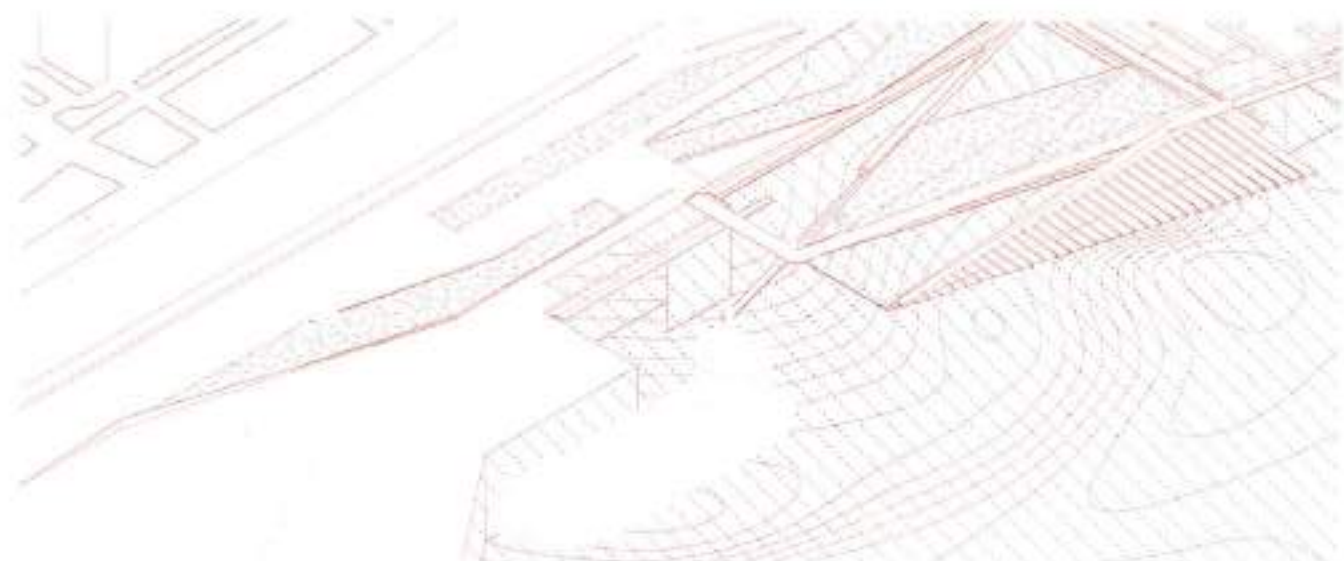
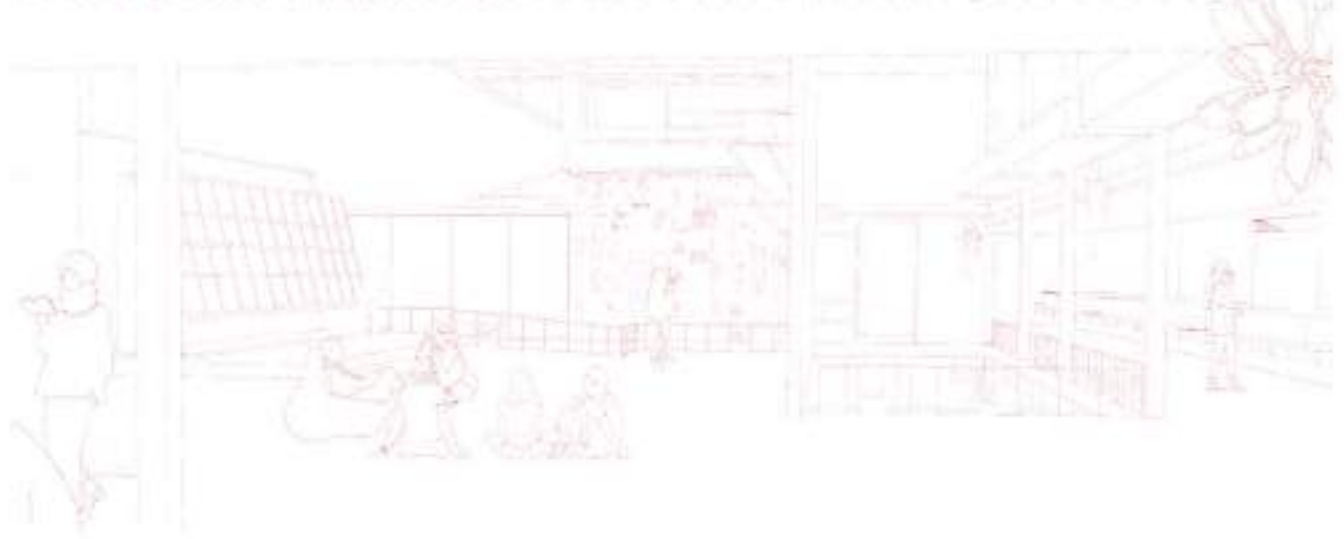
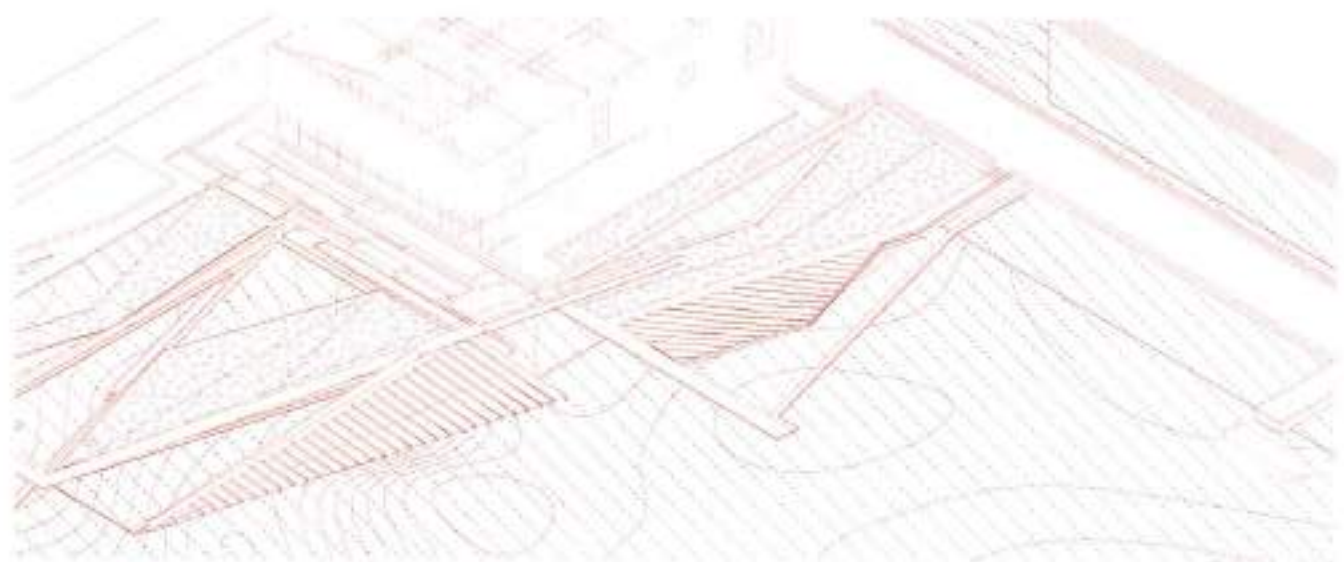




IMAGINING ARCHITECTURE IN THE AGE OF ANTHROPOCENE

REVIVING COEXISTENCE IN HELSINKI SOUTH HARBOR



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ABSTRACT

The thesis presents the theoretical and practical background for inclusive urban formation regarding human and non-human entities as equal stakeholders. New approaches to environmental policies are highly critical for introducing hybrid ecologies, especially in the urban fabric. Thus, the project focuses on the decolonization of institutions such as natural history museums and herbariums as a response to the fallacy of modern thinking, which renders anthropocentrism only with scalar valorization and global imageries beyond patchy consequences of land and its inhabitants for centuries. In that respect, modern practices against a city and forest are discussed as an architectural reflection of nature and culture duality, and the problematic side of inheriting reductive perception from history has been presented through the seeds and origins of the herbarium program. Thereby, alternative viewpoints as; the Chthulucene theory suggested by Anthropologist Donna Haraway and Anna Tsing, the Gaia theory of philosopher Bruno Latour, and the 'Foams' of modern times by Peter Sloterdijk play key roles throughout the discussion of issues in the thesis to speculate about new ways of engagement with context, social processes and a full array of non-humans. Secondly, in the light of the theoretical background of the thesis, the design phase supports new ways of transforming waterfront infrastructures to re-interpret the static condition of urban elements by regarding their post-industrial, ecologic, and infill qualities. Following this, a transformation of waterfront infrastructures can be studied in a multidisciplinary way as reconciliation sites between urban ecologies and human geography. Hereby, the Helsinki South Harbor has been selected as a project site, and the new civic hub has been introduced alongside marine biology and Helsinki University Herbarium architectural programs. In addition, the recent inquiries on urban ecologies highlight the exciting encounters of species' assemblage, especially in a world that loses its wildlife and habitats due to unprecedented stress caused by various industries and urban expansion. Lastly, the project presents a comprehensive environmental preservation policy for the inhabitation, observation, and reintroduction of both marine, plant, and flying species before taking into account creating human-centric spatial organization, which has become a chronic problem in the architecture discipline.

Key words: anthropocene, coexistence, gaia, chthulucene, infrastructure, assemblage, urban ecology, political ecology.

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CHAPTER | 1

Introduction

INTRODUCTION

Nature and culture are generally viewed as opposites to each other. What belongs to nature cannot be the consequence of human interference, while culture is achieved at the cost of nature (Borghini, 2019). The distinction between culture and nature is nourished by human-oriented activities for many years and the boundaries separating human and non-human worlds are sharpened beyond reflecting possibilities for co-existence. Moreover, nature and culture dualism has always been a question of the philosophy which concerns the fundamentals of life in every aspect. Yet, the history of widely acclaimed philosophies that we are all familiar with demonstrates that the 'knowledge' and 'reality' are built upon the hierarchical existence over nature. First of all, the origin of hierarchical perception of the universe is based on Aristotelian tradition which defines Psyche (spirit) and puts the 'man' as a rational animal at the top, then animals, plants, and inanimate beings in a top-down order of the world. This means each existing modality's being and value are predetermined by its assigned position within schemes (Kodalak 2021, 41). Secondly, the Christian tradition emphasized the relationship of man to God; the classical Greco-Roman renaissance tradition emphasized 'man', his power and pleasures but neither put the emphasis on man's relationship with nature, the earth, and the cosmos (Wrede, n.d.). This continuous devaluation and rejection have resulted in ignorance and apathy towards nature (Plumwood, 2004). Consequently, the philosophy of the modern era faced the fallacy of the Cartesian thinking against the terrene crisis of the living world in the aspects of both ecological and spiritual. The current situation requires abandoning the illusions of this distinction where globalization and progress trends gathered momentum parallel to the exploitation of nature.

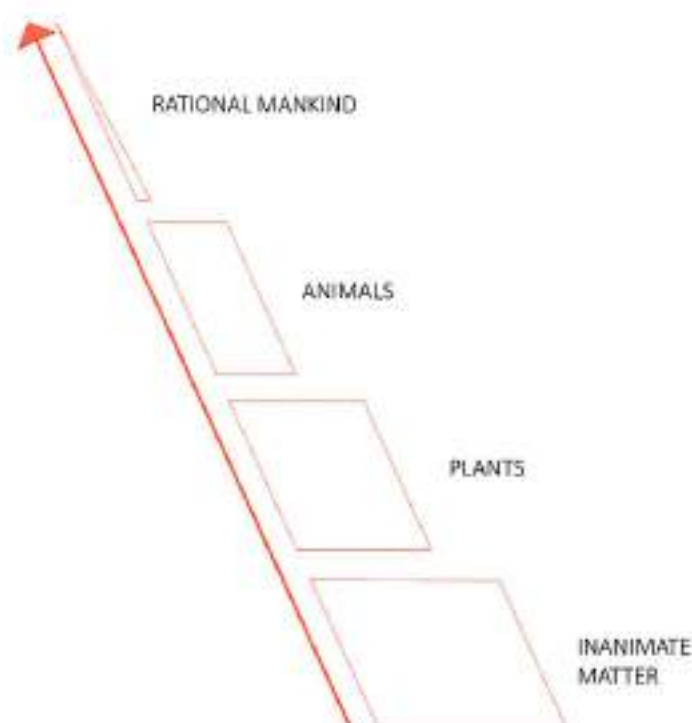


Figure 1. Aristotelian scale of nature

In the same way, the philosopher Bruno Latour argues the modern myth which is the belief popularized by the West that asserts everything natural exists in a pure form apart from anything cultural (Latour 1993, 36). In this way, Latour claims that the separation of the natural sciences and humanities favors the Cartesian approach, especially in the industrialized world. Such approaches including Latour's philosophy are crucial for constituting the new movements of thought instead of stereotyped and conventional ways of knowing that regress the functioning of the world in almost every field. Because sociology, political economy, and preservation ecology developed in accordance with modern myths that highlight human exceptionalism. In this regard, it is believed that the man's lived sphere has to be sterilized and controlled by supporting regulations, laws, and beliefs.

On the other hand, the position of the architecture discipline is vital for the interdisciplinary discussion which is fundamental for establishing a physical relationship with nature. Concerning this issue, architecture has been seen as geometrizing landscapes for centuries and interpreted as building castles that exclude all forces of the enemy outside city walls for the good of the 'insiders', and in this case; the enemy is a distant understanding of nature that has been commodified and if it is not commodified yet, labeled as wild and conceived as a threat to human comfort. Although the history of architecture can be expressed with the influence of new rational and artistic ways of thinking in many periods; none of the discussion of style, form, aesthetic, function, or user's perspective has strayed beyond an anthropocentric giving form to the inhabited environment idea. Therefore, the notion of nature was identified for the civilizations somewhere between the majestic incommensurability of an unmanaged nature and separating and mechanizing 'nature' into ever more intricate and tamed geometries (Diogo, Rodrigues, Simões and Scarso 2018, 202).

Today, all the ecological and climatic crises that the world is facing are a consequence of the wrong attitude against nature, and the built environment is not just responsible for hot topics such as Carbon emission rates, net zero goals, alternative energy sources, and green industries. Additionally, all these positivist approaches assist the wrong conceptualization of the natural phenomena, especially in the cityscape which has already begun to lose its relational operators about material flows, use of resources, and expelled non-human users and former state of the site. Thus, architecture and landscape architecture become professions that design to tame topographies, hydrology, plantations, and even climates for the benefit of human use and verified and calibrated time aspects. Finally, it is crucial to notice that the definitions of the current climate crisis which are constantly expressed by the media did not appear suddenly in the physical world but accelerated as a consequence of a slow pace of the deterioration of the systems of the Earth such as atmosphere, hydrosphere, biosphere, and lithosphere. Thereby, the solutions against the Ecological crisis are also hard to expect to be linear, gradual and steady in general (Monbiot 2021). Anthropocentric effects have a constant trauma impact on habitats and the term 'trauma' is a convenient description for the current crisis because it contains a time aspect with the definition of the word as 'lasting shock and pain' in contrast to static /rational consideration of the Anthropocene.

In recent years, there has been an increasing interest in alternative world manifestations due to the final image of the ruined world as a consequence of the conventional mainstream philosophies that prepare affirmative grounds for so-called ethical civilized actions. On the other hand, recent and most common debates about new ideological shifts in our school of thought against non-humans are voiced by the Chthulucene theory by Donna Haraway and Gaia Theory by Bruno Latour. Firstly, two prominent Anthropologists; Donna Haraway and Anna Tsing define Chthulucene as a distinctive term that emphasizes multispecies unfolding and tentacular thinking which connects various domains of existence in potentially collaborative and creative webs of kinship (Haraway 2015; Haraway 2016a). This view neither discriminates any life form from another nor is in a quest to benefit only the smartest and most capable ones. In addition to this argument which is against human-centered ideology, biology has a great potential to reveal relationships among species and motivate human beings to embrace this kinship. According to this point of view, the mainstream philosophy should redefine life as not what has a form but rather what lies between forms (Coccia and Godoy 2020). Therefore, the architecture debate echoes in modern fallacy can be re-interpreted as an interface between human and non-human entities to encourage unexpected encounters without exploitation in mind. Although climate change is affecting the interaction of species that depend on each other for many reasons, these disrupted ecologies may also generate novel ones (European Environment Agency 2016). In order to comprehend the urgent necessity of these couplings, botanists, zoologists, genetics, and biologists have the potential to define features of both plant and animal kingdoms beyond modern definitions of movement, intelligence, and consciousness. At this point, according to geneticist Daniel Chamovitz, the issue is not questioning plant intelligence but trying to understand their consciousness about their constantly changing surroundings (Chamovitz 2013, 131). If both human and non-human entities are capable to conduct spatial modifications for 'dwelling', many fields that put man at its center should focus more on culture's relationship with the environment and include more-than-human architectures which are in constant movement.

One of the main reasons why societies need such a radical change in ideologies is because of the way that the origins of modern ontology and epistemology emphasized the introduction of plants and animals for centuries with the condition of their captivity and inanimateness in sterilized and ex-situ conditions. However, the problems such as species loss, feral existence in the urban fabric, and preservation of habitats have become a central issue contrary to the passive representatives of 'environment' that is poor in terms of offering for the landscapes of tomorrow. From that aspect, the crisis between nature and culture requires not only architectural, scientific, economic, or ecologic considerations but also philosophical attitudes, especially for architects as the primary decision-makers of the built environment. Moreover, cities and architecture that we understand parallel with the idea of expansion should prioritize multispecies assemblages and heal the disconnected evolutionary processes of the species within the framework of co-evolution and co-habitation. The notion of coexistence derives from the castle's walls that have come down as an outcome of perpetual human interference and now, the ruined cities invite whole beings to construct a new metropolis for cohabitation (Amir 2021).

Finally, Bruno Latour's Gaia is an important metaphor for 'the living planet' Earth to defy the mechanistic thought that typified geological science and, implicitly, qualified anthropogenic environmental catastrophe (Sands 2020). Consequently, Latour's Gaia will conceptualize not only the need for a sole naturalist approach but the necessity to constitute the politics of nature and the changes in science and technology in the age of Anthropocene throughout this thesis. The 'Gaia' is not a phenomenon that only comes to light for human discourse in rural peripheries with their picturesque qualities, on the contrary, it is intertwined with reconciliation sites such as mining sites, landfills, mechanized landscapes and waterfront infrastructures and their whole range of social, political, technical and ecological layers. Thereby, a discussion of 'Gaia' lies beyond the scope of solely architectural framework and guides us in terms of the meaning of the Anthropocene in every aspect of life and shaping the architecture's mission toward constructive solutions in the future.

CHAPTER 2

Theory and Background

Embracing Hazards

City & Forest

Architectures of Exploitation

Records of the Anthropocene

THEORY AND BACKGROUND

Acknowledging that nature cannot be separated from culture at any level, it is the only way to look at this Climate Crisis narrative from many perspectives beyond unifying definitions that not only humanity, but from the perspective of all the living and non-living entities. First of all, the Anthropocene is still a very helpful umbrella term for many disciplines to explain environmental issues since its first use by Crutzen in 2002 as a scientific term. However, it should not just be an attempt to name the era with geological references where the main force on the Earth became human actions but also opens up the discussion of taking responsibility in order to decelerate and even reverse those anthropocentric consequences on non-human world. As a result of this dominant progress of human transformation and capability to transform landscapes with developing tools caused a topological turn for non-humans. One of the key cornerstones of the 'age of humans' is the concept that plants, animals, seas, and forests are just resources to be exploited to tackle economic, cultural, physical, and mental health concerns (Diogo, Rodrigues, Simões and Scarso 2018, 69). That's why, proposals as a solution of being freed from this catastrophe based upon the reduction of nature of such as quick afforestation projects, emergence of green industries which has devastating effects on far-away lands and people also serve for the same Euro-centric and human-centric salvation idea.

Eventually, these effects of the Anthropocene and 'the great acceleration' that we witnessed by measurements, graphs, and forecasts caused inaccurate descriptions of climate change as static and technical phenomena and these descriptions of the crisis are also from the perspective of the Anthropocene. Secondly, Climate Summits concerning all countries or reports from prominent institutions remained far from the realistic action plan and overlooked heterogeneity of the webs of the horizontal hierarchy. So, the decisions at the political level focused on graphs, numbers, and planetary thresholds as a consequence of this attitude; non-humans remain separated objects under the influence of the subjectivity of humans and it promoted the distinction of humans from the rest of the living and non-living world. Furthermore, although more harmful uses of nature for medical and genetic research, aesthetic exploitation, and political acts have been added to those meanings, the nineteenth-century technical perception of industrial consumption, extraction, and monopolization still resound with man's relationship with the biosphere (Cohen and Naginski 2014, 24). Under the guise of development, the eradication of different ecosystems and the massive standardization of nature has proceeded mainly unprotested.

Additionally, this development is supported not only because of the economic gain but also for the illusion that scientific and technical developments might generate an augmented 'hyper-nature' that is completely compatible with modern lifestyles and increasing demands (Bucknell 2020). In short, the protection acquired from man-made glass ark will always be regarded as a way of survival despite all the fluctuations caused by humans because this metaphor strengthened the 'constructed nature' by the act of appropriation (Kershaw 2000).

As a result of this misconceptualization of nature as the commodified hyper-nature that resounded by everyone but could not imagine beyond it is green, created with sterilization, capital, technical systems, and commercials, and even worse, an image of green has been globalized. This image of nature is inevitable due to its strong relation with modern lifestyles as long as our visual sensory dominates. Nowadays, the term 'Ecological Modernization' is given new meaning and appeal by the utopian manifesto that imagines a 'good' Anthropocene that would assume artificiality's omnipotence as the dominant species (Asafu-Adjaye et al. 2015). The problem is that social sciences and environmentalism commonly exhibit a condition of confusion leading people to think that ecological politics are negotiating 'techno-natural' space and time (White and Wilbert 2010, 18). That's why humanity's position today can be summarized as not just being a protagonist of the Anthropocene but also the crisis of not fitting any holistic plan and being in a situation of political and sociological uncertainties. Bruno Latour points out that; science- technology – society and nature become more and more important in order to establish a parliament of things and to have an opportunity to raise a voice for the voiceless. Because for many geoscientists agreed that the danger posed by the Anthropocene is caused by its 'interestedness' in traditional norms of objectivity. In the end, the Anthropocene has the potential to push official geological categorization into unknown territory as a most political unit of the Geological time scale (Zalasiewicz et al. 2010). Finally, the attempt to define the Anthropocene and set it on a geological timeframe associated with politics, entrenched interests, and ideologies resulted in exposing Anthropocene that science, which is frequently portrayed as objective, is driven by and subject to political agendas (Vansintjan 2015). Our politics and sociology insist to keep nature out of our decision mechanisms today and sciences reduce climate phenomena to separate climate change from its social and environmental contexts. As a result of these policies, climate change is reduced to a discrete physical process (Rigg and Mason 2018).

On the other hand, profit economies advocated by politics demonstrated the limitations of humanity's techno-scientific strength as well as the catastrophe that 'nature' has in store for us. From the perspective of political ecology, the cities are home to a wide variety of inhabitants and behaviors, many of which are ignored by urban policies and have long-term effects (Hinchliffe et al. 2005). This assemblage in cityscape requires a new climatic mentality similar to what Latour argues. According to integrating ecological and climatic drivers of global change including growing scientific knowledge and new philosophies, it is problematic to approach architecture with the creation of discrete and isolated objects, spaces, buildings, and landscapes (Zari, Connolly and Southcombe 2020). We clearly need collective systems of administration and supervision, rather than naïve confidence in the technocrats of the state apparatuses, if science and technology are to be directed toward more human ends (Guattari 2000, 42). The real meaning to have an agency during a climate crisis like this can be described best as a destination where we move towards the same 'human ends' with different practices and struggles. Nonetheless, it's obvious that the scientific community can play a key role in multiplying sensors and giving alternative explanations for natural events. This is an approach in which scientists work together with citizens, activists, and politicians to promptly identify problems (Lenton and Latour 2018). For that reason, imagining ourselves as terrestrial agents in every action that we cause is the key to this issue. In that sense, the terrestrial agency does not have to

omit the atmosphere from being terrestrial contrarily, highlighting sites that have shifted from their equilibrium caused by Anthropocentric actions still have a place in planetary dynamics. Thereby, shifting the idea of being planetary to terrestrial requires new political and social thought in order to highlight the interdependencies in the built environment. In short, Latour's idea of Gaia is not a list of issues awaiting sensible policies; rather, Gaia is an invading event that disrupts conventional thinking and arises from a need for new ontology (Haraway, 2016b).

Furthermore, separating climate change from the physical world and reducing it to charts and scalar understanding illustrates that the association between society and ecology is superficial and only speaks up with the wrong representatives. These representatives of nature that scientists speak their name can be best understood with the narration of the deterioration of the environmental systems such as the ozone hole and the impact of its depleted image on all of us. The issue about the ozone hole example is the creation of a quasi-object that scientists investigate, factories that manufacture, workers that produce, climate researchers who reveal, and in the end, a phenomenon that ultimately talks about the same thing (Latour 1993, 144). Moreover, the same issue is valid also for writer John Harte due to the predictive character of science and its ability to answer the complexity of the ecology. Harte's example about a person with red hair and how there might be various explanations from different points of view such as biochemists, geneticists, sociologists, and evolutionary biologists are interesting because he asks if all these sciences are correct and all these mechanisms are talking about the single phenomena (Harte 2011, 9). In other words, as an outcome of the difficulties depicting climate change, it necessitates efforts at expressing either the interconnectedness of scientific events, experiments, and quasi-objects or the inhuman scale of the problem (Morton 2013, 199). For the quest for true representatives of climate change in the junction between human and non-human co-existence; interaction between oxygen, ozone, and carbon dioxide in the earth's atmosphere, programs will have to be established to govern. However, the issue derives from the desire for searching 'mechanic ecology' which inevitably repulses us into an infinite regress of explanations (Harte 2011, 9). Yet, it is clear that the current synthesis of sciences operates with genes, cells, organisms, populations, and species, putting them in interactions with one another that are well-described by competition mathematics (Haraway 2016a, 49). The world is deeply mathematized in terms of units capable of successfully leaving copies of themselves (Haraway 2016a).

In addition to that, technical trend lines of environmental dynamics alone are insufficient since they fail to provide 'cultural meaning'. New hybrids between culture and nature dualism can become manageable if exclusions are re-interpreted as a network of relations and form a whole that means more than its parts similar to the lexical meaning of 'hybrid'. Because the real crisis of the Anthropocene is the exclusion of non-similar ones or descriptions that failed from the approval of Western epistemologies which featured so-called 'modern' and 'global'. While humans have attained the wrong conceptualization of geological agency which ended up in catastrophe, humanities have also demonstrated a lack of collective social and political ability to respond to, reduce, or mitigate this situation (Fox 2013). While humans have attained the wrong conceptualization of geological agency which ended up in catastrophe, humanities

have also demonstrated a lack of collective social and political ability to respond to, reduce, or mitigate this situation (Fox 2013). And, these conservative attitudes of Western fallacy follow up multiple layers of bounds from our individual spheres to reaching up to the community and from nations states to Economic associations which always justified themselves.

In the same way, I found it highly valuable to address the 'The parliaments of things' from Bruno Latour for discussing his theories with 'Spheres theory' by philosopher Peter Sloterdijk to detect the notion of exclusion and mankind's relationship with the exterior. First of all, the idea of 'building up city walls' as a metaphor derives from thinking about a need for segregation such as a sphere for excluding. Building interiors affirms inter-scalar shifts from micro-cosmos to macro-cosmos and in terms of the functioning of modernity; only things that are suitable, not wild or culturally, linguistically, or morphologically distinct, can be included in the system. In his conceptualization of terrestrial globalization, Sloterdijk states that attempts of trying to turn all the exterior spheres into one whole by inhabiting the outside and these practices will inevitably result in the construction of an artificial inside, where bubbles will come to stabilize themselves to 'live' (Morin 2009). In other words, the membrane allows us to appropriate everything inside it, so producing an interior, and Sloterdijk's spheres imply living into this spatiality with the constructed world. Due to this dual action of shielding and expulsion on the one hand, and the construction of an interior on the other; Sloterdijk refers to a sphere as having an 'inclusive exclusivity' which results in immunity and defines its 'umwelt' against what is left outside (Wambacq and van Tuinen 2017). Furthermore, we see this 'inclusive exclusivity' in the cities' development and the functioning of customs throughout history. Contrary to the interior's dynamic and blurry formation, the clear line of the border is limited by regulations that are only as permeable as the interior allows throughout its checkpoints. Although the interior is stabilized for living, it wants to expand onto new places physically and new ontologies. So, Peter Sloterdijk's spheres theory stands both as theoretically and spatially meaningful as a philosophy of modern times, and in the aspect of 'immunization' concept, it is obvious to see the obstacles built over nature's flexibility especially in an urban context. For instance, the excessive inclination to 'city hygiene' and the degree of artificial alterations on land cover and digital transformation of industries nowadays. Finally, this results in land surface division and change to the point that the ecology is unable to move within its biological boundaries in the time allowed (Rotherham 2017, 5).

Following this, Sloterdijk introduces his foams theory which is a final scene as a result of bursting multiple spheres that have been created within both techno-scientific and immunized urban appearances. From this perspective 'foams' coexist as different entities, and he refers to 'co-isolation' as an actual agent of space construction. This concept of foams alludes to the idea that 'social' is made up of individual, isolated bubbles that share common walls, similar to how physical bubbles are made up and as a result, foams are interdependent on one another (Borch 2013). Especially in urban ecology, the creation of bubbles as recombinant ecologies as a result of isolated disregarded interdependencies gather momentum in the century when the science of biology gained much more explanatory meaning in all areas of life. So, if we consider globalization with Sloterdijk's foams theory, bursting bubbles has inflamed by the definition

of climate change which causes hazards, ambiguous atmospheric temperature, and ecological devastations and it is time to consider a consensus, from bottom-up thinking heard with protests, albeit in a very low voice. Additionally, although Peter Sloterdijk's model has limited application because it deals with narrating more comprehensive and theoretical aspects of the modern era, Latour tries to explain the cosmo-politics which dissociates from global politics and economies that are so intertwined with each other. Parallel with the parliament of things and the Gaia hypotheses, Latour outlines his main question as something that is not just about how we arrange the worldly interior immanently but at the same time advocates not only new humans but also possibilities about an array of new nonhumans (Morin 2009). That's why the ideological shift is essential due to the problematic image of the blue planet as not a destination for unifying but a source of perpetual divide and polemics (Latour 2016). At that point, the question is all about how to produce the geological present? Because without an account of the present's production, we can't comprehend today's political obstacles.

Firstly, the creation of the geological present necessitates the creation of relationships, such as those between aerosol cans and the ozone layer, that become involved in the creation of the present as a moment of continual crisis (Turpin 2013, 31). The Society of today is linked on a global scale and is pressed up to the point of action as a result of the great obligations of past and present agreements. Thus, the problem is the lack of production of the 'geological present' at social, economic, and political levels which will eventually become the subject of vain discussions that humanity has to deal with as a result of an accumulation of all bio-spherical fluxes. For example, the number of resources we use, recycling, waste parsing, mining sites or material flows, and many more of these topics have started to resemble an array of obligations that are much more complex, harmful, and difficult to abandon in the long run due to policies and agreements in various scales. That's why Latour's treatment of bio-politics and the world manifestation that has to be done by unsettling the industries and the social ground is also very important. The new ground should be formed through networks of components; and it is described through multidisciplinary professions and perspectives (Latour 1999a, 5). If we understand nature from Latour's definitions of 'Gaia' and 'Critical zone', these terms reject the tendency of justification by neither global norms nor local familiarity.

Secondly, tackling both Sloterdijk's 'foams' and Latour's 'Parliament of things' together reveals that the cosmo-politics of Bruno Latour evokes Sloterdijk's depiction of the world as 'global foam'. Similar to Latour's expression of no longer dwelling in one single cosmos, Sloterdijk's breaking of the global uni-sphere into a global plurality without totalization (Morin 2009). However, these philosophers disagree on how the world is connected to the terrestriality of the world. According to Latour, there is no one terrestrial globe and no genuine nature that can be known by science. Additionally, Latour differs from Sloterdijk advocating foaming would be caused by the proliferation of nonhumans rather than the Earth's spatial finiteness (Morin 2009). The descriptions of Sloterdijk's artificial enclosures state that an open and infinite cosmos and a closed and finite immune system are mutually incompatible (Lemmens 2017). However, environmental humanities argue that the 'Becoming-with' rejects the separated state of species from the rest of its world and the false belief that we can somehow free ourselves

from Earth's biological community (Wright 2014). In this regard, I found Bruno Latour's definition of atmosphere very useful because it draws us back to the ground as agents of Gaia and evokes the importance of perceiving atmosphere with its thickness. Thereby, the explanation of the atmosphere as a medium that enables patterns and flows of earthy systems in which all living systems are bodily attuned reminds the biosphere which is not dependent on this network of systems but a part of this system. Moreover, this buffer zone in between 'space' and a person who is standing on the ground clarifies that this void is not actually a void and we are not living on the surface of the Earth but inside. Thereby, the atmosphere is a life that exists within us rather than something that surrounds us that's why breathing is a dual act by being submerged in a medium that also permeates us (Coccia and Godoy 2020).

Finally, the Capitolocene practices for hundreds of years of taking our world away in the name of globalization and progress should be replaced with the introduction of recombinant ecologies that intertwined immanently. In that aspect, searching for planetary multiplicities and hybrid ecologies become highly crucial nowadays. Due to the lack of harmony between terrestriality and planetary multiplicity in today's societies, this leads to alienation but at the same time, this ambiguity is the reason why the Anthropocene debate is appertaining to the previous geological periods (Clark and Szerszynski 2020, 9). Because when the topic is human and earth history, humanity's relation with nature has been addressed problematically and in the current situation, the issue is looking for an agency that can relate between natural and social sciences, especially in the light of Anthropocene. If we consider how the discovery of a sun-centered view of space impacted global politics in a significant way, we can see how understanding the globe as 'Gaia' and a 'critical zone' nowadays has the potential to change world politics (Latour 2018a). Especially as architects and urban planners, we have to respect the affinities of biotic and abiotic entities on earth and be aware of the exciting terrestrial assemblages which emphasize patches and interrelations instead of the image of a unifying Copernican blue planet. In conclusion, similar to the definition of the assemblage theory; terrestriality is not reducible to the sum of its parts too. Above and beyond the number of butterflies in a field or bacteria on a surface, Biodiversity covers all of the relationships between living beings and also with their environment (Boeuf, n.d.).

EMBRACING HAZARDS

The cultures that originated as island ecologies with their internal logic are now struggling to find their place in a wider ecosystem shaped by modern transportation, mass technology, modes of communication, and several conflicts (Tilder, Blostein and Amidon 2010, 15). As a consequence of the expansion of Western appropriation that continues still today, vernacular architecture vanished along with indigenous cultures all around the world. Eventually, erased techniques that synchronize with their own context result in destructive outcomes which conflict against international norms and eventually become unable to respond properly. Furthermore, concerns such as beautiful, ugly, healthy, sacred, etc. overshadowed the quality of architecture in terms of inside, outside, ecologically performative, interstitial, etc. For instance; unwelcome social and natural factors, ranging from sewage to homelessness, were banished outside the modern house, beneath the streets and within the walls, relegated to a realm distinct from that of the modern individual's dwelling spaces (Guy 2010, 216). This is the intersection where architecture and built environment appropriate the Sloterdijk's immunization theory but in the era of ecologic crisis, spatial configurations remain passive and far from being resilient. In that case, Donna Haraway's depiction of the Orchid makes sense. According to Haraway; one orchid specie's natural pollinator has been extinct, therefore the orchid has become self-pollinating since then (Haraway 2016a, 68). It remains a botanical negative similar to humanism's current situation which declared 'man' to be the world's measure similar to the orchid, depicting a world that no longer exists (Amir 2021).

Thereby, humanity missed the polyphonic rhythms and co-evolving processes of nature which are occurring constantly. We condemn ourselves to temporalities and static, disrupter infrastructure and superstructure in return. Moreover, we see non-humans as less sensory and less mobile but in a world where climate created forest cover and forest cover created a climate, people remained the least active and least sensory and we are paying the price for this exclusionary construction of built environments, especially in cities with extreme heats, floods, pollution.

Extreme weather conditions are often framed as natural disasters and the media is inclined to perceive nature as something 'passive' and threat to human living standards (Foster 2018, 128). Even beyond the co-existence discussions in the urban public sphere, the notion of 'home' creates a static comfort zone by conflicting with forces that are increasingly seen as chaotic, rather than engaging the natural forces that surround it (Barber 2014). Since the closed spherical human activity immunized the world that we live in from the exact living crust of the Earth, the reflection of the protection extends from homes to nation-states and takes the human beings as a measure of everything. Moreover, Peter Sloterdijk underlines the introduction of the multiple membranes that come with the phenomena of 'boundary' instead

of 'border'. At that point, a border highlights the division between two entities and concerns that interface. On the other hand, a boundary perceives the edges of an entity and gains an interiorized meaning such as cytoplasm. Consequently, referring to the title of the chapter 'embracing hazards' opposes the view that emphasized natural hazards that is as a result of unexpected events apart from the functioning of the modern world standards. Investigating sustainable urban development is a continuing concern together with the decline of rural peripheries which are already modified with agricultural lands, highways, deforestation, etc. In that case, nature and culture dualism proliferated by the discussion about qualities of nature because the word 'nature' is ambiguous when someone mentions without the qualities of naturality while artificiality intervenes for the sake of the city.

CITY & FOREST

It was exciting to witness the shift of architecture's both physical and programming definitions especially under the influence of the modernism movement in the 20th century. On the other hand, 21st century is expected to be open to criticizing the static character of the modernism debates due to new understandings of architecture which involves the nature-culture debate with more biological definitions in order to understand metabolisms of built environments. A city both metaphorically and physically has been addressed in nature/culture dualism for many years with the general opinion that the expansion of one of these phenomena depends on the absolute decline of the other. Since the mainstream philosophy advocated men's hegemony over landscapes, the history of deterioration can be traced back by re-reading architecture discourse.

First of all, the agricultural revolution during the Neolithic period promised new lifestyles which ended up with the creation of spheres that excludes untamed ones outside such as invasive plants, animals, and feral landscapes. In time, urban phenomena required collective behavior of its citizens and revealed the first infrastructures which canalize or gather resources to put them on citizen's service. The elimination of nature from cities by overlapping the Cartesian grid system over landscape contributed to the reductionist perception of nature, which see nature as another and distinct phenomenon. As a consequence of this unprecedented speed of neo-liberal urbanization, landscape sceneries' promise for coexisting among feral entities has started to disappear and inside the city membrane, the wilderness has been perceived as something that should be overcome. Moreover, the progression of human settlement from huts to villages and then cities were a process of cities emerging as completely administrative apparatus according to their political ecology, and in continuation of this uniformity, cities have proceeded not only development of physical environment with infrastructure and building stocks but also strict considerations about urban hygiene. However, although this network of industries and growing demand of 'citizens' needs caused a colossal modification of peripheries and then colonization of far-away lands and sources, as historian Joachim Radkau points out; the slash-and-burn method contrary to common assumption had a way more impact on the environment than factories in the early industrialization period and scrublands often evolved of erosion caused by overgrazing and deforestation during the Neolithic era. That means; even during the Neolithic period, humans repeatedly consumed their resources (Radkau 2009, 15-16). Today, following centuries of fragmentation and transformation, many biological systems are essentially habitat patches of either agro-industrial farming or urban sprawl (Rotherham 2017, 19).

On the other hand, although sciences confirm that urbanization is not the only criminal that triggers the Anthropocentric effects, the story of the forest in opposition to the city has been seen as exactly the enemy of the civilizations' leap. According to scientists; from the

Holocene, all of Europe has seen a general decrease in forests, which is most likely due to human-caused deforestation (Zanon et al. 2018). Manuel Delanda's nonlinear history describes the process of Europe's Latin forests and the transformation of those forest landscapes into wide grazing lands. Acknowledging the dominant existence of a temperate forest ecosystem in Europe a thousand years ago, it is obvious that the current confrontation against ecological crisis is due to deforestation, and a complete lack of topsoil (De Landa 1997, 126). This was the reductionist approach against the flow of biomass because human actions in that ecosystem replaced the forest food web with a food pyramid (De Landa 1997, 108). Therefore, the problem with the hierarchical point of view is because of setting a relationship between species that are not defined by networks of herbivores and carnivores or horizontal interactions but putting human needs at the top instead. Additionally, ideas that oppose pyramid positioning also emphasize the fact that no species needed another for its continuation of life because as abiogenesis proved, there is only its self-creation narrative at the beginning of the world. In brief, life evolved through the self-creation of each species, which overcame evolutionary and environmental challenges (Tsing 2015, 139). Thereby, we start to realize the problem of top-down distribution of modified landscapes contributing to human exceptionalism, and the importance of what ecologists call 'trophic diversity'. The goal of trophic diversity restoration is to repair the broken threads in the web of life by increasing the chances for animals, plants, and other organisms to feed one another (Monbiot 2014, 84).

More recently, contemporary literature has emerged that offers exciting and contradictory findings against how we perceive the cityscape so far. One of the most influential ones is from French Landscape architect Gilles Clement and his concept of 'the garden in movement'. According to Clement, the differentiation of inhabitants is very clear in forest ecosystems in terms of biological possibilities, and architects with landscape architects should embrace the capabilities of plant kingdoms. Besides, Clement points out the theory of uncultivated reservoirs or islands hidden inside vast monocultural landscapes allocated to industrialized agriculture or plantation forests (Gandy 2012). From this aspect, new interpretations of urban ecologies as irregular rhythms that result in irregular ecosystems are valuable in terms of their contradictory character against regularized managements that prefer monochrome landscapes and power dynamics (Tsing 2015, 174). In the discussion over the relationship between the city and the forest, it is time to seek sites that are rich in terms of trophic diversity which have grown along multiple directions and resulting in uneven landscapes, patches, and polyarchic sites (Tsing 2015). This more-than-human approaches are needed for those voiceless and trapped ecologies especially in the urban fabric in a world facing with excessive habitat loss.

THE CITY

Nature culture dualism is also a crucial concept for constructed boundaries by the modernist approach as highlighted by Sloterdijk's immunization metaphor and it is useful to explain in detail with the emergence of gardens as favorable urban elements for centuries. The dominance of human beings over nature began with utilitarian demands, and the 'gardens' can be described as the origins of the city which were copies of the artificially created nature to meet all kinds of aesthetic and economic needs (Clement 2007). The word 'garden' is derived from the word "enclosure" and inside the garden is developed to protect what is better (Clement 2007). In the same way, through the administrative function of the city and western epistemologies derived in return from the wealth of the government and institutions, the history of the techno-scientific imageries on natural entities and current practices has the potential to outline the discussion.

First of all, a gardener had the authority to decide the foreseen processes within gardens which are artificially created borders elevated from the ground and even in some cases, climatically altered. These borders can be conceived as inner separators inside the cytoplasm of an immunized system that start the process of justification before letting them exist in its own protection. In general, the garden was not solely a case for agriculture or botany but in its simplest form, it was also a way of ownership. For instance, in Britain's case, enclosures, spatial exclusions, and construction barriers were standard practices to encourage new possession of the land because it is highly believed that the native people in the colonies were not able to use 'nature' effectively. This idea enabled colonial acts to claim private lands once it is renovated, ditched, and drained (Endersby 2019). Additionally, the 19th-century Industrial Revolution in Britain was made possible by this profit from agricultural production which is an outcome of the expansion of individual ownership and new cultivation techniques (Endersby 2019). Today, we are still compelled to deal with the complicated connections between the destruction of human and non-human life forms by human activities and their connections to various types of technoscience, and what is worse; industries still live with the imperial remnants that continue to create contested landscapes (Tsing et al. 2014). So, if architects pay attention to regionalism in the most constructive way, it must be known that above the discussion of the city and forest, the land had its interlinked geologic and biologic dependencies before constant subdivision into parcels and replacement of biodiversity with species that reduced to modern seed catalogs.

Secondly, there is a moral side of realizing the garden of Eden in Christian tradition and this perpetual change shows that from the enclosed garden 'hortus conclusus' to the Victorian flower garden, the practices echoed in verse from the Middle Ages to the present moment with the rise of the technical capabilities (Hunt 2001). From this point of view, the technologi-

cal development of greenhouses and gardens reflects the desires of that time to achieve moral completeness alongside picturesque perfection. Furthermore, although pastoral images made ground with familiarized images that reflect the faithfulness to the homeland, the acceptance of the non-human world's representatives into the urban sphere was also only possible with the creation of more aesthetic and programmatic stimulations in the physical environment such as parks, sculptures and weekend islands. There is a theoretical ground of the visual literature and ocularcentrism which supports that sight as the true source of pleasure over other senses. Despite scholars and botanists of that time do not identify the natural with the adjective 'wild' or 'feral' some of them reject the artificial rudeness rather than an agreeable mixture of garden and forest (Marx 2000). This artificial rudeness represents the existence of man in every state of nature which is formed by anthropogenic elements (Böhme and Merecki 2002). Moreover, inside the garden's boundary, this geometrical arrangement of nature provides its independence as an impediment or deviance, and all of humankind's productive endeavors are directed at severely curtailing or eliminating the impacts of this activity's autonomy (Włodzimierz 2016). Because the first reaction of modern societies has been to rationalize the feral qualities of whether urbanized or not, due to the value production inheritance of the past which is believed to begin with the rational mind.

Today, modern biology and environmental studies explain the fallacy of calling 'nature in nature' by heightening the awareness of the incalculable character of the critical zone. In other words, nothing is natural anymore but nature also cannot be eliminated at any level (Cohen and Naginski, 2014). From this perspective, it can be an approach to allow rich assemblages of human and non-human worlds in culturally build landscapes unlike calling nature to settle back to the city which is ontologically problematic. For this reason, new eco-aesthetics of cities should follow the self-creation capacity of the nonhuman world, allowing plants to come into blossom, to seed, and maybe return the following year in a new location instead of strict borders of the gardens (Clement 2007). This is a reinterpretation of acceptance of the boundary of nature in cities where green has been captured as parks, gardens, theme islands etc., and forced to reflect the existence of men with its artificial toolset and utilitarian needs. Architectures of the Anthropocene must stop simplifying the diversity that used to be a frightening phenomenon. The creation of patches and fractals for co-existence coupling with a network of green areas in the city in contrast to their singular and controlled character is the ultimate solution for exciting encounters of multiple species assemblages unlike urban simulacra imitating one-sided co-existence (Acampora 2003). The decline of sincere contact between people and the nonhuman world is still stimulated by theme parks, zoos, and other regulated and controlled Panopticon suchlike spatial arrangements. From an architectural perspective, the creation of simulacra became one of the most dramatic planning motivations for environments capacitating the creation of islands with animals. Because the need of limiting the mobility of captured animals is another example of inner separators of the same cytoplasm as mentioned again in the gardens because both serve the protection concerns of the whole immunized urban interior. The qualities of the controlled and its thresholds are still valid for those Simulacra as long as it filters out the content people want it to be, no matter how wild or continuous it is. In that sense, the fact that the order we create with architecture for many years intrinsically

is actually at the top of the pyramid of hierarchies separates us from all other processes. So, nations' actions in the past were not distinct from the symbolism that they use in their flags or sculptures as predators. In that respect, Gustav Jung indicates that all the other eagles and other creatures that adorn coats of arms were the psychological representatives of our true nature (Jung et al. 1989, 301).

On one hand, 21st-century sustainable architecture discourse has the potential to be an ultimate agency not just for controlling or geometrizing landscapes but searching for ways to interfere to exist with non-humans on every level. On the other hand, the construction industry advocates the refinement of idealized wildness used to market consumer goods and real estate has been driven by the distancing of feral, which has concurrently fueled urban expansion and environmental degradation (Wolch 2018). Hyper-separating nature from culture encouraged its colonization and domination in the past but today in addition to that, it is one of the most advertised add-on elements for the capitalism as a decoration in a fully static and depressing urban context. Additionally, reuniting nature and culture may involve depicting networks among naturecultures or exploring the constitution of the more-than-human worlds that are constantly being formed by a variety of actors and processes (Escobar 2018, 64). That's why it is thrilling to think of new representations of a site with multidisciplinary communication tools that architecture can use to get to know the site with all of its layers and agents.

From the point of view that nature is not a separate phenomenon from the urban context, and something should be promoted rather than constructing synthetic landscapes to imitate perfected nature, supporting urban ecologies and refining stereotypical practices of environmental policies become crucial. In that case, the geographer Mathew Gandy points out that the urban ecology and animalesque city become new approaches to the city green and it is valuable to look for healing grounds. In addition to that, the studies about urban biodiversity have gained an unprecedented level of interest as a result of investigations on infrastructures, urban fallows, and new requirements in terms of postindustrial transformations. These biologically diverse islands illustrate how blurry the divide between urban and rural is (Gandy 2022). In more detail to this urban reservoirs issue, wastelands are the places in the cityscape that has been left probably after many years of intense use and they may have been seen as places with great value and reflect profit-centered values. Through a development process, urbanization turns vacant land into 'improved property' whose developers are motivated to put it to its highest and most profitable use (Wolch 2018). In the future, urban planning and architecture will find new research and design topics for possible intervention sites in the city fabric and this will require a more complex understanding of infill architecture or transformation projects because the world that architects analyze is more corrupted, its natural processes interrupted, and because of all this, it is biologically fragile. Additionally, an interstitial approach that takes all into account in terms of the complexity of the land including hydrology, geology, climatology and human geography promises us a new understanding of aesthetics and architectural discourse. In addition to that, new interests in architecture should cover future environmental conversations, understanding how nature is urbanizing, and how the city itself is better understood as complicated and social-technological processes (White and Wilbert 2010). As

urban ecology theory develops, cities are seen as heterogeneous, and adaptive socio-ecological systems, in which the provision of ecosystem services connects society and ecosystems at various scales (Grimm et al. 2008).

Moreover, the constant presence of human action suppresses the ideal conditions of assemblages of species. The succession of biodiversity on the urban fabric questions the urban peripheries and the latest research projects show that some of the wastelands offer a great amount of biodiversity even though certain species thought to be extinct years ago. Thus, roadside edges, wastelands, railroad embankments, etc. all of these unoccupied pieces of land have a potential to support biodiversity that might be greater than what can be found in rural under the mechanized parcels. In addition to that, various endangered species, including coyotes and other top predators follow train tracks into cities and live along the borders of unmaintained roads (Cohen and Naginski 2014, 177). Nowadays, we realize responses of nature against the rapid transformation of the critical zone due to major infrastructure projects and fill areas and their existence in the city does not rebound only with vengeful hazards against infrastructures but also with an incredible degree of adaptability. The reason term 'assemblage' is proper to highlight this potential in the city-scape because 'assemblages' are unrestricted gatherings that evolve into "happenings" that are more than the sum of their components (Tsing 2015, 23). To conclude, new ways of co-habiting in cities will require understanding existing static infrastructures and the public sphere with the scripts of events.

One proper example of the metaphor; 'blooming out of ruins' in Anthropocene epoch is the city of Berlin. Berlin with is one of the most biodiverse cities in Europe due to the convenience of artificial habitats such as numerous open spaces left after the destruction of war and division of the land. Today, studies clearly show that Berlin's unoccupied and abandoned landscapes are 'untamed' natural sites and living records of the city's diverse habitats (Lawton et al. 2019). Another inspiring case for this incomprehensible patchy character of 'wild' is the flora of the Colosseum in Rome. The African animals, such as lions and giraffes were brought to the arena to entertain crowds, and their presence is one of the factors in this botanical mystery that has allowed 420 species to thrive on the Colosseum's remains because these animals filled the arena with exotic flowers with seeds hidden in their fur (Cooper 2017). Finally, the islets of Helsinki that most of us know from unique Nordic archipelago formations and weekend activities also promise reading co-existence between nature and human presence for hundreds of years. In that aspect, the military base background of the Vallisaari island in Helsinki is a great example of the post-war transformation of the land. After being abandoned for two years, the operationalized background of Vallisaari island as a military infrastructure, including craters, bunkers, warehouses, and cliffs become habitats for numerous species and artificial layers that have turned the island into a paradise (Bhowmik 2020). In the case of Vallisaari in Helsinki, this multitude emerged from the archipelago's geo-political advantages as a military base more than Helsinki's geo-morphologies. Following this, all the artificial layers that vanished the dynamism of the coast between the terrain and the Baltic sea should offer more about assemblage as pieces of destructed lands detached but biologically enhanced. However, if the image of nature revived from ruins of wastelands still deals with its picturesque/romanticism,

urban ecology will keep highlighting the idea that nature is irresistible against culture and the final image is conditional on the abandonment of one them, culture or nature.



Figure 2. Wildlife in Suomenlinna. Photograph by author.

To sum up, the discussion about ways of supporting urban ecologies and embracing new philosophical thought that emerges parallel with the advancement of land surveys and biology science is very valuable to the establishment of the socio-ecological systems of the future with solid policies. In a world where the era of fourth nature keeps rising with the digitalization of the second nature, new spatial affordances for the nourishment of habitats which thought to be already disappeared from urban context should be the new concerns for architects, landscape architects, and urban planners. Because the rural is under threat as a result of excessive dependency of land on artificiality in order to serve more human needs with agriculture, forestry, mining or new developments and cities will become ecologically new centers in the future on an ongoing basis. More than ever, the nature and culture dichotomy of the twenty-first century includes nature into culture, landscapes have undergone modification under intense human-oriented activities causing deterritorialization and allowing to overlook industrial production by homogenizing and disembodiment nature (Wolch 2018). The threat caused by growing industries will continue to see nature as something that can be managed because the goal of civilizations still shaping around terms of performance, profit and capacity.

THE FOREST: FINNISH FORESTRY AS A MEASURE OF PROGRESS

When we leave the city and shift the focus to the countryside, the idea that the countryside is actually a production or investment area that creates opportunities to meet the intensity which is a consequence of highly populated cities is become clearer. Following that, mechanized landscapes and forestry industries that many economies rely on are another important topic that should be addressed besides the notion of city and reviving urban ecologies in the era of Anthropocene. From Finland's perspective, the country is known as the lungs of Europe with a total of 20.1 million hectares of forest area (Luonnonvarakeskus 2013). The dominating tree species in Finnish forests are spruce, pine, downy birch, and silver birch, Finland's national tree species. However, in contrast to the general knowledge, Finnish forests host low biodiversity in comparison to other forest areas around the world due to its abiotic and artificial conditions for species. Even though abiotic conditions such as climate do not let richness in a type of species; one age, neat and evenly spaced forest areas are not the result of natural processes. In that aspect, Northern Finland's natural forest resembles an industrial tree plantation in many ways (Tsing 2015, 167-168).

First of all, Finland has a governmental policy background that turns Finnish forests into a smokeless factory that has eminently supported the national economy for decades. According to consecutive forestry policies applied by Finnish government over years, the general practices provide a unique case in the whole world, where forest product exports have had a key role in economic development for centuries (Palo 2006). Anna Tsing in her book emphasizes Finland's forest areas which are very clear that almost create an artificial boundary between two countries Finland and Russia (Tsing 2015, 167-168). This is a result of dense forestry actions that transform landscapes into clean and highly controlled territories. In recent years, there are some measures and awareness-raising efforts to ensure for forest areas allow for biological processes. However, although the city-forest relationship exists immanently in Finnish cities in comparison to the rest of the world in terms of size and accessibility, it is a fact that demands over forestry and peatland industries make people overlook material flows and energy demand for varying industries. Those policies put forward how anthropocentric actions turn Finnish forest landscapes into a measure for urbanized lives and products of green industries. According to 2018 research by the Finnish Environment Institute, southern Finland has 59 percent of the vulnerable habitats, while northern Finland has 32 percent of them. Forest habitats represent the second largest portion of threatened habitats with 76 percent (Kontula and Raunio 2019, 115). These percentages are too dramatic due to the huge forest cover size of Finland and open up discussion about future projections of culture-nature multitudes in that sense. The strong economic benefit from forestry and its mechanized industries make

Finland dependent on its forests and objectives for sustainability are indirectly related to the exploitation of the forest. Additionally, it is known that the Finnish forest resources have been extensively used which caused deforestation and forest degradation in the middle of the 20th century but subsequently resulted in sustainable timber production (Palo 2006). Owing to the basis of modern forestry has been the reduction of trees, especially pines, into self-contained, unchanging objects so that pines can be managed as a continuous resource to fulfill the growing demand (Tsing 2015, 168).

Secondly, Earth-bound perspective instead of commodifying trees points out that the pines are among the most active trees on earth and are often referred to as the architects of the land. As true residents of Finnish forest landscapes, pines will be the first trees to colonize a site if you leave it unoccupied (Tsing 2015, 170). A discussion of Finnish forest cover lies beyond the scope of forestry industries and reveals how Finnish boreal forest and biodiversity beautifully flourishes from the harsh but diversified geodiversity of the Nordic landscape unlike bare soil and wide landscapes in European Temperate forests that we are all familiar. On one hand, the Finnish forestry reflects species cooperation to survive together in changing environmental pressures which turns into comfort zones for the Assemblage itself. On the other hand, one of the main reasons why the occupation is dense in the land is because of the pines' relation to a disturbance. People plant pine trees to repair the disruptions they have caused, but it is sometimes necessary to maintain extreme disturbances to benefit pine. For example, the Mediterranean trees need 'fire' to survive because seeds ask that shock from fires (Clement 2007). Additionally, even-aged management strives to establish a cycle of regeneration with small fires, in which only pine participates (Tsing 2015, 172). Due to the significant changes that have been made possible by industry expansion, any territory may now be terraformed in a relatively short amount of time. We can now clear a forest in a couple of days, with devastating effects on all types of life that depend on it, including indirect humans (Davis and Turpin 2013, 137).

Moreover, it is possible to consider together the scaling issue of forestry industries to meet the growing demand with the history of sugarcane plantation which greatly affected the land, labor, and capital to groundbreaking degrees in history. Timber is now managed for uniform growth without multispecies interference similar to what we come across with the capitalization of sugarcane (Tsing 2015, 41). Furthermore, it is important to note that only by drying up a third of the woods that were growing on wetlands was it feasible to mechanize the Finnish landscape as a result of the growth of the forestry sector (Krings 2020). However, those forestry regions' soils are so nutrient-depleted and their soil cycles are altered that they are unlikely to maintain stable forests that's why, Finnish forests ranked 109th globally among 172 in the index of forest landscape integrity (Grantham et al. 2020). The biggest danger to mire ecosystems is draining for forestry and agriculture specifically. Globally 4% of peatlands are estimated to have been drained by those industries and this situation is the same also in Finland (Zoltai and Martikainen 1996). Those habitats are highly crucial in terms of the variety of species and unique landforms as both freshwater and terrestrial ecosystems. In addition, peatlands participate in buffer zone forming between different species' populations and it is

necessary for various 'dryland' species temporary habitats, supplying food, shelter, and breeding grounds as well as controlling the hydrological regime of the nearby areas. As a consequence of the lands under anthropogenic pressure, the functions of feral landscapes become extremely critical (Minayeva, Bragg and Sirin 2016). On the other hand, the dried mires are not only physical obstacles for forestry industries that should be overcome but also these are depressing records of Anthropocene in Finnish landscapes.



Figure 3. Drainage channels for forestry industry at Torrönsuo (Ratcliffe 2014)

Anthropocentric effects on forests and monochrome afforestation following the tracks of channels that evacuate the water from the soil and keep it dry emerge from human-centric covetousness and our time-scale that we are not able to reconcile with natural processes. The damage we caused to trees, lichens, and marine habitats are the natural archives of the age of Anthropocene similar to all other natural systems around the world such as the West and East Antarctic ice sheets, the Amazon rainforest, and the Arctic tundra and boreal forests. Although wood construction materials are known as pioneers of sustainable design, turning natural landscapes into carbon bombs due to anthropocentric pressure threatens the balance in nature. Appreciation of forests for providing more than their timber capacities, including geodiversity that they create, purifying the air, stabilizing the nutrition and water cycle, and their value for both physical and mental well-being can reside background in the future. Moreover, due to the deterioration, further global warming is triggered by industrialized Finnish forests reaching their limits and quickly losing the carbon they contain. Finally, the European Lungs will be unstoppable generators of atmospheric carbon and even in some instances, plants and trees will be portrayed as climate criminals by the mainstream media (Myers 2017, 123-125). Furthermore, the same issue is valid also for the Baltic seabed, Methane and carbon dioxide are emitted from the seabed that is as the temperature rises which is a result of pressure caused by the surrounding cities (Bergqvist and Ekelöf 2019).

The discovery of nonlinear processes such as global leaps and tremendous fluctuations in the Earth's climate were about the system's general reorganization which is worth develop-

ing a new perspective on the global warming narrative (Clark and Szerszynski 2020, 21). From this point of view, forests and seas become records that can be read as measures of anthropocentric actions. Additionally, the re-organization of the seabed and atmosphere will not only be the image of irreversible destruction of the 21st century but also it will broaden horizons of architects, ecologists and urban planners as new regional inputs of cities and all kinds of anthropocentrism.

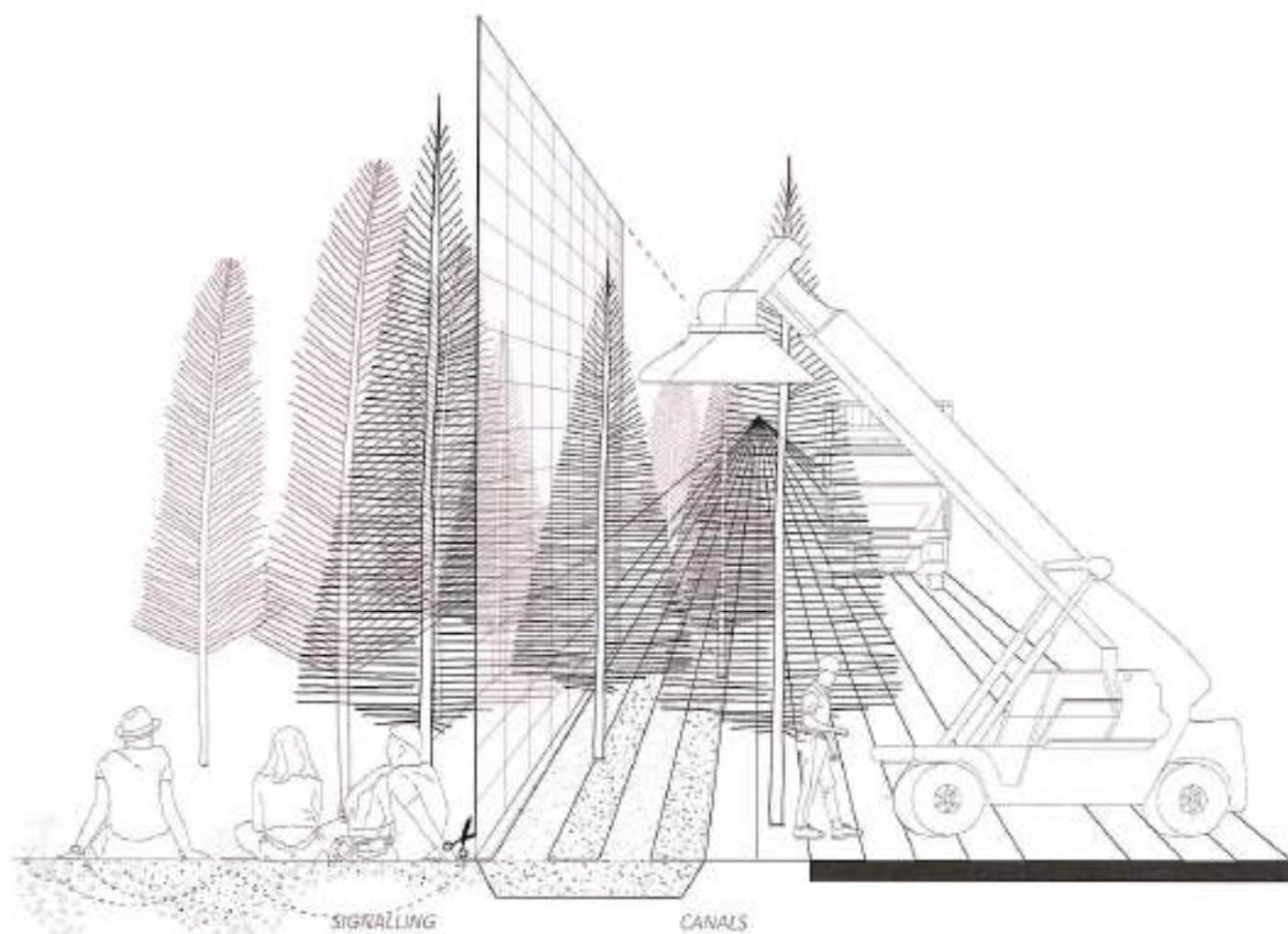


Figure 4. Contradiction between Finnish wellbeing and forestry industries, standardized forest cover erases the Finnish folklore: *Metsänpeitto*. Collage by author.

ARCHITECTURES OF EXPLOITATION

In the era of ecological crisis and biodiversity loss, the techno-sphere of humanity is considered a way out but also a direction that modernity should not accelerate more with the exploitation of nature in mind due to pushing thresholds of the earth. On the other hand, there are some thinkers devoted to living close to nature who support the romantic meaning of landscapes that preoccupies the current urban and rural distinction. These are two extreme ends going back and forth between artificiality and natural qualities but having trouble reconciling. It is obvious that there are lots of problems while implementing first nature to city fabric due to approaching projects as single and independent units. Bringing nature back to culture with this kind of approach will not serve the notion of 'making kin' like Donna Haraway mentions because current architecture practice is passive to react to the dynamics of the site. In addition to that, the desire to create Simulacra in the urban space conflicts with urban ecologies due to the idea of setting criteria among non-humans that eventually accept them into the cityscape.

Furthermore, the issue of nature-culture dualism is conceptualized from its ontological fallacy as a product of modern myth and opened up questions about the new aesthetics and the importance of urban ecologies. However, as Bruno Latour expresses, the distinction between natural and social sciences reveals problematic empiricism of nature throughout history by focusing on the ex-situ strategies of the civilized mind in order to capture 'the natural' whether scientific, collection, or capital advantage and globalization continues this legacy with different approaches. Today, among the abstract concepts of investment, capital, projection, and profit; while nature is merely optimizing, the misrepresentation of nature made it into a strategy for maximizing (Boeuf, n.d.). However, the discussion about ecological crisis elicits our relationship with the dead, alive, singularized, commodified versions of non-humans and prompts architects to search for new ways of engagement and broadening participation that have the potential to reflect what it means to live in the era of the climate crisis. Thereby, the meanings of sustainable architecture should expand in terms of spatiality, multi species' potential modes of dwelling, and agencies that we can tackle together can be considered with multidisciplinary approaches.

Consequently, my interest in this area developed while I was struggling to find meanings of the Anthropocene to be aware of hybrids, unlike homogenized expressions that produce the same explanations. Depending on this philosophical problem, humanity has started to split away from the processes of co-evolution that the earth has been going on for millions of years. In a world that is going through a sixth mass extinction, the most suffocating pressure on humanity is finding ways for discovering species before they go extinct. Nonetheless, issues like extinction, biodiversity, and conservation become epistemological if we rely on interspecies connectedness to understand the Earth's complex natural processes (Smith 2013).

There is a logical connection between the emergence of new scientific techniques and architectural programs to respond requirements of various research fields effectively through the history. Firstly, some thinkers supported the idea that the shift to modern experimental science included an alienation of the scientific subject from the natural world since the 17th century Renaissance (Young 2017). Through the use of discrete elements that may be projected onto a lens, a screen, or written down on paper, 'techne' has thus evolved into social technology for observing nature throughout history (Young 2017). At that point, modern science and techniques are standardized and subjectified to the efficiency criteria of Eurocentric approaches. The growth of alienation practices that treat people and other living things as resources obscured common survival as patchy landscapes and assemblages of humans and non-humans (Tsing 2015, 19). This reductionist approach is still a problem of the modern sciences that process well with policies and institutionalizing triangle but has difficulty in explaining themselves to society and constructing a collective awareness. So, what is needed the most is a comprehensive transformation of institutions as centers of knowledge otherwise current socio-natures will fail to fill the gap between modern sciences, social awareness, and policy making. Thus modernity does not require to coexist with the opposing viewpoints that we may portray as backward, illogical, or regressive as long as we construct our institutions and politics in terms of development and progress (Morin 2009).

The primary goal of biodiversity conservation is to rescue disappearing wildlands with all of their inhabitants (Wilson 2016, 146). However, the question to be asked in the face of an unprecedented degree of destruction is how can we quantify our influence on biodiversity better if we don't know about all the species? (Boeuf, no date). Unfortunately, due to widespread ecosystem damage and biodiversity loss, floras are increasingly serving as historical archives of past conditions rather than present ones (Heywood 2001). With this in mind, it is highly critical to consider the curation and growth of herbaria in the present (Lagomarsino and Frost 2020). First of all, the curation of herbaria does not simply mean a new taxonomy or basic shelf systemization for new species but decolonizing existing collections and exhibiting and using natural archives to be aware of varying environmental conditions of species assemblages. This is a new Architectural program of Anthropocene that proposes physical knowledge-making spaces different from herbariums and natural museums that sits on the common ground with climate protests, social sciences, and policymaking in the quest for polyphony.

New DNA technologies have improved our understanding of species-to-species relationships and have dispelled taxonomy's lack of impartiality by shifting it away from facts toward networks (Lagomarsino and Frost 2020). In this way, sciences take a step in process of studying nature in new ways, but the fragility of mankind still resonates between the knowledge making and the world. For that reason, our policies remain so strict in an environment where interspecies exploration is always expanding. It is very beneficial to understand this irrationality by reading 'time scales of concern'. According to geneticist Otto Frankel, who examined the action, operator, and goal for crop cultivation and presented findings as the chart, some operators were able to recognize the connection between the past and future of crops because they had a larger 'timescale of concern' (Peres 2016). Eventually, communal actions should be able to

search for reflections in both geological and biological time scales and the curation of herbaria of a ruined world should be inclusive and informative in terms of both social consciousness that is shaped around new climatic regimes of political ecology and natural sciences that locked in processes that distance themselves from society. Hence, it is highly crucial to highlight inequalities among societies that suffer from Anthropocene practices diversely and today, those inequalities during climate change and altered rhythms of the unstable environments should be presented.

	Period	Operator	Objective	Time scale
Wildlife	to 8000 BC	hunter-gatherer	next meal	1 day
Domesticated Plants	to 1850 AD	traditional peasant farmer	next crop	1 year
	from 1850	plant breeder	next variety	10 years
	from 1900	crop evolutionist	broadening genetics	100 years
Wildlife	today	genetical conservationist	wildlife conservation	10000+ years
		politician	public interest	next election

Figure 5. The time scale of concern by Otto Frankel (Frankel 1976).

If we consider in more detail the problems derived from institutions, it is obvious that current practices are inherited by the early works of prominent botanists and taxonomists such as Linnaeus or Lindberg. Firstly, the 18th-century taxonomy focused on dead specimens and their morphological character rather than breeding or working in environmental synergies of species. Whereas, unlike practices of many taxonomy studies, working in in-situ environments enhances knowledge of the deeper relationships between species and other environmental factors. Additionally, although Ecological science specifies species interactions, explains processes, and observes them, the Eurocentric view of the natural sciences adds value judgments, management techniques, and conservation strategies (Rotherham 2017, 9).

If we superimpose contemporary way of 'knowing' species with herbarium archives, the advancement of DNA barcoding technology has the potential to make taxonomy less fragmented and less descriptive by diminishing the herbarium's morphological focus and instead connecting it with genomics (Frieze 2013). On the other hand, despite Taxonomic systems have rested on narrow definitions of standard taxonomic characters, they contain valuable indexes of preservation techniques that inherited from among scientists and institutions (Strasser 2012). Herbariums which contain not only the dead/dry specimen but also the lifecycles

multiple researches done by botanists and their own notes have a crucial place in 'indexing' because those shelves were not holding just specimens but also used as a way of collecting data. Sometimes it's difficult to tell which herbarium or collector a certain specimen originated from. An herbarium sheet's potential history can be inferred from the traces of glue, wax, string, paper decorations, labels, handwriting, watermarks, and page numbers (Fleischer 2017). This is a layer that emerged as a consequence of systematic captivity of natural one under human control whether it has scientific or protection purposes in mind. In addition to that, Zeynep Alexander indicates that regardless of whether the data store capacity is huge or not, both indexing methods result in the reduction of the complex world into a simpler taxonomic system (Alexander and Eigen 2019). However, unlike garden exemplars, which are seasonal, and plant illustrations, which are unreliable, the dead state of the collected one allows botanists to work on them all year (Müller-Wille 2006). For example, the so-called "hortus siccus" or dried gardens enable researchers to revisit natural examples and make data constantly available, regardless of the time of day, season, or location (Fleischer 2017). From this perspective, not only the in-situ examination of species with more complex assemblages of their belonged environment but also emergence of first examples of climatic architecture in order to ensure the liveness of the inspected specimen bring discussions about capabilities of mimicing varying habitats' conditions and the goal behind this empsricism.



Figure 6. Specimen's at Kew Herbarium waiting for classification (Orton 2013).

Besides, if taxonomists' ability to barcode specimens still reduce 'nature' into a system similar to herbarium shelves that are interested in inanimate conditions without worrying about keeping the specimen 'alive', then it requires more active participation of these institutions in the age of species loss. Singularization of species blocks the fact that nature selects relationships rather than individuals and interspecies relationships depend on encounter probabilities so we can only look back at those specific events to grasp this co-evolution (Tsing, 2015). Therefore, the 'epistemological fallacy' in Western thinking acknowledged that the unit of survival in the bio-taxonomy is individuality rather than organism plus environment (Peters, 2003). These decentralized systems pose a threat to the principles of the Eurocentric point of view in numerous ways since interspecies relationships were difficult to understand and an unfamiliar concept for scientists who work with units and samples. So, in contrast to both

the simple functioning of the 18th-century classification system and absolute reliance on IT technologies in biology; modern biology has seen a remarkable revival due to the current emphasis on collections-based research (Funk 2018). Technocrats point of view in technology that eliminates human attribution to collections may cause an even greater rupture between sciences and humanities. That's why another issue that needs to be addressed is the power in the creation of environmental knowledge, which mostly engaged with governmentality, and its use as a tool to help identify the facts that govern and encourage specific subjectification processes (Foster 2018, 129-130).

Moreover, although organisms physically occupy an environment, Von Uexküll contends that their relationship to that environment is in the ongoing evolution and cannot be characterized by singularization and homogeneity (Wambacq and van Tuinen 2017). On the contrary, Uexküll does not want to reduce the examination of the unity of Umwelt to an examination of the physical correspondences between a living organism and its environment (Wambacq and van Tuinen 2017). Hence, some scholars believe that both natural selection and evolution theories are mechanical concepts, with selection and heritability of characteristics functioning in tandem as the mechanism (Harte 2011, 8).

ARCHITECTURES OF THE SURVIVAL: SEED VAULTS

The transformation of nature, which is already reduced to the system with taxonomy, into a device that can also be controlled by developing technology is the most reliable way out that humanity trusts against the catastrophe it is preparing for in the future. Today, one of the goals of today's science is to conserve agricultural seeds, but paradoxically, beginning with the Green Revolution, human involvement has affected certain species and caused the extinction of many while giving selected species a chance to thrive (Radkau 2009, 10). Additionally, it is a fact that DNA studies on species promise a great possibility of controlling, labeling, accessing networks of data, and genetic modifications. However, hyper-zooming to the singularization of the species has caused an overlook, the loss of seed biodiversity, and the inability to trace the ancestral seeds too. Today, the seeds, hybrids, and wild species that the big companies offer to the farmers from the catalogs every year prove that the disappearance of the wild species is in the background and how agricultural production is intertwined with the capital.

On the other hand, archives of the seeds have their mission separate from the cultivation practices as a layer of human attribution whether with numbers, indexes, specimens, or dead representatives. In other words, the notion of archive exists because the things that cannot always be expressed in materiality can be articulated in the voids (Simon 2012). These gaps between that information might be every trace that has been left; even time, signature, a note. Artist Dornith Doherty in her Archiving Eden project explains the inspiration of the method as searching for the tension between stillness and change and its potential to reflect our artificial focus on the elusive goal of stopping time in relation to living materials (Doherty 2008). From another perspective, a body is nothing more than a pure image that exists within the seed, and that image has no other nature than that of the body's shape (Coccia 2016, 74). The essence of a person is shown in all Western thoughts on the seed through an idea of those who created him (Coccia 2016, 74). From this Western ideology extent, the rupture between nature and civilization is represented as records of human manipulation of the plant as an item of consumption, collection, and classification with the architectures of the seed vaults (Szabari and Meeker 2012).

First of all, in the case of a catastrophic disaster somewhere in the globe, current seed vault structures serve as worldwide backup systems for the botanical species and provide a chance for the reintroduction of plants (Doherty 2008). Furthermore, the need for human articulation on this 'dormancy state of seeds' put a new complexion on them with precise timetables for delivery and deposit, providing guidance for the appropriate packaging, labeling, and documentation of the material to be deposited, and facilitating the shipment of seeds to vaults. All of these control over seeds can be read as a continuation of 18th-century practices

in the aspects of reduced nature and mobilization of specimens from all around the world to mainly European seed banks. Secondly, the dormancy state of seeds is the result of the technologically-naturally cool conditions that allow seeds to be preserved and reactivated at any point during an approximately 150-year period of quasi-inactivity (Wolff 2020). However, the Linear and non-stop elapsed time emphasizes the background goal of seed vault structures which contradicts seasonal changes in the biosphere. Thus, the seeds, under those circumstances, can be considered carriers of human culture due to the representations of human apprehension against an irresistible change of nature (Szabari and Meeker 2012). Additionally, because seeds have unique behaviors, a seed sample can be regenerated by germinating some of the samples to produce fresh seeds for longer storage (Peres 2016).

In general, the native plant seeds all over the world stored in repositories are more like a deactivated flora of the whole world, standing in drawers next to each other. This is an image of the damaged world, a precaution for the worst. When Syria made the first-ever seed withdrawal from the Svalbard Seed bank in 2015 to replace its seeds that were lost as a result of the Syrian civil war, this unfortunate situation highlighted the significance of seed archiving (Stott 2017). So, the existence of highly protected seed vaults gives both a sad and hopeful message when the world moves forward to collective ends. Nevertheless, this image of 'hope' provided by the techno-sphere of civilization does not include all kinds of species but ensures the continuity of people's consumption that's why none of the actions that do not embrace the web of relations is demanding implicit salvation. In that respect, it is possible to relate modern sciences in the aspect of exclusion of the 'wild ones' similar to the 18th century utilitarian enthusiasm for example 'material medica' which shows special interest especially far east plant specimens (Cook 2009). Another example for this exclusion is also visible as a continuation of ocular-centric domination in various scientific fields that overrepresented birds while insects and other invertebrates were largely neglected (Lagomarsino and Frost 2020). Although reactivation of the collections and climate control is way much more developed in seed vault structures providing minus-degree indoor temperatures, the modern emphasis is still the same as the history of greenhouses in terms of utilitarian approach.

Additionally, the exclusion of the natural sciences of the 18th century built upon alienation and expansion for some profitable plantations such as sugarcane example. This brings back to the main drivers of civilizations' leap in line with an economic benefit of plantation practices and as Latour contends the change is visible when the climatic conditions were transported along with those species (Sloterdijk 2005). According to Latour, the historical immigration of plants to Europe might be seen as a model for trans-human symbiosis politics that emerged with glass structures all over Europe which is similar to the seed vault (Sloterdijk 2005). In addition to that statement, Peter Sloterdijk focuses on the emergence of artificial greenhouses, including the Cristal Palace in London, as well as similar buildings in Brussels, Hamburg, Hannover, Munich, and Berlin that were used to grow tropical plants like *Victoria Regia* in a continent which has colder winters (Rouanet 2011). This enthusiasm for the creation of miniatures of the world date back to the age of discovery with cabinets of curiosities and then the development of glass edifices which were precedence of the scale work of vivarium, terrarium, and aqua-

rium. In comparison to dead collections of cabinets, these structures imitate the climatic and abiotic factors similar to species' local biomes. From the architectural point of view, the greenhouse construction had been strengthened, lightened, and was more durable owing to the use of iron as a building material by the middle of the 19th century and this improvement eased harbor plants that were not adapted to the local climate (Sloterdijk 2005). This was the first attempt for the multiplication of exotic species and the capacity to mimic climates. Similarly, the Oxford Botanic Garden's catalog bragged of bringing all life forms into the Ark and having plants from all around the world represented in microcosm in the garden (Drayton 2000, 9). Nevertheless, a transformation of landscapes over centuries made us aware of how industrialization has turned nature into a commodity, and the collective European practices exploited the world.

From the time aspect of the issue, the techno-scientific image of the first greenhouses were playing a colossal role in terms of holding the time aspect of the studies by providing the comfort zones of the varying plants no matter in which part of the world these species were transported because the optimum conditions required by botanists to study on plants without having to wait for them to bloom enabled by the climate control. In the case of doomsday vaults of the 21st century, the current policies and technologies are still containing seeds by manipulating climates but unlike greenhouses, for the use of them in the 'future present'. Nonetheless, technology do not have the same level of impact on the 'future present' as we witness nowadays. First of all, the time phenomena have started to intertwine with space strongly with an increase in mobilization. In the past, Portuguese explorers had discovered the trade winds and planetary currents in the tropics, which allowed for the exploitation of resources and wealth (Davis and Turpin 2013, 26). Manuel Delanda mentions how the cities and institutions gain authorization as administrative units as a result of accelerating time with the flow of materials, money, and bank stock market. Due to the emergence of institutions and the development of cities now there is no single flow of history but several flows at different speeds (De Landa 1997, 128-129). In addition to this flow of money, knowledge, and communication under the influence of European hegemony; the processes have followed with the development of scientific arrangements that resulted in geographic uniformity and expansion to reciprocal relationships, uniting all the different peoples into a single family (Withers 2017, 108). From an Anthropocentric perspective, icebreaker ships denied the forms of water and showed that nature is not insurmountable to act or submarine oil pipeline agreements accelerated the use of fossil fuels and synthetically changed the demand curve. Additionally, the survival rate of organisms in ballast tanks is growing as modern ships travel quicker, which results in the invasion of local ecosystems and species (Trozzi and Vaccaro 2000, 153). The reason for all of these anthropocentric effects concerning time is the dissatisfaction with the duration of the present and pursuing the possibilities of the future which is the main difference between humans and the rest of the world. Besides, it is also a must for governments due to the decisions made earlier to develop infrastructure which imbalances the 'the future tense' since 'globalization' is the only direction that the whole world moves (Latour 2018b).

In conclusion, the seed vaults as architectures of survival actualize the politics of reversibility by expanding the time scale, in which an event never truly becomes the past but endures as a quasi-past and so stays subject to change (Wolff 2020). Although all living things in nature have a life cycle that they all follow, our controlled environments and strict rules about those specimens for instance gene banks, repositories, vaults, etc. create a time aspect that works completely the opposite way, almost like a bio political immunization. This approach reduces the living organism to its benefit that can be described only in terms of human exceptionalism and creates the image of repairing the deterioration with the illusion that the capabilities of mankind can undo every action.

TOWARDS A NEW EMPIRICISM

The scientific revolution started when lenses allow the systematic observation of many variables ranging throughout the surface of the planet. Galileo's telescope and Leeuwenhoek's microscope made humans aware of realms that were previously unimaginable in earlier times (Humboldt et al. 2013). When Galileo used his telescope and placed us in a universe that is not world-centric, world civilization started to lose its observation point which keeps every decision we collectively make on the ground with all the living and non-living things. By the 17th century, it is thought that the transition to modern experimental science involves the alienation of the scientific subject from the natural world and reduced the natural one as a thing that is collected, observed, and investigated (Young 2017). This transformation of new science led by Francis Bacon underlined the notion of establishing the mastery of man over nature or the idea of controlling nature through knowledge (Ijsseling 1976). Furthermore, the image of Bacon's world caused the creation of contending landscapes with the emergence of industry and raw material inventory. This was the re-definition of nature as a means of generating surplus value. People started utilizing Bacon's theories about observation and experimentation to harness nature for profit and by the end of the following century, the Industrial Revolution was rooted in Scientific Revolution, and Western civilization has advanced along with Bacon's ideals (Wolford 2017). In brief, this kind of thinking not only glorifies 'man' but also encourages science to disentangle the concepts of life and nonlife in order to better understand what it calls 'reality'.

By the 20th century, the mission attained due to wrong mainstream ideology now re-generated from the ecological crisis that the world has started to realize the consequences of human actions and destabilization of earth systems. Later, the global change science and its forerunners sought to establish planetary facts about Earth with the stated intention to learn more about the future state of the planet (Robin, Sörlin and Warde 2013, 8). This was followed by a prediction, and eventually the emergence of the idea of 'environment' which, contrary to common assumption, is a very new invention. This 'environment' has been regarded as the reality whose change was observable and, potentially, alarming in the days of global changes in earth systems (Robin 2013, 158). Following this, the late 20th century was highly interested in the absolute islands that Sloterdijk mentions Spaceship example in his book which underlines the segregation of space from the Earth and environment. This seemed very much to the ideal future for technocrats of that time where the created nature equals the sum of technology and feedback because in that way environmental crisis would cease to be our problem at all. According to Sloterdijk, nature is a form of 'prosthesis' for human existence, and we might interpret the term to refer to a pre-configured system of human life preservation unlike earthly dependences (Sloterdijk 2009). This positivist approach not just only emphasizes the rupture between nature and culture but also advocates the idea that the necessities on which human

existence depends can be created within the techno-sphere capabilities of the future. However, due to Anthropocentric actions gaining importance with the realization of climate change in the early 2000s, various fields including architecture responded to this issue extremely superficial and inactively by tackling the ecological issues by materiality, emissions rates, and numbers which are popularized with 'big jump' graphs.

Today, as architects, urban planners, and engineers; we accept that the created nature is precisely natural enough to prevent any system from mistaking for an artificial construct. Our planet is essentially a gigantic vivarium built with the universe of actual and metaphorical pipelines, ducts, and valves (Cohen and Naginski 2014, 123). Moreover, the notion of being under the protected globe is not a new concept in the aspect of how human beings perceive the world. This idea draws a world that is the same blue planet as a unity in the public eye. For instance; the identical forms and components that Buckminster Fuller used to split the site into pieces and then attempt to cover Manhattan with a 3-kilometer diameter geodesic dome for people to dwell 'inside' the globe in 1968 was serving precisely the same idea of immunized unity (Helmreich 2011). In addition, Fuller's projects can be regarded as environmental infrastructure projects similar to current hyper-natures which are also modern attempts for the creation of comfortable 'exteriors' which intend to keep the state of equilibrium contrary to planetary systems that are getting unbalanced day by day.



Figure 7. Fuller's 3 kilometer diameter dome over Manhattan (Fuller 1959).

To conclude, considering new empiricism, it should be known If Galileo vanished humanity's perspective by exposing that the Earth is a part of an endless cosmos, Lovelock has locked us in by demonstrating how distinct the Earth is from all other planets due to the conditions which enable the existence of various life forms (Latour 2020). Similarly, new definitions of the world's living crust named 'critical zone' has the potential to re-define vantage point of modern sciences has lost already. In that respect, Latour's Gaiapolitics hold the potential to reverse modern sciences' relation with a society that has been underrepresented for many years due to the act of parsing natural entities onto a lens, paper, or exhibiting behind the showcase to formulate and control.

ARCHITECTURES OF HERBARIA: LINNEAUS HERBARIUM

The idea of setting up a uniform microcosm in various aspects as we come across with some megastructure projects of the past such as Fuller's geodesic dome or Le Corbusier's appreciation of the notion of the ideal climate for the modern society advocates the mechanical formulation of the interior. Similar to those attempts in the modern era, the eagerness of the West to create miniatures of the world can be traced back to the cabinets of curiosities in a very basic way as the first examples illustrate the act of uniting the world. Those cabinets which the bourgeoisie boasted with their 'dead' collection of natural items from exotic lands represented a thrilling image for most people at the beginning of the 16th century (Wondrous Obsessions: The Cabinet of Curiosities 2015). At that time, these miniatures of the universe ranged in cabinets were containing the excitement and savagery of the new lands because, since the first contact new world has associated with the idea of 'feral' (Agrest 1994). Nonetheless, the descriptions of the new world from explorers and all the narratives centered upon its pasture and abundance led to the belief that new continents may result in a new golden era to be regarded seriously in politics and the economics of the period (Marx 2000). In addition, the goal of finding new territories resulted in the idea of a land that expands, which is clearly inconsistent with the current ecological catastrophe, which forces us to see a land that trembles beneath our feet (Latour 2017, 212).

Admittedly, the plantation as a possession over the new world was a strategy for the Colonial powers but the first thing that has to be solved should answer Latour's statement as; is it possible to think about new power relations if maintenance of the climatic condition of those species succeeds. In that aspect, transporting plants in 'floating greenhouses' was challenging but essential, not only because of specimen survival but determining what the world contained (Schaffer 2019). For example; the Transplantation of profitable plants due to the greater probability of survival in the special 'Wardian case' completely changed how plants and even diseases were carried throughout the world (Diogo, Rodrigues, Simões and Scarso 2018, 162-164). Above all, the realizing different geographies, climates, specimens, challenges, and opportunities become more and more familiarized as a result of great mobility due to sailing and all this progress caused an urgent need for systemization. That's why, the 'natural system' of plants was a two-dimensional network of relationships in which every plant exhibits its contiguities like territories on a geographical map, which provides the image that transcends the local distinctions. A worldwide depiction of taxonomic affinities was possible because of the botanist Carl Linnaeus' herbarium cabinet's theoretical capacity for total specimen permutation (Müller-Wille 2006). The capital strategy of Carl Linnaeus made his own garden in Sweden the center of an exchange system where his students were a major source of seeds

while traveling (Müller-Wille 2006). However, the practicality of any herbarium's role as a hub for travelers and investors caused botanists a great deal of difficulty with the data (Strasser 2012).

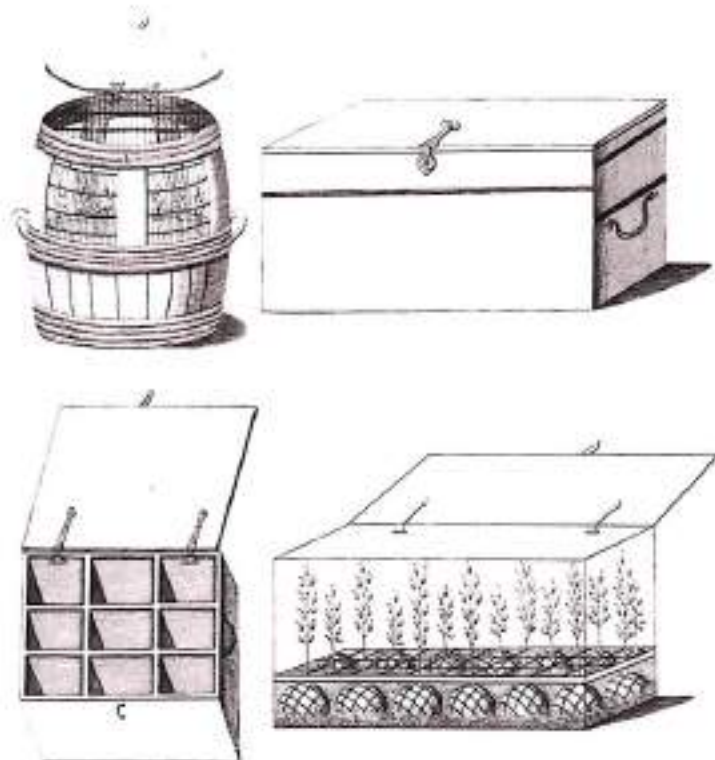


Figure 8. Case designs for sustaining plants' livability (Ellis 1770)

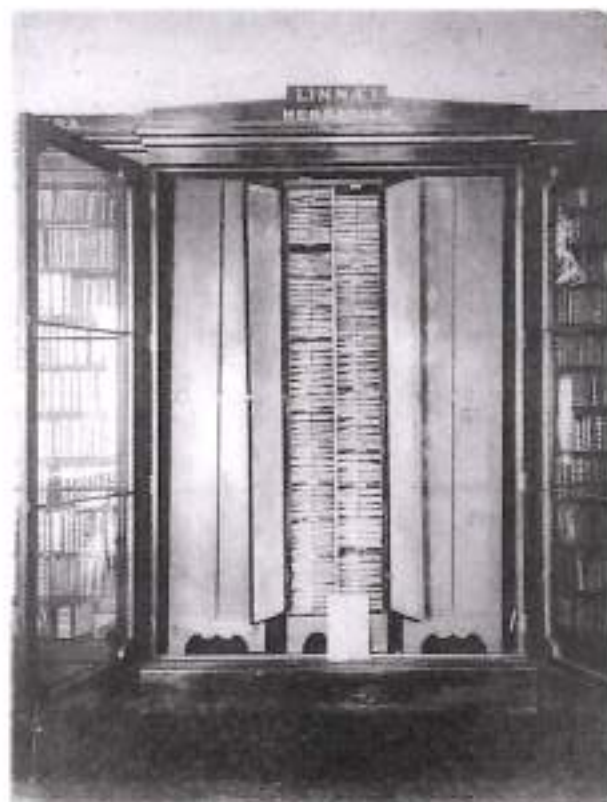


Figure 9. Linnaean Herbarium (Müller-Wille, 2006)

In brief, Herbarium collections had two major missions which are intertwined in many ways. Firstly, collections were archives of body politics of every action of government and control over far-away lands, and secondly, the continuation of this income provided by the plantation as the empire's most important source. That's why herbariums improved in time as a government's most important institutions. Therefore, through the development of administrative networks that gather and convey 'inscriptions' whether textual or visual from the peripheral to the center, the interaction between center and periphery became feasible (Batsaki, Cahalan and Tchikine 2016, 9). The scale of the networks that may be deployed to support the imperialist goals of the center raised as the cycle of accumulation expands afterward (Spary 2000).

Additionally, Linnaeus's cabinet was revolutionary as new empiricism for botany science. The internal mobility of Linnaeus herbarium had a colossal impact on the functioning of his garden he works on the reproduction of specimens for exchange (Müller-Wille 2006). Linnaeus was able to evaluate mounted specimens systematically, as though comparing two manuscripts, owing to the internal mobility of his herbarium, which was clearly more important to him than any aesthetic value (Müller-Wille 2006). At that time, even though the success was derived from the understanding of characteristics of different climates and habitat types of boxes and glasshouses to retain the liveliness of the plants, the herbarium cabinet was reflecting the mainstream idea that the economic benefit of the system above everything.

Secondly, samples glued sheets grow in thickness, volume, and quantity when they are stored on multiple shelves. The entire system transforms into a flexible, expanding architecture. To make room for additional material or to rearrange the collection as a whole, the number of shelves and the spaces between them could simply be altered (Müller-Wille 2006). Beyond the architectural expansion of his physical cabinet, Linnaeus's architectural example emphasizes the transfer of living things into perpetuate scalability for the idea of infinity but excludes valuable diversity (Tsing 2015, 229). At that point, the scalability of the Linnaeus cabinet was crucial in terms of the flow of information except for autopsy made with dead herbarium specimens because the systematization of those species unfolded how people can anticipate using the knowledge in the future. This was a powerful example of the institutional memory that uses the capitalist logic of commodification to remove 'things' from their natural habitats and turn them into exchangeable materials (Tsing 2015, 122).

Finally, although imperial landscapes propagate their stabilization of lands in other geographies through colonial plantation practices, the Western point of view developed both institutional and social viewpoints to overcome the feral qualities of the far-away lands. For example, 18th-century taxonomy studies inclined to disregard the environmental information about collections. A new Latin binomial naming system was eventually advanced as a result of the nomenclature which made it much simpler for botanists to study, switch, and add new dried specimens to the collection (Fleischer 2017). However, the new Latin name of the flora of the region destroys the correlation of local story, information, and relation with its landscape just because of the inconvenient accumulation of cultures for Western epistemology. In the same way, Linnaeus is accused of removing indigenous knowledge about plant uses and geographical positions (Cook 2009). This homogeneous empiricism of taxonomy as a result of the dominance of Western epistemologies constructed a mechanical discovery that verifies the knowledge by linguistically relevant matching and eventually, herbariums become the centers of constructing both expansion of species and the knowledge out of them.



Figure 10. Linnaeus' binomial nomenclature cataloging of plant species (Linnaeus 1735)

Today, our way of relating with non-humans includes processes that we developed by omnipotent ways of seeing the world such as alienation, domination, and intervention. However, especially during the days of the climate crisis with all scales around the world, the position that humanity should take lies in perceiving the time and spatial occupancy with biological and environmental inputs rather than improving data storage or access speed about reduced nature. Similarly, environmental history must go beyond merely gathering historical material whose outcome is already apparent (Radkau 2009, 308). The problem about 'capturing the natural' as dead and scalar which enable collections to be traced back and forth in the archive distinct from the concerns about extinction or environmental crisis only reveals only routinized expressions and this is almost the same principle as archeology which deals with only irreversible time and undoubtable physicality of artifacts. This is the contradiction between our development of ever-greater memory stores and concurrent large-scale loss of biodiversity (Peres 2016). We should abandon the idea of hierarchies over species and even non-human systems and give chance to co-existence with non-humans. This idea opens up new approaches with co-evolution, in which we become aware of varied possibilities in interspecies togetherness.

Lastly, it is known that the colonial past has a long and dominating history and geography totally intertwined with those colonial plantation practices. As a consequence of this Eurocentric point of view socio-ecological problems still resonate today and trigger climate injustice due to modified local landscapes. From this notion, Tsing opposes the previously mentioned spheres theory of both Latour and Sloterdijk in terms of the imageries of the world after Anthropocene. According to Latour, the Gaia is first and foremost tied to the earth's crust and transcends all identities which reside on it. Yet, such a way of thinking is no longer constrained by the notion that advancement requires the rejection of indigenous knowledge systems (Sands 2020). Furthermore, although Sloterdijk views human affordances as universal, species-defining specifications, he defines the Anthropocentric drift as a destination that takes the whole systems of the world towards the same ends and heralds the irreversible end in which nature serves just as the inoperable scenery behind human processes (Sloterdijk 2016, 181). In that respect, Tsing's argument highlights patchy conditions due to the exclusions in world history and refuses any other unifying definitions of Anthropocene like Latour or the secondary image of nature as an apparatus similar to Sloterdijk's expressions. Local practices, sensory sensitivity, and modes of environmental attunement differ in terms of histories of stereotyping, inequities, and colonialism. Even though these concepts are valid when they are used to describe a particular locations, they can mean something different in any other place. The challenges of the Anthropocene are far from being universal because inequalities in social structures like class, race, gender, and wealth are also reflections of climate change (Clark and Szerszynski 2020, 36). On the contrary, the diverse insecurities that differing socio-political environments produce cause issues that are likely to evoke distinct political responses (Clark and Szerszynski 2020, 36). Today, while the problem is bio-spherical, its repercussions are socioecological and political because anthropocentric actions alter geological time scales, landscapes and cause the simplification of the definitions of the disaster and blurs our view of reality. Finally, if the age of humankind is sincere to shift the prevailing philosophy to polyphony which is open to different knowledge practices and locality, this will guide us, excite us and disturb us to a certain extent (Clark and Szerszynski 2020, 8).

RECORDS OF THE ANTHROPOCENE

Prospective studies on the institutions such as herbariums, museums of natural history, and anthropology are very crucial in terms of knowledge making in contrast to the perpetuation of knowledge. In that respect, the development of the DNA studies that work parallel with archived old specimens glued on papers taken from herbariums revealed the records of the Anthropocene. For instance, contrary to popular perception, recent DNA sequencing research followed morphological matching up using herbarium specimens showing the complexity of Northern Hemisphere species (Tsing 2015, 140-141). Hereby, storing information in digital memories rather than physical spaces starts the discussion about the architecture of the past, active learning, and the functioning of the natural sciences that keep specimens in a physical environment with controlled conditions. Nowadays, a life increasingly becomes lived in the shadow of the archive more and more not because of the fact that there is more recordable archive content such internet, but also because there is more material deemed worthy of preserving (Featherstone 2006).

In general, seed repositories differentiate from greenhouses, herbariums, botanical gardens, and natural history museums. In pursuit of knowledge making, seedbanks have to work accompanied by a research program. In that aspect, there are differences between the herbariums and the laboratory program in terms of 'knowledge making'. Firstly, the information extracted in laboratory conditions can be evaluated as successful if its replicability can be applied under the same circumstances elsewhere. Yet, knowledge extracted from archives arises from its uniqueness. However, the concept of the archive as a place of reflection on both social ground and intuitional authority is another essential topic. The issue here covers both political, social, and scientific collective acts as Latour emphasizes in his cosmo-politics, and contributes to the needed paradigm shift against Anthropocentrism. Latour's Gaia-politics call for new definitions of geographies whether natural or man-made and their process of 'knowledge making' with overlapped layers of naturecultures. In other words, learning how new encounters with nonhumans, which develop in scientific practice throughout the course of their history, might lead to new novel human-human relations, or new political practices, is essential (Paulson 2001).

It is inspiring for Anthropocene studies to emphasize the similarities and differences of both natural and cultural archives, especially in terms of the degree of authority and time. In the past, there was no temporal aspect to the study of 'natural history' because, in its simplest form, natural history included the procedures of gathering, observing, and systematizing the knowledge about natural things that were fully descriptive rather than being explanatory (Frank and Jakobsen 2019, 21). Although scientists who work on systems of Earth and biosphere are aware of the heterogeneity, the environment term emerged as a global singularity, a site for mapping and expressing human destiny (Robin 2013, 158). Moreover, anthropology used to investigate an act of dwelling in a landscape that was once local and relational but the term 'environment' now is tied to the single idea that the entire global system will degrade (Robin 2013, 158). Nonetheless, Anthropologist Anna Tsing suggests pluralizing the Anthropocene in relation to space, time, and position against the ongoing singularization of the world (Tsing 2021). Briefly, Tsing's pluralization does not only contain the Earth's crust as a living zone but how humans intervene shaped, and be shaped in return as a result of the system's relation with communities' position.

First of all, the history of instrumentalization of nature with agriculture, landscaping, and colonialization guides us through to elude the complexity of nature at the first place of the equation and brings a silent manifest itself for becoming multi-planetary species and desire for trans-humanist ideas. However, the potential risk of post-human ideas is that the quest for various agents to reanimate the world might lead to both anthropomorphizing the environment beyond humans and the emergence of a passive human subject (White and Wilbert 2010, 216). Additionally, the direction that Cartesian thinking and modern science take our politics end up with a discrete understanding of the cosmos instead of relations and collaborative behavior. At that point, the possible danger of using Anthropocene which is a definition of current world politics' global climate definition is based on homogenizing effect that hides uncertainty of earthy changes and entropy of earth systems. Therefore, this objectivist and rationalistic Cartesian paradigm is frequently paired with phrases like positivist epistemology, indisputable science and mechanistic worldview resulted in a computational model and advocates the singularization process (Escobar 2018, 80).

On the other hand, the world in that we live is way more distant from static and globalized definitions of the Anthropocene and requires the establishment of new policies, new sociologies, and new political ecologies that get rid of the unit-to-unit relationship. Additionally, although the common terms to define the current catastrophe mean a change and such as 'warming' or 'change', different fluxes are forming and these animations are the indicators of new sites of world-making phenomena with chemical reorganizations of the air, water, and soil after their deterioration at greatest levels (Myers 2017, 123-125). Thereby, those alterations in

earth systems can be seen as natural archives rather than proofs of the Anthropocene debate whose proofs are based on observations and 'passed time' phenomena which is a product of cultural archives. For example, in order to understand the archival value of the polar regions for Anthropocene discourse sciences conceptualized the 'threshold' and 'backlash' terms and highlighted how mankind managed to pollute regions beyond their presence (Frank and Jakobsen 2019, 288-289). These alterations are created by being extracted from natural structures and processed for possible use in arguments or the carrying out of administrative acts, such as in the political discourse about the steps that should be taken to mitigate climate change (Frank and Jakobsen 2019, 289).

However, nature itself does not have an intention to store this information for later use in cultural archives, it may visually disappear but starts to contribute re-organization of the network. Although nature's unintentional processes are used as frightening arguments represented as disasters by climate politics, it is crucial to perceive those temporalities as cycles that may form new cycles for the future and it does not mean a broken image of the world that has to back to a former state. Nevertheless, these are the new dynamics of the world that we have to embrace with world-making in mind. In that sense, the archive should free itself from being a source of power due to the uniqueness of the information that recalls only memories of the past to a place for knowledge making and active participatory ground for both public, science, and politics. For example, the deep ocean carbon that reaches seabed strata as a result of years of anthropocentric actions may stay undisturbed very long time. This means an unpredictable threat of possible future disturbances but surely burst at some point if we insist on the idea that we can go further and the world can tolerate it. In the end, there is no conventional meaning of archive for natural phenomena or any other institution that can physically store the records of the global crisis in the future, because the dynamics of the living planet keep changing due to major investment's dependency on geological time.

Finally, the best thing that we can do for the future is to set our alarms on phenology. One proper example of these cyclical natural events is how rainforests are dominated by rain-fall-related events. The lesson to be drawn from this phenology of rainforests might be related to how the people of Brazil live with the forest and its own cyclical calendar. Because of the water flow, tides, and abundant rainfall in Brazil's Amazon rivers, certain species' occupation of the forest is seasonal. So, it is the ancient character of the land that offers multispecies assemblage in a temporally dynamic, not like a forest nearby cities reaching there by car with the open, treeless hills (Monbiot 2014, 69). In the Amazon, when water flows and rises, several river beds occur due to the great capacity of the river and the hydrophilic character of swamps. Consequently, locals attune themselves parallel with other species because the abiotic character of the land is in charge of deciding what is going to be the process and the final form of the region. This is an example of how local people set their clock to the phenology of forest and precipitation. This example recalls the dilemma of already modified landscapes because there is neither a sustainable global image nor a reversible locality that we can attune ourselves. Therefore, it is time to recognize the re-organization of devastated earth systems after anthropocentric pressure which create new possibilities and relationships.

BALTIC SEA AS A TERRITORY OF ANTHRO-POCENTRIC PRESSURE

Highlighting the patchiness of geographies, revealing the stories and relational conditions of cultural and natural layers from different domains such as hydro-scape, atmosphere or lithosphere is the way we learn from natural archives that it stored for us. Our relationship with natural systems is not only shaping around the carbon sequestration capacity or release rates but requires new interpretations of the environment as knowledge making agent, more alive, dynamic, and spectacular in comparison to the image of the geography whether sealed behind the glass boxes or represented with numbers or monotype cartographies. Owing to this, the Baltic sea is a proper example to investigate as a natural archive not the only richness of its natural and cultural layers but also clarifying the hidden information that the hydrosphere can present to us which was neglected by Cartesian cartography for many years. Ascertaining instabilities of the Baltic is possible because of its subjectification to an accelerated artificial scanning for the sake of the economic interests of modern times.

First of all, the Baltic Sea consists of several sub-regions; Arkona Basin, Bornholm Basin, Eastern, and Western Gotland Basins, Gulf of Finland, Archipelago Sea, Bothnian Sea, Kvarken, and Bothnian Bay. Each of these sub-regions has unique geomorphic and hydrographic characteristics (Kaskela 2017, 14). Additionally, the geomorphology of the region provides very unique land formations such as islets and rock outcrop, gravel, sand, and clay seafloor because conditions change within very short distances (Kaskela 2017, 16). The Baltic Sea is unique because of its shoals and islands, which create patchy and rich coastal morphologies. These clearly show that the Baltic sea has patchy seabed conditions and rich geodiversity. These islets and shoals are landforms that enrich the land-sea division of what we call the coastline but at the same time, this is what makes it inconsistent. The dynamics of these landforms are able to host many different possibilities and therefore diverse conditions and habitats for various species. In that respect, Geodiversity also serves as a proxy for biodiversity because the term 'habitat' as we have seen in the Baltic seabed, promotes a more integrated understanding of nature and emphasizes that nature consists of both biotic and abiotic components (Forges, Koslow and Poore 2000). In general, it has been highlighted that the abiotic heterogeneity such as slope and roughness reflects the prevalence of various habitats, regional variance in resources, and therefore biodiversity features (Kaskela 2017, 27). One of the unique examples of how geodiversity supports biodiversity is the distribution of zoobenthic biomass over Baltic sea coastal heterogeneity such as river basins, wetlands, archipelagos, etc. According to researchers, the geodiversity of the seafloor influences the distribution of the zoobenthic assemblages of the eastern Gulf of Finland because the patchy character provides a multitude of habitats by channeling currents in the Baltic (Kaskela 2017). This clearly unfolds that life participates in the cre-

ation of the critical zone contrary to our understanding of pastoral image which is 'given'. This perception is wrong because biodiversity accomplishes essential roles in the continuation of this mechanism and it is obvious that life is not an external phenomenon for the Earth's crust (Vernadsky 2013, 165).

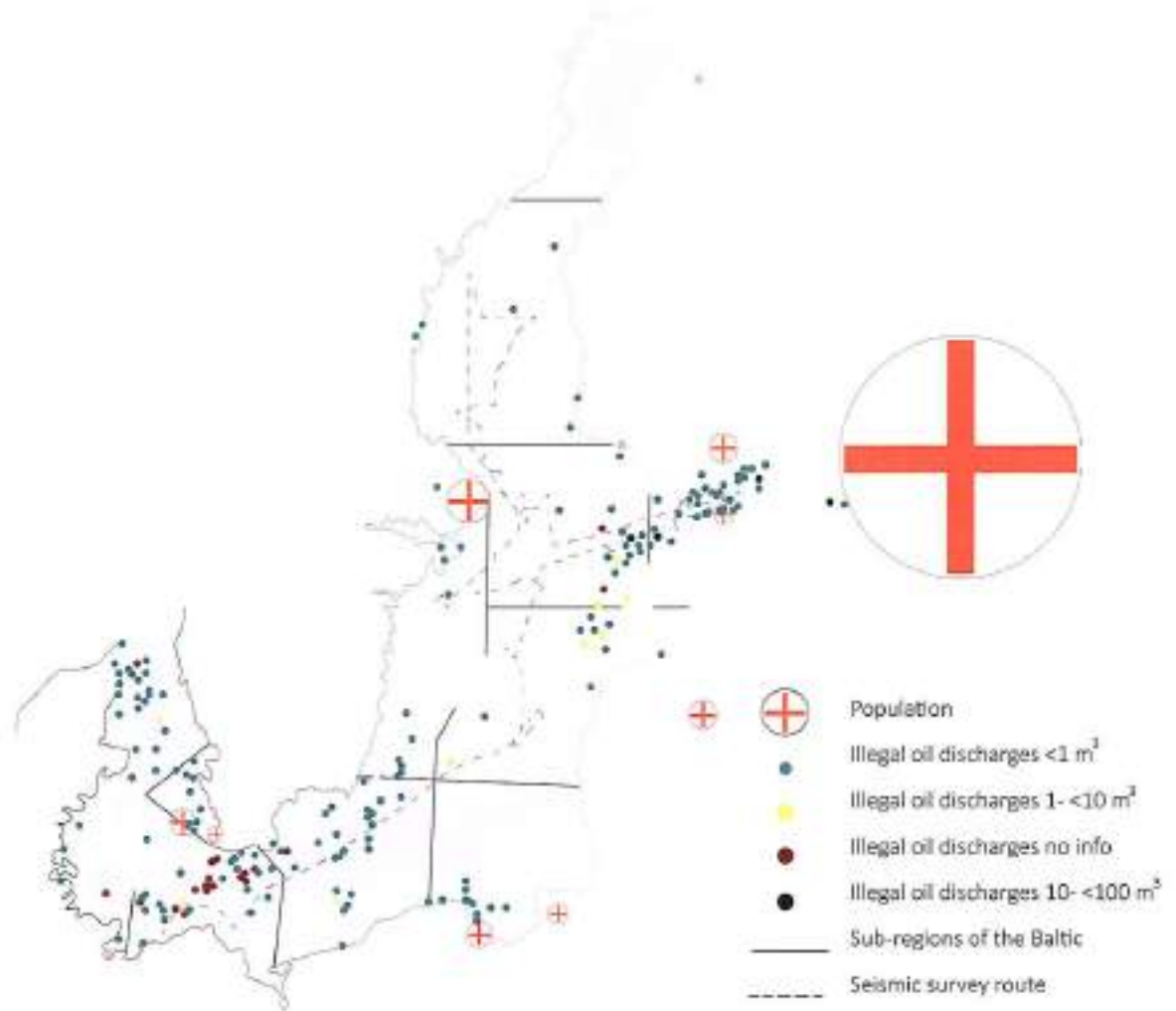


Figure 11. Re-territorialization of Baltic Sea with Anthropocentric actions. Data used in visualization extracted from *Baltic Sea Environment Proceedings* by Stankiewicz and Vlasov 2009. Made by author.

Therefore, Anthropocentric impact over centuries on the Baltic Sea has to be a part of the discussion of our impacts on critical zone and how it forces species to be in motion. As a result of the Baltic's location as an inland sea surrounded by both developed and developing countries such as Sweden, Finland, Russia, Estonia, Latvia, Lithuania, Poland, Germany, and Denmark; there are several ways to draw lines and define territories on Baltic Sea in terms of political, sociological and technological aspects different from its geomorphological character. First of all, political interests and economic parameters blur the boundaries between natural and human geographies because the image of the environment is single and open to interpretation differently under the influence of current policies and balance of power. From the Anthropocentric viewpoint, it is essential to zoom in to the metabolism of these coastal cities which can be considered as foams that open up through the Baltic sea playing a role that unites and at the same time separates.

Initially, the fate of the towns that have been the main drivers of economic expansion in the Baltic Sea Region was altered by a commercial organization known as the Hanseatic League, which dominated commerce in northern Europe, primarily between the 13th and the 15th century (Städtebund Die Hanse 2011). In a similar topic, Manuel Delanda differentiates the network of maritime cities as metropolises operated according to completely different dynamics in comparison to a pre-railroad era with enormous speed differences due to the great speed of sea transport (De Landa 1997, 47). According to him, maritime trade is an accelerator of historical time because of the slow mobility in inland regions. Cities that had access to the Baltic Sea joined this network of commerce during a time when the region was relatively desolate so the prosperity of northwest Europe (Morris, 2019). Afterward, the infrastructure rose to the occasion as a one-way system in order to replace nature's unpredictable processes with a predictable flow of resources that required constant economic progress (Sherman 2015, 311-314). Since then, the collective consciousness continues to perceive sea trade as a benefit for maritime cities but nowadays, the issue is how polluting and cleaning the Baltic sea has turned into a collective unconsciousness due to different practices and miscommunication among politics.

Today, 15% of shipping including oil tankers and passenger ships taking place on the Baltic Sea as a result of the active marine traffic exerts strain on this already fragile inland sea (Stankiewicz and Vlasov 2009). This traffic among port cities and capitals such as Helsinki, Tallinn, Stockholm, Turku, St Petersburg, Gdansk, Copenhagen, Hamburg, etc. both territorializes and linearizes the seascape by routes, Economic zones, accidents, and biological occurrences. Moreover, layers of artificiality and biological responses as a result of this pressure determine new overlaps such as ecological refugia and alters the characteristic of the Baltic. In addition to that, fertilizers, heavy metals, and organic pollutants leak into rivers, lakes, and the sea causing excessive water pollution (Krings 2020).

Thereby, as a result of both development goals in trade and industry and the character of the inland sea, the Baltic suffers from eutrophication to a large extent. First of all, eutrophication refers to the excessive growth of plants and algae due to the high levels of solar lights, carbon dioxide, nitrogen, and phosphorus in water bodies (Schindler 2006). Furthermore, nearly all threatened marine ecosystems on the Baltic coast, including bladder wrack, red algae, and common eelgrass seabed biotopes, are deteriorating due to eutrophication (Kotilainen et al. 2020). Anthropocene records clearly demonstrate that when key thresholds of phosphorus influx to the waters are crossed, large-scale ocean anoxic occurrences take place (Rockström, Steffen and Noone 2013, 498). Finally, the Baltic Sea's eutrophication is predicted to worsen due to climate change, and over time, several factors such as sea-ice-free months, a decline in seawater salinity, and food webs depended on one ice sheet may have a significant impact on the natural communities in the future (Kotilainen et al. 2020).

Ecological concerns and growing sensitivity to climate crises reached a position of developing new tools to detect 'alarming' levels of water bodies which can be considered the new map indexes of modern cartography. The previous cartographies' opaque ocean was substan-

tially shown in physical terms and changed into an oceanic mass that technically operative throughout the late 19th century (Höhler 2002). Unlike two-dimensional understanding of routes and territories of the previous centuries that both connect ports and cities and separate political and economic interests, seismic investigations on the seabed enable scientists and companies to embrace the topographical conditions of three-dimensional water-scape. Recent studies have acquired remarkable vertical resolutions of seismic profiles imaging many layers and the Baltic Sea's tectonic inventory (Schneider 2016). This is a huge climax for mapping out the unknown because non-of our biological systems were not designed to sustain our life on or under the sea but economic dependency on fossil fuels and understanding of earth systems' change made us bring forth seabed strata. Yet, pipelines, railroads, and transitory units continue to divide up local ecosystems as a result of increased rivalry to control critical minerals and fuels (Anderson and Berglund 2004).

In addition to that, operational settlements invested as a result of mapping the seabed strata direct us through offshore drilling platforms which do not appear on the maps but are scattered at the most strategic 'pins' of the previously mapped areas of the submarine. Although, these structures rising from seismic information are at a great distance from any other infrastructure, they are connected to our needs in totally urban lives. Furthermore, the quest for new resources continues to enable investigation of the hydrosphere and Earth's crust to an unprecedented degree. These unexploited sources of the hydro-scape which have been treated as void by Cartesian cartography now define uncertain territories by seismic mappings, oil rigs, and frigates of countries. Most interestingly, excessive use of fossil fuels warms the atmosphere and causes defrosting glaciers in the Arctic region (Miles 2016). Additionally, shipping becomes more convenient day by day due to the disappearance of the ice sheet and this situation puts us in an ethical and practical impasse. The long-standing dispute between countries over the maritime border in the Arctic will make more of the international sea routes available for exploration (Harding 2010). Thereby, environmentalists are worried not just about the future of sectors that depend on fossil fuels but also about potential oil spills, their unpredictable spread, and the harm they may do to marine biodiversity. From this point of view, economic profit precedes acceptance of the existence of another world full of life. The capacities due to the advancement of nature-wreaking machinery set scalar thresholds such as fossil fuel reserves which are five times more than can be used if the projected 2C limit of the warming is to be met (Miles 2016). This clearly shows how inanimate agents of the world functioning suppress the rest of the inhabitants for the benefit of general growth trends.

On the other hand, the investigation of seafloor also revealed new dispersion patterns of various species. In contrast to what was previously believed, some of which are endemic and are recognized by marine biologists as crucial to understanding the genetic origins of life on Earth (Diogo, Rodrigues, Simões and Scarso 2018, 212). From the perspective of the Natural Archives, recognizing the Arctic as one of the most important figures of global warming in media as a carbon sequestration site resonated way more in comparison to for instance the destruction of seabed as records of Anthropocene. Besides, a lot of the seafloor scars from the late 20th century are the early marks from deep-sea mining activities left by ships with dredges

and other equipment departed the region years ago but scientists confirmed that the scars that have never entirely healed (Fisher 2020). Those marks on the seabed restrain marine ecosystems to co-habit and this raises the question of how essential abiotic factors are for the assemblages of marine species.

Secondly, the distribution of life on these patchy abiotic conditions also serves as records of the Anthropocene but lately, movement of zoobenthic biomass can only be explained through the degree of disturbance as a consequence of agricultural activities, seabed scars, vibration, artificial lighting, organic contamination, and temperature differences. In that respect, it is crucial to introduce ‘Climate change refugia’ which is the definition of sites that stay comparatively insulated over time from current climate change and permit the maintenance of valuable physical, biological, and socio-cultural resources (Morelli et al. 2017). Furthermore, understanding micro-climatic and abiotic conditions of the climatic refugia zones, a succession of species in those areas, and their relation to expanding borders of the Anthropocentric actions are critical in terms of supporting urban biodiversity and replication of favorable climatic and spatial fragments in wastelands, urban fallows and waterfront infrastructures. For instance; rock glaciers, talus slopes, riparian zones, wetland ecosystems, and locations near or within a big body of water can all produce mitigating microclimate conditions that function as climate change refugia (Morelli and Millar 2018).



Figure 12. Marine protected areas and climate change refugia in Baltic Sea (Stankiewicz and Vlasov 2009).
Made by author

In conclusion, new representations of the Baltic sea whether embracing symbiosis or parasitism, bring new scale concerns and challenges for architects to be aware of more complex and interwoven problems in the Anthropocene epoch. Following this, the territorialization of the Baltic sea in terms of natural and cultural phenomena involves my project definition into a more speculative way of seeing the 'void' that most of the projects refer to interfere with commercial, public, and human-centric uses. Thereby, spatial configurations of the Earth systems' fluxes as a consequence of Anthropocentric actions require new hybrids for adaptation capabilities of both humans and non-humans because current reports, politics, and socio-economies still tend to ignore the colonization process of the habitats which are the natural archives. Now more than ever, a multidisciplinary approach is needed to turn those records extracted from natural systems into a school of thought that can directly affect our actions instead of being a 'delay in time'. That's why gathering Parliament of things like Latour demonstrates requires abandoning definitions of climate change that are described through thresholds and tipping points whose goal is all about only tilting the tip of the arrow down. Although ecological issues that occur constantly such as pollution, acidification, and species loss are real risks for thermodynamics, modern minds should aim more than keeping global warming below 2.5 C. Because, the first reflex of climate scientists is tackling the earth's systems through several linked systems that promote more robust and sustainable human growth within the safe operating area (Stockholm Resilience Centre, 2012). However, many Earth subsystems respond nonlinearly and those sub-systems might transform into a new state if certain thresholds are passed (Rockström, Steffen and Noone 2013, 492) and the future may require new modes of thinking eluding from knowledge produced in total isolation from polyarchy.



Figure 13. Eutrophication in Baltic Sea (ESA 2005).



Figure 14. Seabed scars due to deep sea mining (GEOMAR 2015).

CHAPTER | 3

Metabolism of Helsinki

Time-Scale

Decolonizing Helsinki Herbarium

Programme Re-Breeding

Interstitial Infrastructure

DESIGN PHASE

Candice Lin perfectly represents a world manifestation opposing the centrality of any life form contrary to the mainstream philosophy that misrepresented the relationship between humans and non-humans within a hierarchical order. From this perspective, the ultimate goal for the design phase of the thesis is built upon both theoretical and practical ways of searching for the rehabilitation of the urban ecologies and new definitions of architecture that advocate co-existence. Consequently, Helsinki South Harbor has selected as a project site which is very valuable and contentious land located in the center of the city and includes different aspects of urban dynamics. Overall the project emphasizes the value of animalesque landscapes rather than picturesque aesthetic concerns, especially in the urban fabric. Additionally, the process of the project focuses on both architectural programming and construction strategies to familiarize potential tools, tactics, and threats that can be faced as a character of a valuable and restricted site. In the light of South harbor's potential future changes and socio-political projections, the project aims to be adaptive and resilient.



Figure 15. Nonhierarchical order of 5 kingdoms (Lin and Munoz 2015).

Firstly, developing architectural tools and representations to understand the site, context, and formations of biological affluxes is crucial in deciding the next step that architects are planning to take in the built environment to host more-than-human worlds. That's why, the project proposes the transformation of static South Harbor infrastructure into a new interstitial landscape that works as a performative ecotone between the land and Baltic sea because, from the geographical point of view, the site requires to have this multitude as a natural biotope for species. From this point of view, the project highlights re-interprets 'rewilding' in

cityscape which will become more and more important for urban planners and landscape architects as a strategy that enables professionals to perceive newly built artificial landscapes as convenient geodiversity for recombinant ecologies. Reconceiving urban areas as new centers as opposed to ecological sacrifice zones with their integrity irreparably broken has the ability to enhance cities in terms of more than just human worlds (Wolch 2018).

Due to destructed habitats, lack of food, and the expansion of urban growth inevitably invites the feral presence of non-humans into cities in an unintentional and unplanned way. Either this or that way, cities will start to host various species day by day and these potential assemblages will require connectivity of ecosystems and understanding of the flows of earth systems as analysis input for architects and planners. From a point of view, 'rewilding' appears as a reformer approach, especially in cities and contributes to carbon, water, and nitration cycles and allows species for habitation by the transformation of wastelands and infrastructures with the idea of a degree of autonomy. That's why it is inspiring to consider rewilding as an attempt to allow biological processes to continue instead of striving to restore natural systems to a certain state (Monbiot 2014, 8). Furthermore, the solution is not just giving a space, connecting fragments of nature with corridors, or introducing keystone species to the site for the purpose of the advancement of nature but at the same time, new modes of learning ways to co-exist together, entangling a bigger flow of earthy systems. In that respect, Andrea Branzi's proposal for Paris is worth mentioning because he planned to release 50,000 sacred cows and 30,000 monkeys in the parks and streets of Paris, similar to a kinship that was inscribed in the cultural codes of Indian cities (Renna 2018).

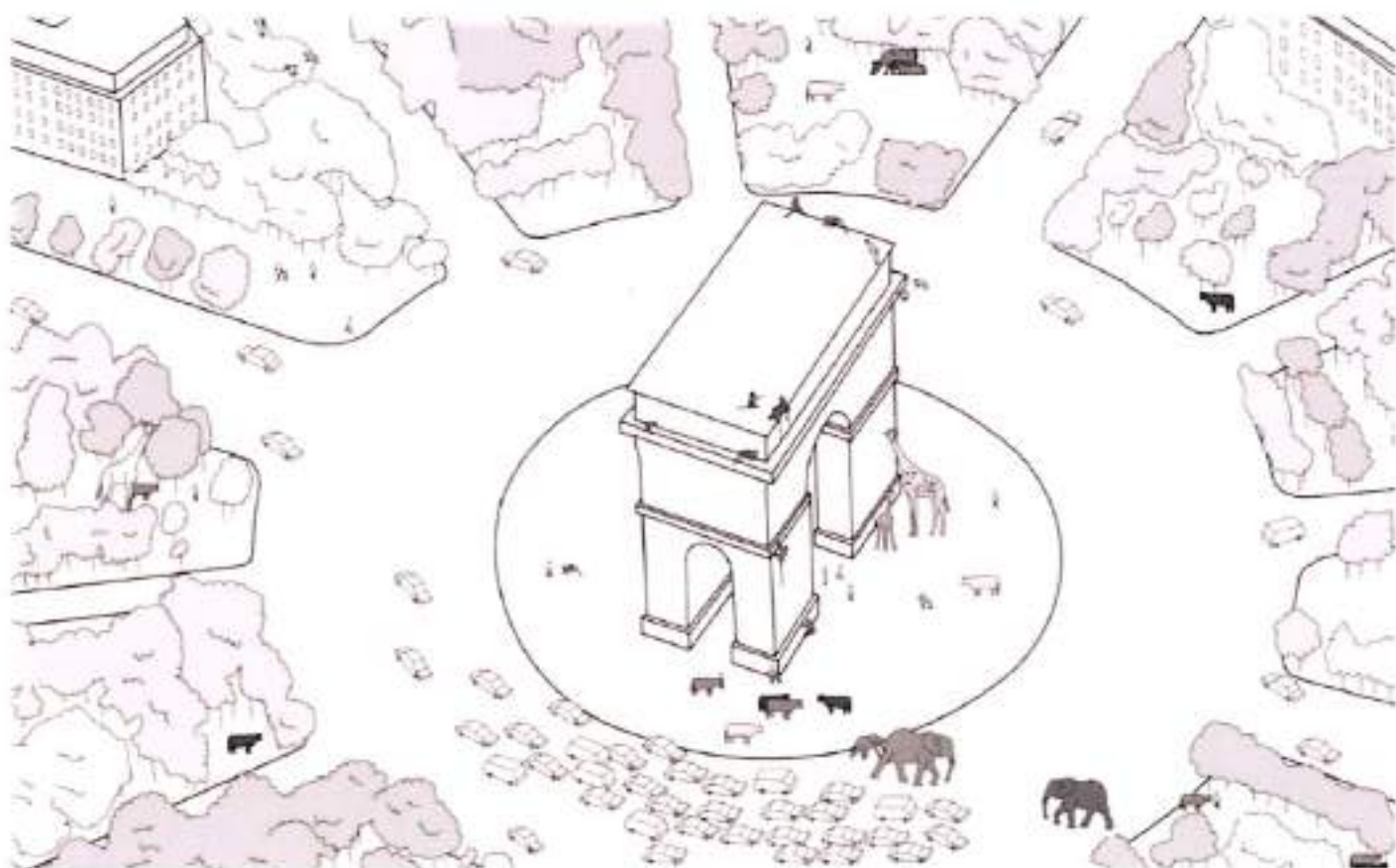


Figure 16. Branzi, A. (2008). *The possibilities of co-existence in Paris by the introduction of 50,000 cows and 30,000 monkeys*

Cherishing the immaterial background of the possibility of the co-existence in Indian cities precedes the process of constructing habitats that can host those species because the key is respecting the existing encounters with this existence in every sequence of life. Afterward, the term 'infrastructural opportunism' becomes crucial in terms of possibilities that it provides on various scales for different users including both humans and non-humans due to the discrete condition of natural reservoirs. Rewilding built environments cover a general concept in the aspect of introducing species' multitudes with control mechanisms such as mineral values in the soil, feeding network, etc. Projects that address infrastructure-scale problems and then ecosystems are the new method to understand how ecologies spread across regions and give rise to complex systems (Baldwin 2021). Furthermore, New definitions of sustainability and interconnectedness of human-centric design approaches with the rest of the living world are needed because sustainability is reduced to only materials, systems, and numbers in today's architecture discipline. Thus, carbon cycles, nitrogen cycles, and water cycles have to be taken into account in the design phases and the final design should support to regain rich soil ecosystems back to cities where it is covered with impermeable concrete and asphalt grounds.

On the other hand, politicians, the media, and a big part of the public give a place priority to the difficulties associated with generalized problems of climate change, that's why it is difficult to force policies to adapt to change since disrupted ecologies pose problems for nature protection (Rotherham 2017, 1). In that sense, it is beneficial to highlight strategies used by socio-technical systems to redirect focus to assemblages of infrastructures, technologies, materials, and people (Forlano 2016). Therefore, in my project proposal, the waterfront infrastructure is not a valuable site just for the physical opportunities that it gives for rewilding marine habitats but also South harbor is a site that can enable people to raise their voices against climate change. The new civic hub aims to be a new public space of Helsinki as a collective social ground for entangling all types of users and help us to attune ourselves to several patchy phenologies of the cities that are ignored by governance but come to light by bottom-up synergies. Finally, the solution underlays new interpretations of infrastructures that enable the polyphony of cities and allow residents to imagine cities as more inclusive and dynamic. This approach is also essential for resiliency in case of hazards, unexpected seasonal changes, the capacity of infrastructures, and gradual changes of earth systems which require new policies for climate change mitigation.

METABOLISM OF THE HELSINKI

From the Earth system's point of view, Hydrosphere, atmosphere, and biosphere seek equilibrium unlike the built environment's restrictiveness and pressure against natural flows. Therefore, the term 'entropy' become more of an issue for the city of Helsinki where urban meets with water in various forms throughout the waterfront promenade. Man-made infrastructural elements of the city are specialized according to meet the requirements put forth by various urban programs and industries such as transport, storing, lading, harbor, marina, etc. but on the other hand, rest of the elements such as parks, wetlands, beaches, and docks react differently. Due to the lack of flows in South harbor, re-functionalization of the area may gain a new layer to the urban ecologies. In addition, the land reclamation is not adaptive against the changes neither public use nor excessive precipitation because most of the areas are used as parking lots and terminals. This situation reveals the problem of the port in terms of resilience beyond ecological dynamics.

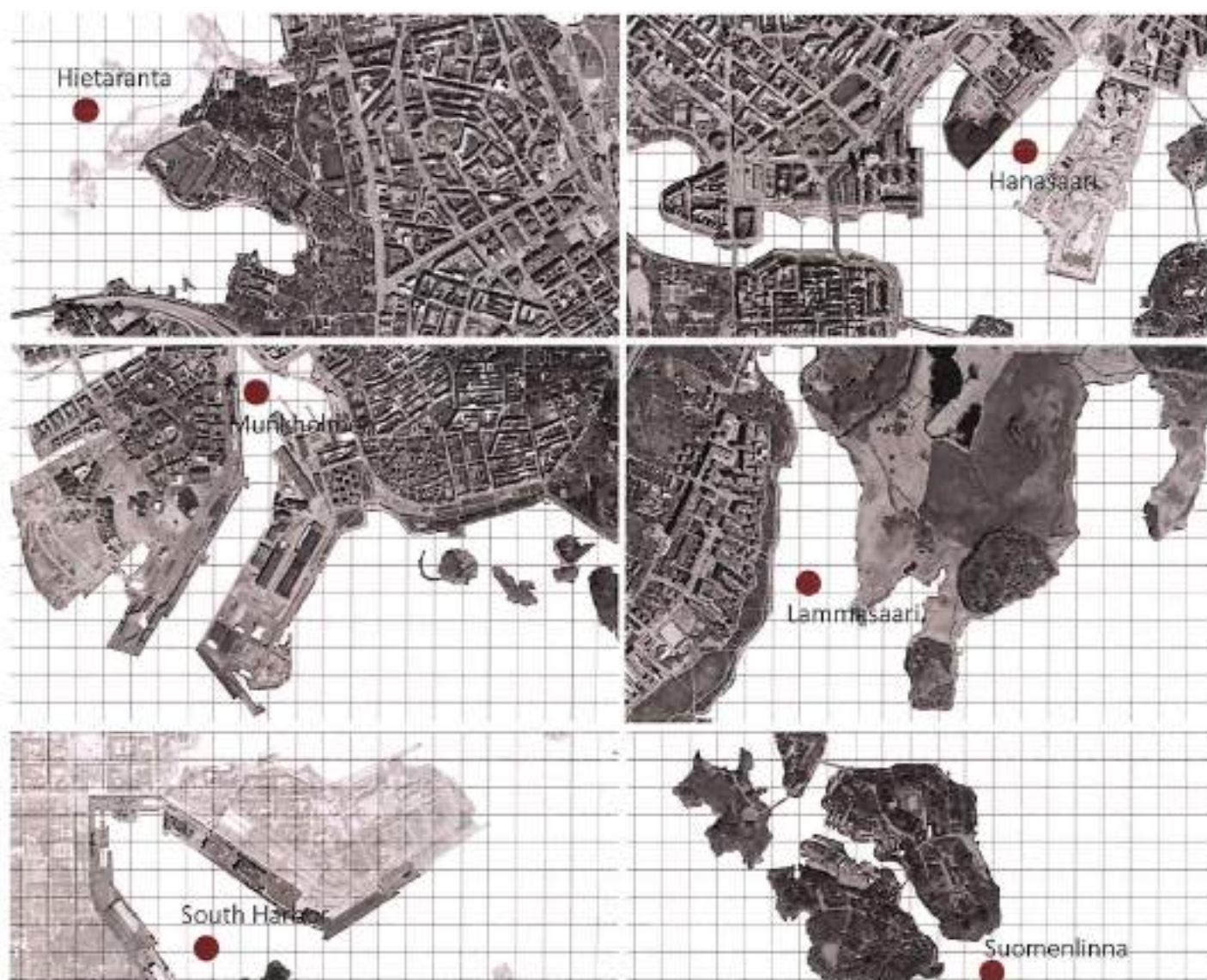


Figure 17. Metabolism of Helsinki. Relations with the Baltic Sea along the coast and specialized apparatus. Collage by author.

First of all, heavy snowfalls, torrential rains, heat waves, excessive temperatures in the urban fabric, and altered circadian rhythms that do not fit with urban phenomena are a few of the problems that have to be addressed. Secondly, hazard mitigation by searching for more permeable, dynamic, and performative ways to inhabit also become more and more crucial in the era of environmental fluctuations. Following this, gradual sea level rise is a global phenomenon and a threat to some countries for many years. Although Finland's situation depends on the postglacial land that causes a drop in water level, the situation is reversing on the southern coast of Finland. According to the highest sea level scenarios, the rising mean sea level will outstrip the land uplift everywhere on the Finnish coast by 2100 (Johansson et al. 2014). This means floods and extreme winters are likely Helsinki's two biggest weather risks as a result of altered temperatures (Pilli-Sihvola et al. 2019, 31). The insufficiency of the harbor as an infrastructure unfolded during the flood in 2005. This hazard can be read through the lack of coastal character of the harbor, especially during excessive precipitation which is considered to happen more with the trigger of climate change in the future. In addition to the fact that the long-term peaks of the sea level have grown significantly during the past century, the short-term variability of sea level has also increased in Finland (Pellikka et al. 2018). Hence, the static waterfront could not act as an ecotone between hydrosphere and lithosphere because its 'clear cut' section which unable to absorb affluxes of the Baltic that happen unexpectedly. The greatest challenge of the harbor came to light during the massive coastal flood in January 2005 when the sea level rise to +170 cm and resulted in substantial damage (Pellikka et al. 2018).

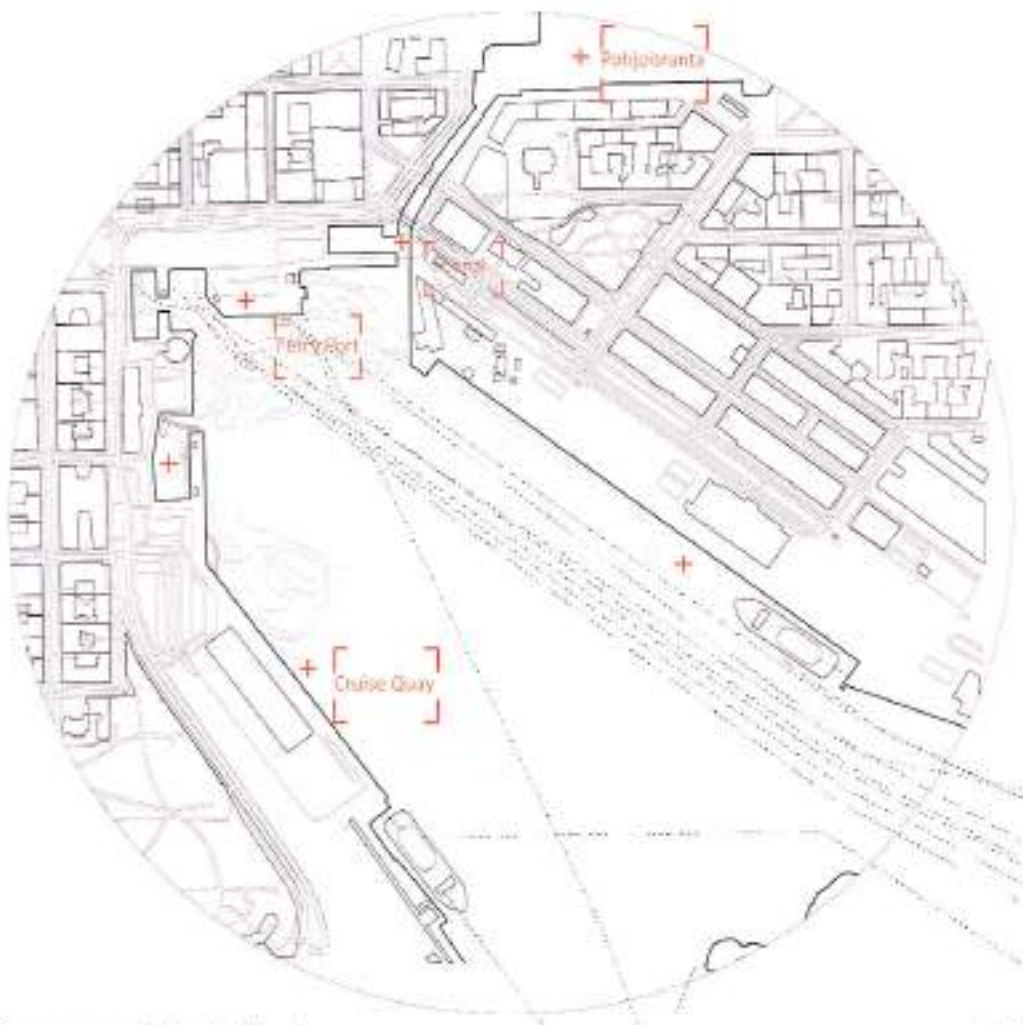


Figure 18. Sequences of South Harbor.

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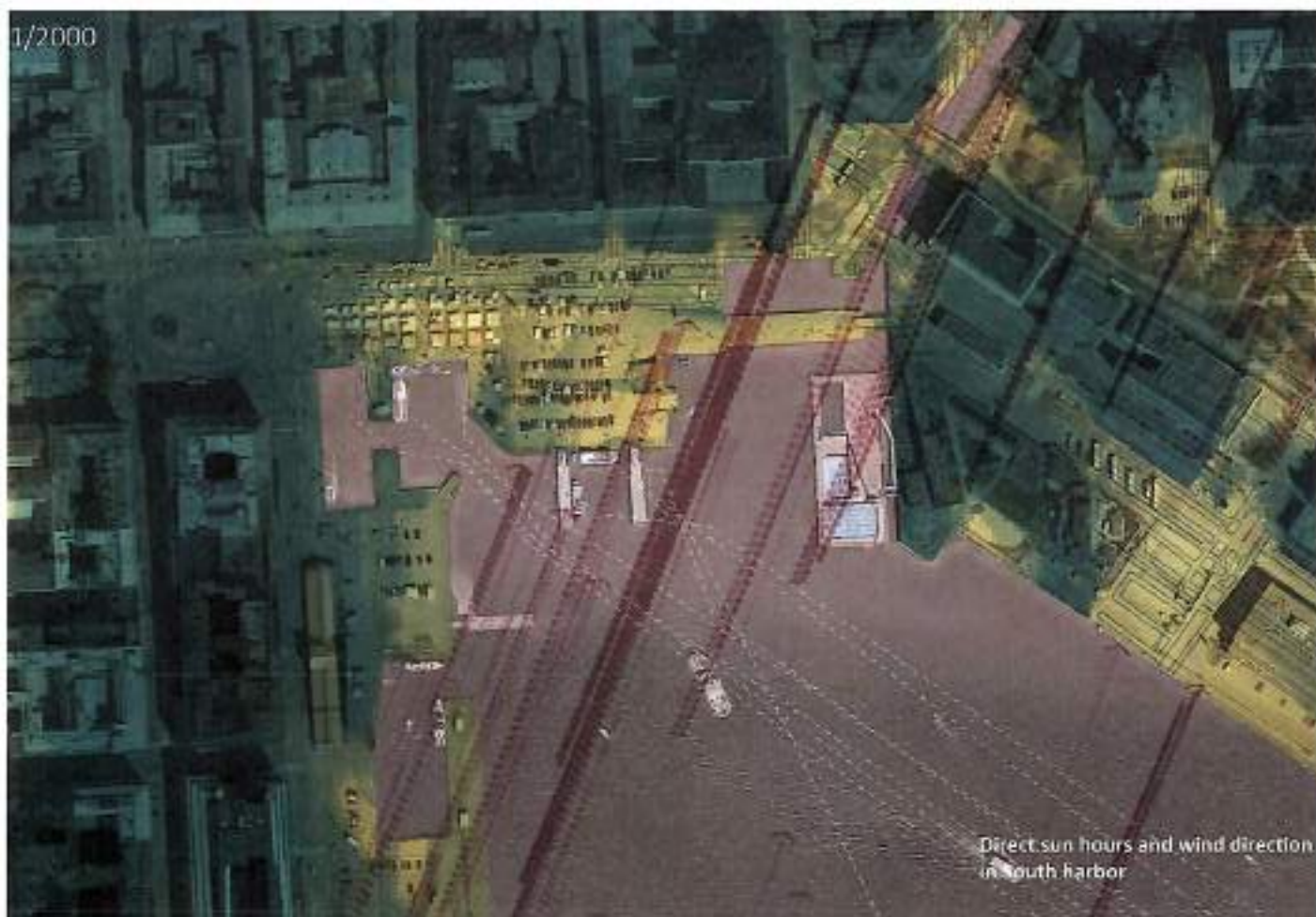
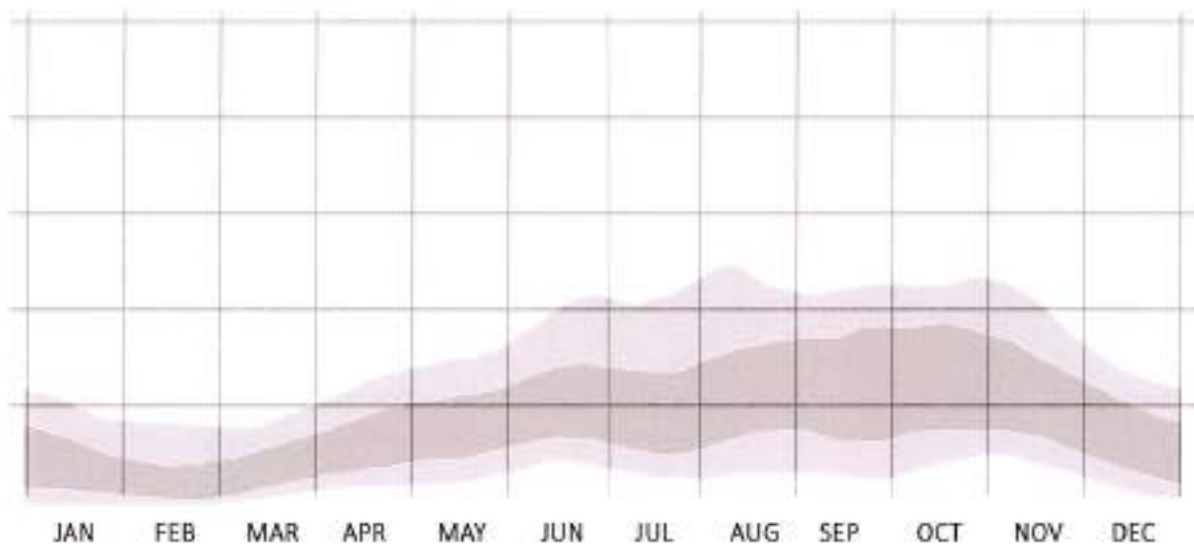


Figure 19. Direct sun hours and micro-climates of Helsinki South Harbor between January - February.



Figure 20. Direct sun hours and micro-climates of Helsinki South Harbor between June - July.

AVERAGE MONTHLY RAINFALL IN HELSINKI



AVERAGE MONTHLY SNOWFALL IN HELSINKI

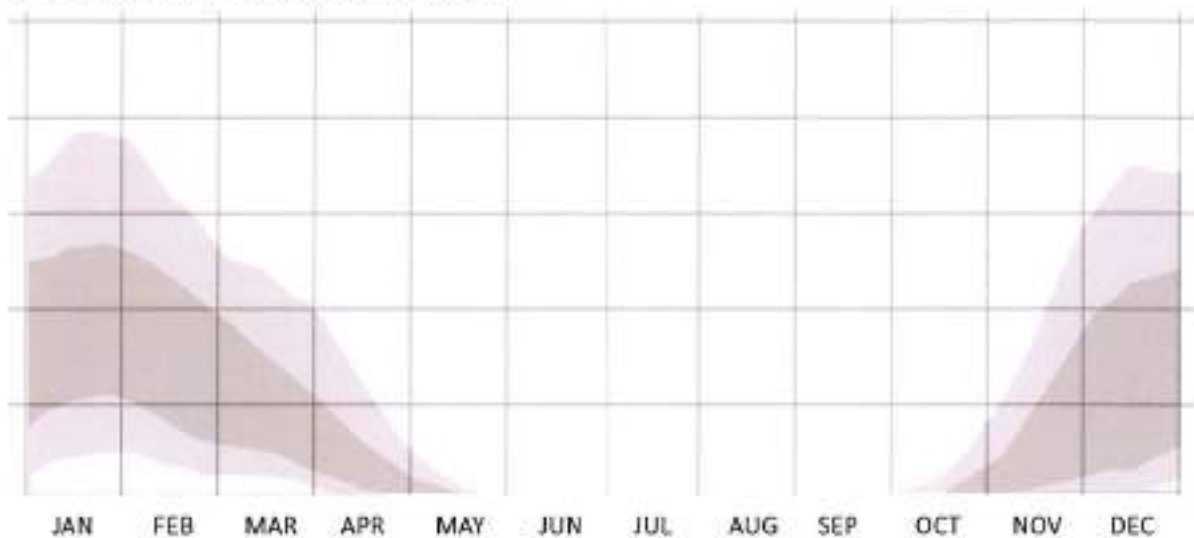


Figure 21. Average monthly rainfall and snowfall in Helsinki. Data used in visualization extracted from [Weatherspark.com](https://www.weatherspark.com).

As well as altered climates and expected fluctuations more in the future, new design decisions about the port's future should take increasing snow accumulation in a short period and longer dry seasons in summer into consideration immediately. These micro-climates and abiotic factors can be a result of the hybrid approach implementing both planning various habitats holding urban biodiversity and evaluating physical conditions extracted from the city-scape.

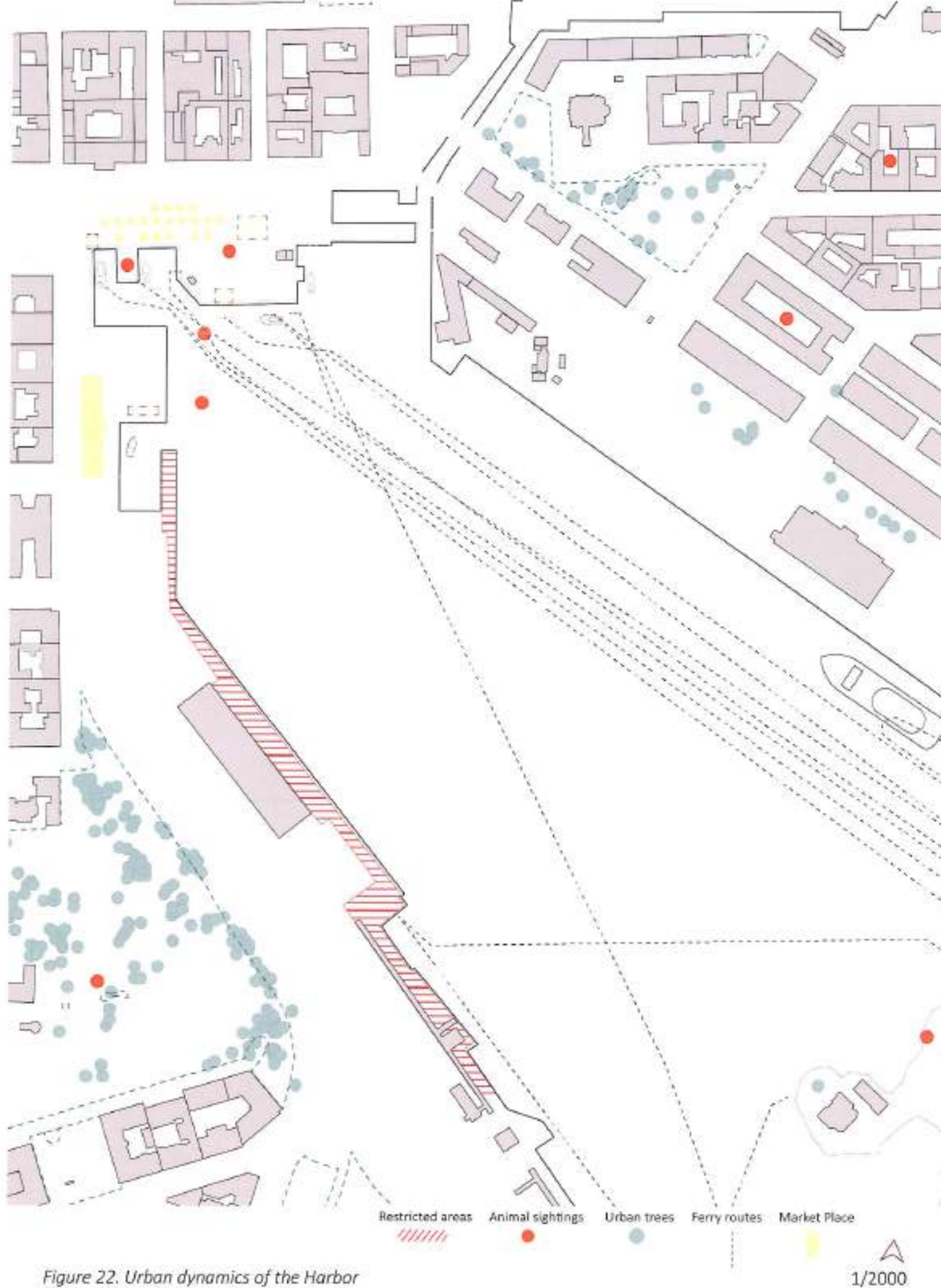


Figure 22. Urban dynamics of the Harbor

Secondly, beyond South harbor's infrastructural and ecologic problems, it remains between its contentious images as a transformed industrial port and political legacy that is explicit with its representatives. Therefore, it is essential to elaborate liberalization post-industrial formation of the port including sculptures of dead representatives of animal life, vast squares, governmental buildings, and green areas which are the layers of Helsinki's past and highly picturesque aesthetics. Moreover, Helsinki still resonates between the power dynamics and is seen as the site for hundreds of years that was founded upon human exceptionalism. The establishment of Helsinki dates 16th century owing to its geological location has regarded a site that can compete with Tallinn and the rest of the coastal cities (Port of Helsinki, n.d.). In the upcoming centuries, the South Harbor turned into a trade center and a railway reached the South Harbor. This increased the mechanization of the port a great deal in the 19th century (Port of Helsinki, n.d.). Finally, in the 20th century the significance of Helsinki as an industrial city was unquestionable but today, after the transformation of all warehouses, cranes, and railroads the South Harbor can be described as the heart of the city.

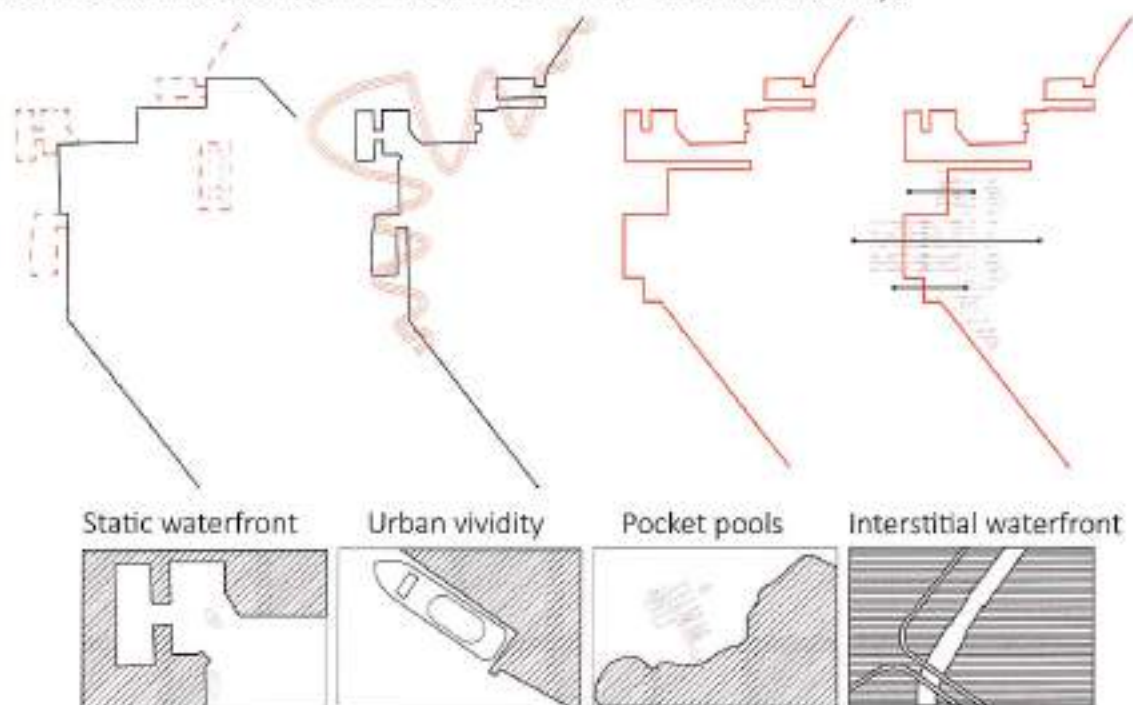


Figure 23. Previous situation of the Harbor. Transformation of the static coast into interstitial infrastructure.

Today, the South Harbor has a static presence as a result of its specialized pocket pool forms such as Kolera-allas, linnanallas, and its flat wide piers that allow cruise ships to dock. Moreover, the harbor's level difference from the water, leftover spaces as parking lots and the areas where the entrance of the public is prohibited promote the port's bleak image. The main artery through both sides of Esplanade Park serves the ocular-centric desires of residents and recreational needs since its establishment by the city administration at the beginning of the 19th century. On either side of the park, there is a sculpture by Viktor Jansson called 'Water Nymphs' which depicts a mermaid and child playing with a fish, and 'Hey There' sculpture depicts a small boy playing with a fish (MyHelsinki, n.d.). Besides, in Market square, the Stone of the Empress' is the oldest public memorial in Helsinki with stone turtles and advertisements of the Helsinki zoo in front of that. In brief, unlike the idea of appreciating the co-fabrication of urban ecologies, these are background components onto which human designs impose (Hin-

chliffe et al. 2005). Moreover, the South Harbor is surrounded by the commerce program in an extremely expensive neighborhood. Although spaces offered alongside the road are built on grid reference as wide and robust areas, the South Harbor comprises temporary rhythms of the users in this symbolic urban context. Nevertheless, the project aims to find ways to inhabit the harbor in an unplanned way by advocating both temporal rhythms and public engagement with the site through various activities. The new waterfront is tying people back to the Baltic sea right on the edge of the South harbor without sailing to the islands or demanding the ecologically perfected simulacra expelled from urban landscapes. Thereby, the nourishment of the landscape, rewilding of the marine ecosystems, and architecture that host exciting encounters assert that the reconciliation sites are the new urban codes for the future of the cities. To conclude, the South harbor stands as a valuable site in the age of the Anthropocene, and the strategy should not only attract public attention with fancy activities emerged by urban renewal projects but also search for erased precedence of territory as a coast that defines its interchanging character between its surrounding landforms and biomes. Following this, urban planners and architects can emphasize the companionship of species, especially in the heart of the city instead of ignoring and imprisoning qualities of nature in simulacra near peripheries and sculptures.



Figure 24. Dead representatives of nature. Creation of simulacra in urban fabric. Photographs by author.



Figure 25. Coastal characteristics of Helsinki (Helsingin kaupunkisuunnitteluvirasto julkaisuja 2001).

TIME-SCALE

I really like the metaphor of life that derives from an inanimate state of timber and soil which hold a great amount of biodiversity, unlike rehearsed synthetic landscapes. This is a beautiful example of how a body of nature can be an organization for interspecies design and how networks of relations are still the most essential infrastructure of neo-liberal urban development. Anna Tsing argues the term 'precarity' which is the condition of being vulnerable to others and the law of nature that does not seek stability (Tsing 2015, 20). From the perspective of co-evolution, unpredictable encounters transform us into kinesis that we are not in rule and since the major changes in the Earth's systems such as ocean and climate, humanity has started to break off from this.

On the other hand, the way Western epistemologies directed tackling the future with the notion of prediction sciences that investigate disorienting systems of the world as scalar systems is obviously the opposite of the uncertainty of nature. Because modern sciences are inclined to extract the knowledge from ex-situ observation such as seed banks and herbariums which were appointed to capture the natural. In that sense, the Architectural program of the project aims to decolonize Helsinki Herbarium and include a 'time' aspect in reference to the functioning of seed repositories as 'politics of reversibility'. Herbarium with all the seeds and information that it contains will find a central role within the program as a sealed space for external forces but fosters contradictions between the landscape and specimen collections. This contradiction originates due to the goal of rewilding which, unlike conservation looks to the past (Monbiot 2014, 10). That's why rewilding is crucial for performative modules of the project to rehabilitate both seabed of South Harbor and offer habitats for various flying species within the landscape. Thereby, the end image of the landscape is about neither the benefits of human use nor an attempt to design with nature solely. In the end, the final image of the Harbor will reflect an environment that constitutes an ecosystem for species' interaction with one another and their surroundings.

The re-functioning of the herbarium plays a central role in the system as a space that works both as an archive, collection, and repository that binds public and scientific programs. However, the question is whether a change may be undone before it becomes irreversible (Wolff 2020). Firstly, the time aspect of the project includes the re-interpretation of the herbarium functioning that aims to restore the declining marine habitats as a result of contamination, artificial disturbances, eutrophication, and the colonization of the invasive species. Herbarium contributes to the active re-location of specimens among collections, germination studies of endangered flora, and rewilding procedures in general. Because it is not enough to seek the state of equilibrium anymore as a consequence of disruptive Anthropocentric actions which damage the Baltic sea in every aspect for decades. That's why the damage caused by hu-

man activities requires a reverse act parallel with mitigation that focuses on human-centric comfort and in addition to that, If humanity decides to stop and think like terrestrial, new modes of conceptualizing rates of change, reactions, and delayed effects are required (Robin, Sörlin and Warde 2013, 2). At that point, the notion of operational time becomes highly vital to evaluate actions taken against climate change. According to operational time, every event irrevocably fades into the past in clock time precision but every sequence of 'now' appears as a durational period in which options may be maintained and past modifications can be considered reversible (Wolff 2020). Since events can become reversible in certain chronopolitical phenomena, such as we witness in seed repositories which are technologies that deal with the time of the captured seeds in the form of the future but also have the potential to change the temporal order by introducing the possibility of reversibility (Wolff 2020).

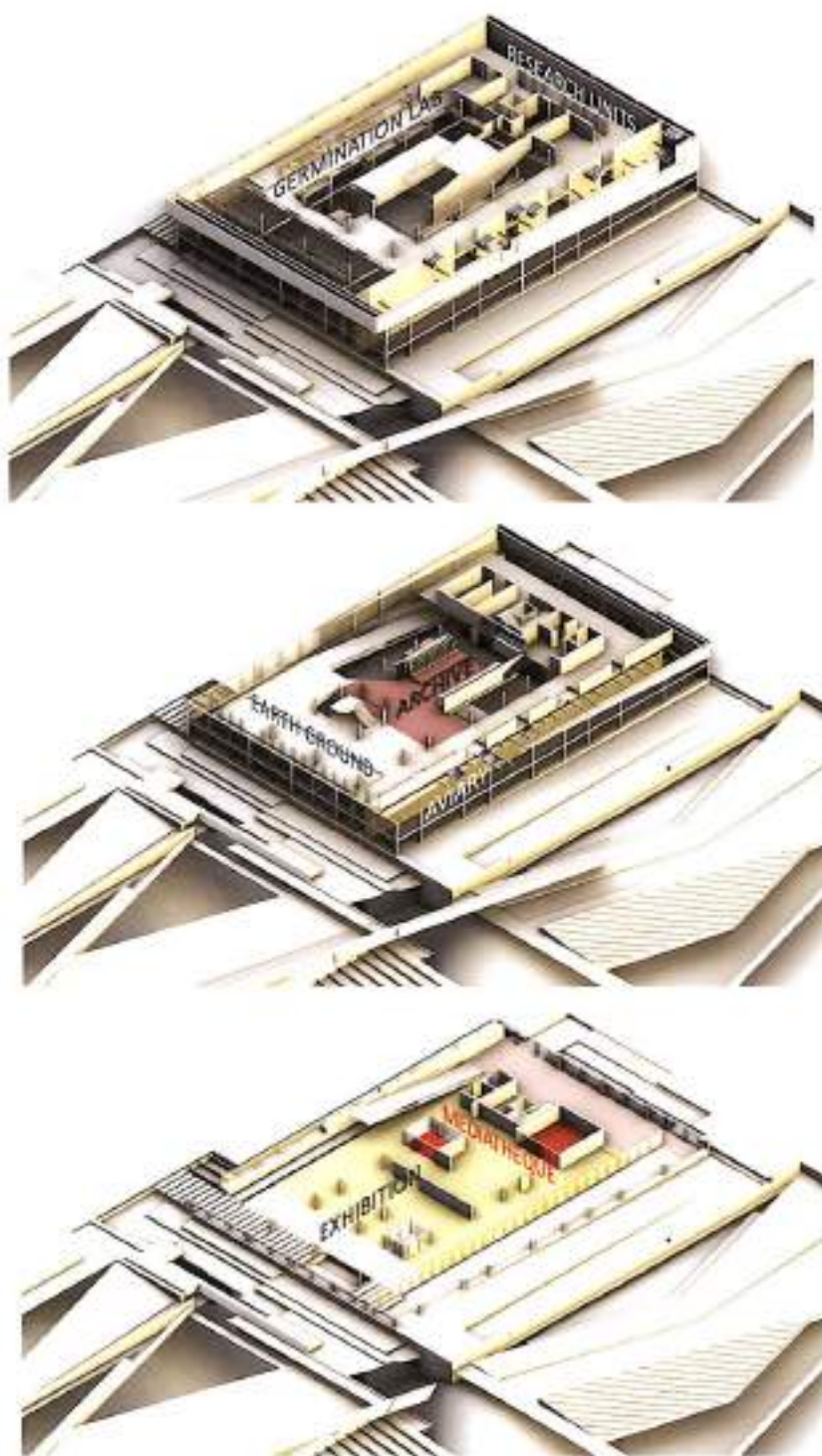


Figure 26. Architectural program of the project.

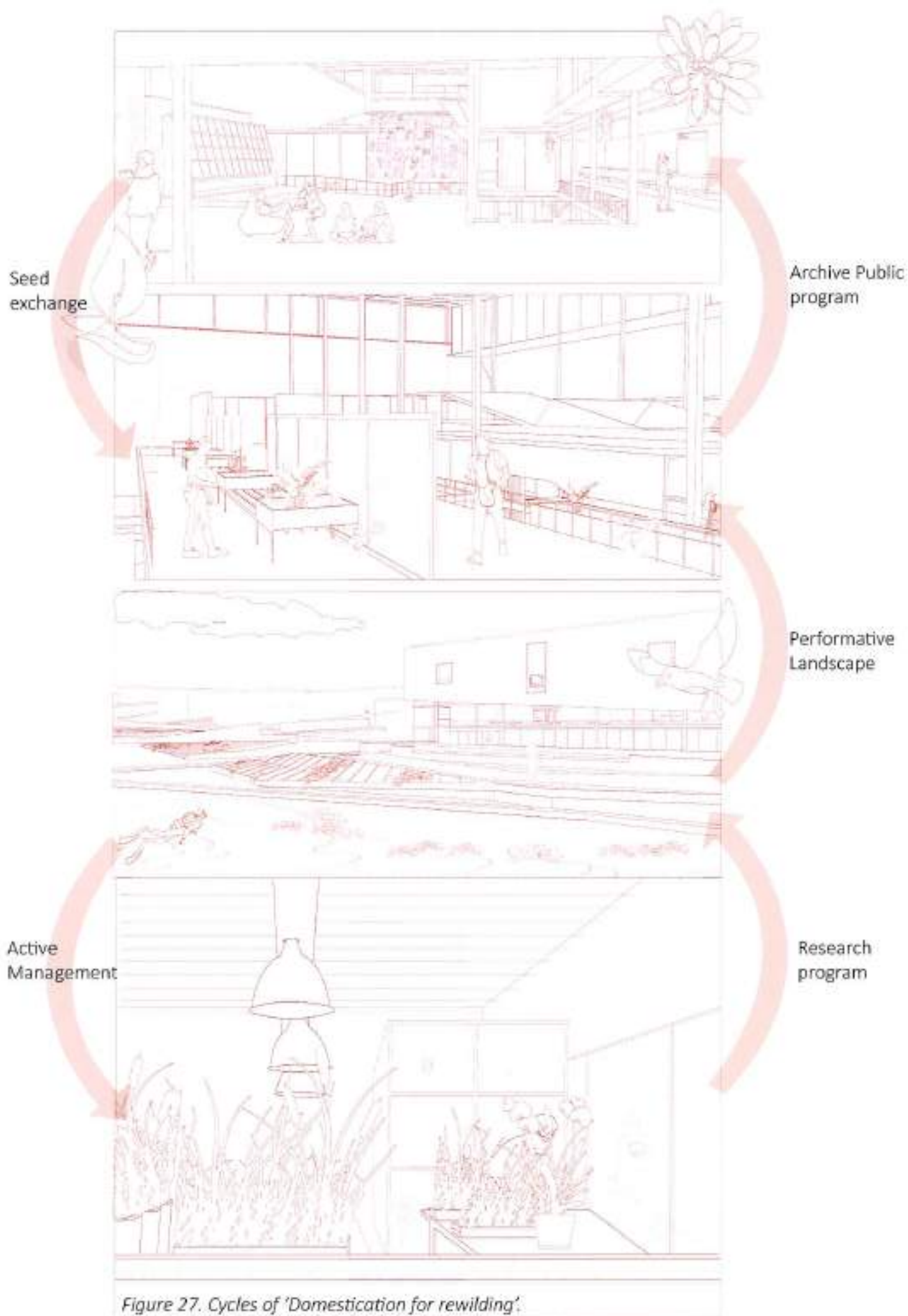


Figure 27. Cycles of 'Domestication for rewilding'.

Moreover, the time-scale of concern on disappearing ecosystems enables us to criticize political ecologies and social processes. Institutions like museums, natural history museums, and herbariums must present themselves as learning communities rather than vague bastions of authority that can never be questioned (Shoenberger 2022). Therefore, rewilding arises again as an act against the scalar expressions of nature which result in a passive and unsuccessful reflection against climate change in people's mind. In that sense, rewilding should seek to reverse and rehabilitate but with the construction of active involvement of all actors of the climate change from policies to sciences, public participation to activism, and even protests. In this regard, the project includes germination units of scientific programs that are open to public participation in order to work with the triangulation processes such as extraction, preservation, and plantation which are the cycles of 'domestication for rewilding' designated to the dynamics of the site.

First of all, the processes 'domestication for rewilding' is a marvelous term and process to explain the interconnectedness of these steps and combine collective act with the construction of active knowledge making. The ultimate goal of the project can be expressed in terms of controlled de-controlling which sound contradictory but highlights a degree of autonomy granted to species while maintaining the scalability with the authorities in charge (Lorimer and Driessen 2013). Therefore, domestication for rewilding is the name of the action plan that follows specific steps starting from scientific methods such as taxonomy, germination, and multiplication to the implantation phase of seaweeds on the seabed to form an ecosystem or reversing the decline of particular seagrass species. By doing this, it is possible to reverse the biological conditions of South Harbor which suffers from eutrophication, and species that depended on that assemblage. Additionally, it is commonly recognized that seagrass meadows increase biodiversity, protect coastlines, and trap atmospheric carbon dioxide to a large extent (Rewilding Britain, n.d.). However, we need more knowledge and long-term political commitment to achieve effective outcomes of rewilding marine habitats since the operations of rebuilding the ecosystems are slow and climate change hinders the recovery process (Kontula and Raunio 2019).

Secondly, domestication for rewilding program of the design also supports the public commitment to seed, land, and collective memory of the Finnish people. While the herbarium requires taxon, index, shelves, and visual representation of specimens for its institutional and epistemological possession, the project in general works as a civic hub that is aimed to represent the narratives, erased techniques, and ancestor seeds that can be shared through audio rooms, mediatheque, and cultivation pots. Moreover, the proposal enables gardeners, farmers, associations, and society to borrow and barter seeds to protect Finland's variety of plant species and offers active participation of human users with sowing, inspection, packaging, and compost formation from wastes. As a result of this, the program turns the tension between social sciences and natural sciences into active engagement with people, researchers, activists, people who suffer from climate anxiety and indigenous people ever lived in the whole Fennoscandia and South regions. Both indexes and narratives that used to erase each other for centuries under Western hegemony nowadays navigate local people to show more

than species ex-situ precedence and mechanized empiricism as a form of interaction that has been applied as the only way to perceive 'environments'.

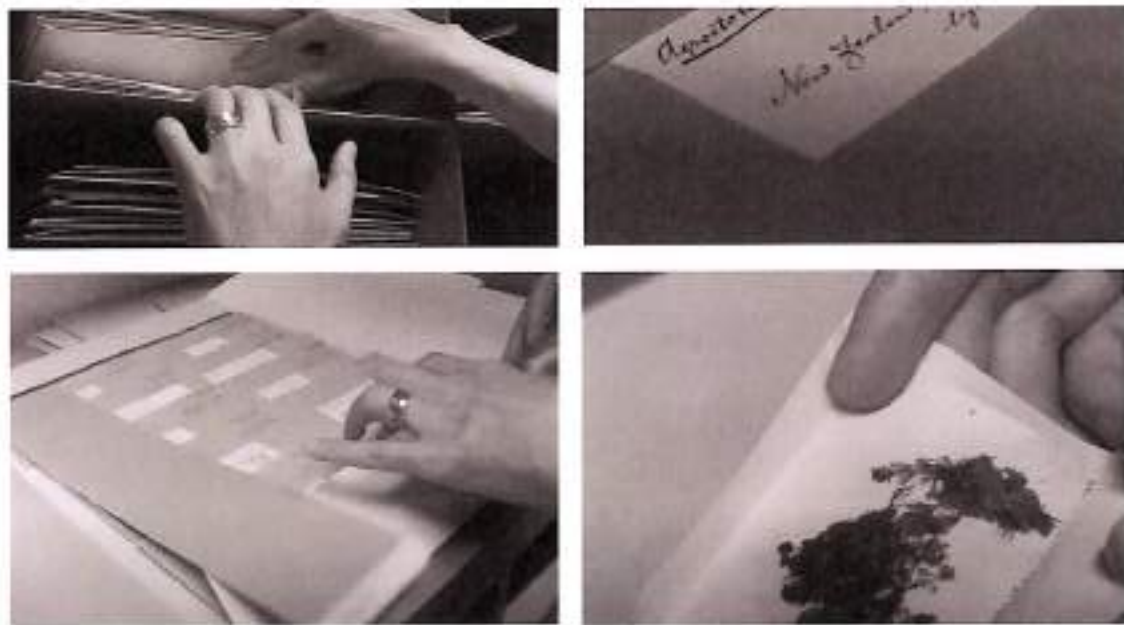
Finally, the project reminds us that we live on the threshold of biodiversity loss, where humanity has a huge responsibility to stop thinking parallel to the modern practices that let species extinction due to their secondary priority. The time aspect of the project intertwines with the programs of the proposal such as herbarium, labs, mediatheque, workshops, and landscape modules and highlights not only being operational in the present time but in the past, present, and future past.

DECOLONIZING THE HELSINKI HERBARIUM

Although Kaisaniemi Botanic Garden and Helsinki University Herbarium appear as supporting architectural programs to each other, both structures function contradictory to each other in terms of spatial and climatic conditions. In Kaisaniemi botanical garden, the steel and glass construction supports the liveliness of the interior with different sections as a giant terrarium. Additionally, those sections of the botanical garden imitate changing climatic conditions of the earth biomes such as hot and arid Mediterranean, Moist and rainy tropics, high-temperature differences of Tundra, etc. On the other hand, around 3.5 million specimens from Europe, Fennoscandia, Asia, and North America, as well as specimens from Asia and South America are kept at the Helsinki University herbarium (NYBG Steere Herbarium, n.d.). Moreover, the collections contain notes, names, classifications, and indexes of the scientists, and turn all of these physicalities into a part of this archival work vicariously. For instance, botanist Sextus Otto Lindberg is at the top of these names and other researchers also can be found in both digital and physical databases such as Acharius, Nylander and Karsten collections (Luomus, n.d.).

Initially, the role of the collection-based institutions should promote a conversational purpose and unquestionably make a direct contribution to conservation science and teaching as well because those organizations provide numerous urban dwellers a unique opportunity to watch the beauties of life (Miller et al. 2004). However, these collections echo the reflections of the past and inanimate representations. The 'museum' role that they are only able to resurrect the conditions of the landscapes of previous centuries in people's minds behind sealed glass display cases and drawers is not enough to make them key agents as knowledge-making sites while the world is facing an ecological disaster. The rising interest in natural collections and the data they generate is crucial because it is expected that a broader number of people will use the data from these collections (Schindel and Cook 2018). In the end, the main objective of the program is re-constructing seed repositories as civic living archives for vanishing, domestic, non-human centric, in-situ live presence in contrast to institutionalized herbarium collections that preserve homogeneous empiricism of the specimens, taxa, and ex parte historiography. In addition to that, the program of the project re-shapes also contemporary taxonomy practices in terms of integrating with ecologists, policymakers, and the public. Thus, the endeavor of the herbarium is both acting as an active field of empiricism for 'domestication rewilding', reconciling field as decolonizing its natural collections with names, narratives, techniques, and information about extant geographies. Similarly, the Nordnorsk Kunst Museum is a perfect case as an example of decolonizing collections because this way, the museum asserts hidden meanings of the same narrative from the Sámi communities' angle (Shoenberger 2022). In Finland's case, this is still an ambiguous topic that has to be discussed because the Swedish-speaking population, the Sami native population, and the Romani minorities disprove that Finland is a culturally homogeneous country (Raento and Husso 2002). Additionally, many political and social factors resulted in political concessions (Raento and Husso 2002). So, it is important

to understand the characteristics of geography from its real inhabitants and different cultural perspective including their diet and attunement with the landscape.



UNIVERSITY OF HELSINKI HERBARIUM



Figure 28. Collections of Helsinki University Herbarium (Hyvärinen 2020; Anon 2018). Collage by author.

Therefore, the project aims to start an ongoing archiving process for turning dead plants, their indexes, collection data, and a geotag into a digital database for the access of everyone, similar to the broad-scale atlas of Finnish flora because of numerous diverse cartographies and maps, as well as various political and cultural realities exist and needs to be at someone's agenda (McGowan 2020). Moreover, Exclusion, marginalization, or constricted limits do not have to be the results of the incommensurability of indigenous empiricism when it comes to establishing the norms of epistemology (Doceda 2020). Alternatively, by recognizing the flaws in each worldview, there may be a lot of room for creativity and openness to greater understanding (Doceda 2020). That's why, In the mediatheque of the project, one of the goals is to represent the contentious landscapes between Sami people and forestry industries and the attunement between the Sami people, native plant species, and their mobility as a result of political and profit economic pressures. It is known that throughout history, the Sami people of northern Fennoscandia shared a strong interaction with plants for food and medicine, and as a result of this, the Sami people altered the environment to become a 'cultural refugia' (Rautio, Linkowski and Östlund 2016).

Consequently, the project tries to advocate Latour's suggestion that a socio-natures that takes hybridity seriously needs to develop new epistemological practices of conducting research and engaging in politics based on open 'matters of concern' rather than on institutionally closed 'matters of fact' (White and Wilbert 2010, 16). All these cultural phenomena happen in the most controversial political site of Helsinki. Taking this into consideration, the architectural program of the design highlights a growing number of voices discussing the misapprehension of the 'social' which insists that we live in only one social environment, and that realization of multiple social processes and naturacultures might be also produced, enforced (White and Wilbert 2010, 16-17).

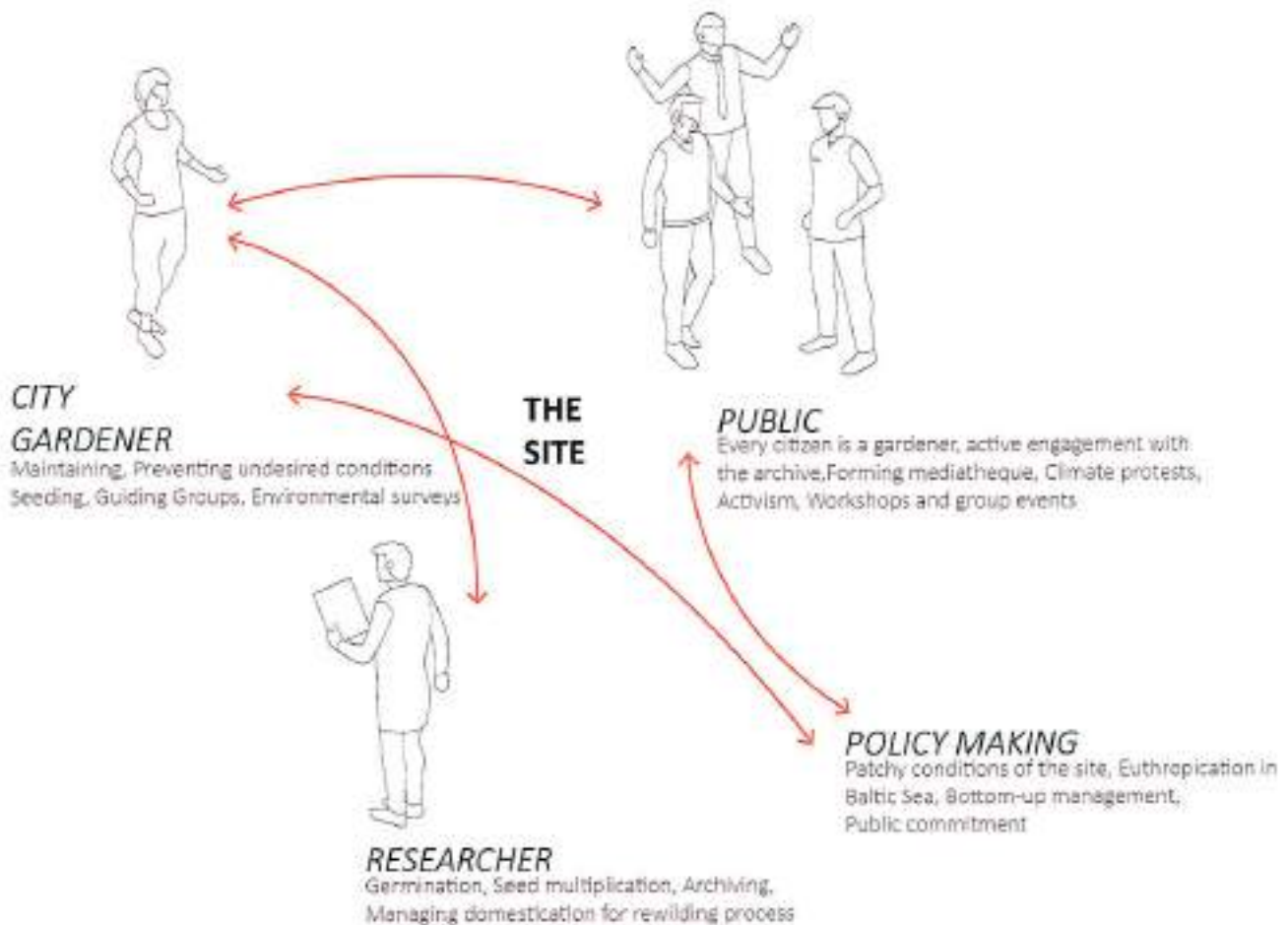


Figure 29.

Lastly, the project aims to achieve an active engagement with the public and find true representations of the climate catastrophe in politics as a result of this radical transformation. Additionally, the new roles of these institutions have a potential to involve enthusiastic researchers, local people and city gardeners as the main users of the program. Thereby, city gardeners can correlate between the research program of the archive and public activities that people use the site by learning Finland's climate, region's permafrost and most importantly how cultures have related to Nordic landscape and how the two have transformed each other. This notion puts forth the significance of democratized reciprocal relationships which eventually reveal new possibilities in the heart of the urban space.

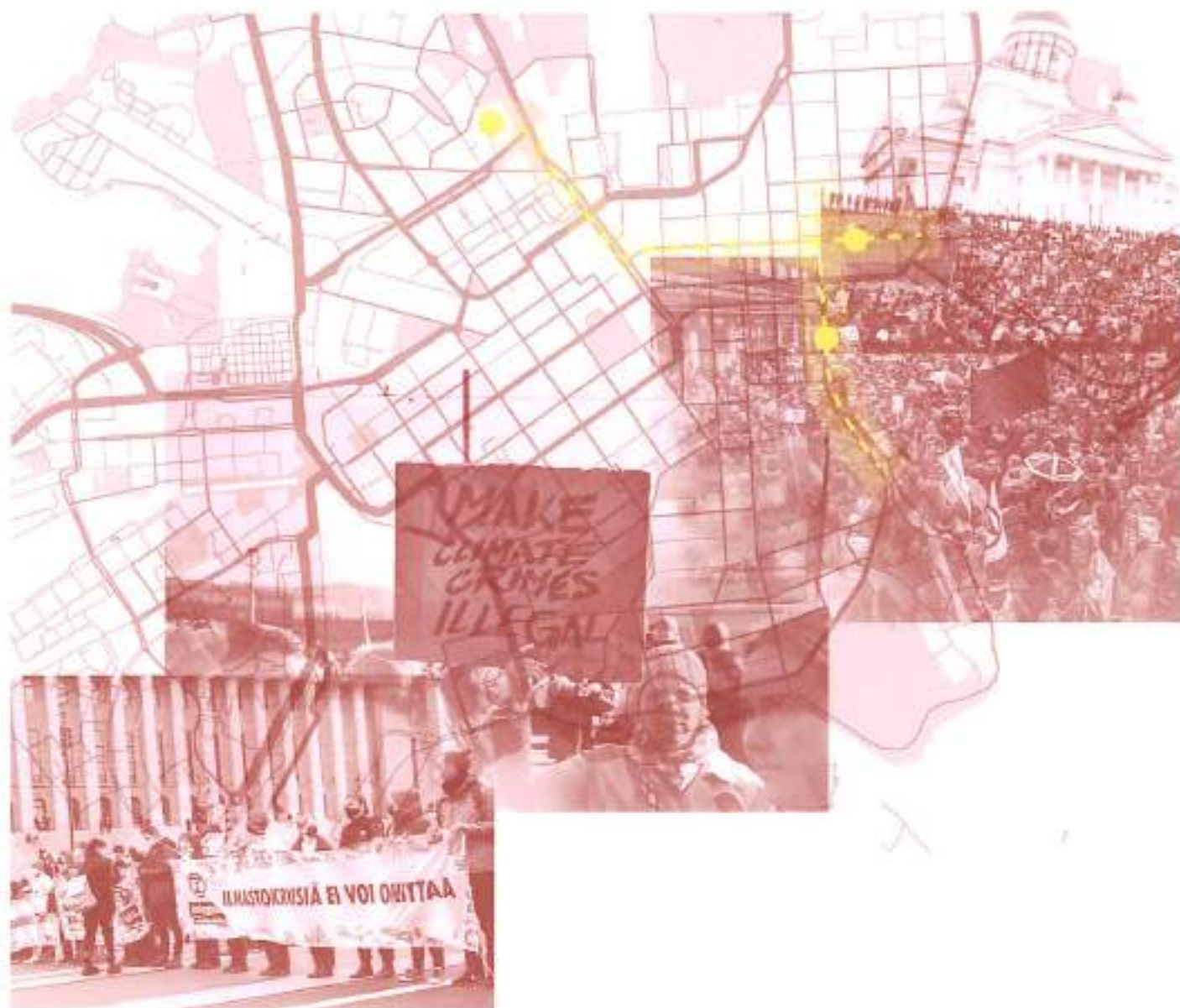


Figure 30. Reading Senate Square Helsinki from climate protests. Photos used for collage taken by P. Sopanen (2021) and (Extinction Rebellion UK 2021). Collage by author.

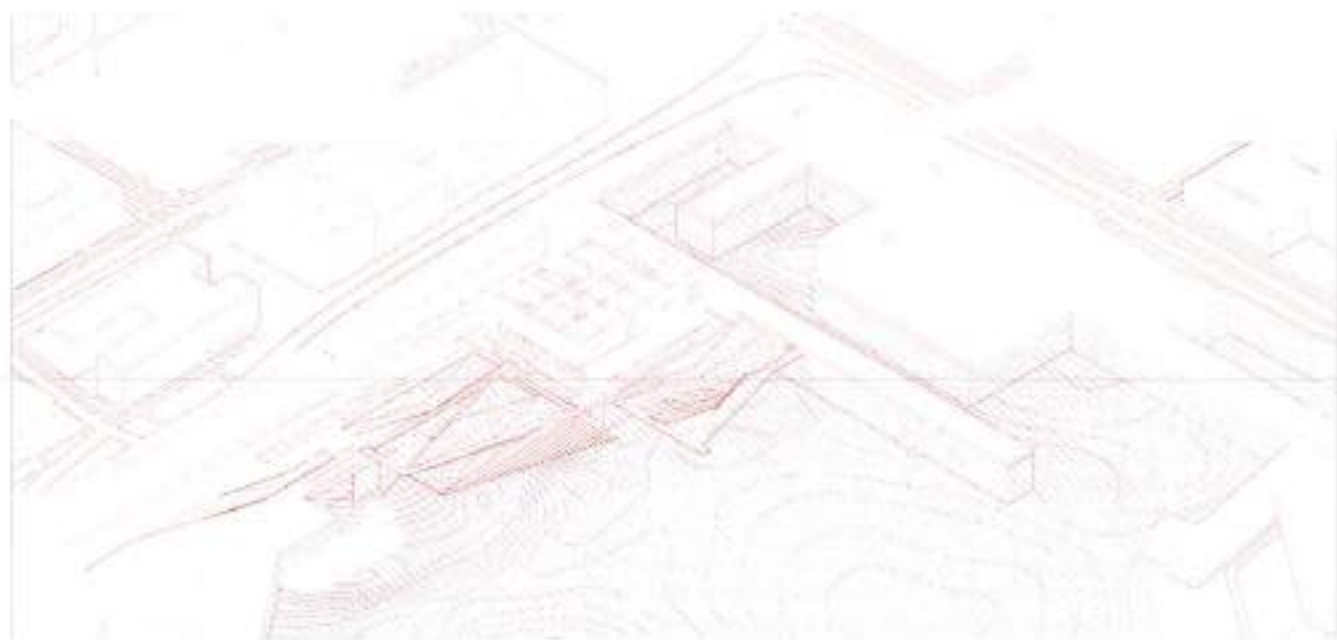


Figure 31. View of the Project.

PROGRAMME RE-BREEDING

In the 1960s, environment and climate started to take part as new domains for architects who perceived architecture as not something passive but in contrast, a living entity like an organism. Even though this approach to architecture is thrilling and eye-opening, architectural communication abstracted the environment in representations for example material realities like rain, snow, smog, or dust were never represented (Sheppard 2014, 297-300). However, with the devastating consequences of the Anthropocentric effect on natural systems, the term 'climate' become a phenomenon in that designers pay attention to the land, its weather, soil characteristics, and materials to think more transversally. Although enlightenment happened in the 60s about the regional approaches in architecture, due to atmosphere's crisis-related perception, the global mean temperature has been used to characterize the climate all around the world. By monitoring the quantity of carbon dioxide gas across the whole atmosphere encircling the planet, carbon measurements have significantly contributed to the global warming discourse (Robin, Sörlin and Warde 2013, 291). Hereby, the history of how the earth responded to climate change is currently being recorded in the Anthropocene archive (Turpin 2013, 4). Natural archives conceptualized over planetary thresholds present the image of the globe that shapes the treaties agreed by the countries, the policies of the states, and the society's perspective on the problem.

Immunized interiors that are defined by human artificially suspend other biological happenings of the land and climate. Thus, the climate is now seen as non-sensory, abstract, and something that can be adjusted so that the users of the buildings may best achieve their human potential (Barber 2014). Additionally, the architecture has adopted this division by interiorizing exteriors at varied scales and considering how designs for particular light, odors, and climate regulation impact foam sociality as Sloterdijk presents (Lemmens 2017). Thus, environment as an agent can be interpreted as a new concept that can be embedded into a static architectural envelope in order to establish species co-habitation especially in Nordics. It is highly crucial to diversify those micro-climates for various species' comfort zones due to long and extremely cold winters and natural disasters such as heatwaves, heat islands, storms, etc. that will become more complex with global warming in the future. In addition to that, the rapid loss of cold-adapted species' habitats raises new questions regarding the effects of global warming (Gottfried et al. 2012). Taking all these things into account, definitions of sustainable architecture must work beyond its shielding role for interior comfort and it is expected to be both physically and climatically porous and multi-layered. Thus, architecture becomes main discipline for discussing new possibilities and reciprocal understanding implicit in this sort of collaborative conversancy that makes talk of inter-species partnership sensible (Acampora 2003).

At this point, urban ecologies can be supported and climate can be addressed as a more complex and stratified phenomenon in urban fabric by architecture discipline. The importance of urban built landscapes can be expressed by the presence of flying species for example return of birds to cities since the seventies due to façade morphologies and verticality of the urban fabric (Boeuf, n.d.). These spatial affordances underline ecological niche and provide better habitats for flying species with smaller refuges, rare predators, and much higher temperatures in winter (Boeuf, n.d.). Moreover, with the pandemic started in 2019, the presence of birds in cities increased where human activity has slowed down. It is possible to map cities' micro-climates and the long-run behavior of the species that settle those areas or avoid them.

On the other hand, some of the urban animals such as Seagulls in Helsinki attuned themselves to fishery activities and time patterns of the open marketplace near South Harbor. Therefore, the aviary façade and performative landscape of the project come as elements that help to redefine the anthropocentric infrastructure of the Harbor as a habitat beyond ocular-centric codes that modern practices interpreted nature as a 'camouflage'. As a consequence of the double membrane of the polycarbonate façade, the spatial organization of the pavilion does not only envelope the interiors but also creates spaces for migratory birds and urban animals such as seagulls. In addition to that, the double membrane of the façade also manifests that the harsh climate is not anymore the main driver for constructing fully protective interiors against external factors but multi-layered micro-climates and refugia instead. Hence, this means that architecture gains the power to establish both instantaneous and geological time relations by leaving the monotonous time schedules brought by human uses and the function of the port cities. With the introduction of exciting encounters with feral qualities in the South Harbor, the built environment participates in the construction of the future ecosystems which are going to boom in time.



Figure 32. Views from Helsinki South Harbor. Photographs by author.

In addition to that, reinterpreting waterfront infrastructures as permeable zones rather than monotonous interfaces that only get into a relationship with the sea with its static line opens up a thought-provoking approach for intertwining flows and relations happening in the seascape. Because the built environment is now more than ever a part of the biomass and energy conversations, erased borders, and microbial composition, the mutation of man-made systems beyond 20th-century anthropomorphic models is explicit (Turpin, 2013). In that respect, it is crucial to take into account all the natural and artificial layers that happen constantly in the cityscape. Firstly, the ferry traffic in the Baltic sea is an essential example of the territorialization of the seabed in a way of anthropocentric actions. According to scientific researches, one of the major reasons for the marine habitats being threatened is water traffic (Kontula and Raunio 2019, 56). Additionally, the Organic contamination of the port, artificial lighting, and vibrations caused by soundscape of dense urban life also have harmful effects on natural life.



Figure 33. Contamination, water stagnation and marine mucilage. Photograph by author.

Consequently, the integration of landscape design into this project is not only related to social infrastructure and well-being issues but advocating co-existence against the mainstream practice that takes non-humans only in terms of visual and satisfaction. This project aims to re-define the geology, hydrology, bedrock, islets, and archipelago landscape of Finland which has been scraped by man-made systems. Furthermore, the project's amphibian modules do not only aim to bring the feral life back to the site but also investigate the sedimentation process in the seabed in order to increase the heterogeneity for the benefit of marine life habitations. From that perspective, the regenerative character of the project's landscape infrastructure is inspired by the character and changes of the Finnish coastline and habitats. In detail, clay soil regions in southern Finland and high fens areas are critically endangered habitats against climate change (Finnish Environment Institute, 2018). A holistic action plan is needed for Finnish geodiversity too. The sand beaches and gravel coastlines are less common in Finland, while rock and moraine shores predominate (Kotilainen et al. 2020, 56-58). In addition, the most vulnerable coastal habitat types in Finland are coastal dunes with *Empetrum nigrum*, bladder wrack, or common eelgrass because there are few opportunities for habitat shift when ecosys-

tems are close to agriculture fields or the constructed environment (Finnish Environment Institute, 2022). Because sand beaches and islets deteriorate and suffer from eutrophication, climate change has several repercussions on the Baltic Sea shore (Kontula and Raunio 2019, 215). Lastly, the Baltic Sea ecology depends on bladder wrack and common eelgrass to create underwater meadows that provide habitats for numerous marine organisms as well as places to feed and reproduce (Kontula and Raunio 2019, 200).



Figure 34. Possibilities of co-existence.

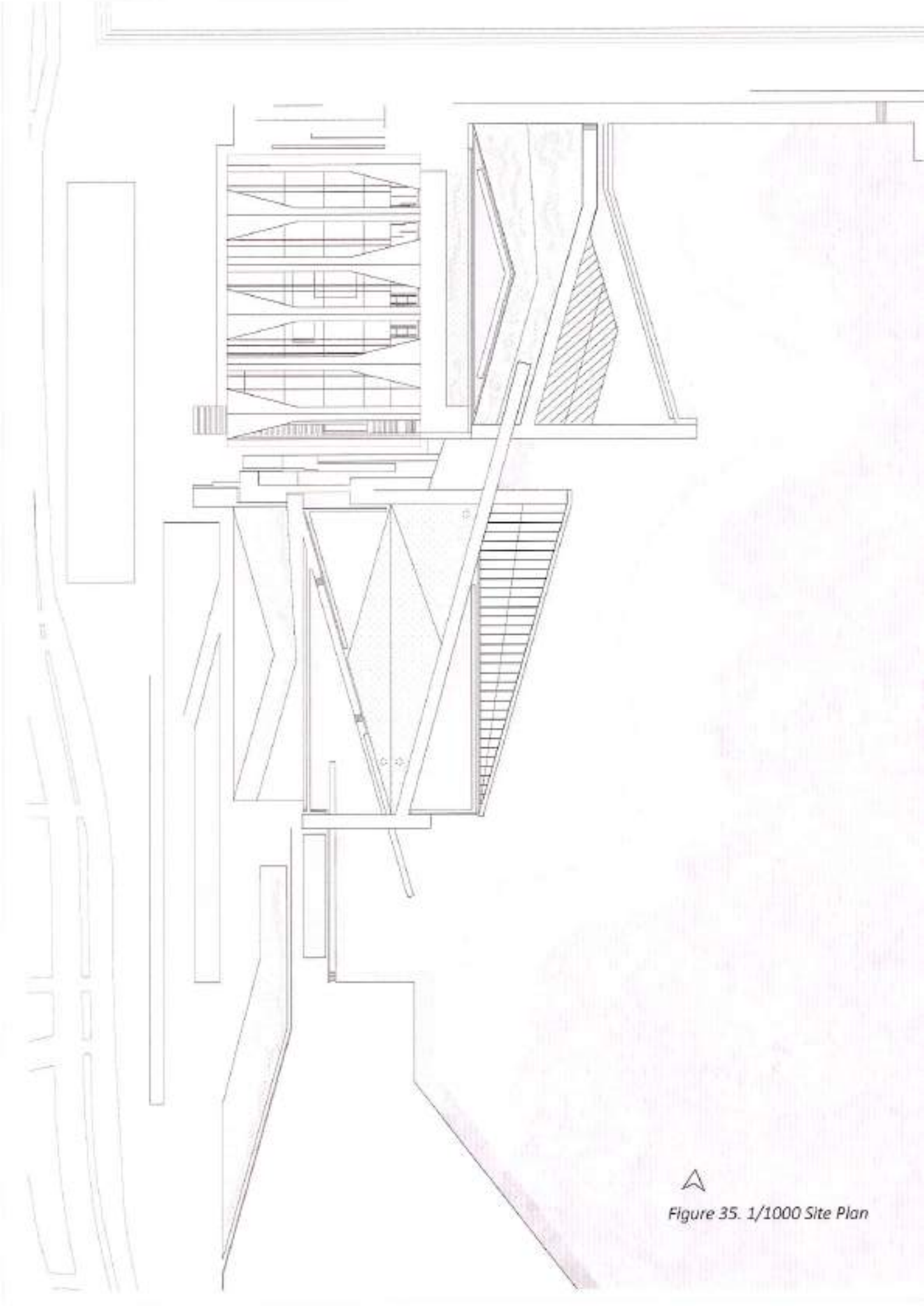


Figure 35. 1/1000 Site Plan

INTERSTITIAL INFRASTRUCTURE

Architecture has the potential to seek to enhance habitat reserves of cities as well as restore and facilitate respawning biodiversity including human and non-human agencies. Although the term infrastructure is derived from the easy access of resources into cities and their dwellers, it has been the actors of current environmental problems such as resource, material, and habitat exploitation. Due to urbanized habits that construct hyper-defined spheres, residents have completely disconnected from where the resources they use come from and where wastes are discharged. In that respect, 'interstitial infrastructure' has a great potential for re-interpreting allegoric and patchy conditions of urban fallows, wastelands, and shifting the center debate to material/resource flows. Because ecology can be addressed both as biological ecologies and social ecologies that are capable to become agencies that navigate the society to be more aware of actions that they repeat and the consequences of preferences. It is all about gaining a new set of conditioned retina, and a different sensibility to evaluate (Latour 2004).

New definitions of urban infrastructures as synthetic/ interstitial apparatus that artificial and natural systems can come together can be considered as a positivist approach based on techno-natures. However, Emanuele Coccia describes artificiality as something that someone intervenes and modifies by using technique and this is not special to our race but also all the animal and plant kingdoms which shape their environments to settle and communicate better (Coccia and Godoy 2020). Plants have flourished on Earth for millions of years and their constant invasion covered every ecosystem with their unique sensorial features which are different from ours (Chamovitz 2013, 89). What's more, the invasive plants will be the most outspread in a climatically altered world since their mobility is greater than native plants which are reacting to global warming in unstable ways (Meyer 2016). Taking all these into consideration, the changes in the biosphere against climate change takes place quietly while the man-made environment remains passive. Accepting that everything on earth is artificial ends the pointless discussion about culture and nature dualism and encourages to consider what type of intervention humanity can do to coexist with other species (Coccia and Godoy 2020). In the same way, the project offers various habitat modules by mimicking various geodiversity characteristics such as microclimates, lagoon formations, water level rise, sedimentation as an outcome of the intertidal zone, and lastly rocky Nordic landscape to support species positive invasion to exist as micro-climatic refugia in the Anthropocene epoch. This is inspiring in terms of how interstitial infrastructures can embrace the inconsistency of natural phenomena and transform static waterfront man-made structures beyond their numeric definitions and bleak uses.

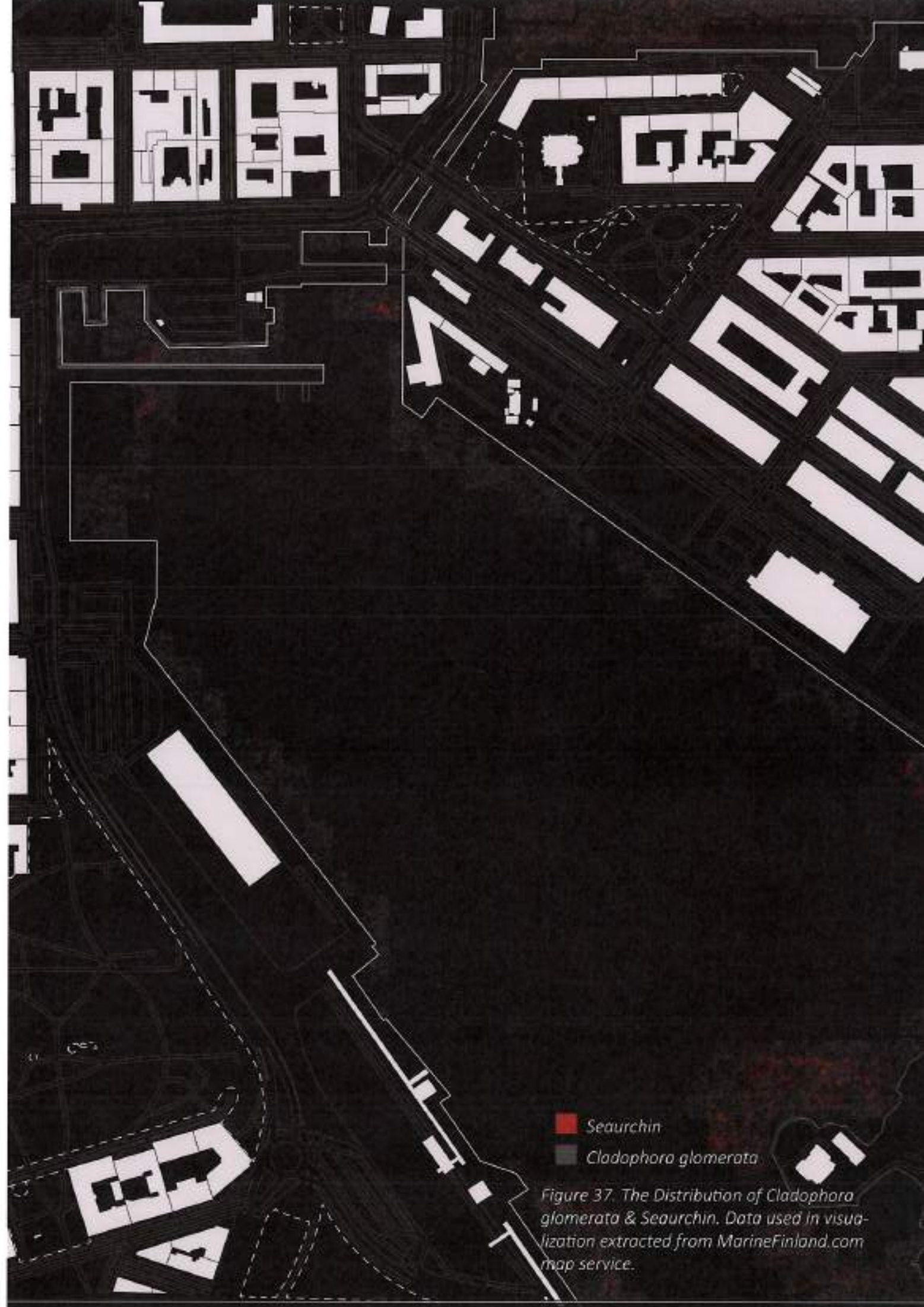


Figure 37. The Distribution of *Cladophora glomerata* & *Seaurchin*. Data used in visualization extracted from MarineFinland.com map service.



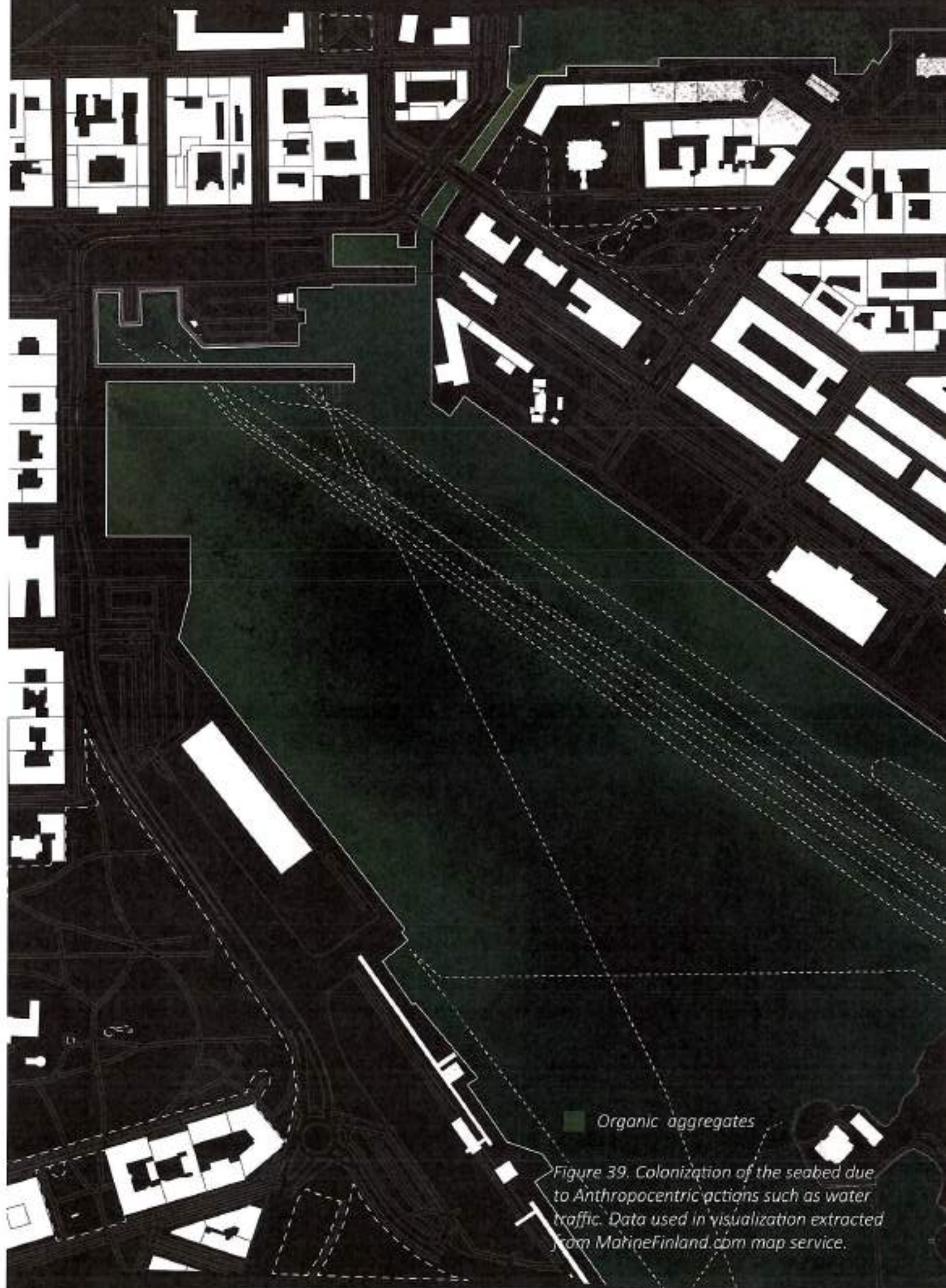


Figure 39. Colonization of the seabed due to Anthropocentric actions such as water traffic. Data used in visualization extracted from MattiFinland.com map service.

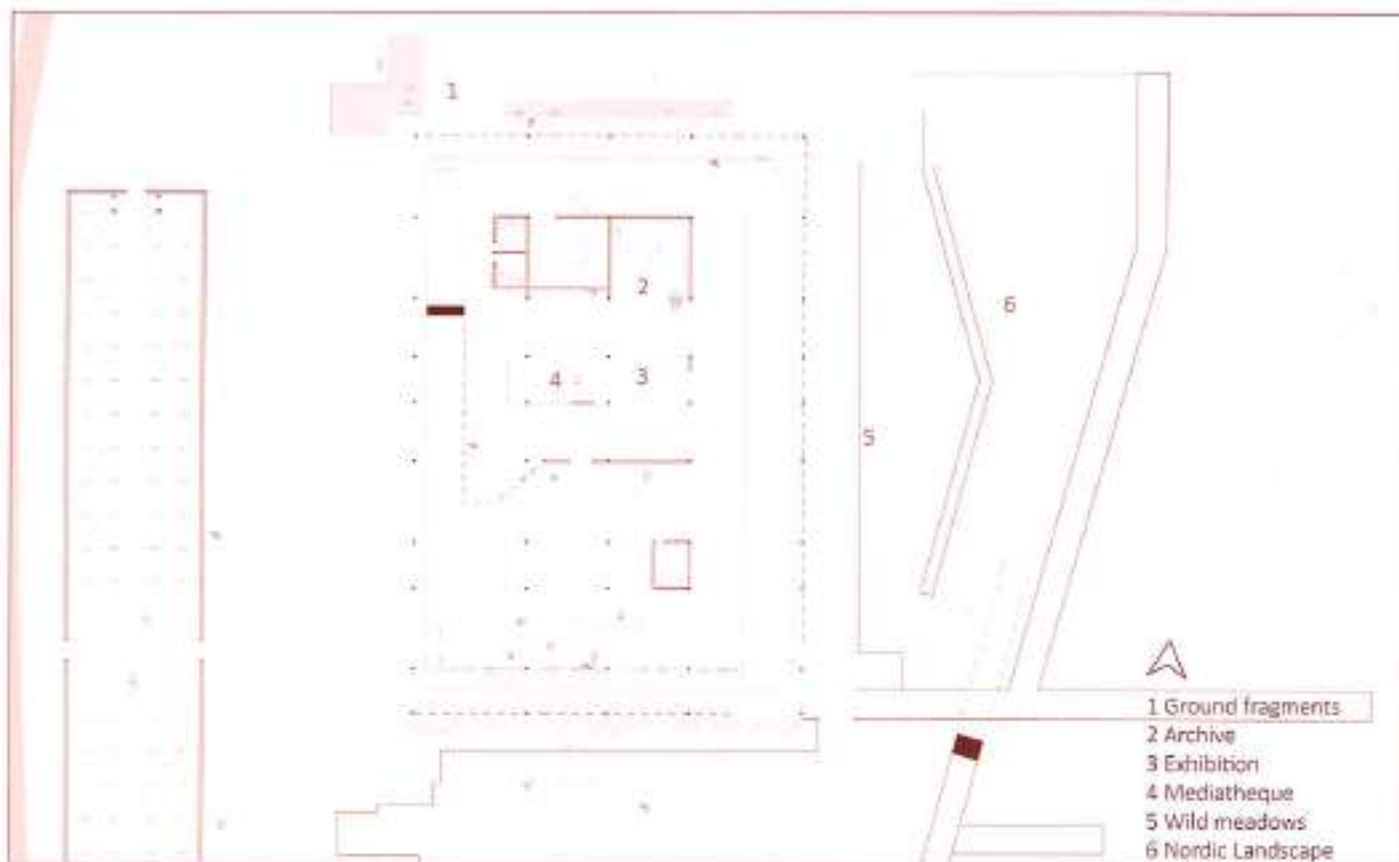


Figure 40. 1/500 Ground floor plan.

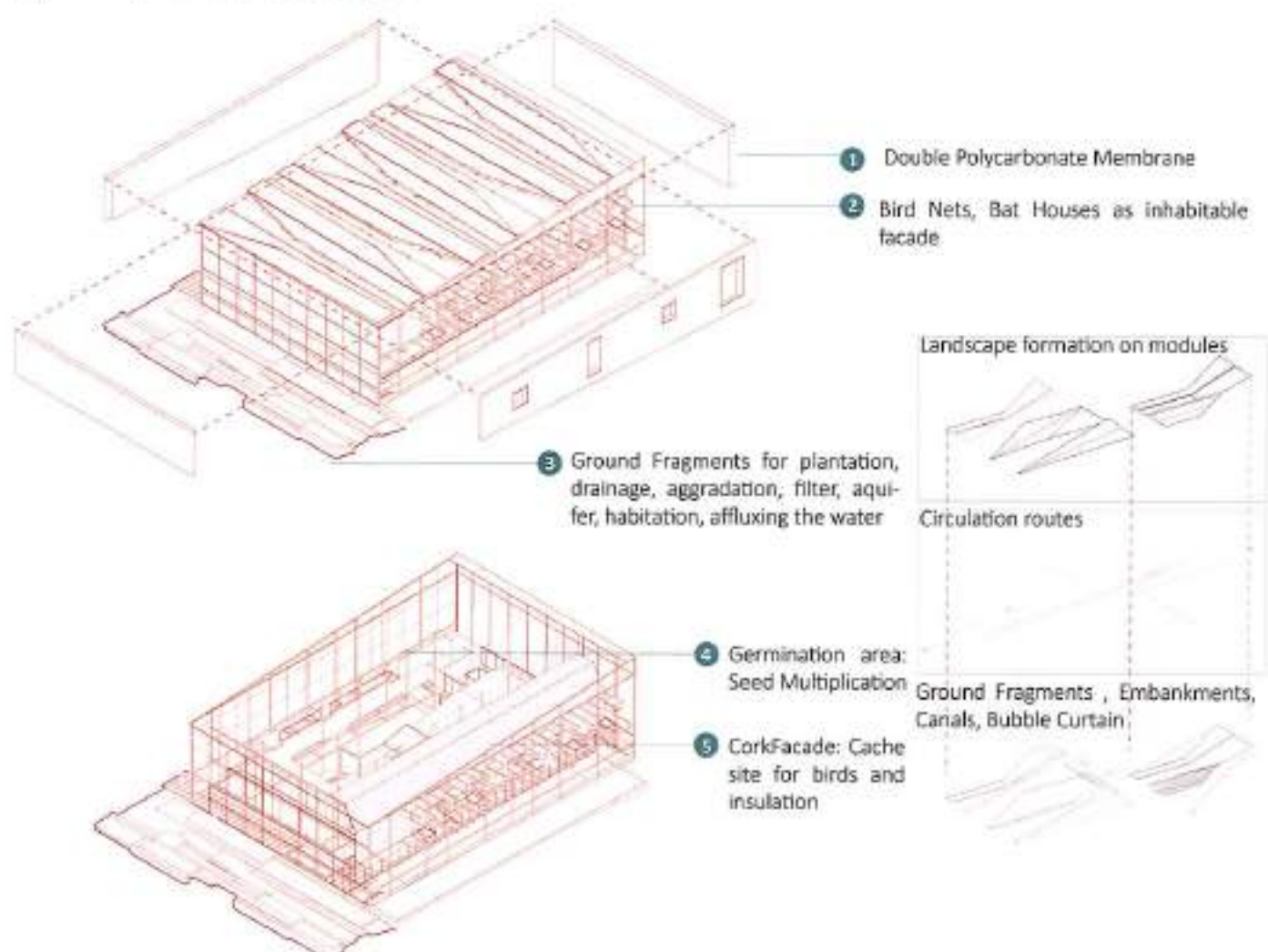


Figure 41. Ground fragments, add-on infrastructure modules.

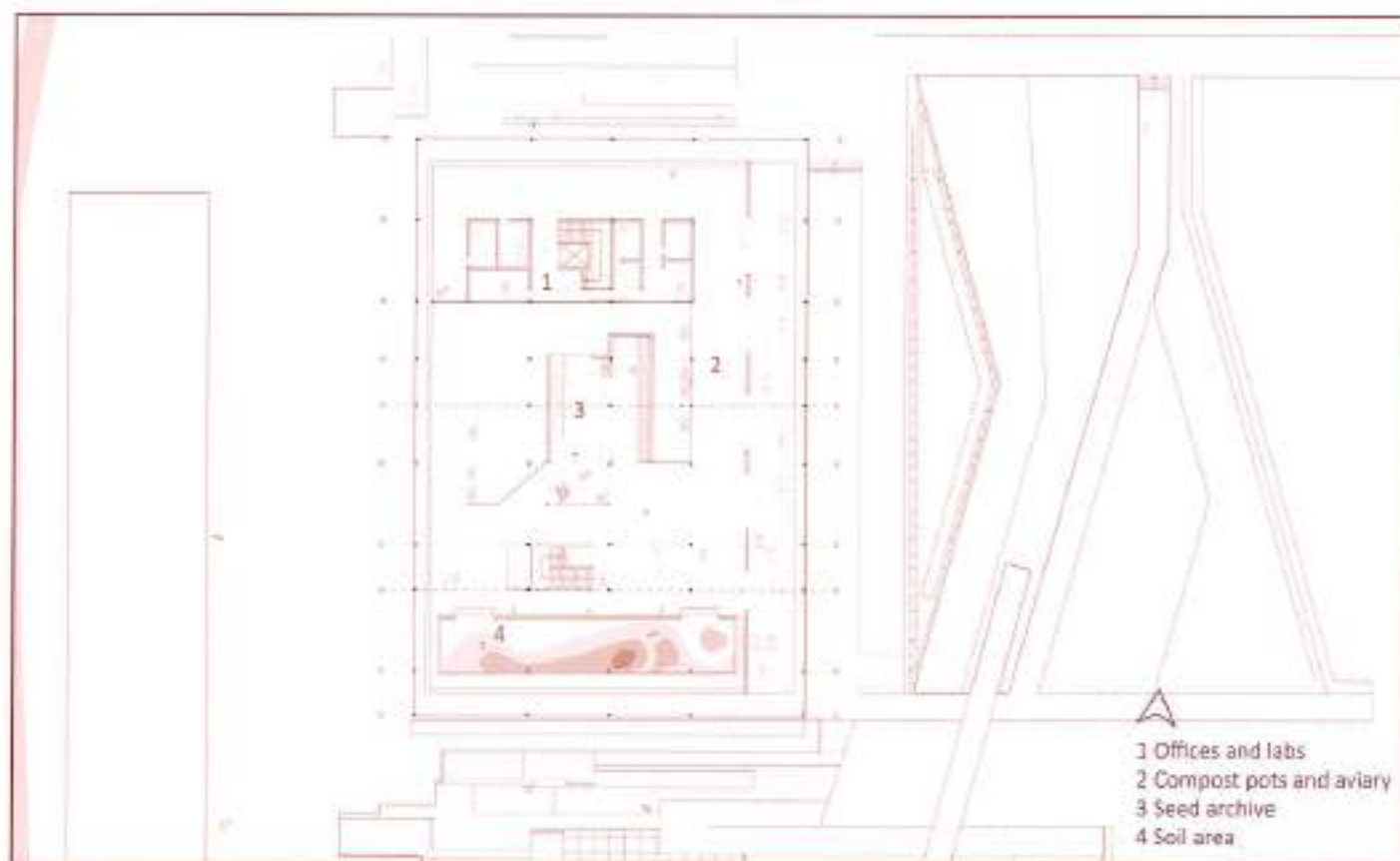


Figure 42. 1/500 Second floor plan.

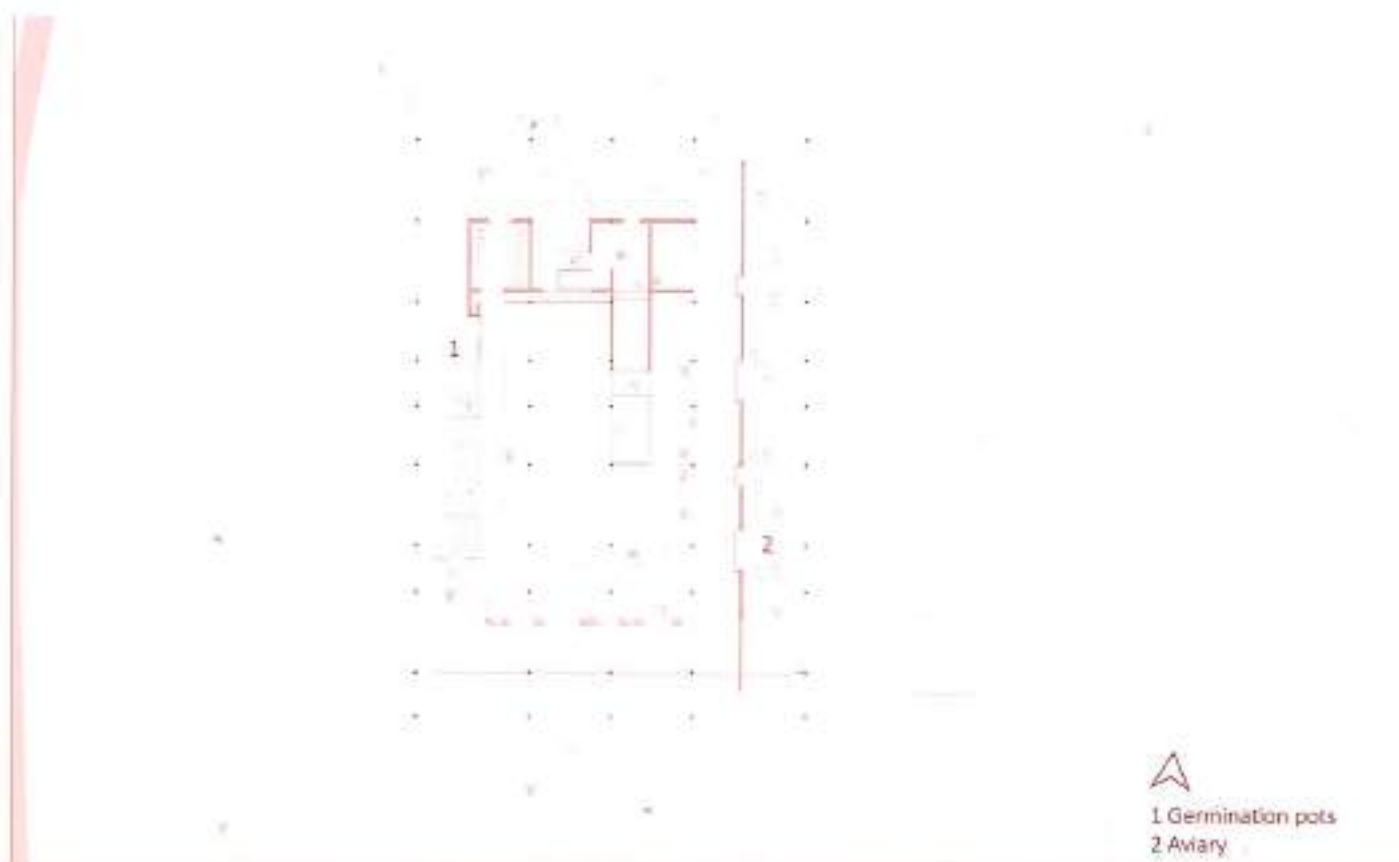


Figure 43. 1/500 Third floor plan.

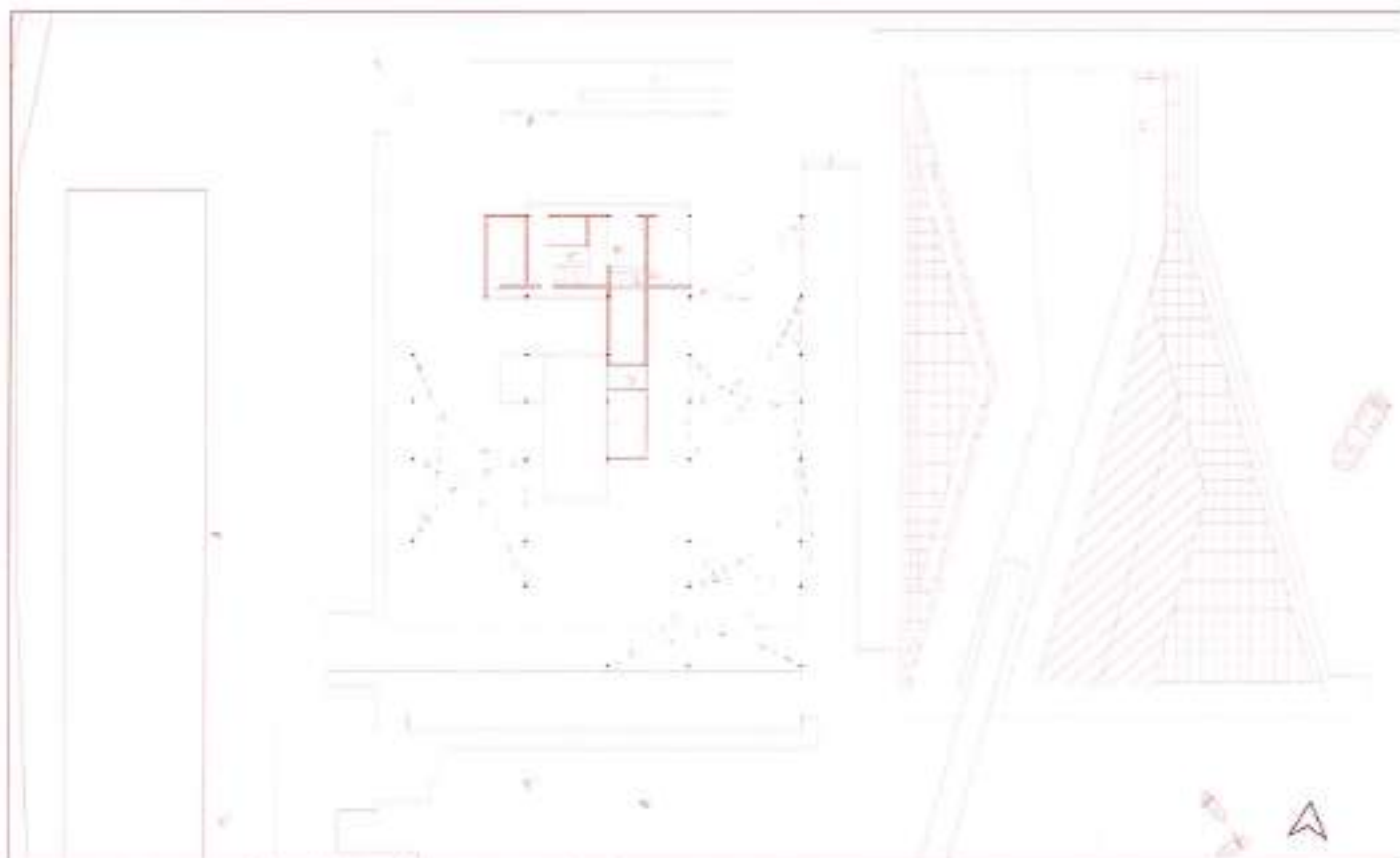


Figure 44. Disassembled Plan of the project for future uses.

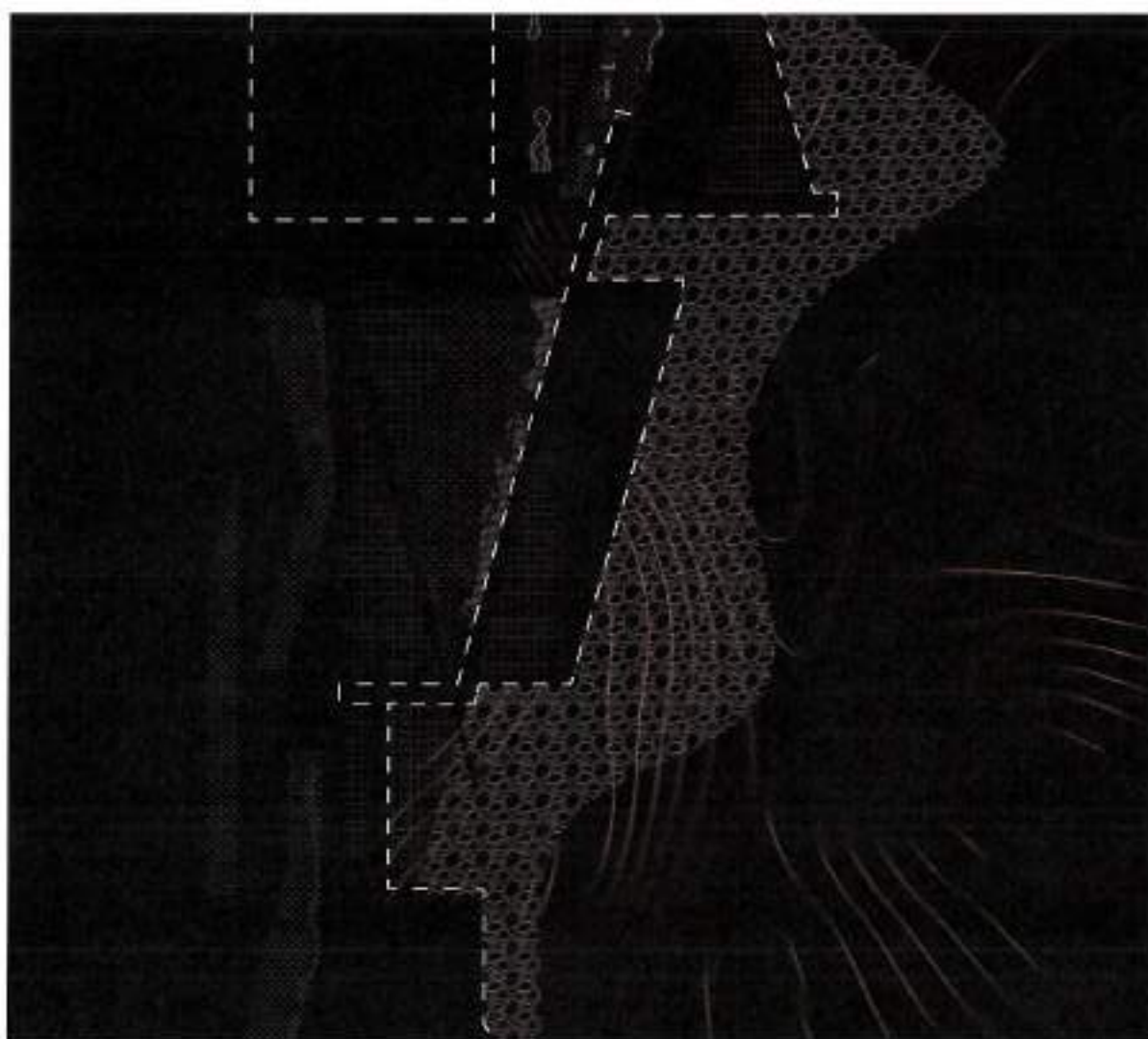


Figure 45. New hydrology of the South Harbor.

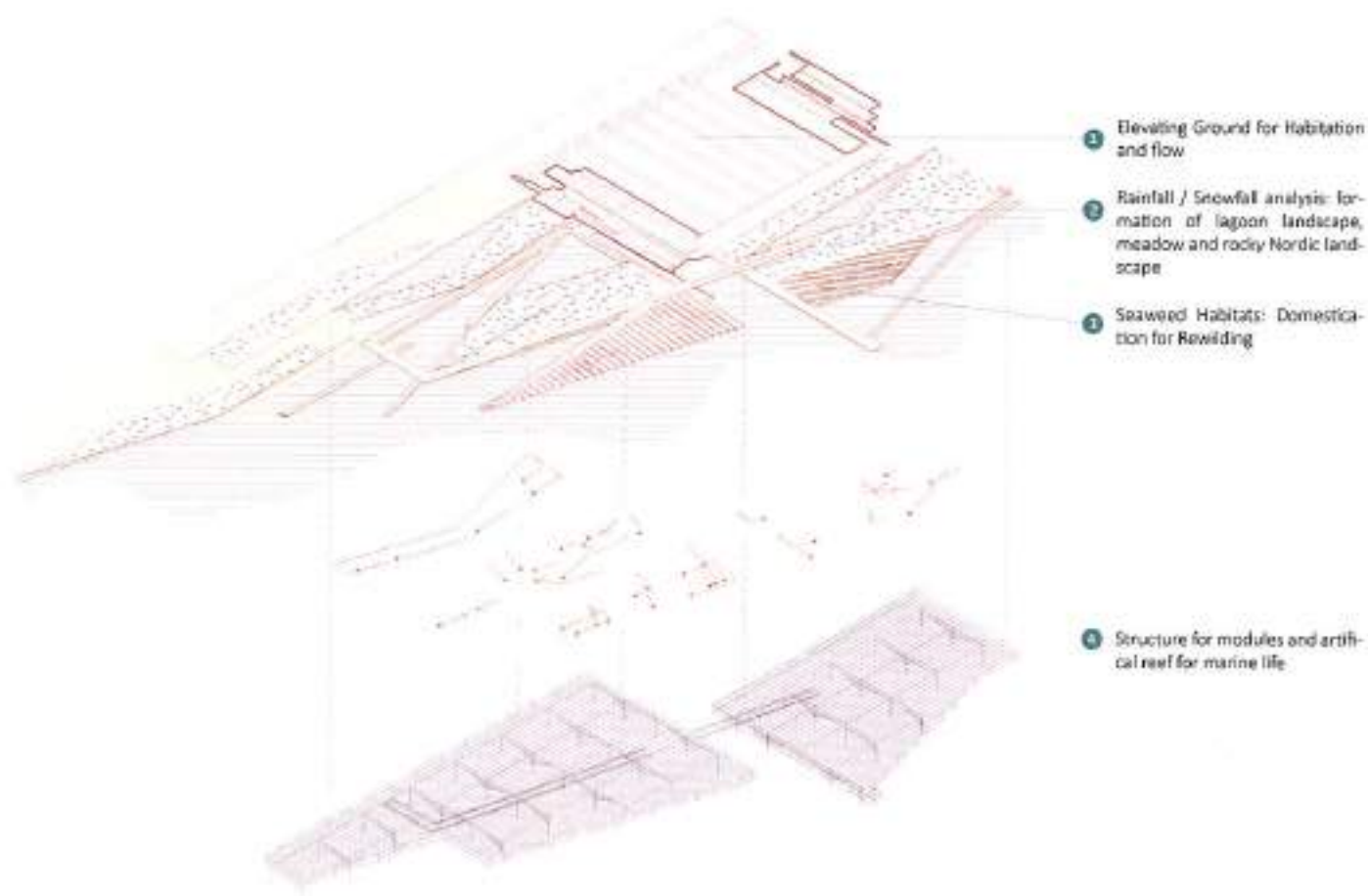


Figure 46. System of the interstitial infrastructure.

According to anthropologist Anna Tsing, despite current misconceptions about plants, which claim that they are immobile, the urban fabric is full of solid structures such as bridges, roads, and homes that are rigid and therefore vulnerable to the dynamics of nature (Tsing 2017, 22) Hence, we may expect new functions from interstitial infrastructures that regenerate neighbor ecologies by re-purposing solid formed, static and impermeable infrastructure. This project does not seek where South harbor transforms into a port where only the best and expected life forms are accepted. One of my goals is to seek everyday social life that perceives assembled species like a neighboring, developing a relationship not by selecting but compromise.

The aim of the design phase is to explore the relationship happening with the constructed landscape which can be imagined as successive but non-hierarchical layers of both human and non-human incorporation to the topography that implies climatic, hydro spherical and terrestrial dynamics. In addition, according to my definition of landscape, it has to have a potential to present changes to enable authorities and inhabitants to read the traces and events with full of geological and biological references. That's why I found it essential to present the concept of 'natural archive' again to highlight potentials to indicate setbacks or irreversible consequences of disturbance caused whether natural or artificial changes directed by environmental politics that generally implies beauty as a main concern. Besides this, the combination of the exterior, which is produced by biogeochemical processes and activities, and the 'interior' which is produced by and experienced through cognitive processes and shared cultural

phenomena, can be represented by socio-ecologies (Hes and Chrisna Du Plessis 2015, 26). Moreover, sustainable design refers to more than just passive materiality; it also reimagines landscapes as intricate assemblages formed through interactions and affective relationships (Whatmore and Hinchliffe 2012). Finally, these multitudes are recognized for contributing to the livability of cities and the bonds of civic identity and association (Whatmore and Hinchliffe 2012).



decline > %80 decline > %50 decline > %25	Muddy Sediment	<i>Arctica islandica</i>		○
		<i>Fucus</i>		
		<i>Haploopsis</i>		
		<i>Astarte sp</i>		
		<i>Eelgrass</i>		
	Mixed Substrate	<i>Fucus</i>		○
		<i>Flustra foliacea</i>		
		<i>Eelgrass</i>		
		<i>Soft Corals</i>		
	Coarse Sediment	<i>Fucus</i>		○
		<i>Charales</i>		
		<i>Eelgrass</i>		
	Sand Substrate	<i>Fucus</i>		○
		<i>Charales</i>		
		<i>Eelgrass</i>		
	Rock and Boulders	<i>Flustra foliacea</i>		○
		<i>Porifera</i>		

Figure 47. Table of threatened marine life in Baltic Sea (Avellan et al. 2013)



Figure 48. Herbaria of the Anthropocene. Building up the collective inquiry.

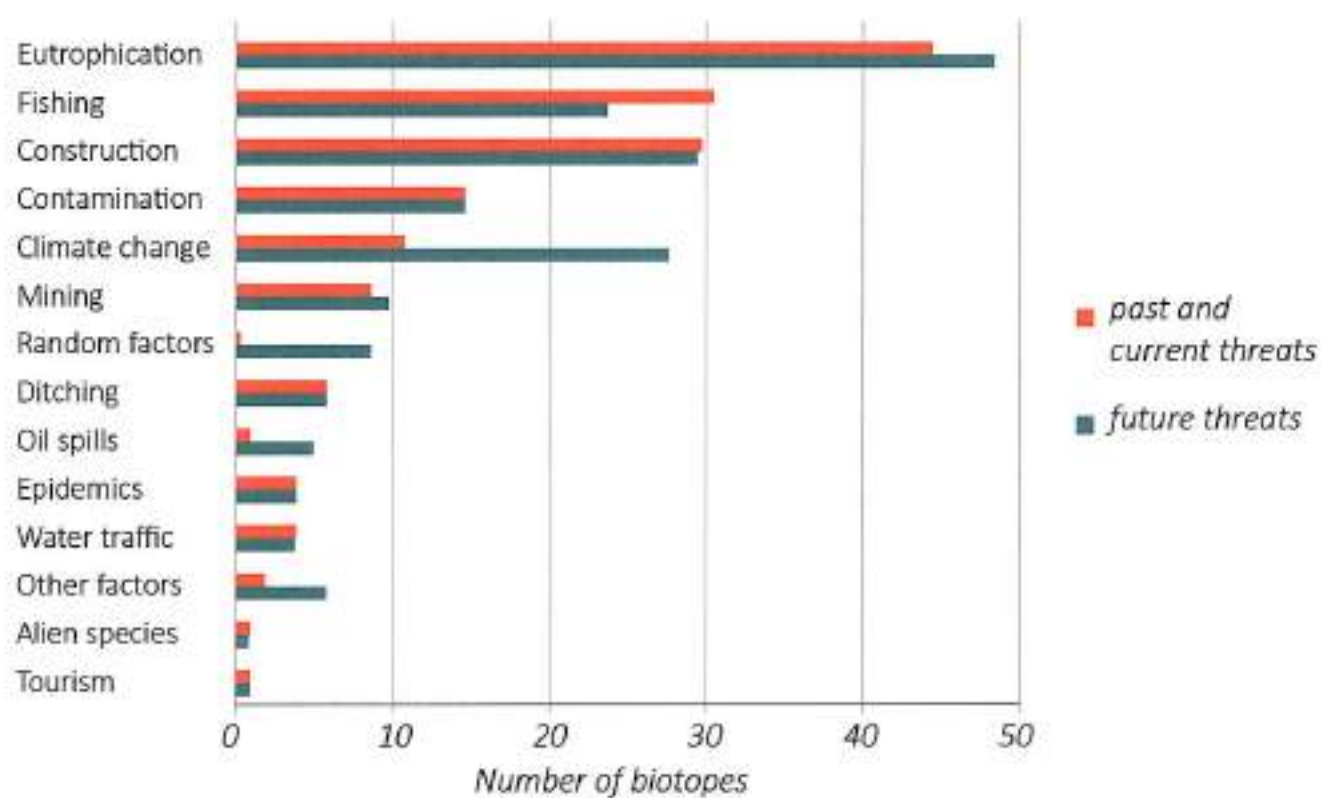


Figure 49. Threatened habitats of Baltic Sea (Avellan et al. 2013).

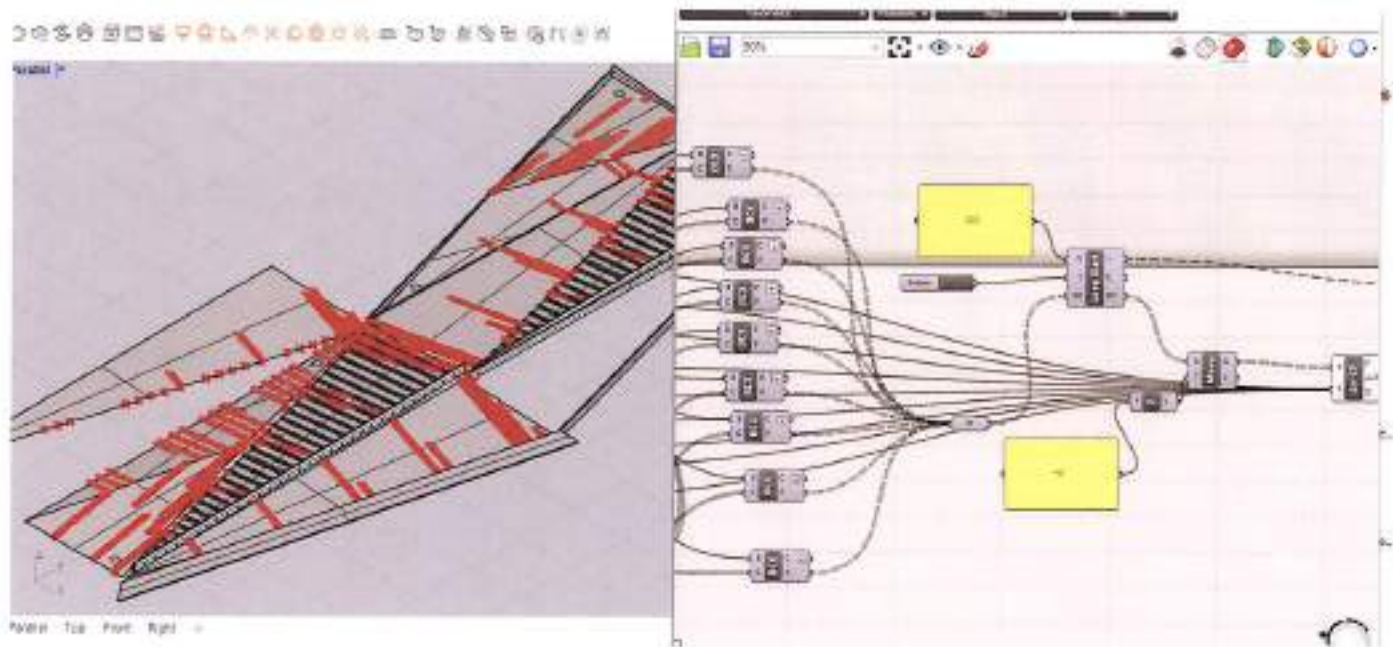
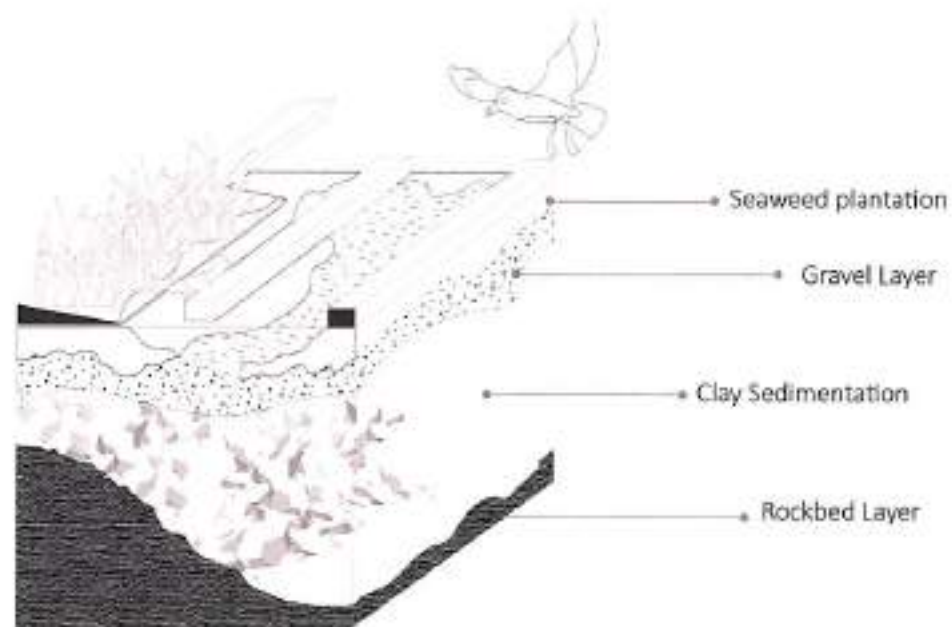


Figure 50. Interstitial modules and their behavior during and after precipitation.



Entropy of the coast



Figure 51. Entropy of the coast. Introducing performative landscapes.

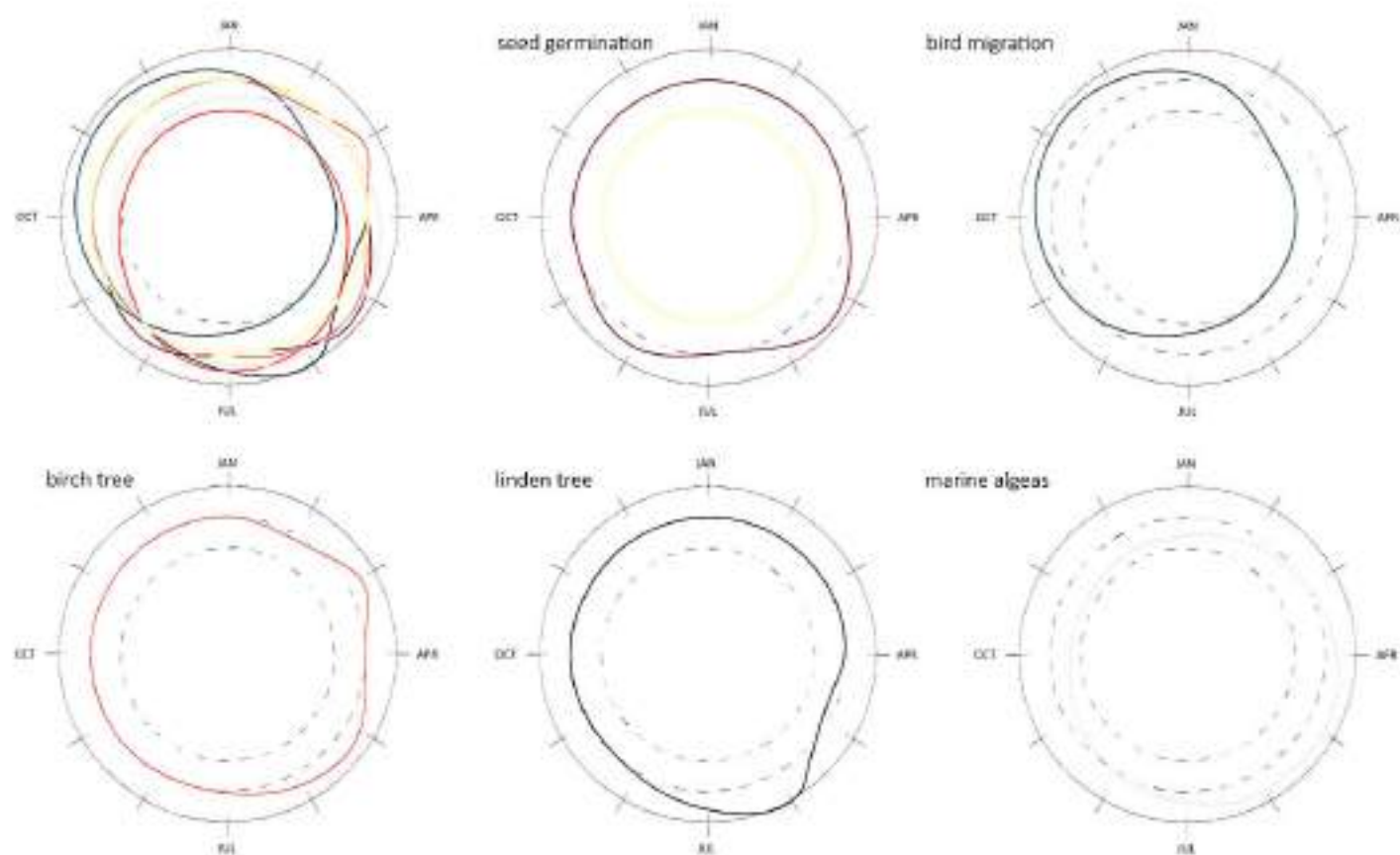


Figure 52. New phenology of the harbor. Liberating numeric schedules with possibilities of co-evolution.

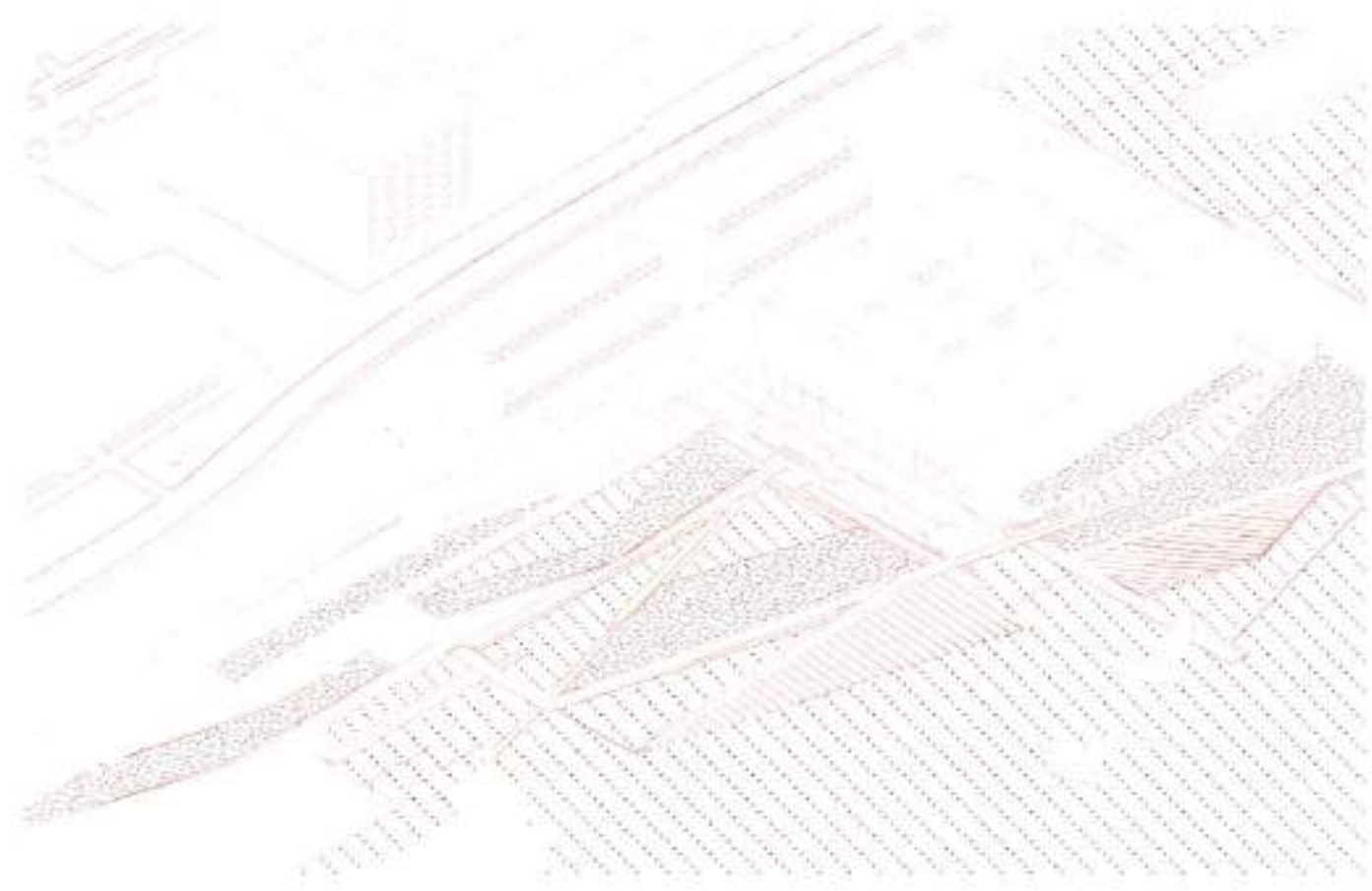


Figure 53. View of the Project.

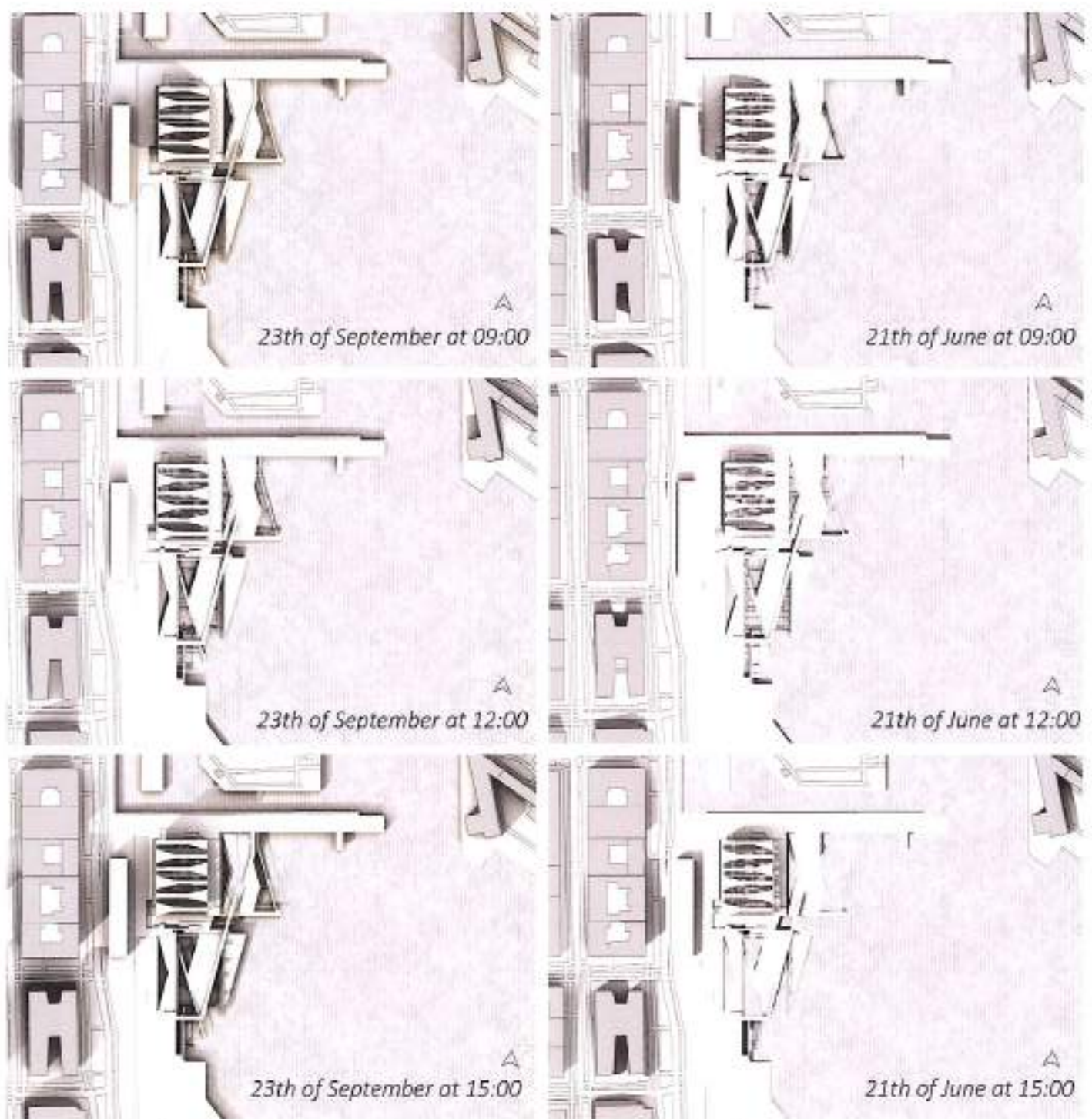


Figure 54. Shadow studies for different habitats and micro-climates throughout the year.

The introduction naturecultures as new approaches in political ecology demolish norms built upon redemptive progress imaginations. It is essential to enrich recombinant ecologies as hybrids in every direction of an urban sphere including temporal uses of the site by both humans & non-humans, attunement with marine ecologies for collective knowledge making, and getting rid of the passive and fully rational definitions of life. Therefore, the architectural program of the project presented both climatic and other abiotic factors caused by several phenomena affecting the fluxes of the site. Finally, the overall goal of the project calls for searching for new ways of living in the age of Anthropocene not only for architects who are getting involved in the transformation of the built environment before the design but for anyone concerned about the future of the site.

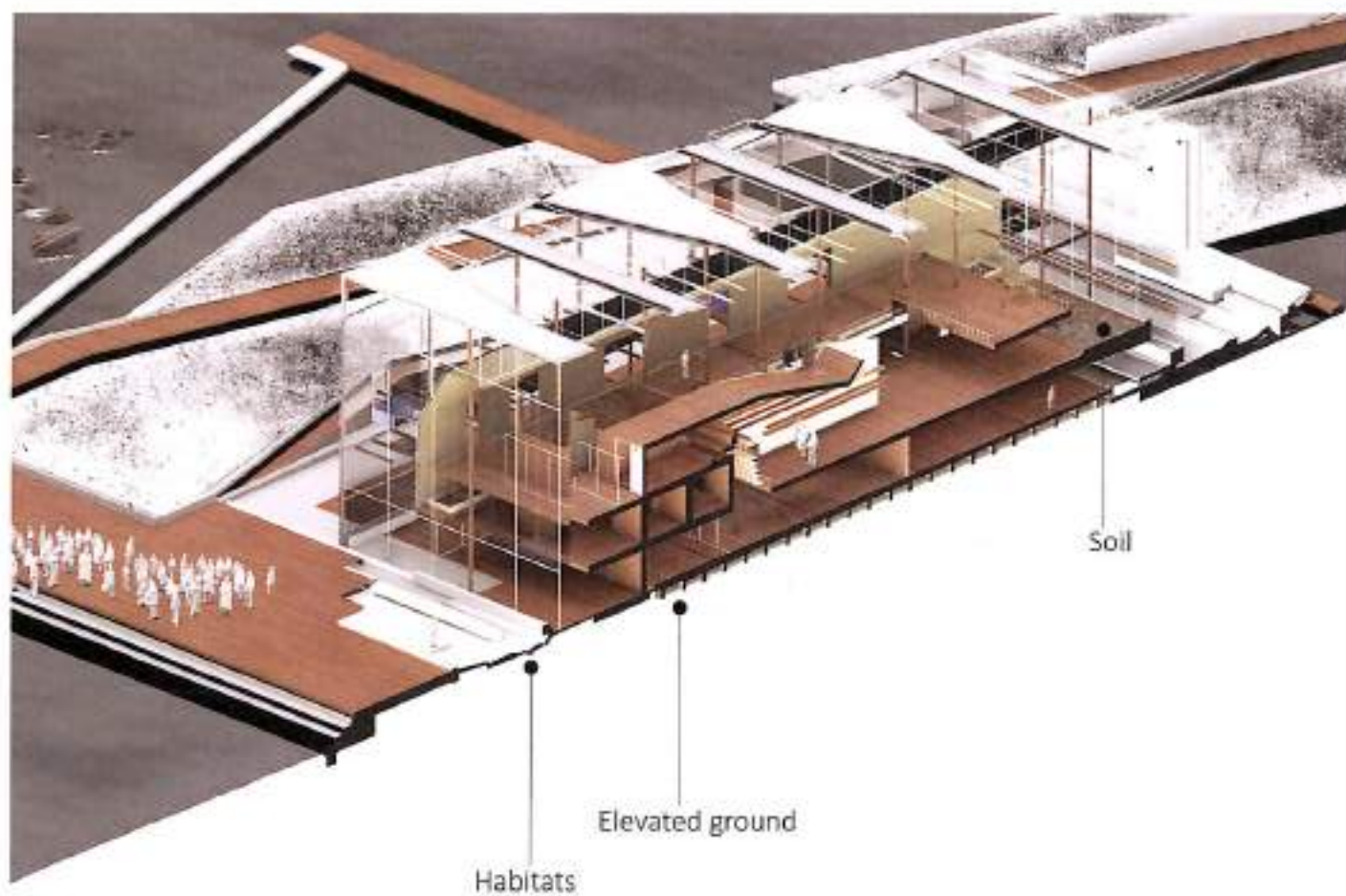


Figure 55. Longitudinal section through the seed archive.

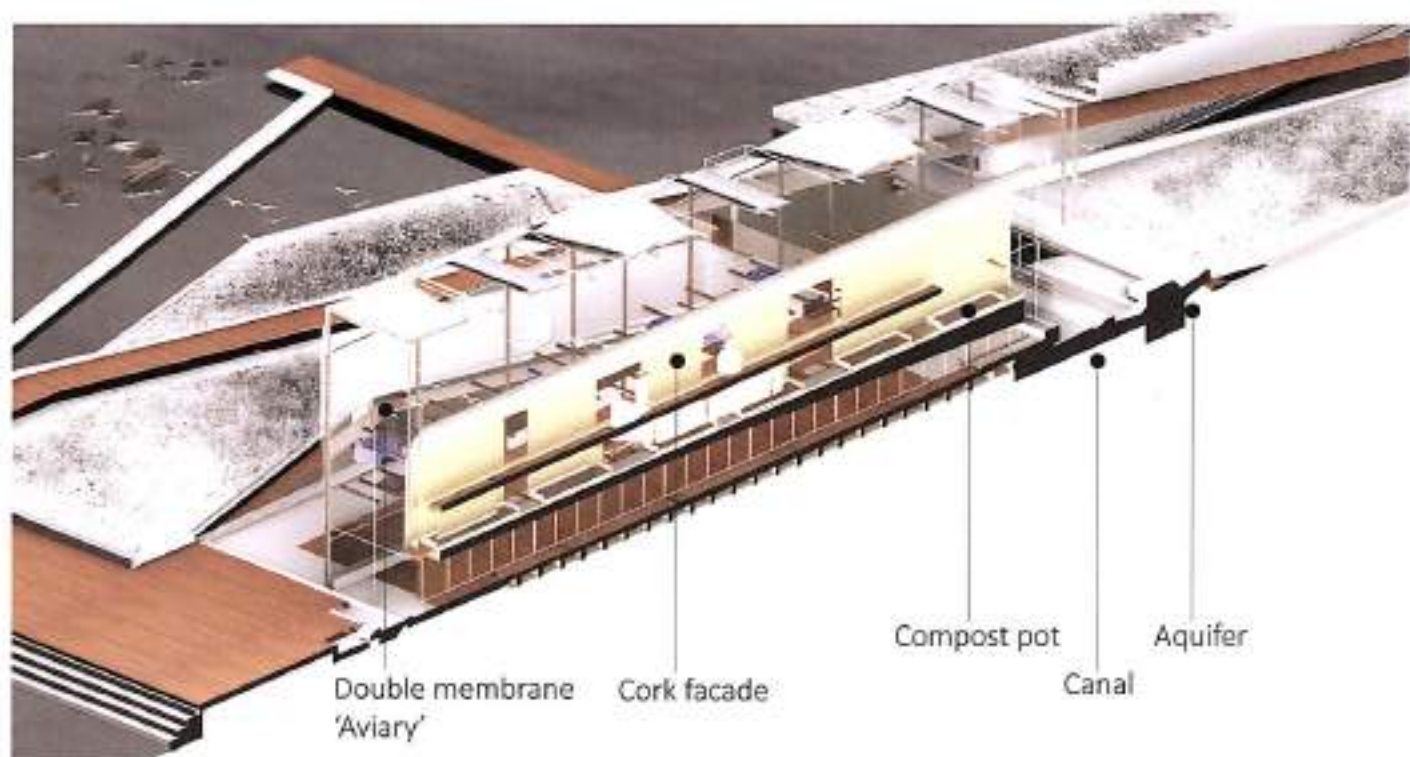


Figure 56. Longitudinal section through the 'aviary'.



Figure 57. Section shows research facilities and private spaces.



Figure 58.

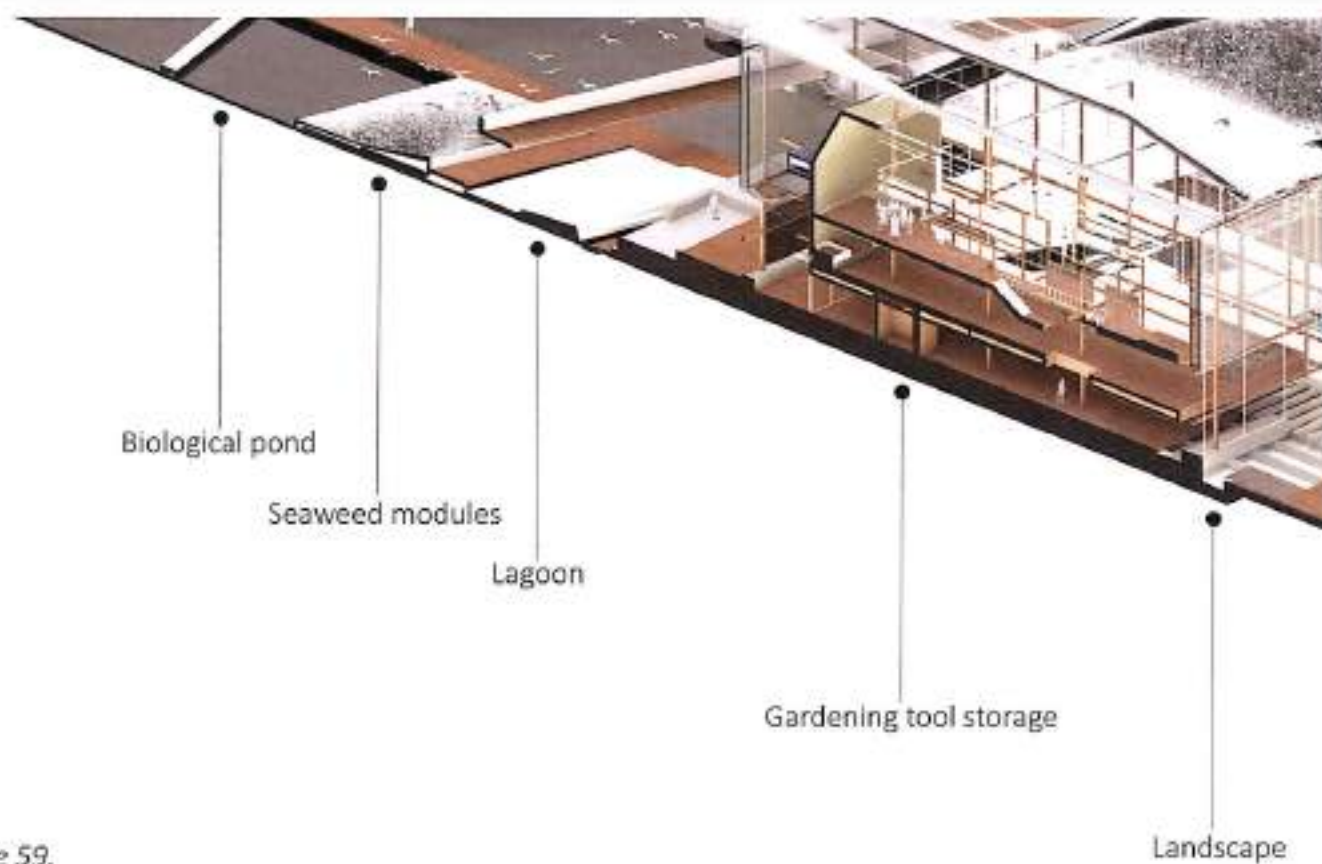


Figure 59.



Figure 60. View of the Project.

CONCLUSION

This thesis aimed to identify the meaning of the Anthropocene and the ecological and political obscurity that comes with this geological definition. There is no doubt that due to a lack of integration with the non-humans, human-centered actions will lead to the collapse of the whole biosphere in the near future. The wrong mainstream philosophy approaches non-humans as a source to maintain the growing demands such as mining sites for technology, forest landscapes for timber, marine habitats for fossil fuels, construction sites, etc. One of the main problems of the age of Anthropocene is the mechanization of the land and omitting its inhabitants, flows, and narratives in return. However, the fallacy of modernism is because of the lack of communication among sciences, people, and authorities whose agencies lose the meaning of terrestriality. Thereby, the thesis expresses a theoretical background and new concerns derived from the ecological crisis by referencing different philosophies such as Chtulucene, Gaia theory, and Foams, which are crucial in revealing various views and thoughts to mitigate climate change and raising a collective awareness. Therefore, instead of advocating the unifying definitions of the earth systems, which inherently underlines the image of blue marble floating in 'nothingness,' it is crucial to define patchy consequences, bottom-up voices, climate protests, and activists as new agents and focuses. Because the meaning of both global warming and Anthropocene is similar to globalization, offering the same insufficient, static, and harmful for both land, local users, and economies in the long run.

Secondly, analyzing changing representations of natural sites and biological fluxes as an outcome of constant anthropocentric pressure guided me to seek new ways to represent territories, moving back and forth among scales. Additionally, the research process enabled me to respect more extensive flows of resources and network of relations with the climate, hydrology, geology, and most importantly, the living crust of the earth, which is generally forced to migrate or suppress. Furthermore, this thesis has unfolded how inadequate the mono-disciplinary approach is to alter the future of the site and city. The wrong conceptualizations of the profit industries' good, bad, and beautiful definitions should be unsettled by raising voices against policies. This ideological shift should also cover every institution and regulation that is rooted, inviolable, and authoritative over the naturecultures which are not able to express themselves. An inclusive and multidisciplinary act is needed to determine the relationships between the decisions, actions, and knowledge making. Furthermore, the new approach can, directly and indirectly, shape political decision-making with the collective memory of the citizens, their engagement with the site, and new spatial configurations to represent reduced natural phenome in its relation to culture in Western epistemologies. In the end, collective action can be capable of bursting immunized bubbles that are shaped by the techno-scientific imageries governing every regulation that is followed from our safe homes to cities, nation-states to economic zones, which are successive components of the same collapsing system.

On the other hand, the thesis proposes a project focusing on the Helsinki South Harbor that ignores the 'happenings' as a post-industrial coast landform in the current state. The project aims to include various users and programs beyond characteristics attributed to it as a waterfront infrastructure with two key definitions as interstitial infrastructure and climatic architecture. Primarily, the South Harbor echoes between its stiff cultural and political symbolism that constitutes temporary and faded events. Although the site is valuable for Finnish people, it is a site that runs with ferry schedules, tourist attractions, and dead representatives of nature and is made of poor and restrictive use of space such as parking lots and terminals. Secondly, the static coastline between the land and the Baltic sea is problematic when the focus is on the affluxes between sea and land. In that aspect, the modules enable varying habitats and species assemblages to nourish and advocate the transformation of the geometries of the port into an amphibian site for co-existence. In addition to that, module prototypes were analyzed to be able to respond to precipitation, sea level rise, and formations. Lastly, modules designed in reference to the existing floating extension on the port for supporting the water traffic and adaptive construction techniques have been learned from the character of the historically precious site.

Finally, my project supports the rehabilitation of marine habitats by rewilding the seabed of the harbor, which is highly critical for tackling eutrophication in the Baltic sea. For that purpose, the main goal is the transformation of the old harbor to increase resiliency and embrace unexpected floods and intertidal characteristics of the shore similar to ecotone characteristics. Besides, the architectural program implemented in the pavilion and landscape modules aims to gather scientists, gardeners, and broader social processes around a re-functioned Helsinki University Herbarium in order to complete the decolonization of the institutions, which promises to link the indigenous people and their attunement with the landscape. Moreover, the herbarium program raises public awareness about the translocation of the invasive and native species that damage the Nordic landscapes all over the region in the age of Anthropocene. The design interposes the threats of planetary urbanization and temporality of the South harbor with paths and openings that enable visitors and researchers to observe marine life flourishing in seaweed modules, wild meadows, artificial coral reefs, and all over the site. Additionally, the new phenology layer of the harbor becomes an environment for co-existence in Helsinki's center owing to the modules supporting the biodiversity of the urban fabric with add-on habitats. Lastly, the project aims to propose a new urban sphere reflecting the norms of the new climatic regime that reconciles fragments of altered ecologies and levels of human agency to raise voices against current world politics. It is time to be equipped with a toolset created in active engagement with institutions to understand the consequences of anthropocentric actions.

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