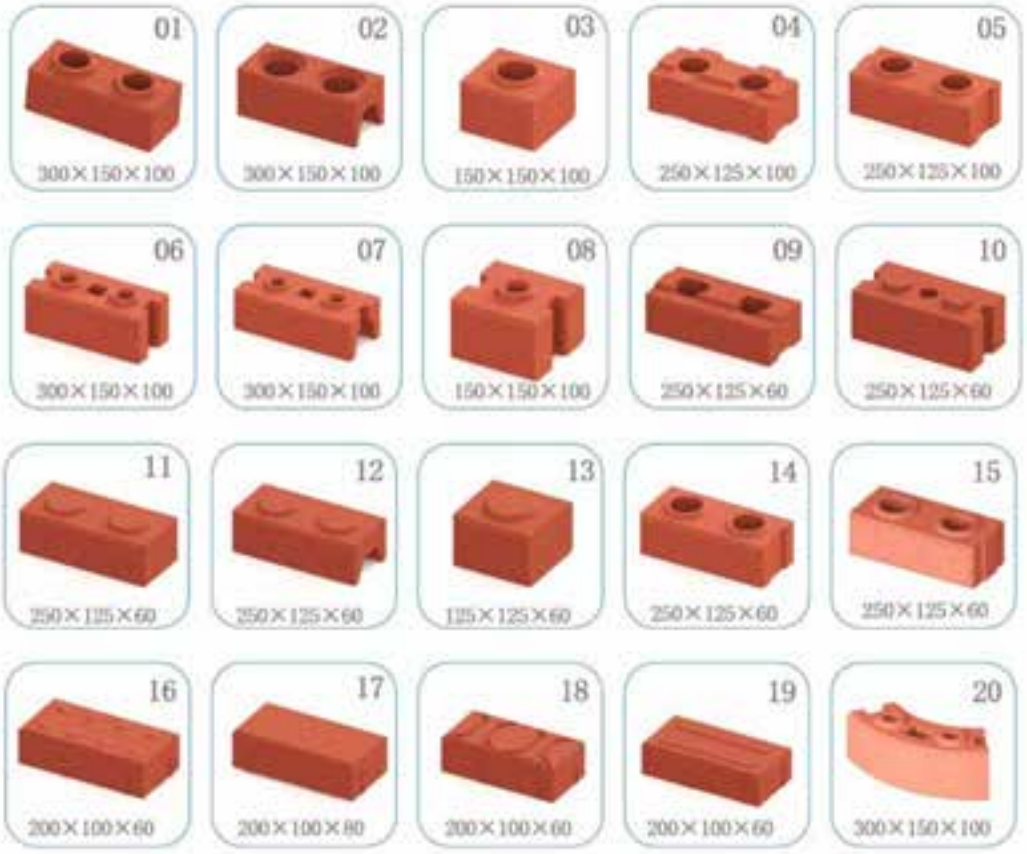


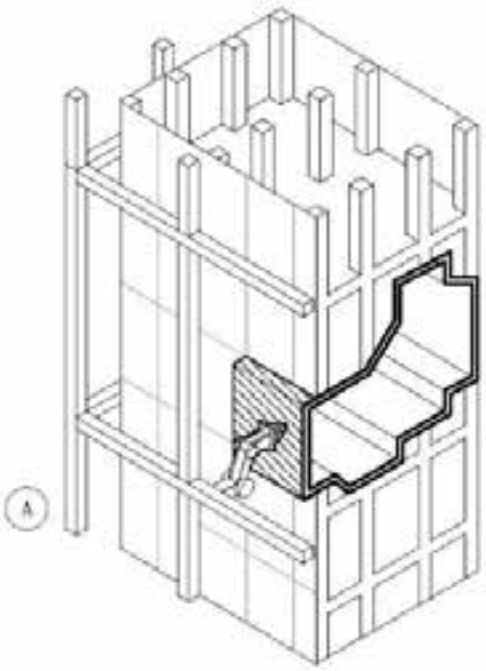
Image from wir .com

CEB Bricks

CEB Bricks are earth blocks made from soil that contains clay. The mixture is made from 4 – 8% cement with 92 - 96% soil and a little bit of water. After they are pressed and then laid out to dray for two weeks after which they can be used to build. CEB doesn't burn and is exceptional at keeping out insects- mosquitos in particular, making it ideal for tropical climates. This material is less subject to overheating and dampness compared to concrete because of its superior insulation qualities. They also are less dense and absorb more humidity. Similar to clay 3D printers, the earth solution used to make these blocks can be reworked chemically to be 3D printed as well as manufactured into bricks like it is currently.

(Shaping Buildings for the Humid Tropics)

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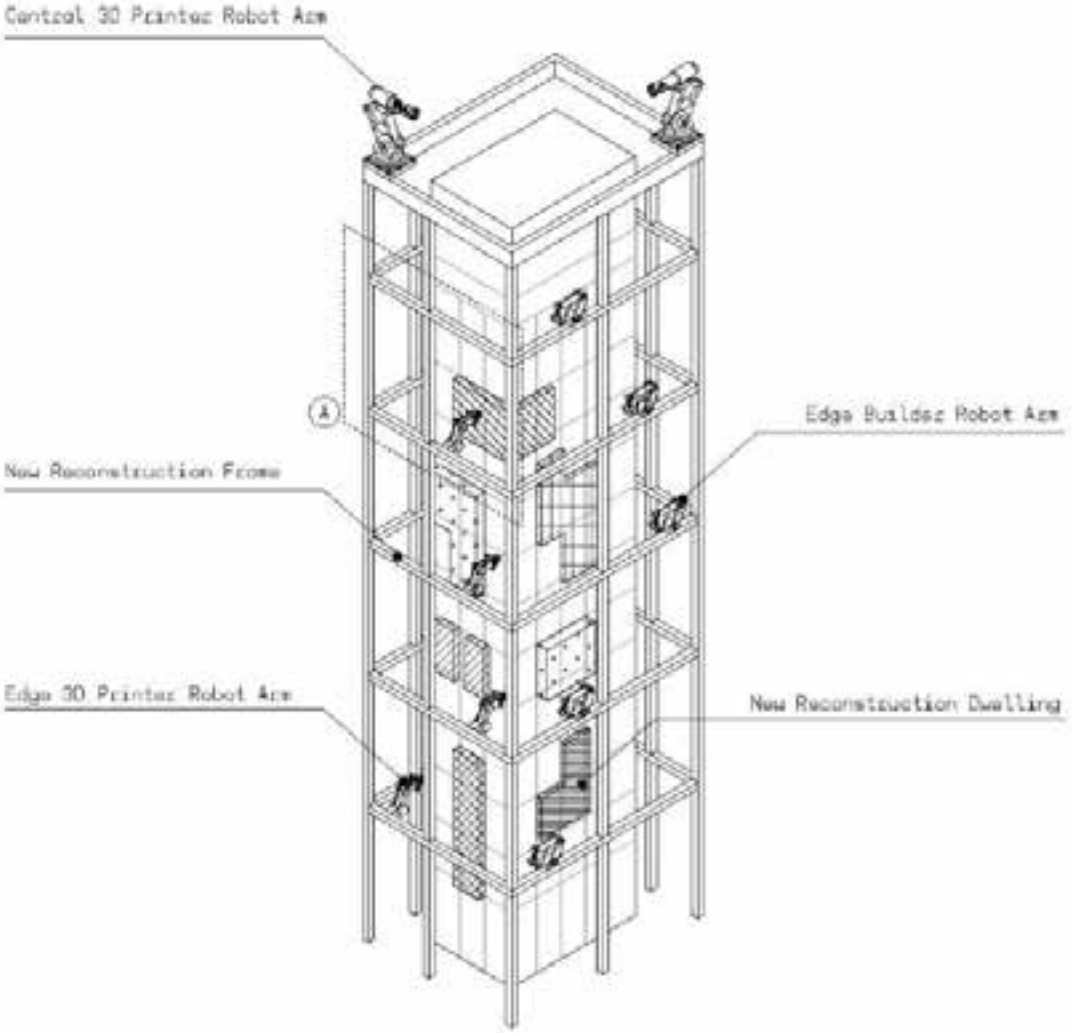
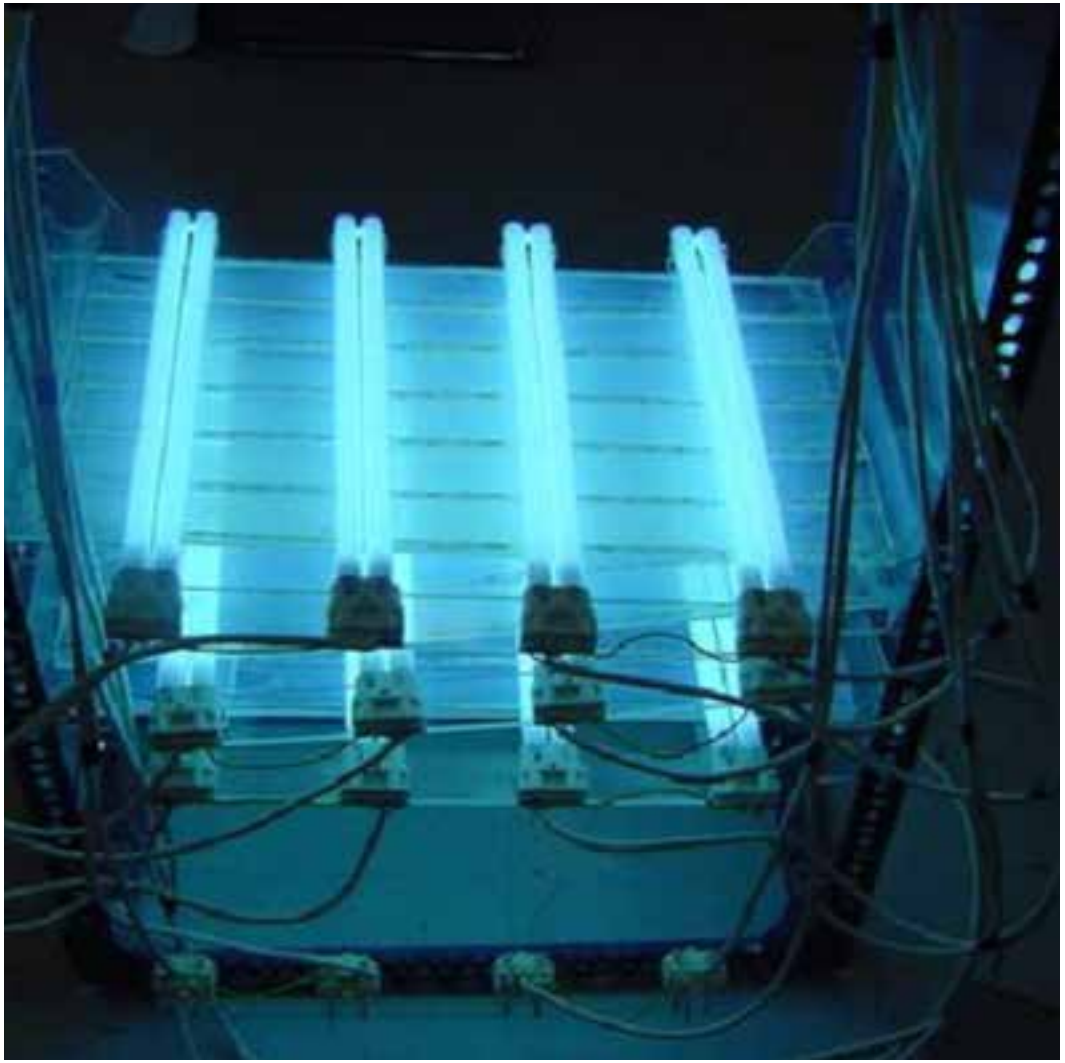
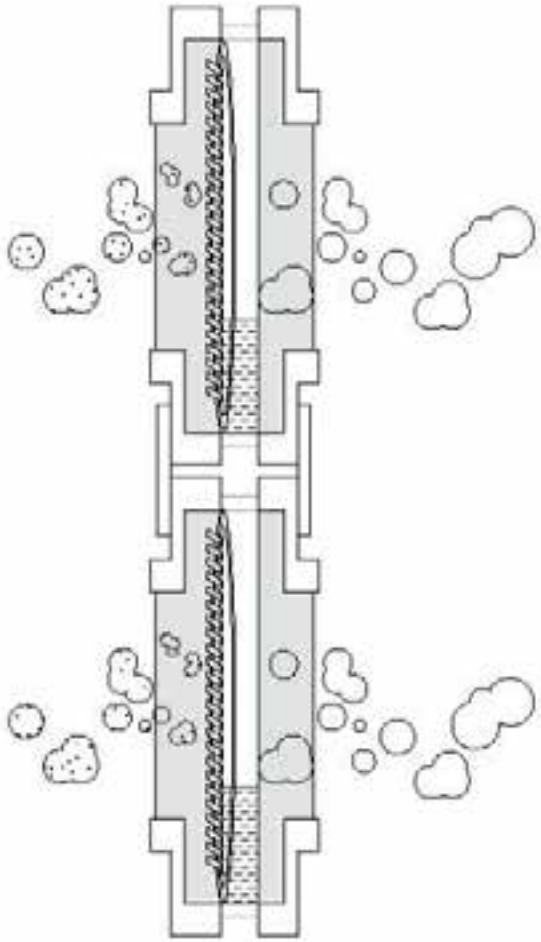

Central 3D Printer Robot Arm
A
Edge Builder Robot Arm
New Reconstruction Frame
Edge 3D Printer Robot Arm
New Reconstruction Dwelling

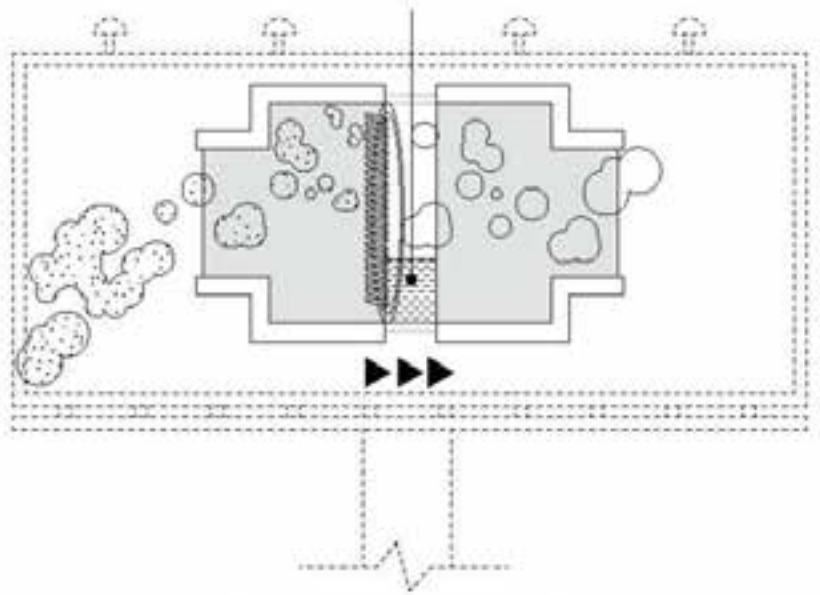
Air Purifying System

The University of Engineering and Technology of Peru (UTEC) has developed a screen system that can filter polluted air and dust particles into clean air. 3.5 million cubic feet of urban air per day to be exact, the same amount as 1,200 grown trees. Built into a billboard in a construction site in Lima where it is difficult to breathe because of the dust from the construction. The system uses basic thermodynamic principles reating shifts in temperature, pressure and vacuum. It combines contaminated air with water in a mechanism that balances their internal heat. The process makes the pollutants stay with the water. In a desert climate with toxic particles and frequente dustorms, a building made up of this filtration system would benefit from the conditions. The winds from the storm that are now freshly cleaned can be used for wind-powered energy and to breathe.

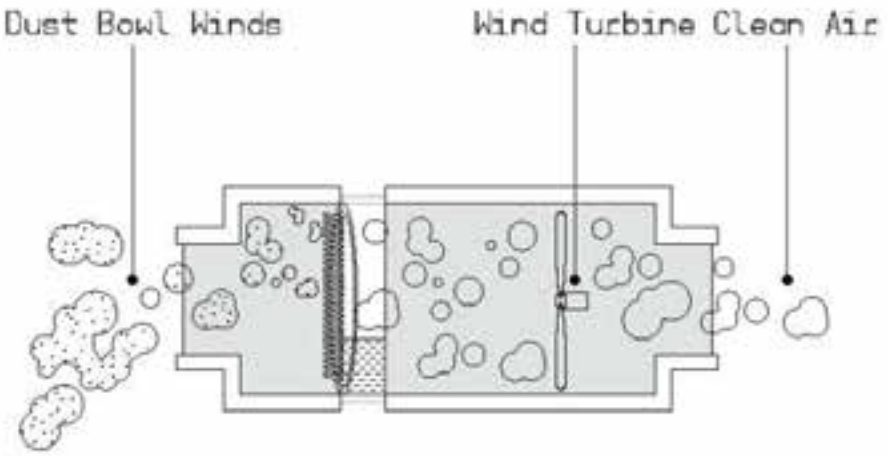




Screen Facade System



Current Research

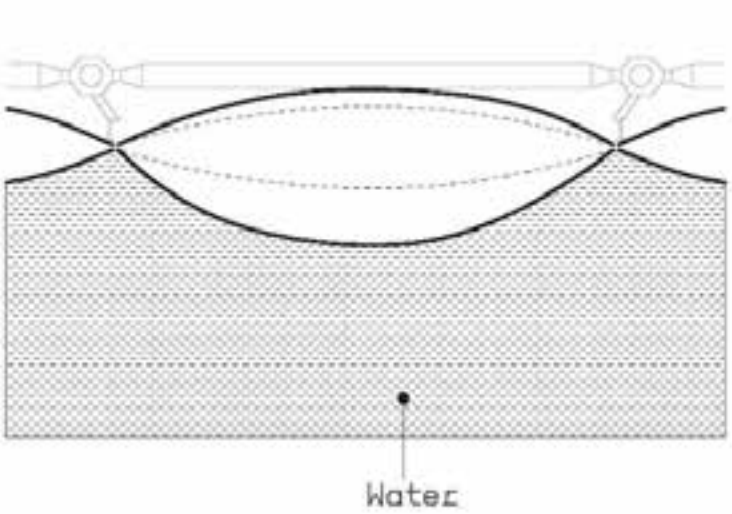


ETFE

With all the plastic that is currently in the ocean including the plastic that will be there in the future, recycling it and using it as a primary building material would be a logical solution. ETFE is a plastic that thrives in a variety of climates and is particularly good in cold climates. Its high corrosion resistance makes it ideal for humid places as well. The material is super light, which allows the supporting structure to be light as well. This plastic functions in weather anywhere from -300F to 300F. Ideally, the plastic that is dumped in the ocean can be recycled to make ETFE that can be used in extreme cold oceanic environments. In places like the Allianz arena, the panels can be inflated or deflated to allow for fluctuating sunlight and heat.

(Structureflex)

Plastic Recycling



Deflated

Inflated

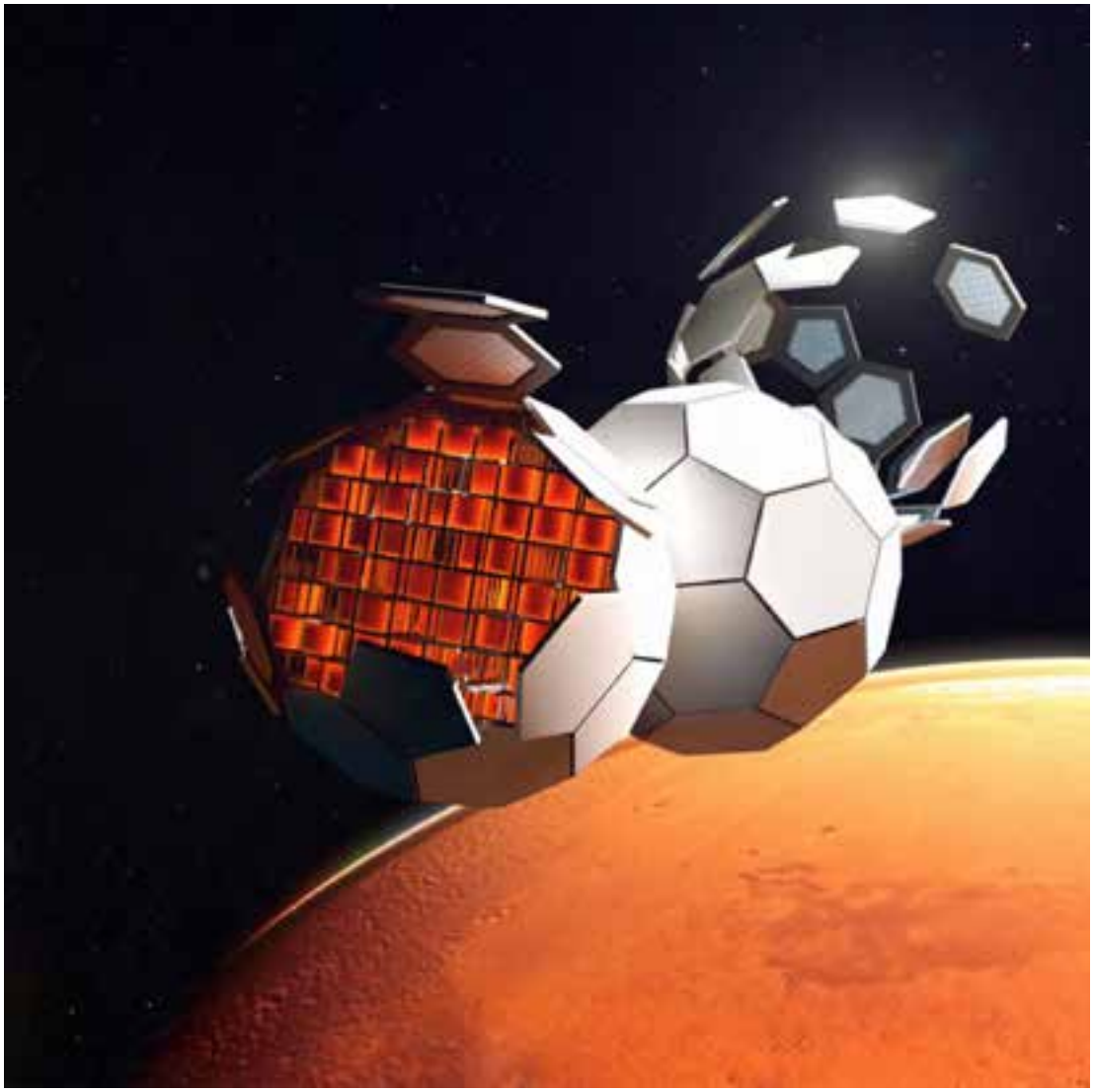
Precedents

TESSERAE

Self-Assembling Space Architecture

The future of human habitation in space lies in self-assembling, adaptive, and reconfigurable structures. Rather than transporting fixed, rigid habitation modules and risking astronaut Extravehicular Activities (EVAs) during construction, we can lower payload weight, reduce assembly complexity, and revolutionize space-structure modularity by relying on reconfigurable, self-assembly.

(Source: MIT LAB)



SpaceSkin

Aerospace-grade electronic textiles for distributed sensing on persistent orbital structures

The outermost skin of a space-based structure is designed using materials known to protect against the harsh elements of space. Simultaneously, the skin provides a unique opportunity to characterize the environment proximate to a spacecraft and to perform real-time damage detection. Thus, we propose developing an aerospace-grade fabric that simultaneously senses and protects, emulating the dual protective and sensory capabilities of biological skin.

(Source: MIT LAB)

Biomechatronics

Enhancing human physical capability

Today, permanent assistive devices are viewed by the physically challenged as separate, lifeless mechanisms and not intimate extensions of the human body—structurally, neurologically, and dynamically. The Biomechatronics group seeks to advance technologies that promise to accelerate the merging of body and machine, including device architectures that resemble the body's own musculoskeletal design, actuator technologies that behave like muscle, and control methodologies that exploit principles of biological movement.

(Source: MIT LAB)

Fluid Interfaces

Designing wearable systems for cognitive enhancement

Building upon insights from psychology and neuroscience, the Fluid Interfaces group creates systems and interfaces for cognitive enhancement. Our designs enhance cognitive ability by teaching users to exploit and develop the untapped powers of their minds and by seamlessly supplementing users' natural cognitive abilities. The solutions we design are compact and wearable to support real-life studies and interventions, rather than for use in laboratory settings.

(Source: MIT LAB)

Genealogy

Image by Juan Gomez

Genealogy Essay by Maria Fernanda Rosario

Since its appearance on the face of the earth the human being has manifested itself as the main trigger for the environmental crisis. If it does not stop the accelerated process of destruction of the biosphere, this voracious destroyer of its own habitat will be the cause of its own disappearance. The history of human development has manifested itself through ambition, selfishness, and envy, running after power without mediating any conscious process of self-destruction, throughout its evolution it has made thousands of wars with millions of deaths, and has devastated and destroyed many places. The human being is the main consumer of drugs and narcotics; its quest for progress and permanence on the planet has modified and genetically transformed viruses and bacteria, some with beneficial results but also lethal epidemics. The human being has destroyed the planet without conscience by knocking down trees, burning areas covered with nature, depositing garbage and solid and organic waste from surface and underground aquifer sources, poisoning the land by spraying crops without measure, excessive hunting of different animal species, and causing the mortality of all kinds of sea animals. What is more worrying is the lack of control of urban growth and of the entities dedicated to the construction of buildings without considering the damage caused by deforesting the planet. The construction of buildings and infrastructure is the greatest impact that humans make on the environment. It consumes the largest amount of material to build, and the most energy to operate.

The disproportionate destruction made by man has caused many parts of the world to be uninhabitable. For example, the city of Norilsk in Russia, known as the world's northmost city, is recognized for its nickel mining. More than two million tons of gas are sent to the atmosphere from Norilsk Nickel a year (Buder). As a result, life expectancy in Norilsk is ten years shorter than the Russian average. Norilsk houses a gigantic mining and metallurgical complex, where workers extract and process large amounts of nickel, copper and cobalt, which represent more than 2% of Russia's GDP (Buder). In fact, the history of the area is quite bleak. The city has become so contaminated the Russian government does not let anyone go there (Buder). Another example of manmade destruction is the Kabwe Desert in Zambia, where the lead contamination poses serious dangers to the people's health. Although the lead mine there ceased its activity 25 years ago, the waste has not been eliminated. There is still illegal mining going on, putting workers and their families at risk of contamination (Carrington).

The history of architecture is full of examples of ecological devastation caused by the growth of cities and towns without a conscious criterion of natural balance. In the face of such a conflictive situation it is necessary to establish an educational structure that allows access to precise solutions to the environmental problem without undermining the economic and social development of the human being in order to create consciousness in people's mind about the environmental crisis. Therefore, it is necessary to propose a project that directs development in a way that respects the environmental coexistence and favors the social and ecological growth of the planet. Buildings account for 41% of the energy used on Earth and 38% of all CO2 emissions (Sichimwi). Most construction materials are produced in non-sustainable ways. They are often shipped from other parts of the world and extracted in mines that have serious environmental impacts on the communities that surround them. Waste is also a large problem in buildings, especially renovations, where materials such as concrete, metal, plastic, wood, asphalt, bricks, and more are disposed of in landfills or incinerators.

Modernity has been built around a story of knowledge and progress that has more recently been questioned and, with it, also the instrumental rationality with which man should be able to transform the world to his own benefit. However, scientific-technical knowledge seems to have been kept out of this crisis, to the point where it is now in the middle of a new revolution. We live in a time when concepts such as "artificial intelligence" or "machine learning" are increasingly important in the debates of society, and it thus seems inevitable to rethink the relationship between the human and technology. Is it possible to continue thinking about technology as that which allows us to emancipate ourselves from our needs and increase our autonomy? Or should we maintain the critical attitude of rejection of technological rationality, as something inalienable in the discourse of domination that has led to an unsustainable world? We return to a recognizable crossroads: technology viewed with suspicion or technology viewed as a solution.

Since its origins, the humans relate to the world artificially. Technology, therefore, would be nothing other than the way in which man relates to the world, and the way in which man builds his world. Perhaps the problem is not to embrace or reject technology, but to analyze the unique world configured from contemporary science and technology. We must examine what are the conditions of what we commonly call "new technologies" to determine what their power mechanisms are, and how they affect and transform contemporary subjectivity.

Considering the irreversible damage that humans have done to the Earth, we need to

find a way to simulate the future of the planet. With the climate crisis, humans need to start to think about what will happen after the Earth becomes completely uninhabitable. The term "posthumanism" has become an important factor to our proposal. The post-human is a concept that originated in the fields of science fiction, futurology, contemporary art, and philosophy. These multiple interacting origins have contributed to a deep confusion about the similarities and differences between the post-human concepts of "postmodernism" and the post-human concept of "transhumanism." In Katherine Hayles' essay "Unfinished Work: From Cyborg to Cognisphere" she presents the human as one with "rationality, free will, autonomy and a celebration of consciousness as the seat of identity," while "the post human in its more nefarious form is construed as an informational pattern that happened to be instantiated in a biological substrate" (Hayles 2). Posthumanism and technology have been advancing hand in hand since this is currently a way to access knowledge: social networks, smartphones and others are instruments that facilitate access to this knowledge. Transhumanism predicts that the fusion between technology and human intelligence will occur, leading to an era in which the non-biological intelligence of the post-human will be imposed. We have to begin to accept the fate of the Earth's future, and create ways to adapt to this new destroyed condition.

We have before us the responsibility of leading the evolutionary process of humanity, and radically transforming and improving the human being through the implementation of emerging technologies in our bodies and minds, which will take humans beyond the conditioning and limits imposed on us by nature, of which we are an essential part. Matteo Pasquinelli writes in his essay "The Automaton of the Anthropocene: On Carbosilicon Machines and Cyberfossil Capital" that the "perception of the whole Earth as ecosystem and the measurement of the Anthropocene are possible through the most sophisticated information technologies" (Pasquinelli 320). These technologies would cause unimaginable social, cultural, political and economic changes. Transhumanism predicts that a fusion between technology and human intelligence will take place, leading to an era in which the non-biological intelligence of the post-human will be imposed. Throughout this process, transhumanism wants to spread an ideology and culture favorable to human improvement through the adoption of artificial improvements in humans (genetic, organic, and technological) with the stated objective of making humans smarter, more long-lived, more perfect, and happier. Donna Haraway's "Cyborg Manifesto" makes a distinction between reality and science fiction by presenting the term "cyborg," a cybernetic organism that has a machine way of thinking but is also organic. Haraway writes, "Machines have made thoroughly ambiguous the difference

between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines." By making the fusion between humans and technology, superhumans are created, creating an organism adaptable to any kind of environment.

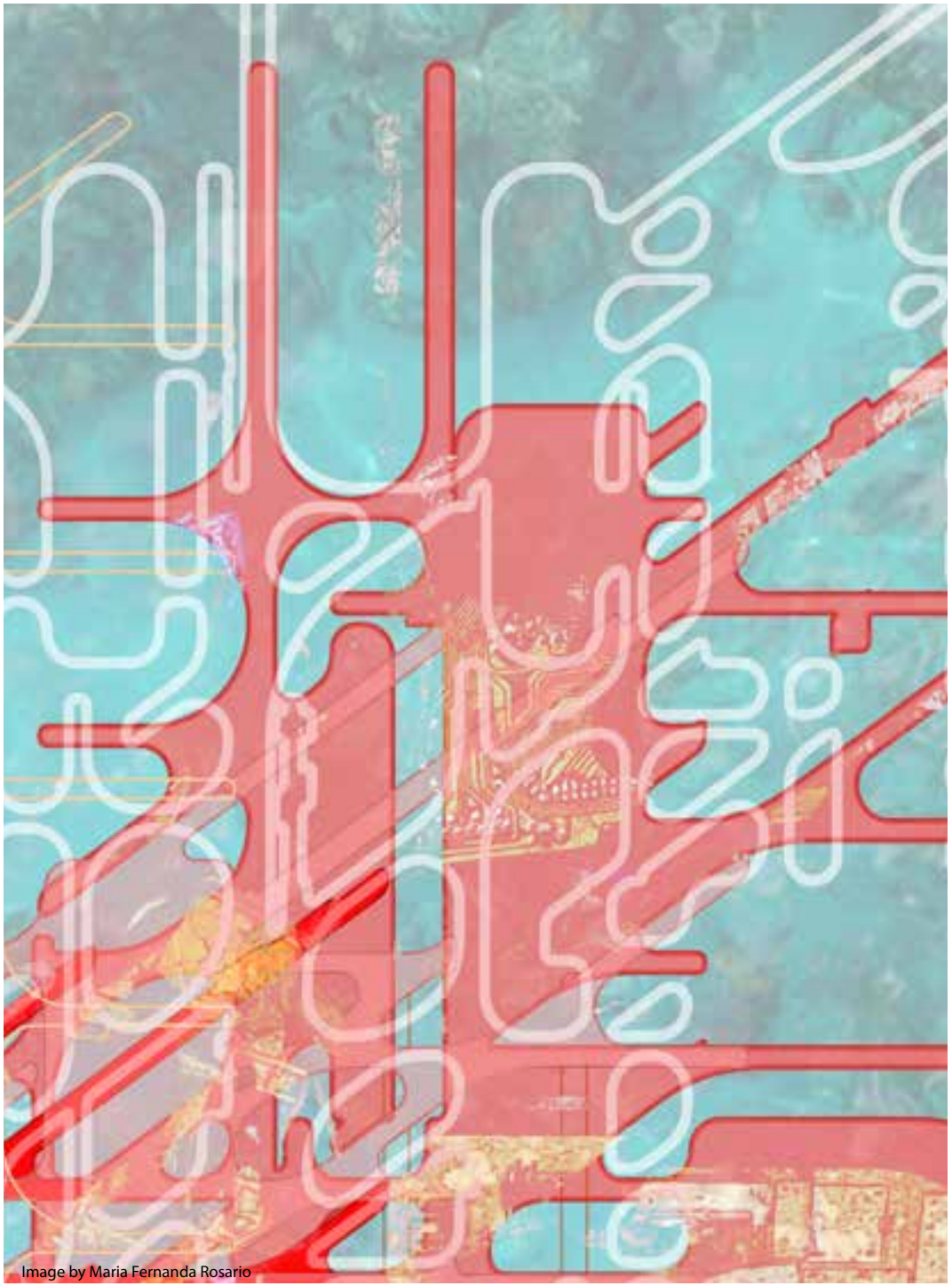


Image by Maria Fernanda Rosario

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Geneolagy Essay by Juan Gomez

The hubris of human nature has caused irreparable damage to our planet in a way that will force us to drastically reinvent our way of life. We've entered a "point of no return" and we must now think in terms of "prepare" instead of "prevent". Our role as architects will be to provide the blueprint that will help us make the transition into this new way of life. We've evolved into a species obsessed with commodity and having what is new, sacrificing the livelihood of our natural surroundings as a result. The way forward will present itself through an investigation into the areas that have already been exploited to the point of un-inhabitability, or have emerged as a result of our negligence.

Since the era of colonialism, the "civilized" population has created a distinction between themselves and nature, seeing nature as something that lives on independently from our daily activities. Our belief in this distinction cleared our conscience to be able to do with the world whatever we wanted, leading to some very worrying results. The texts "The Climate of History" by Dipesh Chakrabarty and "Being Dumped" by Michael Marder seem almost like a before and after documentation of our current environmental crisis. Chakrabarty, being a practicing historian, talks a lot about the history of the human's opinion of nature and how we got to where we are today in that relationship. His text documents, in a way, the arrogance of our way of thinking in the past. The perceived distinction between us as humans and of the rest of nature gave us this delirious mentality that no matter what we did, nature just ran its own course and our actions couldn't alter it. In his text Marder describes the present reality we find ourselves in and with no hope for a positive change.

Our idea of history has always revolved around the results of human affairs, ignoring the fact that there existed a time before us. Ecology was something we couldn't afford to ignore for a long time, and now we are becoming aware of our bond with nature as we experience the results of its alteration. The aggressive mining for metal has caused cities like Kabwe (Zambia) and Norilsk (Russia) to become borderline unlivable. The contamination of the air and soil is giving people lead poisoning and destroying the flora and fauna that live there as well. The ship breaking site in Chittagong (Bangladesh) is essentially the world's largest boat graveyard that gives people jobs but contaminated them with dangerous toxins from the waste. In Russia, the melting of the ice in the Arctic Circle has forced polar bears to mate with grizzly bears, resulting in the birth of a new hybrid species of bear (give name of species). These scenarios are popping up around the world as we generate

more and more waste. Our panic and aggression to hit "rewind" and prevent further growth to these scenarios is just making us less prepared for what will inevitably be our future, because humans have shown a willingness to put their self-interest first in moments when we should be thinking about the collective.

The global population today is essentially divided into two ways of thought: feverish self-reproach and "deserted being" . Meaning, we are either in frantic, repentant, overdrive or in a disconnected surrender. There are those who believe the world can still be saved, and those who have forsaken the world and just live how they want to. It creates a two-headed monster that blinds us from what should be the primary task of finding a way to adapt to our eventual new environment, while also accelerating us to our destination. The way we have thought and acted created the "dump" we live in today. It has become "life's unforeseen side effect" that has, in some ways, changed our human nature by dulling our senses to the point where we have just become accustomed to the light-pollution, the toxicity (mental and physical), the waste, etc. It is a sort of "impoverishment through surplus" ; our commodity-driven mentality and our desire to be better than our peers have stripped us of our humanity and has isolated us from our natural surroundings.

We are just now starting to see the effects of our actions but according to the media company Futurism, the world will be completely changed by the year 2100. It will start with flash flooding and fresh water shortages but the constant changes in weather coupled with other effects like melting glaciers and heat waves, will eventually give rise to new permanent environments. Among other environments like tundra and grasslands (that will become limited); Desert, Marine, and Tropical climates will be the three climates that will dominate the planet. Tropical climates will expand way beyond their natural limits and proximity to the equator, spreading viruses like Dengue, Zika, and West Nile, to places where they have never been. The deserts will give rise to massive dust bowls that will facilitate the movement of toxic substances like CO2, SO2, lead, etc. across multiple countries. The sea-level rise will cause most coastal cities to permanently flood, and will change the shorelines of every landmass on the planet.

Recent responses to this impending world alteration have come from companies like SpaceX with their Mars project. The project is grounded in the reality that the earth will be beyond saving, but proposes a very typical and outlandish way of thinking: "Let's just leave our mess and start fresh somewhere else" that is very current. Rather than settling on Mars, I propose that we can learn to re-inhabit our own planet. The Mars project presents possible solutions to problems that we will likely face. In terms of land that has been lost through pollution and toxicity, projects for other planets provide a lot of possible

solutions to similar issues. The mining towns on earth contain the same atmospheric threat in their fumes and soil as an outer-space atmosphere does; contact will eventually result in death. Soil purification and access to clean water become primary issues and looking at how they are managed in an extraterrestrial environment would provide useful insight.

Homo sapiens, along with other organisms, might have to evolve as a species into something that purely is living rather than having all these distinctions and categories. Technological advancements have developed in a way that the difference between what's natural and what's artificial can and has been blurred. Donna Haraway argues that "Our best machines have made thoroughly ambiguous the difference between natural and artificial, mind and body, self-developing and externally designed, and many other distinctions that used to apply to organisms and machines". Living species in general are nowhere near as fluid or mobile as machines as they are purely material (flesh and bone) beings. The current state of man, and of any living species, will have to go through a type of evolution. Technological enhancement is something that has already begun in today's world with humans' dependence on phones and computers as well as simpler things like glasses and contact lenses. Glasses and contact lenses provide a sensory augmentation while phones and computers expand our range of interconnectivity. These are four things that have essentially become an extension of the body in terms of how much humans rely on them. Embracing this new but powerful relationship rather than being fearful of it will push us into a new stage of evolution where the distinction between man and machine will not exist and will eventually transcend a human / machine relationship to become a living organism / machine relationship.

The basis for the design of a future habitation comes from the uniqueness of the three major environmental types (Desert, Tropics, and Ocean) and their overlap as the goal is to provide a type of settlement that can be implemented to all three environments indiscriminately. A settlement not only made for humans but one that neglects species differentiation and develops a mutually beneficial give and take relationship between multiple species. It is important to survive and settle in a world not catered to most living species anymore without creating bubbles of oasis' that live independently from one another. Working at the scale of a settlement (however big it may be) is important but the scale of a singular subject is arguably just as vital. Designing for a single occupant, regardless of the species, provides a freedom of movement away from the settlement that we can't lose in this new world.
Dipesh Chakrabarty said it best when he wrote "we must prepare for the worst and adapt". Preventative designing and ways of thinking are short sighted and will become outdated. The world as we know it is going to change within the

next 100 years regardless of what humans try to do to fix it, but the tools are there to survive already.

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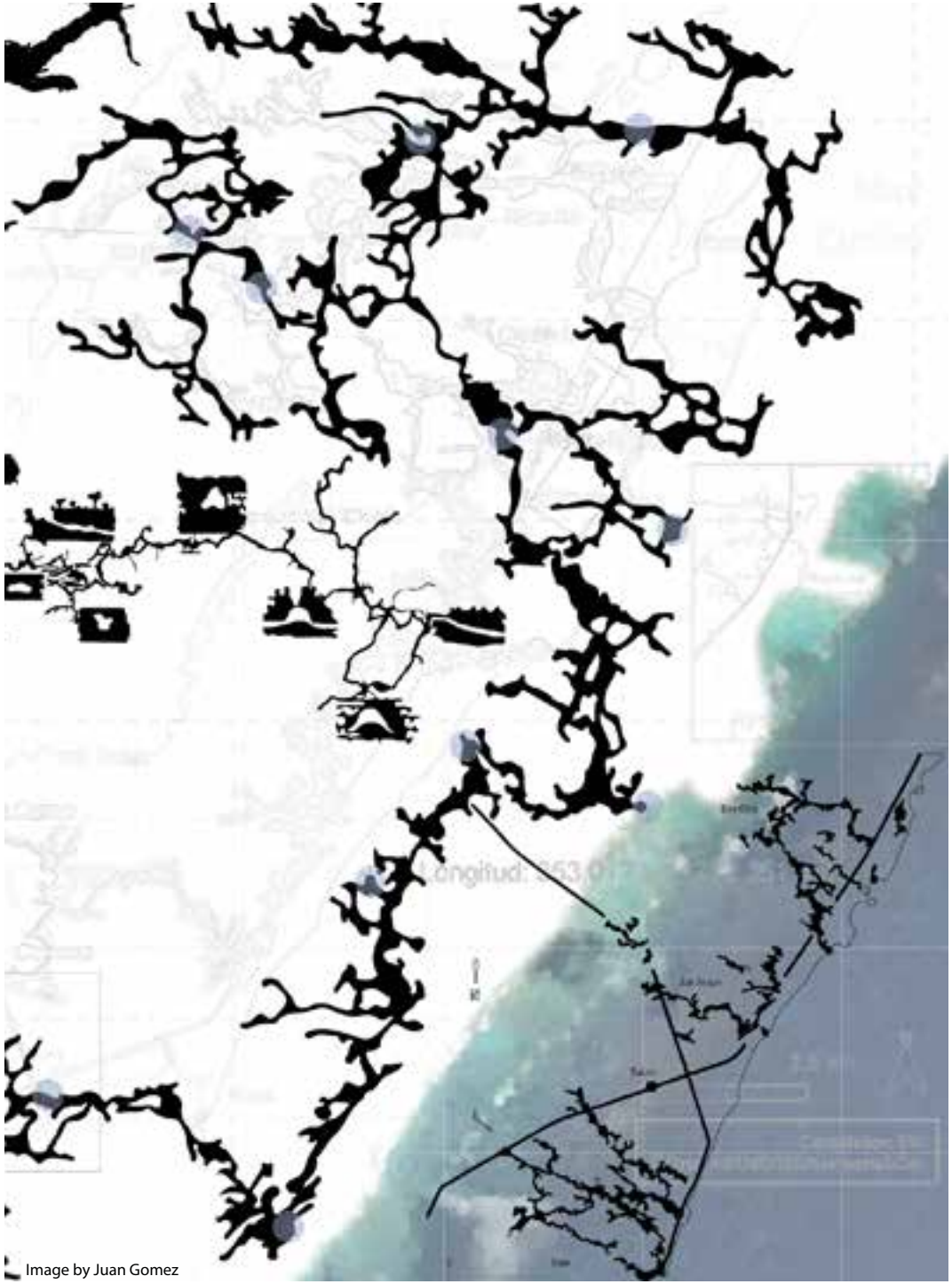
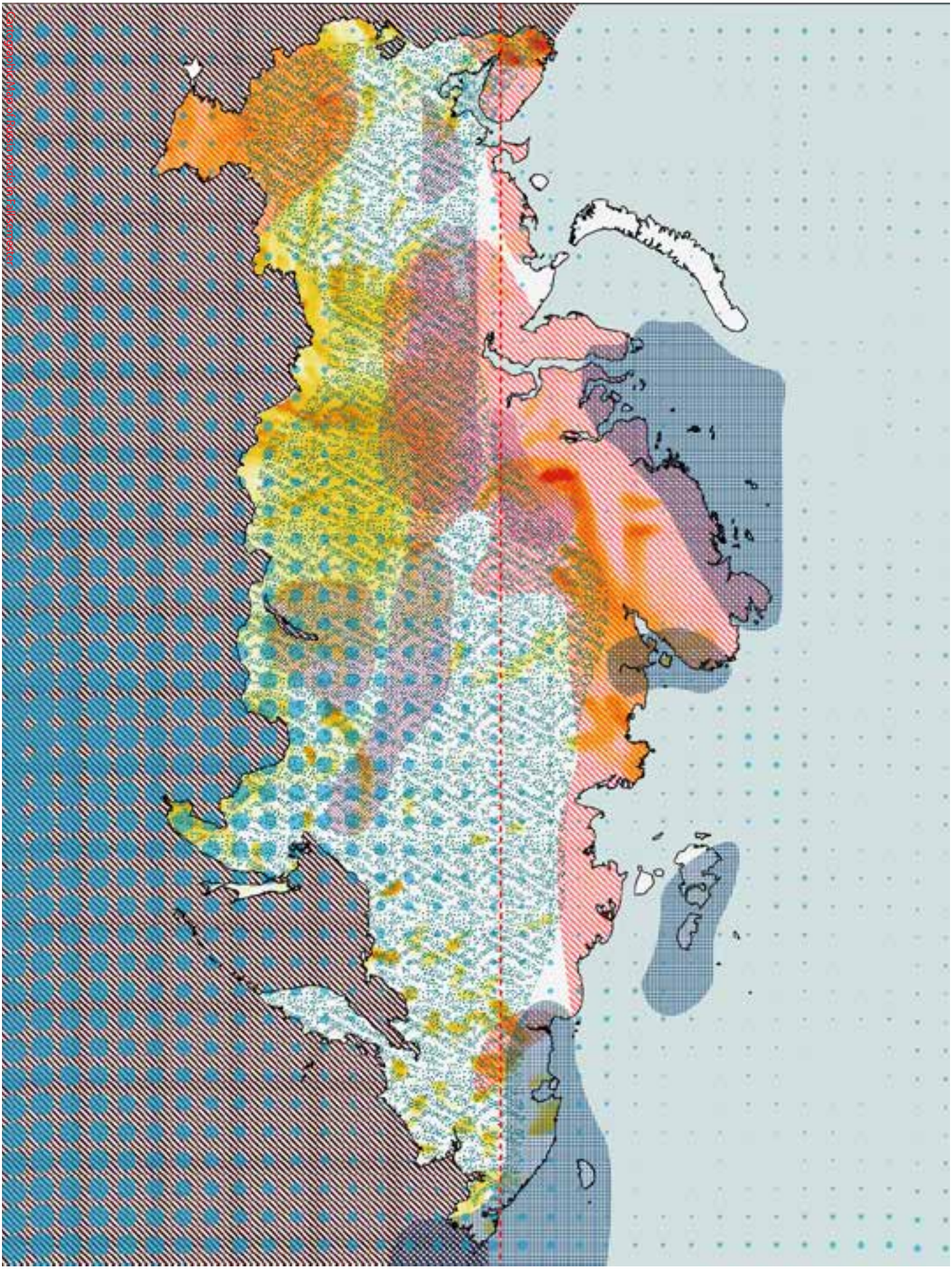
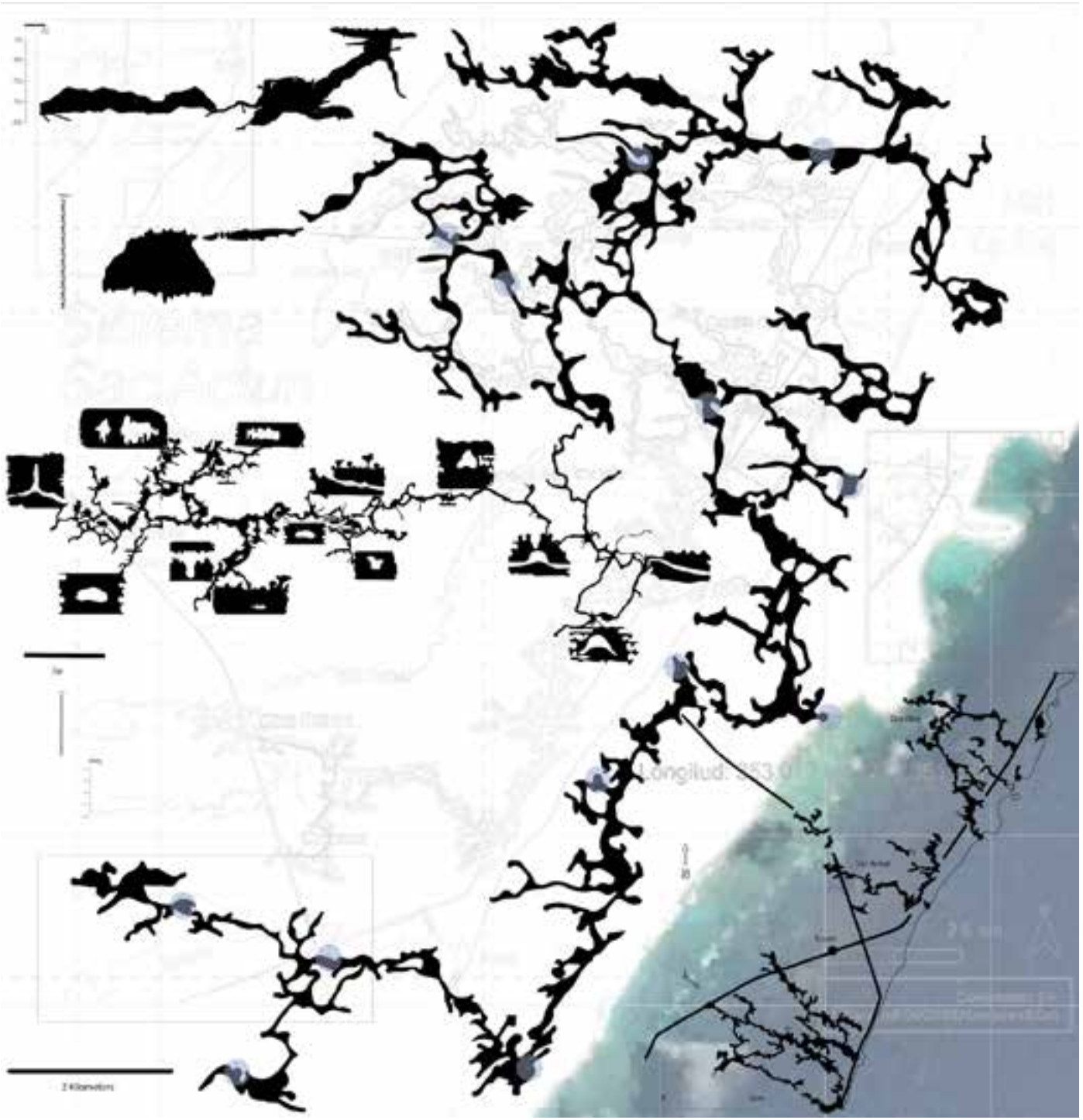


Image by Juan Gomez

Appendix



Generative



112 Drawing by Juan Gomez

Drawing by
Maria Fernanda Rosario

Wanderer

Analytical perspective
of the polar bear

1. Russia
Geological Map

2. Ice sheet
connection to soil

3. Anatomy of
polar bear

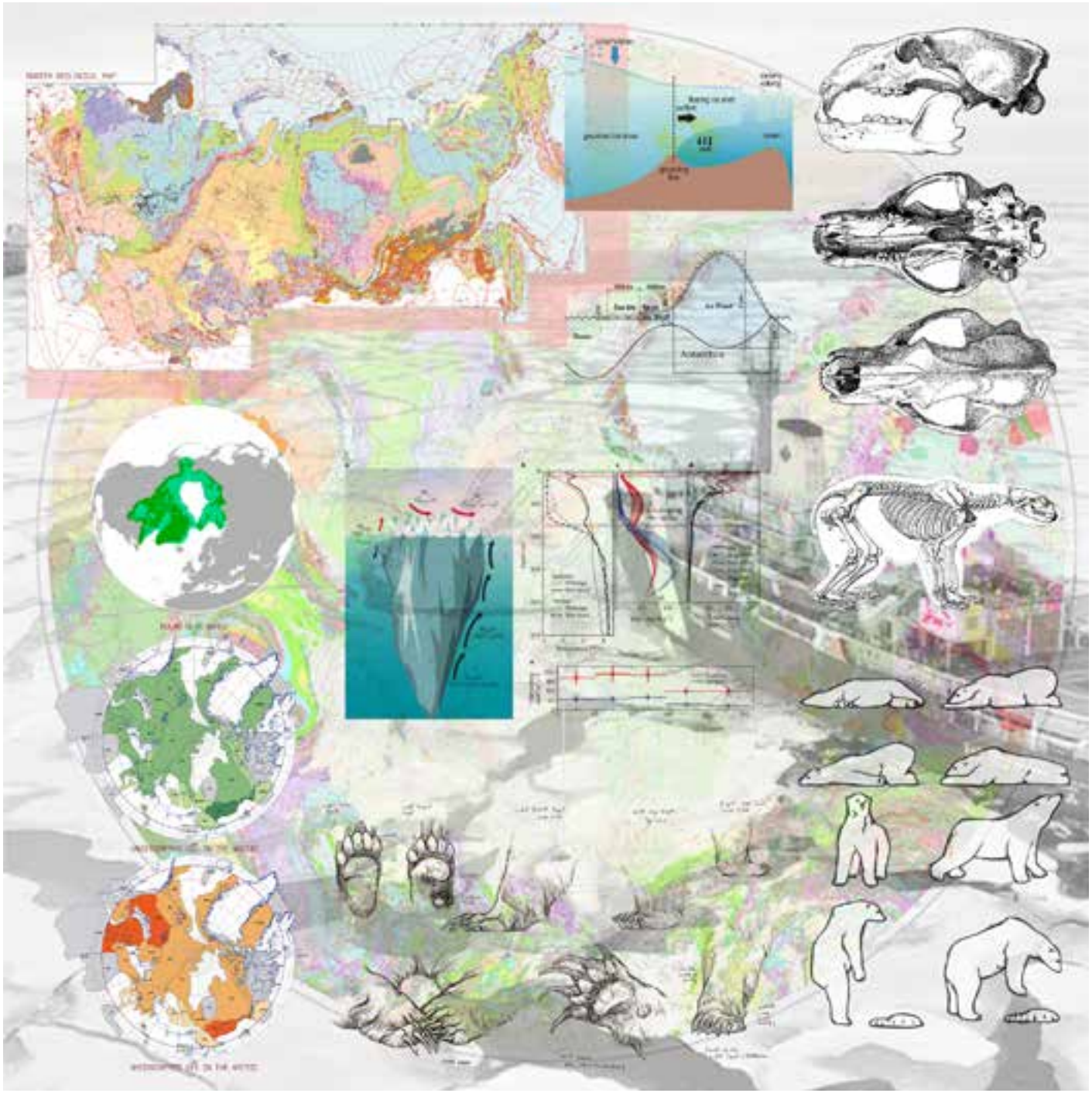
4. Polar bear
range in Arctic
Circle

5. Oil Exploration
in the Arctic

6. Gas Exploration
in the Arctic

7. Polar bear paw
anatomy

8. Iceberg melt
mechanisms
seasonal
oceanographic
conditions

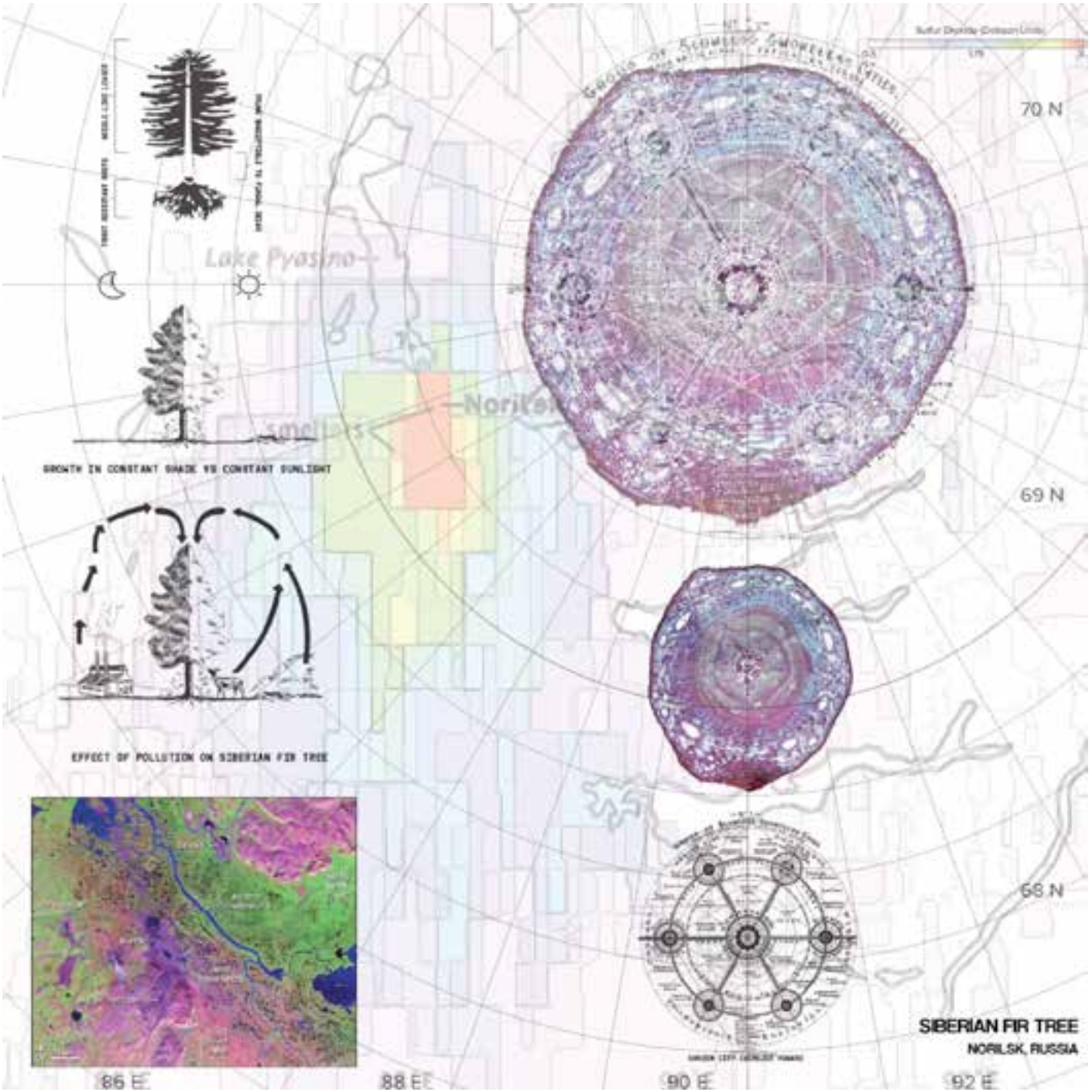


Ramification

Generative drawing aims to explore the migration polar bears have made into land from the ice caps. Showing the lost polar bear trying to integrate itself in an industrial city that is harming the well-being of the species.

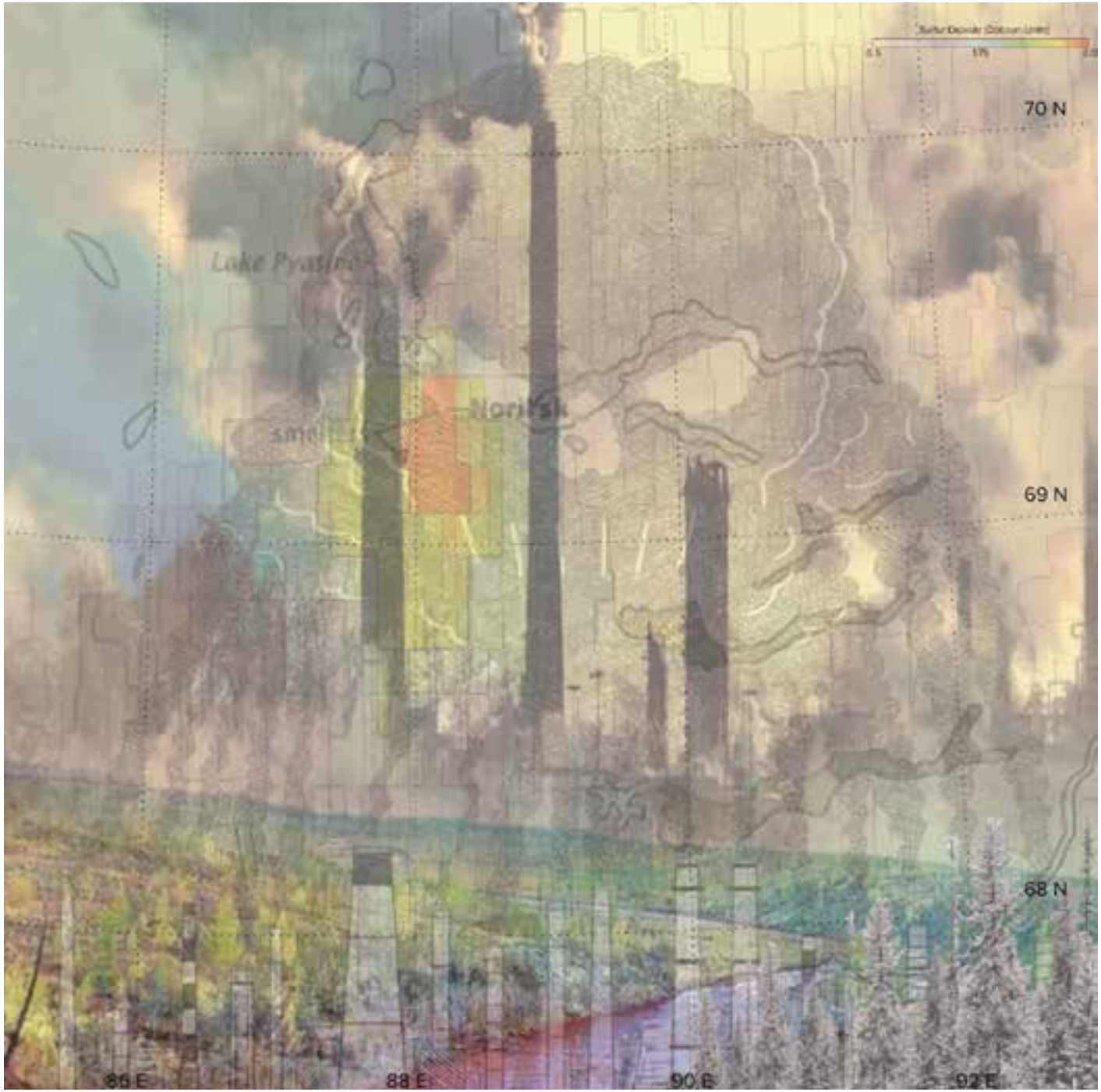
Mutation

Analytical drawing aims to anatomy of the tree.



Isolation

Generative drawing aims to show the effect pollution has on the tree



Bear and Tree Habitat

Architectural Proposal

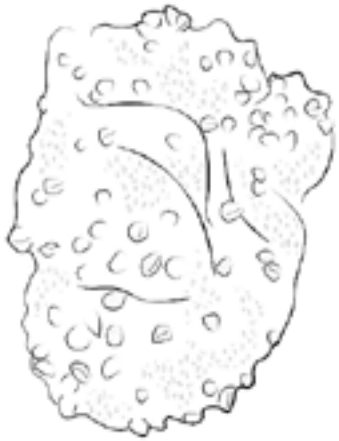
The future of human habitation in space lies in self-assembling, adaptive, and reconfigurable structures. Rather than transporting fixed, rigid habitation modules and risking astronaut Extravehicular Activities (EVAs) during construction, we can lower payload weight, reduce assembly complexity, and revolutionize space-structure modularity by relying on reconfigurable, self-assembly.

Each TESSERAE structure is made from a set of tiles. These tiles are tuned to self-assemble into a particular geometry--in our initial prototypes, we have focused on the buckminsterfullerene (20 hexagonal tiles, 12 pentagonal tiles).

Each tile at minimum includes a rigid outer shell, responsive sensing for bonding diagnosis, electro-permanent magnets for dynamically controllable bonding actuation, and an on-board power harvesting and power management system. Habitat-scale TESSERAE tiles will also including clamping and sealing for pressurization.

Bear Scat

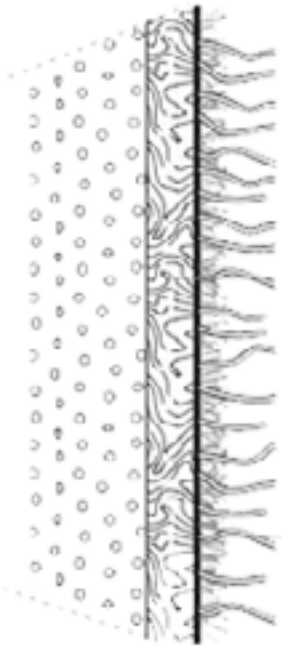
Bears are the primary distributers of small f ruit seeds in, spreading the seeds through t heir excrement.



Above: Globular Scat (contains berries, s eeds, vegetation
Below:Tubular and Tapered (hair, bone and f ibers)

Conifer Cone

Female cones produce seeds
Male cones produce pollen

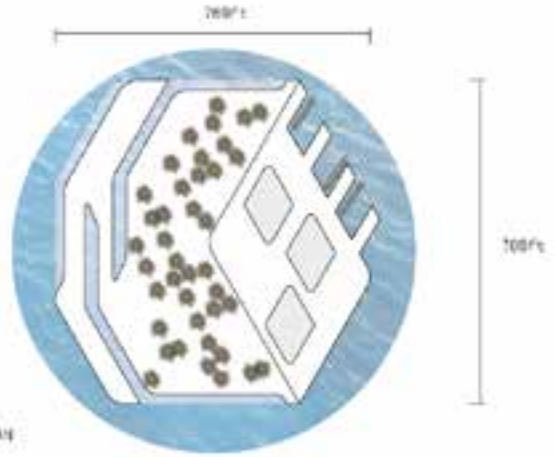


Bear Fur

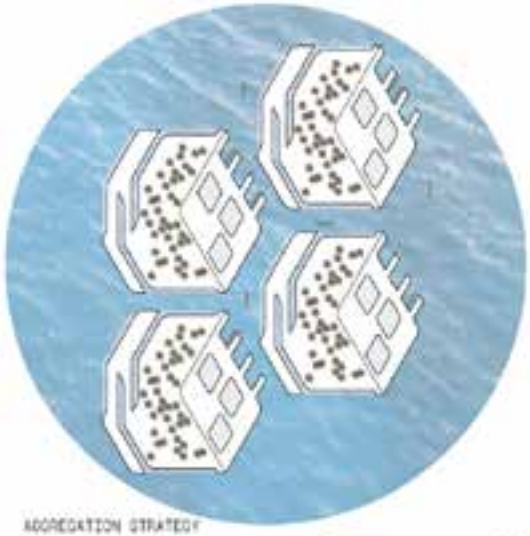
Some plants, like the burr at left, have barbs or other structures that get tangled in animal fur or feathers, and are then carried to new sites

CONCEPT

CONCEPT



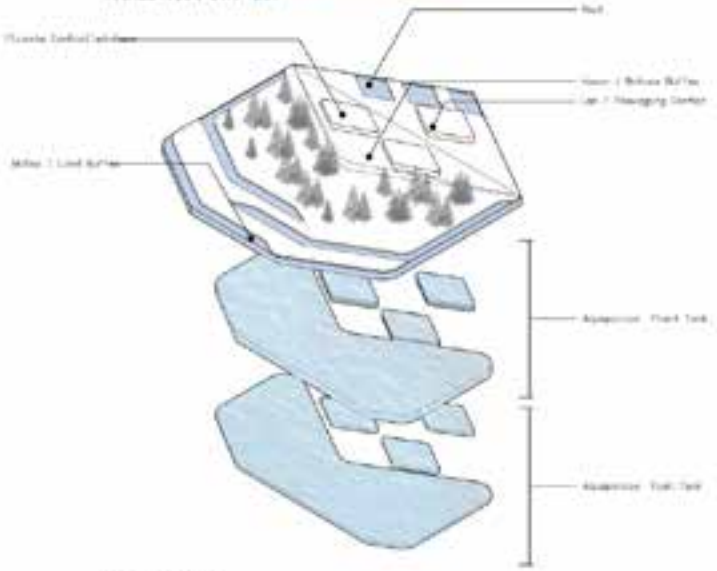
PLAN



AGGREGATION STRATEGY

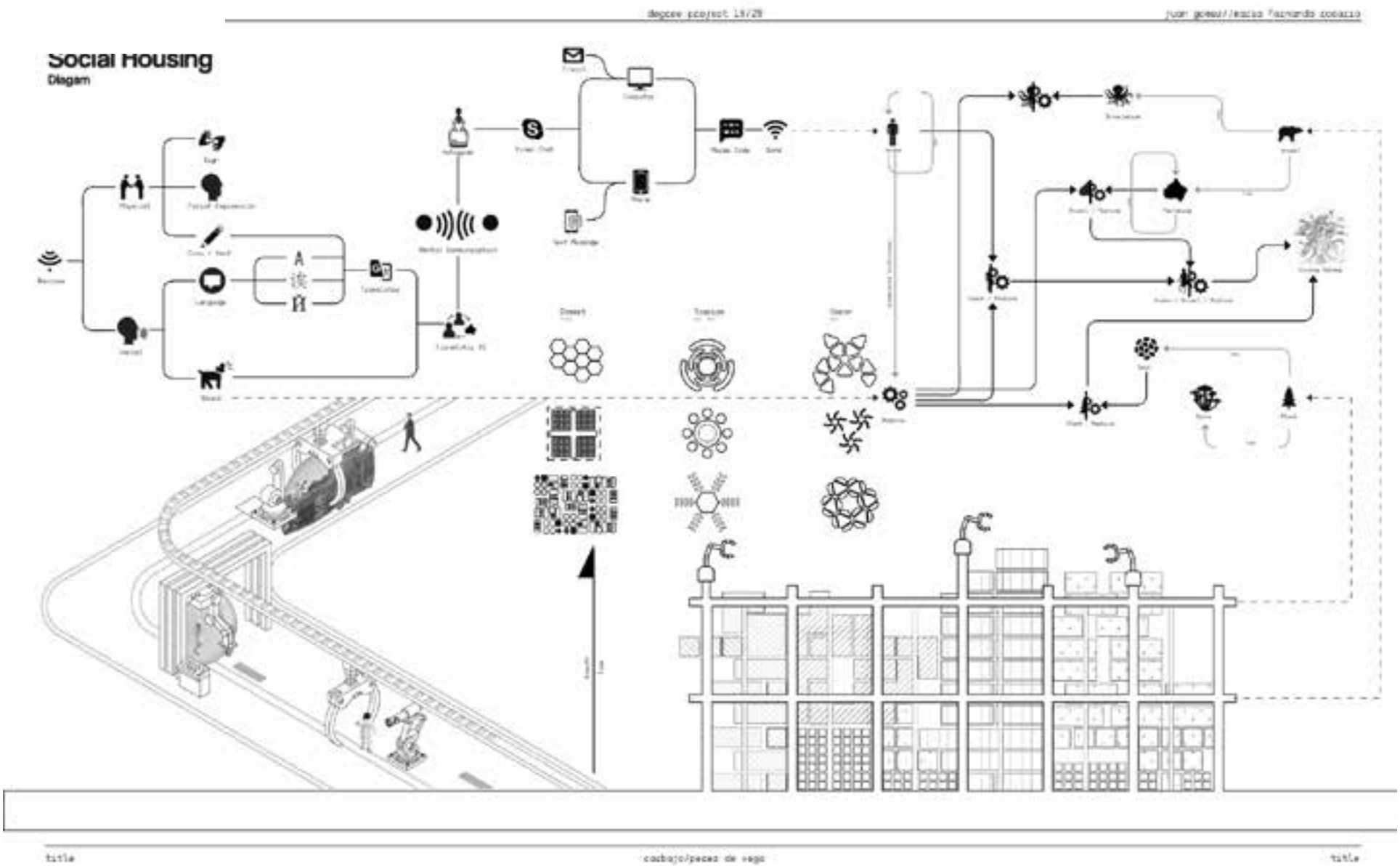
SECTION

AXON

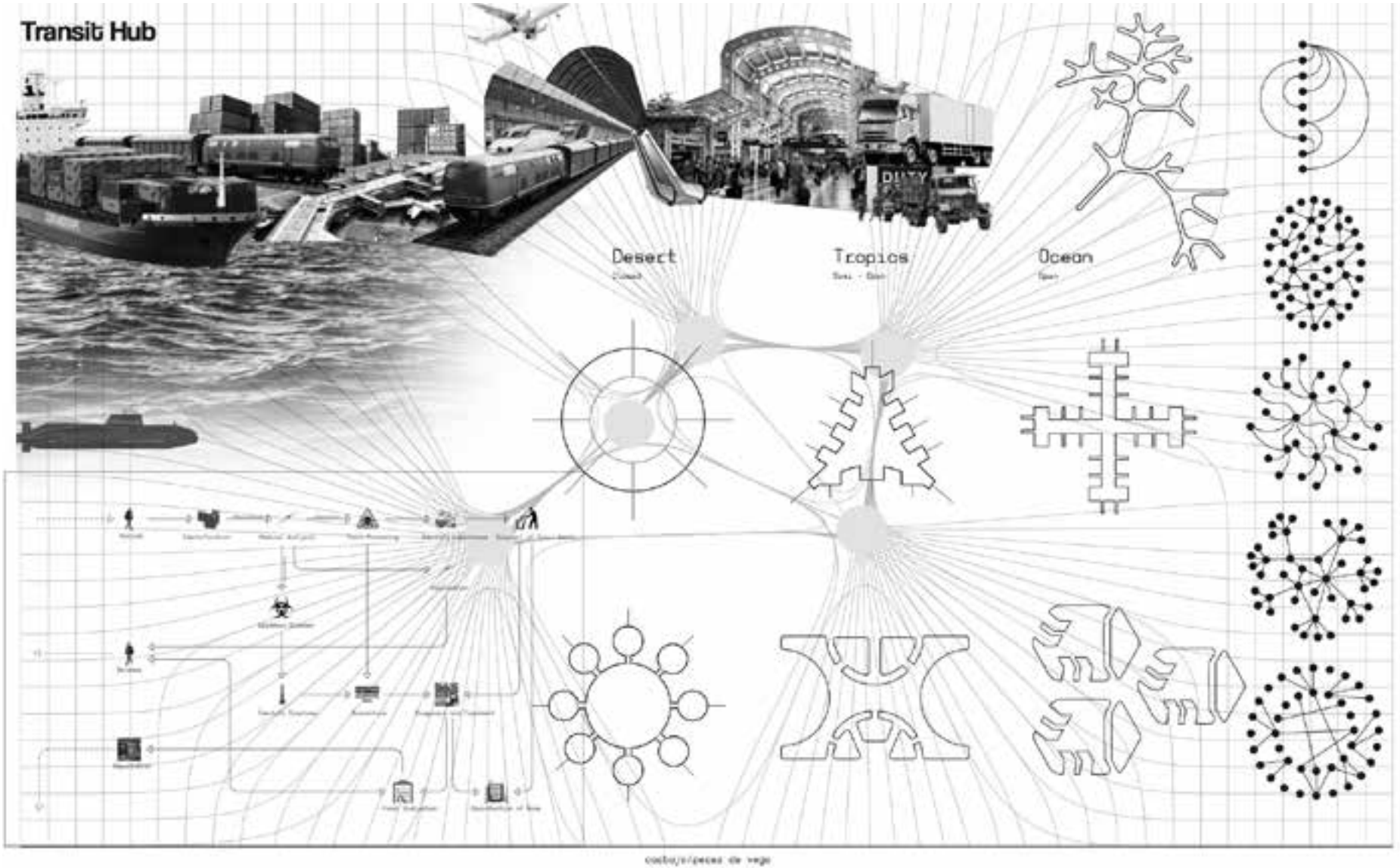


EXPLODED AXON

Social Housing Typology



Transit Hub Typology



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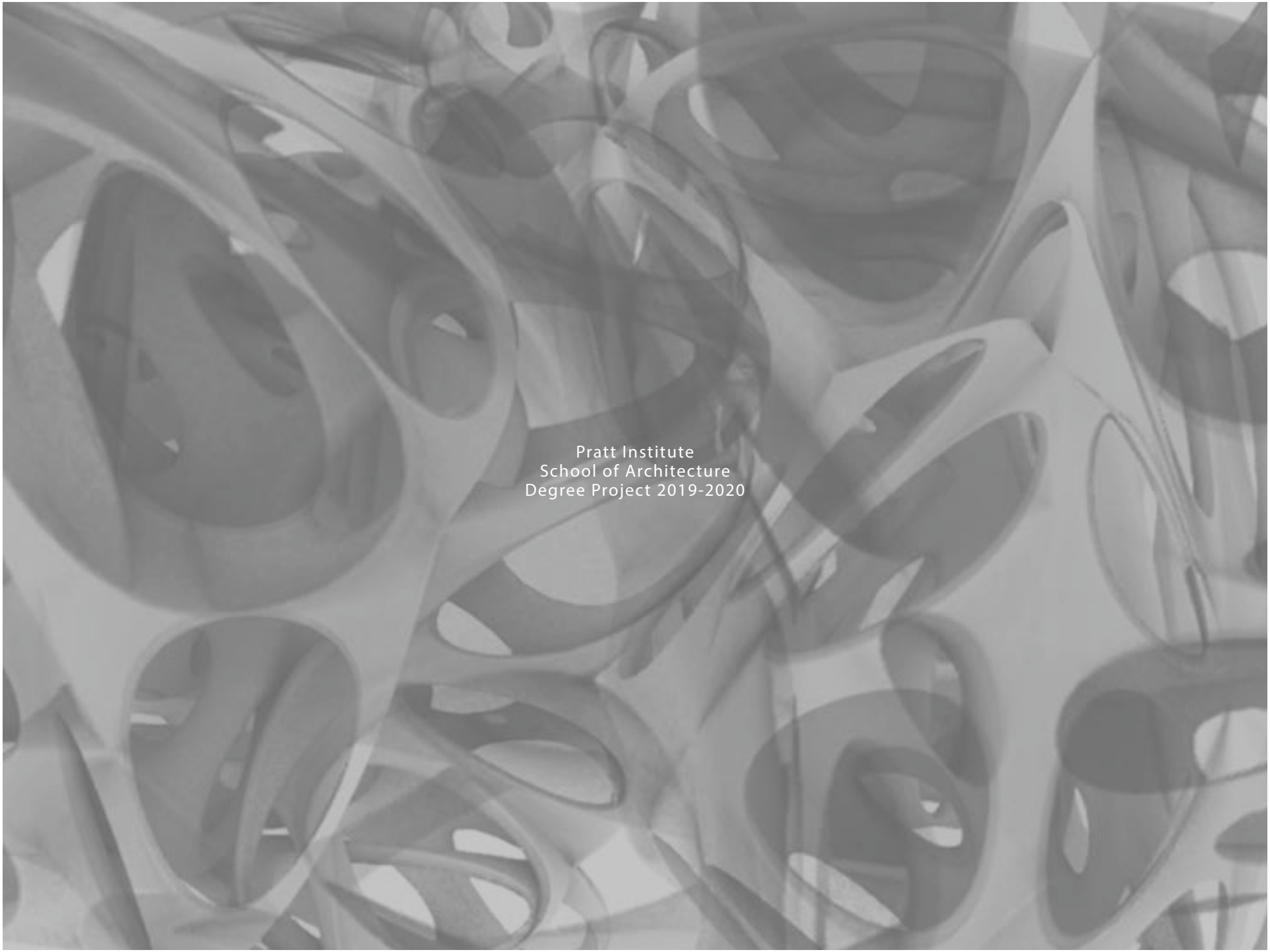

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