

CRYSTAL DROP: THE NEW HABITAT

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## SYNOPSIS

If there ever was a need for innovation it is at a time when a man's misconduct towards nature and over-dependency of fossil fuels threatens to bring a civilization to pre-industrial era. The dismal prognosis for the next century made by experts from assorted scientific fields, are awakening the sleepest skeptics into acknowledging that obligatory and preventive steps we as a society have to make to avoid losing 200 years of evolution. What climate scientists, ecologists, and demography experts have in common is the battle with morbidity of stagnant society driven by entertainment. An industry relying almost entirely on fossil fuels is fragile not only for filling our vehicles but manufacturing them as well. A society that is losing its habitat to ever-growing population is also vulnerable in producing enough food for it is halfway through its capacity in space already. Assorted branches of society, from lay people to scientists are seeking for the easiest, most swift, and the least traumatic acclimation. Among them are notable contemporary artists, whose imagination is not confined with the prism of doable and can therefore push any idea to its limit, thus offering solution that could otherwise not come to life.

I joined their ranks and with the help of data of various scientific researches, on the wings of artistic freedom created 'Crystal Drop', a floating self-sufficient module harboring a community of people that gained more land, is eco-friendly, and is free of typical governance.



0. Univ.-Prof Hans Kupelwieser & Mag.art Brigitte Kovacs for your help and support!



# INTRODUCTION

As I was perusing through the literature I have gathered recently, I found myself wondering about an earth-bound human being, a man destined to the confinements of the Earth's surface and its offerings.

I was puzzled by the idea of whether we have already exhausted all of our resources for innovation. Has everything already been invented, at least in a truly remarkable way? An innovation with the prowess of social significance? And at last, can one still create if there is nothing left to be created?

Diving deeper into these questions, I succumbed to the notion that the majority of innovations have been conceived decades, if not centuries ago.

Theoretically, at least, since the implementation of these ideas has not always seen the light of day. Is today nothing but another shade of grey of yesterday?

And if each invention defined the beginning or the end of a certain era in man's history, are we on the verge of a new big break? With the newfound ecological awareness and all the bio-frenzy are we just channeling nature's last warning signs for an inevitable change of things to come?

As I will display in the following pages, we as a human species must take certain measures in order to preserve our way of living. With an ever-growing population, we might soon face shortage of land to accommodate us and our needs. From the perspective of earthly beings, I wondered, is it still safe to be bound to the terrestrial? In the last couple of decades we have witnessed the rise of scientific reports documenting people being pushed off of the Earth's soil, metaphorically and literary speaking. And the reasons cited are either social, political, or environmental.

There have been raised concerns about the climate change that may drastically transform the behavior of an entire eco-system. Moreover, due to the way we function now, we might run out of fossil fuels in this century.

In order to be able to understand what it is that makes our planet a seemingly inhospitable place of residence, I had to scavenge for answers in

assorted literary publications. I did not restrict myself only to the environmentalism or other sole segment of our dissected societal outlook on life. I rather focused my attention on understanding all of the issues combined through the eyes of contemporary artists, the free spirits, or travellers toward the unknown. I also backed up my points of view with credible scientific data.

With the desire to contribute my own solution for the established issues, I used them as my thesis and contemporary art as a guideline for the creation of the Crystal Drop.



## AWAY FROM THE LAND

The obsession with a new way of life dates as far back as science fiction, which gave birth to progressive art projects; from the times of mythological storytelling to one of the most potent examples of extravagant ideas such as the 18th-century 'Gulliver's Travels', a book written by Jonathan Swift - with an idea of a floating island, 'Laputa'.<sup>1</sup>

The quest for gaining more land became a passionate fixation for some. This led to a series of artistic endeavors that offer numerous scenarios with quite versatile and imaginative outcomes. They are equally pursued today.

<sup>1</sup> cf. Higgitt, Gulliver's Travels in science and satire.

## BREAK THE SHACKLES

In order to appreciate the importance of these concepts, it is helpful to observe both famous and lesser known examples we will go through a bit later. It is usually the courageous people that choose freedom over regulation, thus creating new territories - in our case meaning literary.

The idea of being free, in our case meaning not being tied to the land's scape, might seem unconventional to most people, but it offers a new dimension of living that in the right context can bring the same skeptics an appealing and very practical alternative to the ways they are used to. Especially if you consider the hazards we face as the population keeps on growing while the ecosystem falls victim to our lavish daily habits, and other problems we will be tackling more thoroughly in the upcoming chapters.

## SQUATTING ON THE SEA

"You've got to always remember that the name of the game is - what does it sound like. I don't care if you've got 90 tracks... What does it sound like, baby?"<sup>2</sup>

-Ray Charles

With the ever rising demand for pop music over the decades, the banning of songs has not always been understandable. The BBC is one of the largest

<sup>2</sup> Moormann, Tom Dowd & the Language of Music.



broadcasting houses of the last 90 years and they fit perfectly into the unjustifiable-music-banning basket. According to them, Cole Porter sang about prostitution, Louis Armstrong glorified violence, the Beatles were pornographic, and Bing Crosby lowered the army's morale overseas. Yet still they danced to Chuck Berry's 'My Ding-a-ling', an oxymoron worth noting.<sup>3</sup>

In the decade of change and social turmoil such repression was not acceptable to a majority of younger generations - it was known that ideologically you were to choose whether you belong to the antiquated part of society with conservative standards and a high regard for the army, or to the younger long-haired music tripping peaceniks and revolutionaries.<sup>4</sup>

As the conservative officials struggled with the chaotic youngsters and brought new prohibition laws to the table, so did the new generation of thinkers respond with countermeasures. Music was to be heard by all, thus radio pirates moved to locations free of government control. Located 10 km from the British coast, the micro-nation Principality of Sealand became the hub for one of many British pirate radio stations in the 1960s. The pirate radio stations broadcasted radio transmissions that were either unregulated or illegal.<sup>5</sup>

During World War II, the designer Guy Manusell, built forts on water in order to strategically protect the entry to the rivers Thames and Mersey. The Royal Navy abandoned the forts in 1956, which were taken over by radio pirates in 1967. By proclaiming the land an independent nation, the Principality of Sealand, they started a bizarre second life.<sup>6</sup>

The forts, which were infamously called the Manusell Forts, were made out of a concrete platform with extruded pillars that were sunk into the water, on top of which the forts for the Royal Navy were built.<sup>7</sup>

The significance of these forts lies in the fact that even in those days, "they generated their own electricity in order to avoid power failure at a crucial moment."<sup>8</sup> It indicates an inclination to self-sufficiency.

The British have since made great efforts to prevent pirate radio stations and similar undertakings. In 1967, the Royal Engineers flew to the Sunk Head tower, a part of the Manusell's pirated naval forts, in order to sink it -

<sup>3</sup> cf. Rodriguez McRobbie, 11 Reasons the BBC Has Banned Hit Songs.

<sup>4</sup> cf. Schildt/Detlef 2006, 70.

<sup>5</sup> cf. Ryan/Dunford/Stellars 2006, 9.

<sup>6</sup> cf. Zumerchik/Danver 2010, 563.

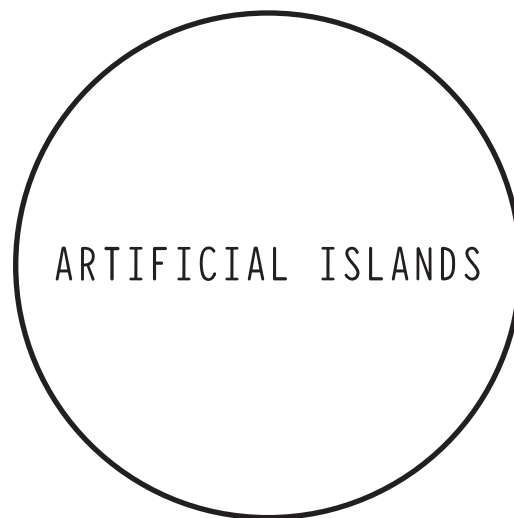
<sup>7</sup> cf. Zumerchik/Danver 2010, 563.

<sup>8</sup> Fautley/Garon 2004, 210.

the Royal Engineers worked on the task for one week and allegedly used a ton of explosive to destruct the forts. In 1987, a law on territorial waters (Law of Sea) was revised, extending its range up to 12 miles from the coast. This decision only concreted the steps United Nations made in 1982 when they proclaimed new international rules stating that any artificial island needs to be removed instantly after its use.<sup>9</sup>

The lust for freedom of expression is showcased in how eagerly it was defended even at a time when every deviant behavior or thinking was closely monitored by the officials. It is nothing short of inspiring how a creative bunch found a way to provide fellow comrades with artistic independence.

It is an aberration in space-thought that proved to play an essential role.



"Their floating homes kept the Uros safe. And they could live their lives without problems from the outside world."<sup>10</sup>

Lake Titicaca is the home of the people of Uros, who live on floating islands. The lake is known to have a rich growth of totora reeds, which the locals use for construction of their islands in layers, a method adopted from the Incas. The reeds rot from the bottom upward, and new layers are then placed on top to ensure stability, which happens every six months, approximately. As you stroll on a surface made of this material, the ground supposedly feels soft and spongy. Today, this peaceful Eden thrives with about 45 intact islands, most of them concealed in isolation.<sup>11</sup>

The people of Uros claim that centuries ago they isolated themselves via floating islands in order to escape from the violent nature of the Collas and the Incas.<sup>12</sup>

<sup>9</sup> cf. Fautley/Garon 2004, 212.

<sup>10</sup> DeKoster, Floating Islands.

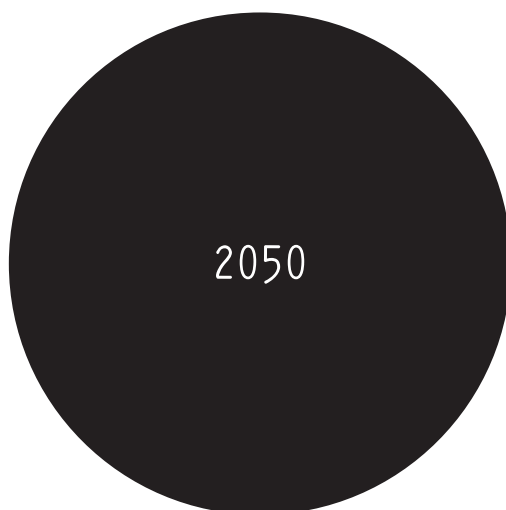
<sup>11</sup> cf. Schlecht 2012, 274- 275.

<sup>12</sup> cf. Benson 2007, 203.

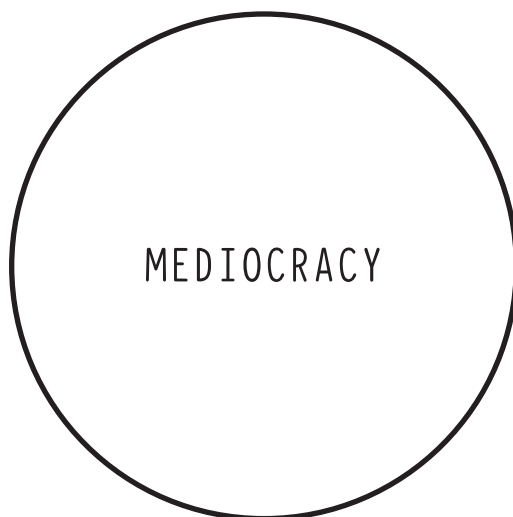


Pic. 2

This is another testament to how people move away from the opressor's control over their lives in order to gain a certain amount of autonomy, freedom if you will. In this case they found it in the haven of water.



"War is peace. Freedom is slavery. Ignorance is strength."<sup>13</sup>  
- George Orwell



As our world consists of enormous amounts of information that is being published on a constant basis, we are flooded with fragments of mostly unreliable data, which does not contribute to the quality of our lives. It hinders it, in truth. People may be aware that many studies and research material are at hand, available to be consumed as the Holy Truth, but we must question the entirety of these conclusions, as the methods are usually limited to only the available resources. We can therefore easily be fooled into satisfying our curiosity with an explanation we come across first, rather than developing a habit of constant exploration and critical thought, a healthy diet of any free-thinking man. As modern society finds itself on the doorstep of a phenomenon where people deem scratching the surface of every issue as a milestone, we have come to face the mediocre standards in all aspects of our lives. This is especially true in culture, which undoubtedly defines every society and gives purpose to the existence of human life other than pure



natural instinct. Believing that the first hit on Google.com is sufficient to finish an assignment, or finding a translation into Mandarin, correlates with ever waning interest for exploring deep waters of the unknown. Nowadays, it takes us less than a minute to form an opinion and that same opinion - depending on the interlocutor - may as well be taken as an absolute truth. Given the picturesque delusion of our easy-come convictions, the term 'mediocracy'<sup>14</sup> comes to mind as a new model of a societal form. Expressing oneself has become fashionable, for purely having an opinion is valued more than basing an opinion on merit. We are bombarded with attractive and motivational quotes left and right on social media that stick in our heads just as long as it takes us to read them, before they vanish into oblivion, sharing the fate with its predecessors. The meaning of these phrases is often taken out of context and its purpose confused with profoundness, when in fact it is nothing more than another form of entertainment. And it is precisely entertainment that commands our actions, which renders us passive observers rather than active contributors. Intellectuality is fashionable, and correctness a symbol of status.

Fabian Tassano, a German author, who deals with the modern society, published a book in 2006 called 'Mediocracy: Inversions and Deceptions in an Egalitarian Culture'. In the book, he proclaims, that a new model of society has emerged, which one which holds style above substance and where cultural progress is sacrificed for the sake of egalitarianism. And in this kind of society, there is no room for exceptional or innovative individuals.<sup>15</sup>

Such is our present and it is easy to be demoralized with what the future has in store for us. A culture that seemingly has unlimited knowledge brought into people's homes, has to use this luxury to evolve from the current stale state. Even if the technological advances prosper, the ever growing void of cultural essence threatens the purpose of our existence, which should ideally surpass pure functionality.

We should expose ignorance in disguise and set standard for a mind of concentration.

"The same institutions produce quite other results as long as they are fought for; they then, in fact, further freedom in a powerful manner. On looking more accurately, we see that it is warfare which produces these results, warfare for liberal institutions, which, as war, allows illiberal instincts to continue. And warfare educates for freedom. For what is freedom? To have the will to be responsible

<sup>14</sup> cf. Tassano 2006, 17.

<sup>15</sup> cf. Tassano, The meaning of 'mediocracy'.

for one's self. To keep the distance which separates us. To become more indifferent to hardship, severity, privation, and even to life. To be ready to sacrifice men for one's cause, one's self not excepted."<sup>16</sup>

- Friedrich Nietzsche

And this what leads us to the state of societal ignorance, where people do not seem to care or do not even know that they should care for the way our civilization is progressing or stagnating. Each and every one of us should be aware whether or not we can endure as a society in the manner of our current lifestyles. We should be informed precisely how much more fossil fuels we still have and what our alternatives are.

As the notion of freedom is increasingly trivialized, other, supposedly more apparent, issues are popularized today as the absolute priority. Everyday mishaps that can be seen on the evening news detract our attention from the causes, gloomily entertaining our short attention span with consequences only. So, instead of acting or reacting and thus contributing to changing the causes in the first place, we focus on worrying about misfortunes that have already happened. We are so entwined into a governmental way of life that is set in stone, unmovable and unchangeable. It forces us to conformism instead of seeking alternatives. Forming new societies, free from the common and authority, on open waters can offer such alternative. A new form of society.

This idea is not new and has been a subject of several scientists from fields of geoscience, political science, and so forth. The same goes for artists who, unlike scientists, can be free of all the boundaries and provable data collecting, but can glide on their imagination to exhaustion. It is where these two worlds meet that I see the solution to aforementioned problems. It is the predictions of extending human living territory onto open waters, 'a nowhere land' as in 'no government' that I find the most compelling. People of similar interests and mentality could combine their efforts and visions on various such stations across the sea. Measures like these would have a drastic effect on the way we live and understand communities.

We will take a few crucial parameters into account, such as climate change, the necessity of clean water, the ever-growing population and its culture, health issues, energy availability and sustainability, and moral values and ethics.<sup>17</sup>

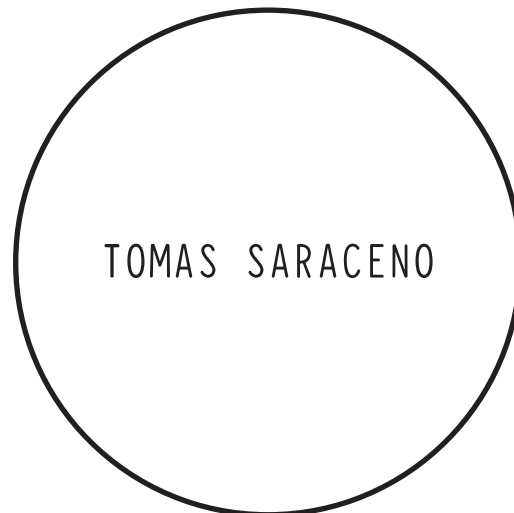
I wonder, should we believe the authorities on their public stance on these parameters, or should we be skeptics and have more control over the details and understanding of what is really happening with our habitat for our future generations? Due to the fact that the majority of information we were given in

<sup>16</sup> Nietzsche 2009, 46.

<sup>17</sup> cf. Lomborg 2013, 70-304.

our lifetime has proven to be more relative than absolute, we should definitely be more selective, at least in my opinion.

Taking 'truths' and converting them into probabilities and opportunities has shown to be of a great value in the 'era of information'. To accept information as a possibility and not merely as a fact allows us to have a broader overview, with its outlines serving us as objective boundaries to tame our imagination.



"What if we designed in layers and moved as clouds do, forming and reforming. We could think of being in transit from here to Europe, say in a cumulus cloud. Think of a rainy day, and what if we could rise to a higher plane and reach a level where it was sunny?"<sup>18</sup>

- Tomas Saraceno

Artists such as Tomas Saraceno dream big in terms of creating the new environment. He stresses the point that it is essential that we engage in thinking about how and where we want to live. With that he addresses everybody by emphasizing how important it is that we do not exclude ourselves in the search for new ideas, thus contributing to the development of society. With a human as the protagonist in his work, he explains his project 'On the Roof: Cloud City' as an experiment that studies the interrelationship between people and space.<sup>19</sup>

This is a deviation from a gallery space as the 'white cube' as it is commonly perceived, where a line on the floor restricts one from engaging with objects.<sup>20</sup> His installation consists of 16 bubbles, framed with a stainless-steel skeleton and is meant to be an interactive design, where visitors can explore its space by walking in its interior.<sup>21</sup>

<sup>18</sup> Kisa, Walking On air.

<sup>19</sup> cf. Saraceno, Interview, Vernissage TV.

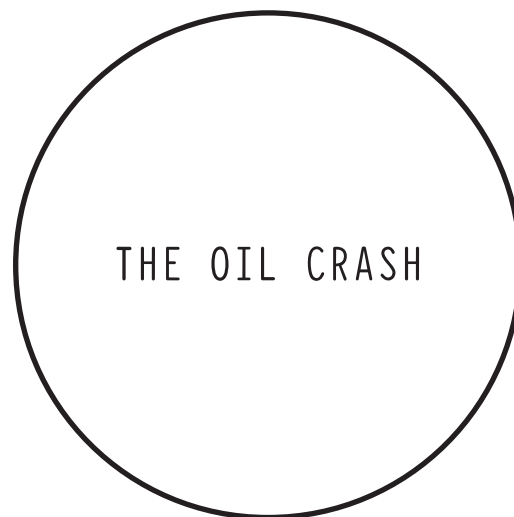
<sup>20</sup> cf. O'Doherty, Inside the white cube.

<sup>21</sup> cf. Dobnik, 'Cloud City' By Tomas Saraceno At The Metropolitan Museum Rooftop.



It is apparent that he studies the framework of a project thoroughly. When working on the project 'Cloud Cities', he even studied at the International Space University as the only attending artist. Among other candidates, of whom all were engineers, he was the one chosen to experience a zero-gravity flight.<sup>22</sup>

Just like Tomas Saraceno, we need to define the parameters when engaging into a quest for possibilities of a new habitat. Only by employing these parameters can we take proper steps towards the future and ensure a beneficial outcome for all parties involved - a 'homo universalis' approach, if you will. In order to lay the foundation for this book, the scientific data revealed itself to be very helpful. This chapter provides the coming chapters with the needed groundwork. It should supply the reader with reference material when a design might be too complex to comprehend immediately.



"Oil is the excrement of the devil."<sup>23</sup>

Colin Campbell, an oil geologist and consultant to Fina, Shell, Exxon, etc., states, that the great bulk of the world's oil was formed at two brief moments of extreme global warming, about 100.000.000 years ago. Dead organic material (from animals and plants) supposedly settled on the bottom of the oceans, where it blended with sand and over long periods of time shaped one layer after another. This resulted in extreme heat, to what geologists refer to as 'the kitchen', where chemical reactions led to the formation of oil. In the documentary 'A Crude Awakening: The Oil Crash', oil is described as the blood-flow of economy.<sup>24</sup>

<sup>22</sup> cf. Kisa, Walking On air.

<sup>23</sup> Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>24</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

The difference between now and earlier periods, where cheap energy was abundantly consumed, is that we have to face the era of energy-poverty. This forces us to rethink our way of living. Our existence in this civilization is more defined by oil with each passing year. And because we are well aware that the supplies are limited, we are forced to consider the repercussions of not finding an alternative.<sup>25</sup>

When a society collapses, the chain reaction it fuels consists of bankruptcy, unemployment, poverty, starvation, etc. We should ask ourselves whether the world of new dimensions is only a few years away. Oil is non-renewable and a product of millions of years of geological history, and the fact that our industry runs on its very foundation is quite frightening. As data about the reserves is very ambiguous and the actual numbers unknown, we could crumble very soon.<sup>26</sup>

The power of oil is enormous in our society, not only sociologically, but also power-wise, used as the backbone of energy. The scientist and U.S. Congressman Roscoe Barlett stated that one barrel of oil produces as much energy as 12 people working for an entire year. While, according to Matthew David Savinar, an attorney and founder of [lifeaftertheoilcrash.net](http://lifeaftertheoilcrash.net), an average person would have to perform physical labor for 25.000 hours to be equivalent to 1 barrel worth of energy output. For further illustration, it is worth noting that 1 barrel in Iraq costs 1\$ to be pumped out of the ground. 70% of 1 barrel of oil is refined into fuel for transportation, and 98% of all energy for transportation comes from these barrels of oil. We not only need to consider the gasoline being used to fill our car tanks, but also the energy we put into building those very cars. For instance, building a microchip consumes 630 times its weight in fossil fuels. In addition, we get all of our petrochemical plastic materials out of processed liquids that come out of the same oil.<sup>27</sup>

According to Mir-Babayev Mir Yusiv Fayilogly, an oil historian, the Caspian Sea became one of the first oil provinces in the late 1800's. The author estimates that by the end of the century the majority of Russian oil came from Baku, which quickly rose to prominence.<sup>28</sup>

"In their heyday these oilfields produced up to 5.000 tons of crude oil a day."<sup>29</sup>

<sup>25</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>26</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>27</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>28</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>29</sup> Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

Another big discovery of oil was in Venezuela in 1914. The turning point in Venezuela was the day, named as 'the day of the black rain' on December 16th 1922, on which a drilled well was blown out and 150.000 barrels of oil erupted and poured out in a matter of three days. This event set Venezuela among the oil-wealthiest places in the world making it one of the largest oil exporters in the world alongside America, which remained the oil-capital up to the 1950s. One of the cities considered to have endless supplies of oil was McCamey in Texas. Today, the town has vast lands with scattered dead pumpjack machinery, or 'dinosaurs', as the Texans refer to them. It is a gloomy reminder to its residents of how every well has its bottom, that supplies do run out and there is no way of knowing when. Today, cities like Baku and Maracaibo offer scenery no different than McCamey.<sup>30</sup>

"Oil is a magnet for war. Oil starts wars. The Sudan for example, Darfur. What everybody is treating as an ethnic and religious struggle, is in fact in part a struggle about major oil finds, located in the south, which means that the government in the north, a different ethnic and religious make-up is displacing those people and moving them out of the area, so that those oil-revenues belong to them."<sup>31</sup>

- Terry Lynn Karl

Since the World War I, the battles were driven by the lust for economical dominance, but the first war that began specifically to seize oil fields was The Invasion of Kuwait, led by Saddam Hussein. In the last couple of years it became known that Iraq's oil supplies were the least explored and the demand for its geo-political position became apparent.<sup>32</sup>

The number of oil-reserves is uncertain because most of them are labeled as probable. Oil geologist Colin Campbell states that the public data of how much oil reserves there really are is misleading and outright false. He cites how the numbers describing the supply change rapidly from one day to the next and with no discernable cause. The reason that countries like Venezuela or Kuwait can double their numbers on how much reserves they really have is due to the production and shipping ability. Countries like Saudi Arabia frequently register an enormous increase over night to protect their production quota. The numbers rise in a chain reaction every time one country decides to make theirs higher. Campbell says that it is not possible to trust the ever-rising numbers of reserves, because countries are continuously producing oil. Common sense tells us that the number should be decreasing.<sup>33</sup>

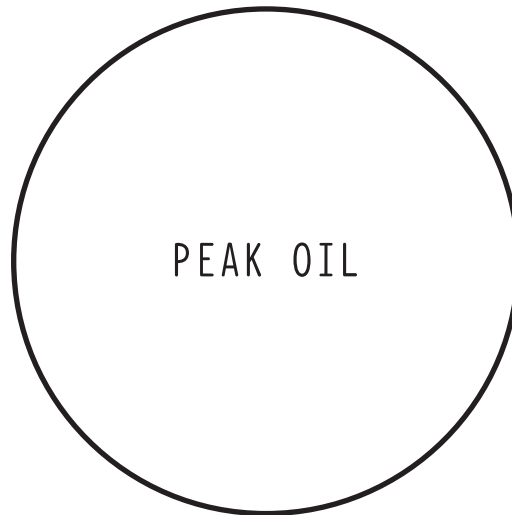
<sup>30</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>31</sup> Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>32</sup> cf. U.S. Department of State, The Gulf War, 1991.

<sup>33</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

Most of the controversy and confusion arise from these unreliable, politically influenced reports of correlation between reserves and production. There is a prevailing belief that no one can or will ever know the definitive amount of reserves in the ground, either because we have yet to find all of the locations holding fossil fuels, or because we are being denied the correct numbers.<sup>34</sup>



"The point at which the supply begins to diminish is much more important economically than when the wells run completely dry."<sup>35</sup>

"The 'production peak' is therefore the main event in the future history of oil extraction, a point which will mark the epochal change from cheap oil to expensive oil."<sup>36</sup>

The term 'peak oil' was defined by M. King Hubbert, an award winning scientist, who worked in fields of physics and geology, stationed at a research laboratory owned by Shell in Huston, Texas. Among other contributions, one of the most notable is the 'Hubbert peak theory'. It does not focus on any specific geographical area in the world and states that the rate of petroleum production follows a bell-shaped curve. This means that earlier in the curve we discover that the production rate is increasing - pre-peak, whereas late in the curve the production tends to decrease because of resource reduction - post-peak. There was a wide spoken skepticism surrounding Hubbert's theory, because he himself announced that oil had peaked in the early 1930s.<sup>37</sup>

With data that cannot support any of these theories, it is hard to find the right answers.

<sup>34</sup> cf. BP Statistical Review 2004.

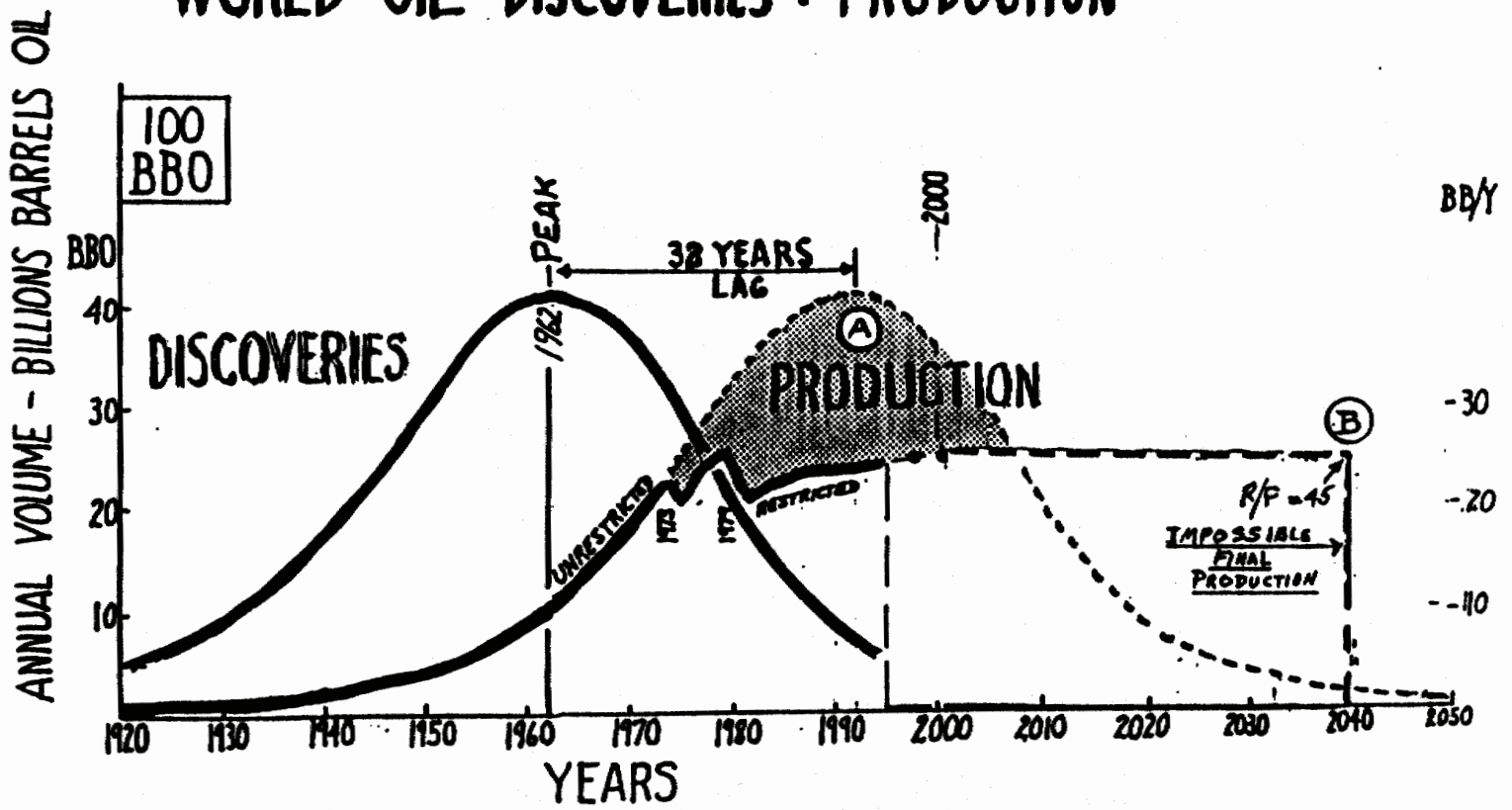
<sup>35</sup> Lawton/Andrews, Fueling the Force in the Army After Next-Revolution or Evolution.

<sup>36</sup> ASPO, Hubbert Peak, 10.

<sup>37</sup> cf. Deffeyes 2008, 1.



# WORLD OIL DISCOVERIES + PRODUCTION



Pic. 4

"If we have only produced about 50 billion barrels in 100 years and if we have 100 billion barrels still to go, which is twice that amount, how long will it be before there's an oil shortage? The U.S. will hit the peak of oil production in about 10 or 15 years from that date."<sup>38</sup>

- M. K. Hubbert

In the US in 1970 Hubbert's predictions became reality. Today, there are about 58 countries that produce less than they did in the past. As the quest for new oil-wealthy regions continues, experts share the same opinion: some oil is easy and cheap to produce, some is not. If one would, for instance, go to pump out oil from the Sahara, the usage of energy to do so would be far more colossal than the energy obtained from the pumped product.<sup>39</sup>

"It has been estimated that, without hydrocarbons to provide energy, fertilizers and pesticides, agriculture could not support a population greater than two billion. This reduction would take us back to pre-20th century levels but the disruption to society and its infrastructure would probably mean a reversion to pre-industrial revolution."<sup>40</sup>

- Paul Thompson

So if most of the world's oil has been discovered and if the world's crude production has peaked and if the world's demand continues to grow, what does that mean for our society? We could be moving towards the end of cheap oil which would evoke catastrophic repercussions for financial, economic, and political markets. We could witness a population crash, a higher count of wars, and ostracizing of poorer countries, even if they own their own supplies. Will the oil age be remembered as a time when humankind consumed hundreds of millions of years worth of hydrocarbon resources in less than 200 years? It is astonishing how the public remains willingly uninformed. The problem we face is too broad to be solved by experts alone. It is us who choose how to further our 'modern' lives.<sup>41</sup>

"Peak oil is a turning point for Mankind. The economic prosperity of the 20th Century was driven by cheap, oil-based energy. Everyone had the equivalent of several unpaid and unfed slaves to do his work for him, but now these slaves are getting old and won't work much longer. We have an urgent need to find how to live without them."<sup>42</sup>

- C. J. Campbell

<sup>38</sup> Robin, A Conversation with M. King Hubbert.

<sup>39</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>40</sup> Wood, Peak Oil.

<sup>41</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>42</sup> Wood, Peak Oil.

The problem is that people have gotten used to the climbing side of Hubbert's curve and are now facing the declining reality. With the oil reservoirs drying out and the growing demand for energy, we are facing a potential collapse in the society, according to Luis E. Giusti, from the Venezuela State Oil Company. We are quickly going from the current 18 Million barrels a day to 120 Million, predicted for the year 2030. In the early seventies, about half of the world, including Africa, the Middle East and almost all of Asia, did not use oil at all. Now we face an entirely different situation, one where only tiny patches on the map of the world exist without it. Thinking about the future with no fossil fuel, a mind wonders if we would be able to go back in time and adapt our lifestyle to the one hundreds of years ago.<sup>43</sup> The idea of a horse and carriage as a way of transportation, a kind of Amish way of life, seems rather extreme and not acceptable by most westerners.

It is Richard Nixon, former U.S. President, who paved our way into the careless usage of oil that we have gotten so accustomed to. We take driving up to a gas station and filling up our vehicles for granted and can get riled up by a gas price increase of only 1 cent.

Since hydrogen power, nuclear power, wind, solar energy, etc. are able to produce only fractions of energy we absorb nowadays, the question about alternative energy source remains unanswered. The amount of sunlight hitting the planet is 20.000 times higher than the fossil fuel that we are using. Such numbers give confidence for the future, the problem is that we have not begun to understand how to implement and use this energy properly. We are in a desperate need of further research and an optimistic application of new renewable energy sources. It is very unlikely that we are going to maintain our lifestyles in the post-peak period. As a result, we will have to adapt to new conditions very abruptly.<sup>44</sup>

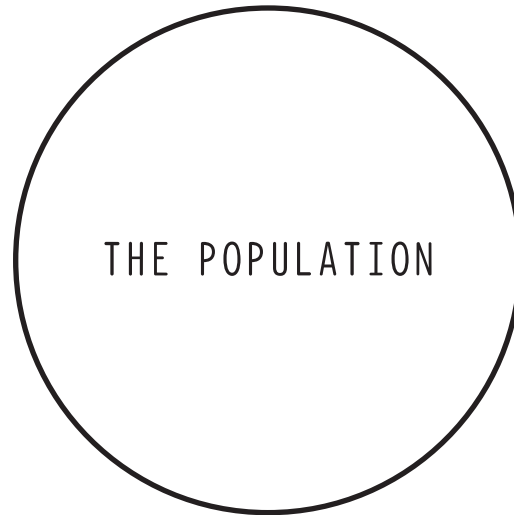
If we return to nature, we find that one of its basic components known to man since the commencement of civilization has been valued as 'life-giver'. Water symbolizes life. It gives birth to organisms and feeds its surroundings, designing the circle of life by recreating existence. In addition, it offered our ancestors means to travel. The fastest known way of moving was by water - it shortens distances.<sup>45</sup>

Thus opened a new era of exploration, and most significantly, it connected people and societies. Water became the messenger on top of all aforementioned beneficiary factors. The world became closer for the first time, even if just by a little.

<sup>43</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>44</sup> cf. Gelpke/McCormack/Caduff, A Crude Awakening: The Oil Crash.

<sup>45</sup> cf. Hopkins, Water: The Life Giver.



# THE POPULATION

"World population is expected to grow another 1 billion in just 12 years, creating unprecedented demand for food, water, energy, and employment. Population growth is expected to be most rapid in the 49 least developed countries, which will double the size from around 900 million today to 1.8 billion in 2050. There were only 1 billion humans in 1804; 2 billion in 1927; 6 billion in 1999; and 7.2 billion by 2013. UN forecasts a range from 8.3 billion to 10.9 billion people by 2050, with 9.6 billion as the mid-projection."<sup>46</sup>

It is estimated, that by the year 2050, around 80% of the world's population will be settled in urban centers. According to demographic trends, the human population will increase by around 3 billion people during the same period of time. It is estimated that 10<sup>9</sup> hectares of new land will be needed to grow enough food if the food production stays as it is, as reported by statistics of the Food and Agriculture Organization of the United Nations (FAO) and NASA. The FAO and NASA also claim that we are already using 80% of all the land suitable for raising crops.<sup>47</sup>

The population growth is a root cause for many social and environmental problems and is far from being a negligible sideshow parameter. This fact alone directly affects modern day issues such as global warming, disruption of ecosystem, lack of availability of new energy sources, causes soil to be unsafe for housing, affects the gaps between the wealthy and the poor, and so forth. Reports nowadays show that over 1 billion people do not have sufficient amounts of food and safe drinking water for an adequate life.<sup>48</sup>

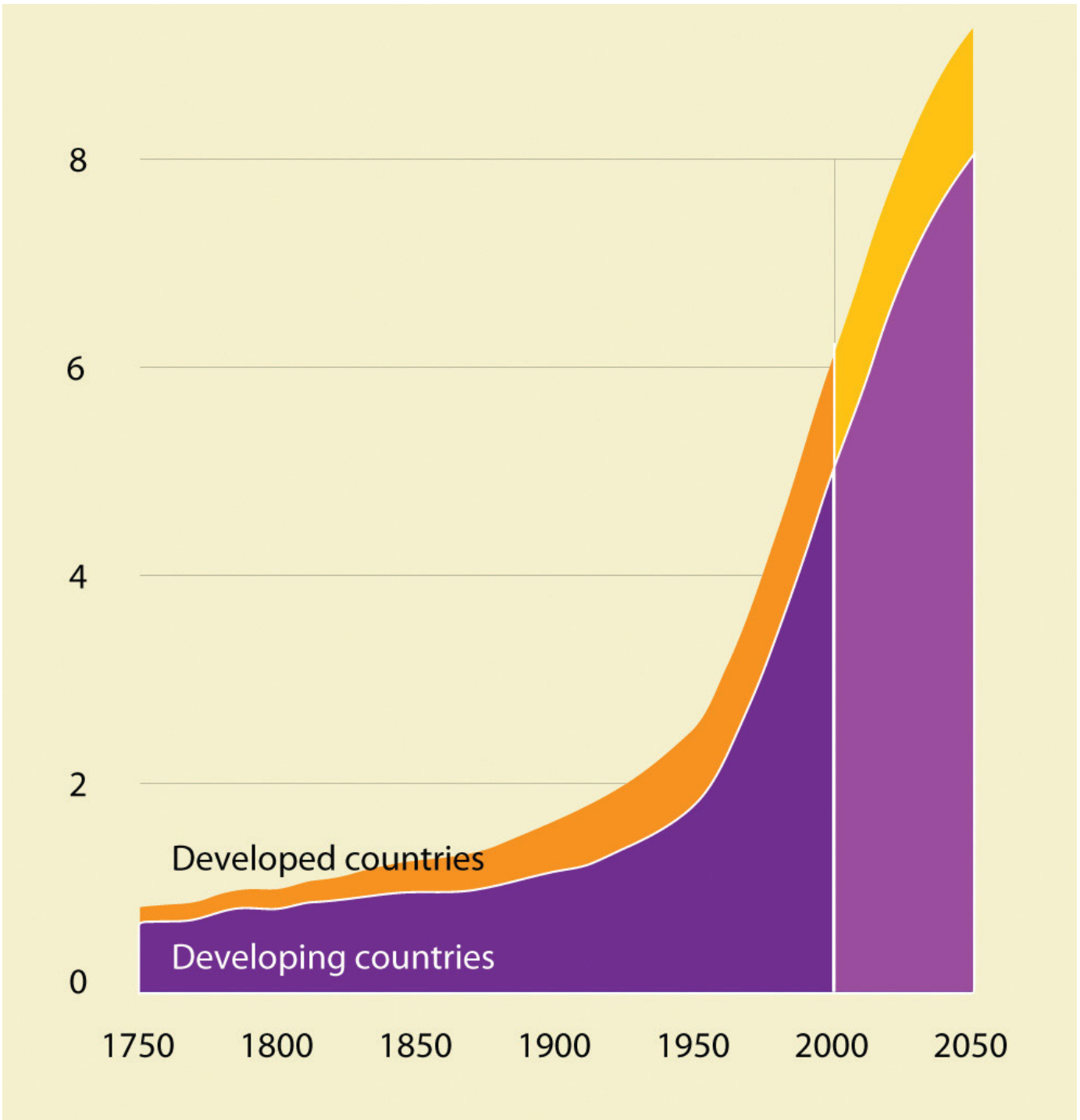
Gary L. Peters, a retired professor of geography at the California State University, focuses on the problem of population growth by linking it to subjects like global warming, genetically modified food, epidemics, and urbanization.<sup>49</sup>

<sup>46</sup> Marien, Global Challenges.

<sup>47</sup> cf. Despommier, The Vertical Farm.

<sup>48</sup> cf. The Water Project, Water Scarcity & The Importance of Water.

<sup>49</sup> cf. Lovelock 2000, 1-12.



Pic. 5

In his 2010 guest post for the Business Insider he discussed this very issue. In the article he mentions several experts that have focused on the same topic throughout history. He names Thomas Robert Malthus, a clerk and a scholar, who worked in the fields of demography and macroeconomics. In 1798 he wrote an essay titled 'An Essay on the Principle of Population' with which he was accepted into the circle of theoreticians. Even then, Malthus argued that the trend of ever growing population must cease. James Lovelock, a scientist and environmentalist known for formulating the Gaia hypothesis about organisms interacting with their inorganic environment in order to design a system that contributes to life conditions on Earth, agrees with Peters in a statement that the world's problems stand in correlation, for the issue of overpopulation and climate change are connected and when speaking of either, the other should not be neglected.<sup>50</sup>

Population Connection, formerly known as Zero Population Growth, the American voice for population stabilization since 1968, comments on the population and climate change link by referring to statistics:<sup>51</sup>

"Since 1970, the world's population has nearly doubled, growing from 3.7 billion to over 7 billion. Carbon emissions have followed a similar trend. A 2013 review of data from around the world found that between 1960 and 2005, for every one percent increase in human population, greenhouse gas emissions increased by slightly more than one percent. The relationship, however, is complex. Increases in greenhouse gases are driven mostly by consumption, which tends to be highest for wealthy populations. In the United States, annual per capita carbon emissions have hovered around 19 tons for decades. However, U.S. emissions had until recently been declining since 2007, with the latest data indicating emission levels to be 17.6 tons per capita. Most of these emissions come from burning fossil fuels."<sup>52</sup>

According to the published research by the National Academy of Sciences, slowing the population growth would reduce emissions. Population Connection argued that the fastest way to restrict people's activities and their effect on nature should cut off those "who consume the most to reduce their consumption."<sup>53</sup>

<sup>50</sup> cf. Lovelock 2000, 1-12.

<sup>51</sup> cf. Population Connection, About Us.

<sup>52</sup> Population Connection, Population and Climate Change: A Clear Link.

<sup>53</sup> cf. Population Connection, Population and Climate Change: A Clear Link.

Martin Luther King Jr. once said that we already possess the know-how and the proper course to address the issue of overpopulation, what is missing is the education on the severity and implication of this occurrence.<sup>54</sup>



Recent studies have shown that about one third of all world-wide food production gets wasted or even lost in either food production or in the consumption system, which means addition of 1.3 billion tons of waste in total.<sup>55</sup>

We celebrate the World Environment Day every year on June 5th. In 2013, the World Environment Day was dedicated to food waste as dictated by the United Nations Environment Programme (UNEP). The theme of the day was titled 'Think. Eat. Save. Reduce your food-print'.<sup>56</sup>

Another characteristic of food waste to consider is the enormous amount of energy and resources that go into its production. According to Dana Gunders, from the Natural Resources Defense Council, in America, for example, half of the total land area and 80 percent of its water usage is dedicated to growing food.<sup>57, 58</sup> The energy that fuels this growth adds "up to 10 percent of the total U.S. energy budget."<sup>59</sup>

With the rise of the population we must be aware of the food-prints we leave behind. Research showed that a foodprint of a single American acquires 9.5 hectares.<sup>60</sup>

<sup>54</sup> cf. Vajdi 1991, 15.

<sup>55</sup> cf. US News Centre, UN Report.

<sup>56</sup> cf. Think.Eat.Save. Reduce Your Foodprint, About the Campaign.

<sup>57</sup> cf. USDA, Major Uses Of Land in the United States.

<sup>58</sup> cf. USDA, Agricultural Resources and Environmental Indicators.

<sup>59</sup> cf. Gunders, Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill.

<sup>60</sup> cf. Pearce, Consumption Dwarfs Population as Main Environmental Threat.

This fact should be alarming to anyone aware of cataclysmic consequences if as expected the populous of London or any mid to large city grows for even a few percent in the next couple of years. There is little doubt for this scenario.

To be able to produce food more efficiently, we must forgo traditional farming. Not only is traditional farming limited geographically, it is also an enormous consumer of resources, water being in the forefront. A solution for an efficient production of food could be vertical farming, a type of recycling system that continually re-uses water and nutrients without wasting it needlessly. Such farming is neither limited geographically nor wasteful of resources as in the case of traditional farming.<sup>61</sup>

Dickson Despommier, author of 'The Vertical Farm: Feeding the World in the 21st Century' and an ecologist and professor at the Columbia University, uses New York City as an example of how stacking greenhouses atop each other - the author compares it to the hanging gardens of Babylon - could benefit the population of 8 million, whose feeding demands are enormous. Such a vertical eco-system would conserve on space, as well as resources by way of recycling water and nutrients, and produce little to no food waste.<sup>62</sup>

<sup>61</sup> cf. Despommier 2010, 15-16.

<sup>62</sup> cf. Despommier, Interview, Creative Solutions for Lining Well + Doing Good.





THE CONTEMPORARY  
ARTIST



ON ART AND SCIENCE

"Like the scientist, the artist is a poet who deals with symbols." <sup>63</sup>

- Byron Browne.

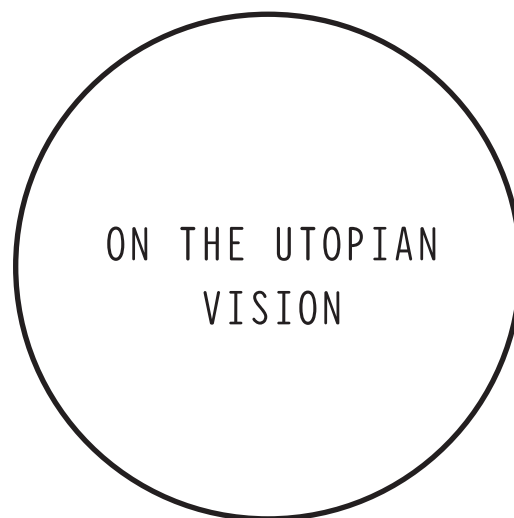
When reflecting on life, we often do not remember actual occurrences - they can no longer be grasped by our conscious and are therefore immaterialized through the dimension of time. What we are left with are interpretations of the no longer tangible and beyond our physical reach. In other words, perception of the non-bodily, or the abstract, is based on personal human experience, which is the only element within our being that can be collectively perceived as sincere and eternal.

As can a human being be painted through the subjective means, so can solutions to the problems, raised in previous chapters, be subjectified and freed of common interpretation. By divorcing our perception from stagnant reality, we can release our imaginative self.

<sup>63</sup> Graubard 1986, 2.

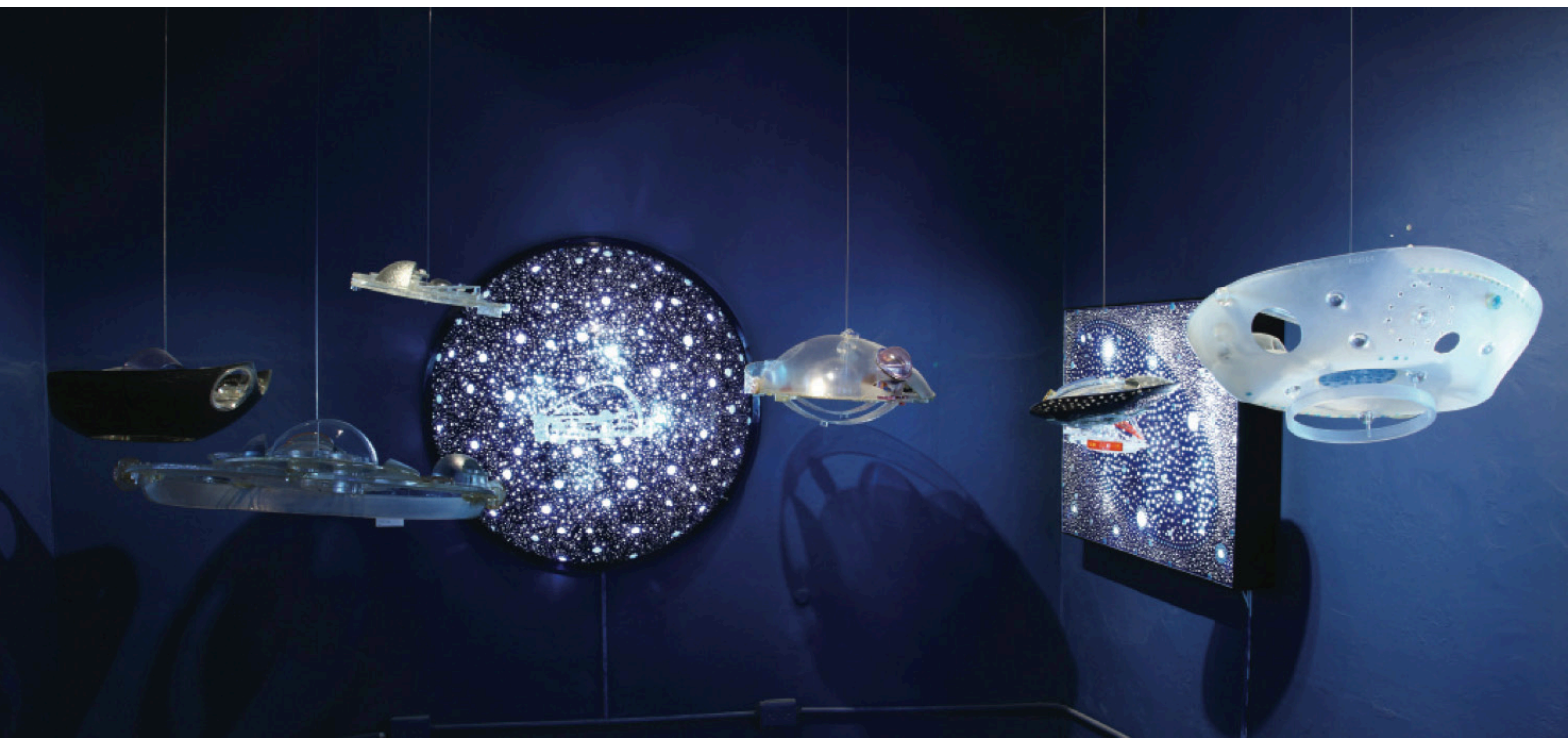
Art and its noteworthiness in the lives of humans has been evident throughout the history. It narrates an essentially different tale of the past events than the one based solely on cold fact data. Art as experiential perception of individuals combined and put into context of time depicts the closest approximation of an absolute truth due to its inclusion of otherwise overlooked senses. These perceptions, individual's or societal, can thus be more conclusive. Art offers a fuller understanding of history, and when appropriately created can elicit the same emotions, feelings, or states of mind as the subject it is carrying. It goes without saying that every artist should be on the quest to capture a moment, a feeling, a state of being, or other such focal point of his or her creation in order to establish a communication that stretches beyond physical limitations, such as distance, world order, gender, religion, and especially time.

Rawson does not equate art with our everyday experiences but rather sees it as an example of a unique occurrence that contains within it a means to communicate, evoking meaning one is able to grasp only as a whole and not as something made from connected pieces.<sup>64</sup>



Many contemporary artists speak out on today's state of things with the colorful use of reflection, remembrance, exaggeration, and last but not least, utopianism. We can perceive our time as a time of transition above anything else and this moment can be seized now and thus become an opportunity that can

<sup>64</sup> cf. Rawson 2005, 20.



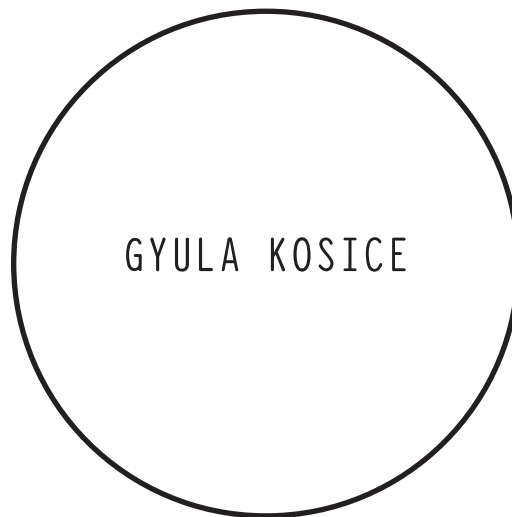
Pic. 6

evolve from an ideological view to becoming a reality in the future.

The keyword is movement, carrying the notion of motion.

While utopia can be seen as a critical and analytical tool in order to reveal what is lacking, the essence of it lies not in the final product, but in the process - the non-existent - the journey.<sup>65</sup>

To the western culture, says Noble, utopia represents an imagined solution to the present ills of any society, proposing an ideal place of residence. However, inherent in its nature is the fact that it will always remain imagined and thus never be realized in the real world. The concept only serves as inspiration, something very near to the grasp, yet perpetually elusive.<sup>66</sup>



"Why create a sculpture if the habitat itself already is a sculpture?"<sup>67</sup>

- Gyula Kosice

In 1940, the project 'Hydrospatial City' by the kinetic artist Gyula Kosice was presented to the world. By merging science and art, his vision was to refrain from traditional architecture, presenting new possibilities of living. As a progressive sculptural and architectural design based on kinetics, the 'Hydrospatial City' carried the idea of "a sustainable community of mobile habitats".<sup>68</sup> Kosice proposed a radical change where architecture would depend neither on land nor on gravity ever again.<sup>69</sup>

<sup>65</sup> cf. Norman, Lecture, Utopia -- Its here, if not now.

<sup>66</sup> cf. Noble 2009, 12.

<sup>67</sup> Bauchner, Gyula Kosice's Urban Idealism.

<sup>68</sup> cf. The Art and Electronic Media Online Companion, Hydrospatial City.

<sup>69</sup> cf. L'Observatoire Leonardo des Arts et des Techno-Sciences, The Hydrospatial City by Gyula Kosice

Projects like the one from Kosice can be used as encouragement for 'going wild' in terms of conceptual visions today. Even though he began his work at a time when a technological progress was not yet at the point it is today, he continued to deal with floating habitats. Considering the iconology of his work he can be perceived as a key figure of utopian thinking, providing a theory of space and humans.<sup>70</sup>



As a branch of human ability, art gives propositions for solving current and future problems by focusing on these issues intensely and, above anything else, differently. Artists tend to seek out scientific conclusions of past research studies in order to tailor their hypothesis by including social and political parameters.

With art as a setting stone for innovation, it is of great relevance to examine what the body of work has to show about the issues of the world today, specifically with our predetermined parameters (disrupted ecosystem, overgrowing population, and waning natural resources).<sup>71</sup> Predictions about the future of floating and hovering cities may come to us as an undesired futuristic current of events, but if given the appropriate amount of work in design, it may save us, beautifully.

<sup>70</sup> cf. Bauchner, Gyula Kosice's Urban Idealism.

<sup>71</sup> cf. Marien, Global Challenges for Humanity.



ANDREA ZITTEL ON  
EXPERIMENTAL  
LIVING

Andrea Zittel, born in 1965, is an American artist working under the name 'A-Z Administrative services'. She is known to work outside of art's boundaries (if they even exist) by merging it with social, environmental, and political components.<sup>72</sup>

The floating island she created, which is about six meters wide and named 'Indy Island', is located in Indiana's 100 Acres: The Virginia B. Fairbanks Art and Nature Park, behind the Indianapolis Museum of Art. It is constructed from fiberglass, mixed media, and foam, and was commissioned by the Indianapolis Museum of Art. The island is intended to be an experimental living structure, opened to be a home for one or to two residents per summer, who, in collaboration with Zittel, would work on making modifications and improving it.<sup>73</sup>

Zittel was thrilled by the idea that her project would evolve even further. The island was actually made in Scandinavia in 1998 on a much larger scale, but was hard to maintain due to its size and could not withstand a long-term installation.<sup>74</sup>

"I've been working on various ideas for habitable islands for over ten years, but it isn't so often that you find an institution with a protected body of water willing to take on the challenge of maintaining a floating work of art. The idea of an island appeals to me as representation of many of the values that we strive for in our 21st-century culture: individualism, independence, autonomy, and self-sufficiency. Yet at the same time, these are the same desires that isolate us and lessen collective social and political power. I am fascinated at how the things that set us free are also the same things that oppress us; you could say that the concept of the deserted island is both our greatest fantasy and our greatest fear. But regardless (and probably even because) of these complicated readings, I'm drawn to structures that generate a kind of personal autonomy for their inhabitants."<sup>75</sup>

<sup>72</sup> cf. Coles 2007, 200.

<sup>73</sup> cf. Indianapolis Museum of Art, Indy Island.

<sup>74</sup> cf. McCoy, The Island in 100 Acres: An Interview with Andrea Zittel.

<sup>75</sup> McCoy, The Island in 100 Acres: An Interview with Andrea Zittel.

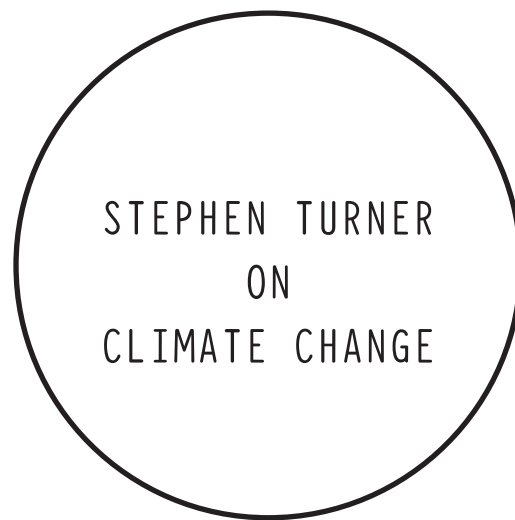


Pic. 7

Zittel's contribution to experimental living sets a tone we could be following in the near future. As the world is changing around us in a rapid pace, adaptation to a new way of life may not be far away. Considering this project as a possible reality might help us recognize that we should take immediate actions in order to prevent the time from running out.

The ambivalence of deciding whether to be an isolated individual or part of a community is beautifully portrayed in the Indy Island.<sup>76</sup>

Indy Island is a valuable experiment that showcases our options for future experimenting. It also gives us hope that we might still have enough time to undertake such an odyssey. Conclusions of this project are certainly crucial in the coming years, since it is mandatory to spread awareness.



Stephen Turner is an American artist, who conceptualized a similar project to Indy Island. He is often involved in long-term experiments, as was the case when he spent 36 days in the abandoned ex-pirate radio station Shivering Sands. It is his way of studying the relationship between natural and man-made environments.<sup>77</sup>

He constructed a temporary and self-sustaining structure which he uses as a personal work space situated on the River Beaulieu. His vision is to study the tidal creek in order to understand and later react to environmental changes.<sup>78</sup>

*"Climate change is already creating new shorelines and habitats."*<sup>79</sup>

The Exbury Egg is to be used as a calendric marking board, where Turner is to document the changing level of the river and rainfalls. It displays how sustainability of the resources depends on how and which materials and location we choose.<sup>80</sup>

<sup>76</sup> cf. Eischen, Andrea Zittel.

<sup>77</sup> cf. Turner, The Artist.

<sup>78</sup> cf. Turner, What is the Egg.

<sup>79</sup> Turner, The Exbury Egg.

<sup>80</sup> cf. Turner, What is the Egg.

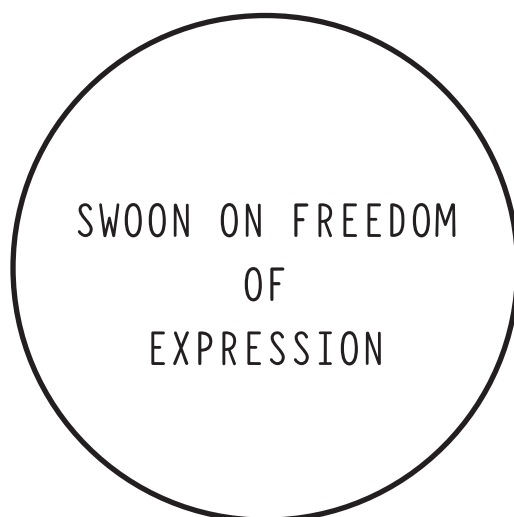




Pic. 8

"Inside, my own visual and philosophical journey will be catalogued in collections of still and moving image, found objects, drawings and maps that chart an emotional as much as a physical geography. Thus the Egg will become a sculptural element in a time based happening, that both inside and out is a creative archive about one of the pressing issues of our times."<sup>81</sup>

- Stephen Turner



Swoon is a 31-year-old Brooklyn based street artist.<sup>82</sup>

"Swoon first launched what is now known as 'Swimming Cities' in 2006. For the maiden voyage of her first vessel, the Miss Rockaway Armada, Swoon gathered a group of artists and other creative friends to cobble together rafts from discarded wood, foam blocks, bed sheets, car parts and other found 'junk' before sailing the whole lot 800 miles on the Mississippi River for two summers in a row. In 2008, she took the idea a step further with 'Swimming Cities of the Switchback Sea,' a set of seven stunning sculptures that carried 40 artists down the Hudson River and culminated in a large-scale installation at Deitch Studios in Long Island City. The 30-member crew also stopped to perform music and a play about the imagined origins of the boats written by the multidisciplinary artist Lisa D'Amour."<sup>83</sup>

In 2009, SWOON crashed the Venice Biennale with the 'Swimming Cities of Serenissima'. The project she designed consisted of one boat and thirty US artists onboard. The floating sculpture was inspired by the urban city, built from recycled materials. It traveled from Slovenia to Venice, where they concluded their journey and where the crew performed for the Biennale visitors.<sup>84</sup>

<sup>81</sup> Turner, Creative Agenda.

<sup>82</sup> cf. Grigoriadis, Barging In to Venice.

<sup>83</sup> Lewis, Swoon's Swimming Cities' Crashes the Venice Biennale, in: Art in America.

<sup>84</sup> cf. Serenissima, About.



Pic. 9

"Watching them approach the shore was like seeing a floating city in the distance, as improbable as Venice itself."<sup>85</sup>

Due to materials SWOON used for the sculptures people more often than not describe her Swimming Cities as an environmental project that spreads awareness about the climate change and the decreasing availability of natural resources. However, she has since distanced herself from such a label.<sup>86</sup>

Her view is displayed by putting an important parameter into the equation: the freedom of expression.

"Once I found that I could create art with or without a gallery, working in galleries became more of a choice than the forgone conclusion of all my efforts. All at once institutions didn't seem so daunting."<sup>87</sup>

SWOON chose water as means to travel and expression of freedom. She deliberately chose such an uncustomary venue for making a statement, as she did when she crashed the Biennale.



"The new city should be the intensification of an existing city."<sup>88</sup>

- Yona Friedman

The Hungarian-French theoretician and architect, Yona Friedman, is known to "deal with issues of urban planning, infrastructure, and the empowerment of the user"<sup>89</sup> in his utopian designs.

He has often risen above architecture and employed sociology and contemporary art, while his core idea remained a constant: always state the sentiment of individual freedom.<sup>90</sup>

<sup>85</sup> Serenissima, About.

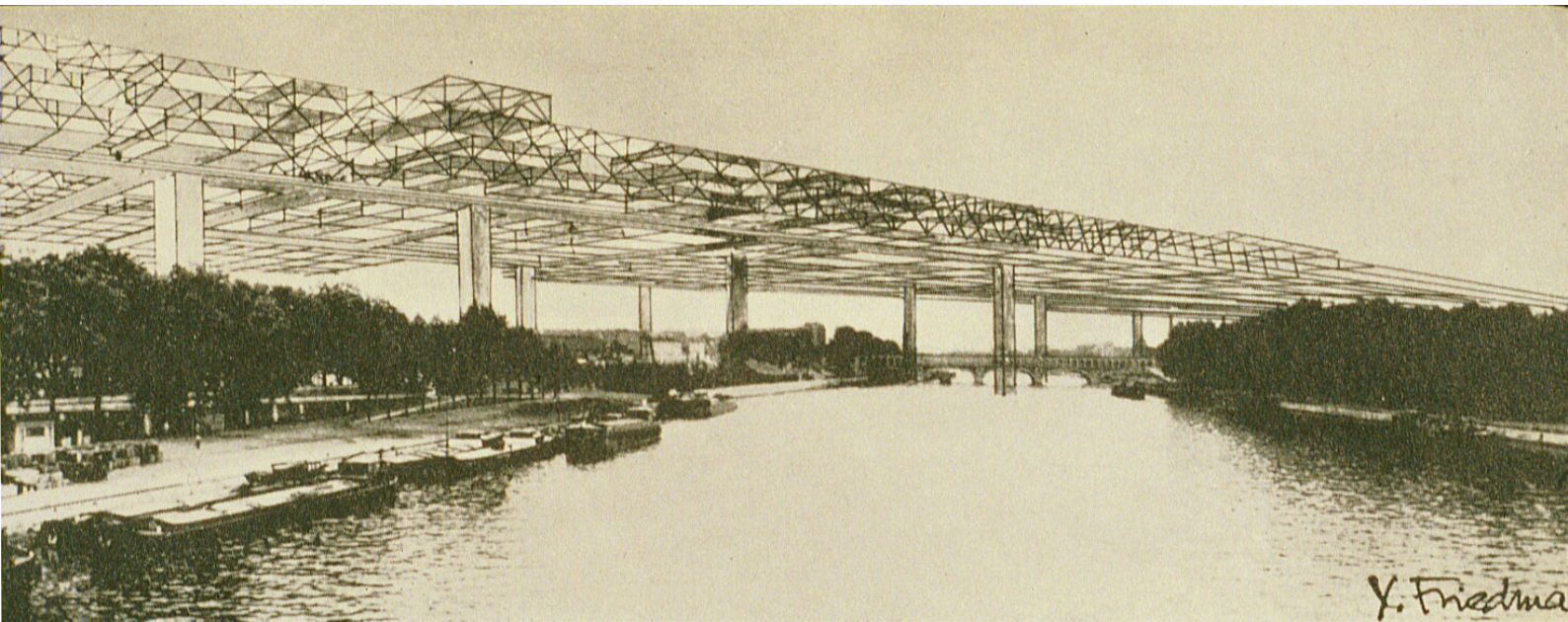
<sup>86</sup> cf. Serenissima, About.

<sup>87</sup> Yazter, The Swimming Cities of SWOON.

<sup>88</sup> Friedman, Mobile Architecture: 10 principles of spatial urbanism.

<sup>89</sup> cf. Awan/Schneider/Till 2013, 151.

<sup>90</sup> cf. Awan/Schneider/Till 2013, 152.



Pic. 10

Yona developed a spatial concept in the form of the manifesto 'Architecture Mobile', in which he discusses a "New type of citizen free from the structures of work through the growing automation of production." <sup>91</sup>

He presented the plan for mobile architecture in 1956 in Dubrovnik, at the CIAM 10 conference, where the project did not "resonate within CIAM due to significant internal problems that were destabilizing the organization at the time." <sup>92</sup>

Friedman was taken aback by the gap between his ideas and that of CIAM, so he decided to create his own group, named Groupe d'Etudes d'Architecture Mobile. The 'Architecture Mobile', an architectural discourse, evolved into a temporary structure. An elevated construction, named the Ville Spatiale (spatial city), the landscape of which could be animated with people's everyday lives. <sup>93</sup>

"Friedman's mobile architecture did not involve movement through space; instead, he promoted an architecture that could be changed easily according to the needs of the client. His concerns were threefold: first, the unchecked growth of the contemporary city, which fed fears that the Western world would soon run out of space; second, the inflexibility of urban environments in which houses could not easily be altered when a family grew in size or a building changed hands; and third, the relation between architect and client, especially the power that many architects exercised over their clients." <sup>94</sup>

At first glance, Friedman's concept does not seem to differ much from other modern architects. However, if one invests time in order to understand it, the distinction clearly shines through. As an example we can take Le Corbusier's proposal for Paris in the Twenties of the previous century. He advocated a total eradication of the city in order to build an entirely new city - a project Plan Voisin, which was basically a rebuilding plan of downtown Paris (1925). A proposition that was hailed by his contemporary colleagues, modernists, and apprentices, is nowadays regarded as an endeavor far better left immaterialized. It now serves as a case study of project better left unexecuted. The area in the city that Le Corbusier wanted to annihilate in order to be restructured and then rebuilt to fit the modernistic standards, today flourishes as a vibrant neighborhood with an extraordinary architectural importance. <sup>95</sup> Contrary to such practices Friedman believed in preservation of existing cities, which were to be enclosed with new structures. <sup>96</sup>

<sup>91</sup> cf. Awan/Schneider/Till 2013, 151.

<sup>92</sup> cf. Gaehtgens/Zelljadt 2009, 191.

<sup>93</sup> cf. Awan/Schneider/Till 2013, 151.

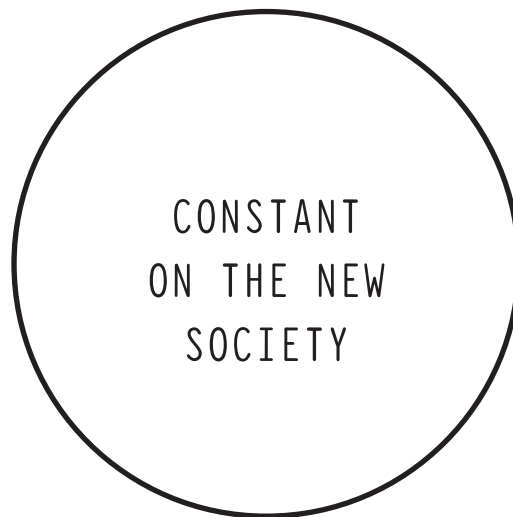
<sup>94</sup> Gaehtgens/Zelljadt 2009, 192.

<sup>95</sup> cf. Shaw, Promoting an urban vision.

<sup>96</sup> cf. Gaehtgens/Zelljadt 2009, 193.



Pic. 11



CONSTANT  
ON THE NEW  
SOCIETY

"The question, how the people would live in a society without hunger, without exploitation, and also without labour. In a society thus in which every person without exception would be able to fully develop their creativity. This important and intriguing question calls forward the image of a material environment that substantially differs from everything that we can, from everything that ever was established in the area of architecture and town-planning."<sup>97</sup>

- Constant

The Dutch artist and a member of the Situationist International, Constant Nieuwenhuys contributed one of the most prominent concepts to the new way of living in the 'New Babylon', which he had been working on for nearly twenty years. It incorporated the idea of a free nomadic lifestyle that expands through mutual control and ownership of the land. New Babylon, an interactive and dynamic social construct, depends only on the autonomous contribution of its citizens, and proposes a new character for the future environment of today.<sup>98</sup>

There are a lot of similarities between the Ville Spatiale and the New Babylon. Both are elevated from the ground and both project a similar soft color collage aesthetic.<sup>99</sup>

Friedman supported many of Constants ideas and vice versa. "In April of 1961, Friedman wrote to Constant that he 'was thrilled to find many points in common between our views' and sent some of his own articles, suggesting that they met in Paris."<sup>100</sup>

<sup>97</sup> Gyra, Constant. New Babylon.

<sup>98</sup> cf. Awan/Schneider/Till 2013, 178.

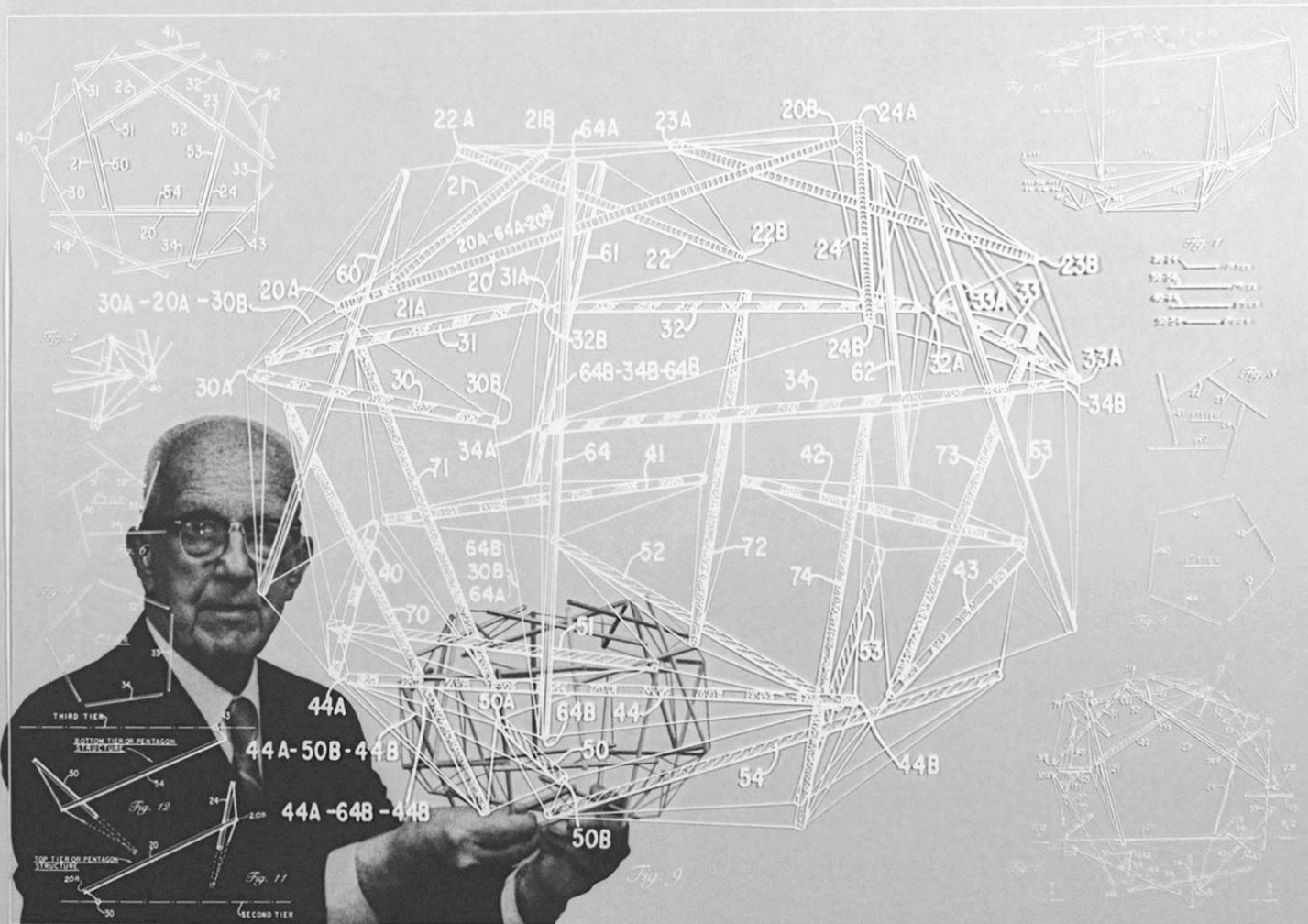
<sup>99</sup> cf. Awan/Schneider/Till 2013, 151-152.

<sup>100</sup> Wigley 1998, 40.





Pic. 12



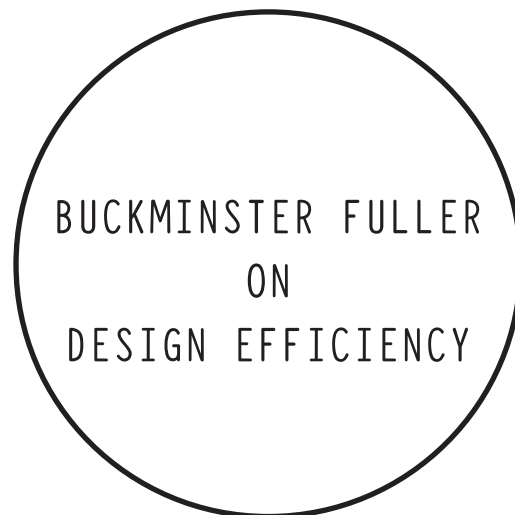
NON-SYMMETRICAL TENSION-INTEGRITY STRUCTURES, United States Patent Office no. 3,866,366, filed August 7, 1973; serial no. 385,302, granted February 19, 1975, inventor: Buckminster Fuller

Pic. 13

The utopian city of New Babylon could be described as a political, cultural, and social "deconstruction in order to create a new concept of social and cultural everyday life."<sup>101</sup>

With that, New Babylon represents an additional and influential milestone, conceptualized as a floating city, where interconnected sectors are, similar to Ville Spatiale, built over an existing city. His core idea within New Babylon, converses a nomadic way of life, where freedom is, again, of fundamental significance.<sup>102</sup>

"People are profoundly influenced by the structures they inhabit. Their lives are conditioned by the unique atmosphere of each space. To neglect the nuances of ambience is to neglect people. As the world turns into a single vast city, and an exploding, increasingly mobile population has less and less room to move, a new relationship between space and psychology is needed: 'what we lose in geometrical space we must recover in the form of psychological space.'"<sup>103</sup>



"A nomadic people is free-ranging, unsettled, and therefore open to adaptation as conditions change. Unchained from fixed horizons and habits of thought, physical and intellectual structures are dismantled in favour of exploration and experimentation. A nomadic community, organized around the principles of mobility and necessity, must be flexible and therefore non-hierarchical. Bonds formed through mutual interest can be more easily broken than when society is confined by economic, racial or class imperatives."<sup>104</sup>

<sup>101</sup> cf. Gyra, Constant. New Babylon.

<sup>102</sup> cf. Gyra, Constant. New Babylon.

<sup>103</sup> Wigley 1998, 9.

<sup>104</sup> Hughes/Sadler 2013, 121.

Buckminster Fuller proposed what can be best described as a social revolution.<sup>105</sup>

In the 1940s, Fuller considered that the earth's space and its resources would eventually be outgrown by the ever rising population count. He began to experiment with architectural ideas which would lessen the consumption of natural resources and the space given to us by nature.<sup>106</sup>

"Buckminster Fuller dedicated his life to solving the problems of humanity, and the geodesic dome could be said to be his greatest achievement to that end. As a structure that is resource and energy efficient as well as structurally sound, the geodesic dome has potential to change the way the world looks at building design."<sup>107</sup>

He was interested in spherical geometry, the knowledge of which he used in explaining several parameters of the geodesic dome that would benefit the new design. Fuller began with the nature of a dome, clarifying that it consumes the least amount of material to be used to enclose a space. A geodesic dome is 30% more efficient than a box. Another one of its benefits is its smooth aerodynamic form, which, in case of a strong wind, would simply divert it around the structure, as opposed to allowing it to blow directly into it. A destructive force of an earthquake would not likely damage a dome because of the equal distribution of stress in a dome's design. What is more, the energy efficiency in terms of its shape, is reflected in that only one third of its surface is exposed to the environment.<sup>108</sup>

On the subject of floating habitats, Fuller categorized the geodesic cities in three groups; the first group of cities was to be placed within the safety of a harbor, the second one was meant to float in semi-protected areas like the deep seas, and the last group was to be submerged into the sea. Because his vision was ahead of time, Fuller did not succeed in realizing these projects.<sup>109</sup>

His ambitious vision of the new way of life can most certainly serve as a guideline for future designs and also as an important case study. Due to its character, it should be considered whenever an attempt a creation of new habitat takes place.

<sup>105</sup> cf. Hughes/Sadler 2013, 120.

<sup>106</sup> cf. Gore, Geodesic Domes.

<sup>107</sup> Gore, Geodesic Domes.

<sup>108</sup> cf. Gore, Geodesic Domes.

<sup>109</sup> cf. Olthuis/Keuning 2010, 271-272.



Pic. 14



## THE PIONEERS



## VINCENT CALLEBAUT

The project that is described by most experts as phenomenal still rests on paper. Lilypad's detailed design is already ready to be materialized.

An acclaimed architect, Vincent Callebaut, created Lilypad as an idea against climate change. It is envisioned entirely as a self-sufficient city that would float on sea and harbor an estimated 50,000 residents.<sup>110</sup>

According to his claims, the water level will rise from 20 - 90 cm by the end of this century, thus affecting a populous of over 50 million people.<sup>111</sup> If the sea level should rise for more than two meters, the number of those affected would rise to 300 million people needing to leave their homes. Callebaut suggests that the next logical step would be moving elsewhere than deeper into the land, where the water could eventually reach them again.<sup>112</sup>

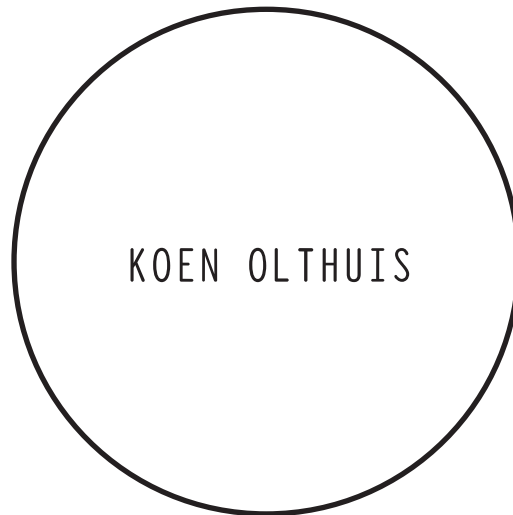
<sup>110</sup> cf. Inhabitat, LILIPAD: A Floating City for Climate Refugees.

<sup>111</sup> cf. Callebaut, Lilipad, A Floating Ecopolis For Climate Refugees.

<sup>112</sup> cf. The Critical Architect, The Lilypad City - A Big Floater.



Pic. 15



"Save the world, build on water, that is Koen Olthuis' core business in a nutshell."<sup>113</sup>

Koen Olthuis is an industrial designer and architect who completed his studies at the Delft University of Technology. In 2007, he was listed as the 122nd most influential person in the world by Time Magazine. He ranked higher than fellow architects like Zaha Hadid, Jean Nouvell, and Rem Koolhaas. His work incorporates the problems of climate change and a response to it with floating architectural constructions.<sup>114</sup>

In 2002, Olthuis founded Waterstudio.NL, which was the first architectural firm dealing solely with life on water.<sup>115</sup>

"Living on water is a relatively new development in urban design. Very few architects and urban designers are involved with the subject fulltime. (...) It's just like the Internet. In the beginning, its development was dependent on small groups of computer nerds, who together changed the world by constantly inventing new applications."<sup>116</sup>

Coming from a bloodline of shipbuilders, Art Nouveau architects, and engineers, Koen is used to the ideas of floating cities as well as their construction, and gained most of his experience with working in native Holland.<sup>117</sup>

To the question of why he builds on water he responds by stressing the issue of the ever-growing occupied space, meaning that the distribution of the population and their resources are out of balance. His solutions are 'customized environments' on locations that are still considered as uninhabitable.<sup>118</sup>

<sup>113</sup> Metz, The city of tomorrow may be built on water.

<sup>114</sup> cf. Waterstudio.NL, Vision.

<sup>115</sup> cf. Olthuis/Keuning 2010, 4.

<sup>116</sup> Olthuis/Keuning 2010, 113.

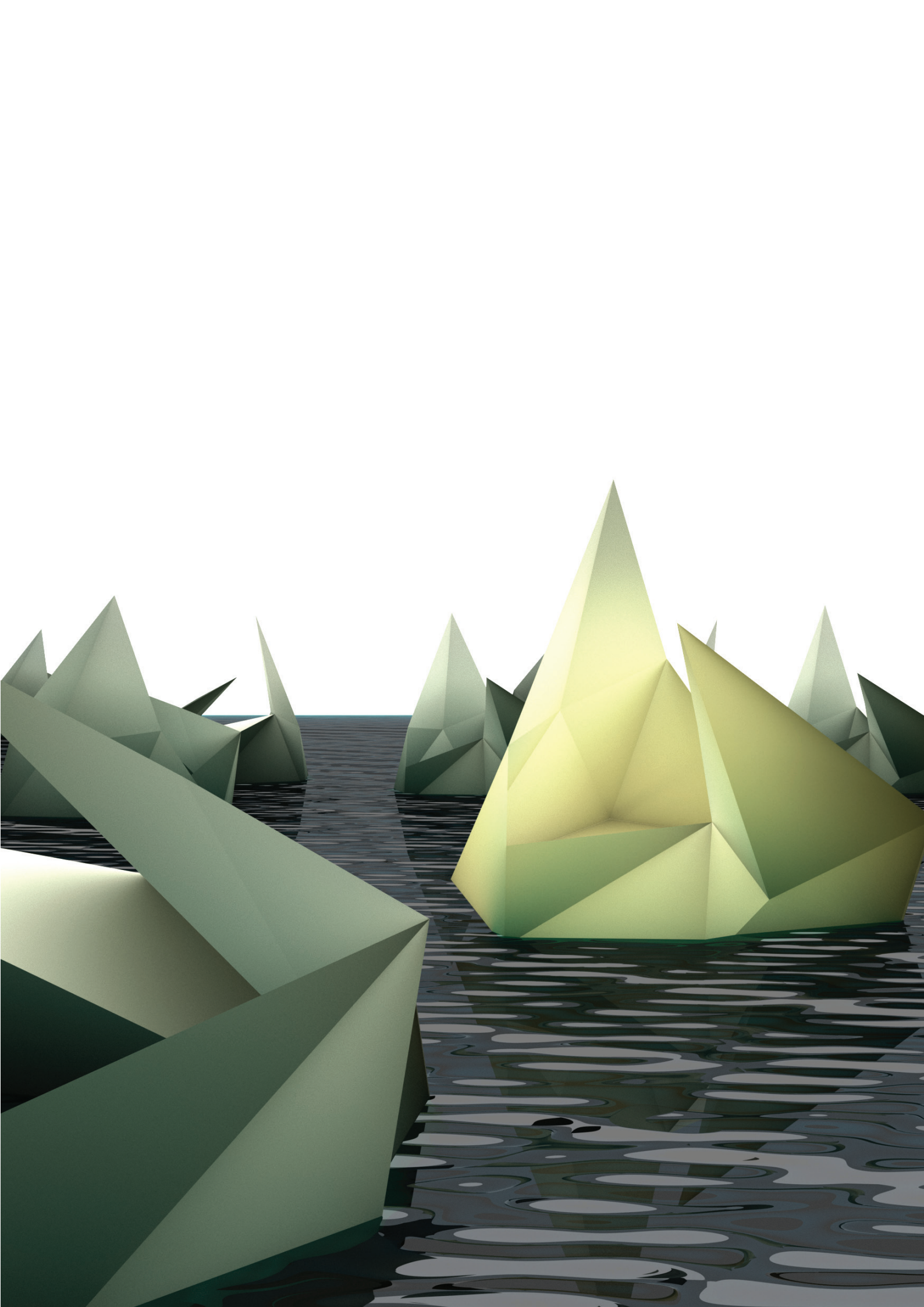
<sup>117</sup> cf. Olthuis/Keuning 2010, 9.

<sup>118</sup> cf. ArchDaily, Oceanic Living: Floating City Apps / Koen Olthuis.





Pic. 16





THE CONTRIBUTION

"Most metropolises are short of space but have more than enough water." <sup>119</sup>

In order to understand the human willingness to develop, shift, and assimilate, it is easier to look at aspects of change, described in previous chapters, practically.

In my project I seek out the resources nature has to offer, setting it symbolically 36 years in the future as a great milestone for change. I hope that years leading up to 2050 give us enough time not only to plan efficiently but to understand the problems of our living environment better.



I isolated a single module out of the concept of several, forming a new kind of society. Its aim is to clearly present such living space-entity. The module becomes a mobile unit, which constructs a design of experience.

When I was thinking about the restrictions in the world today, it became clear to me that we've created a system which, from an outside point of view, may

<sup>119</sup> Olthuis/Keuning 2010, 61.

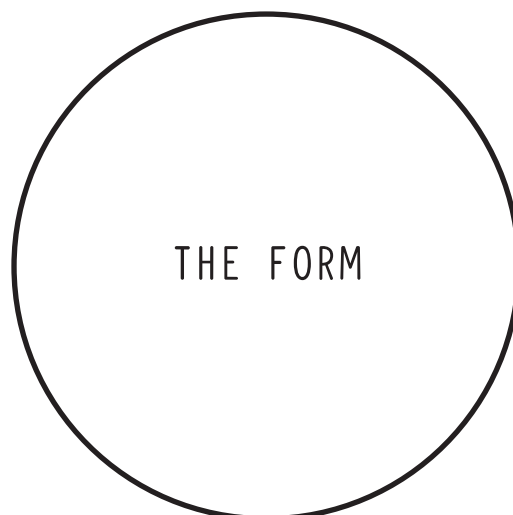
look arbitrarily fictitious - it makes sense that in order for people to form communities, a set of rules based on values had to be installed. From communities came towns that eventually lead to countries, be it a product of common culture, religion, or other denominator. However, since it is a man, to put it bluntly, who created it, the system is not devoid of errors. Besides, as time progresses and conditions in the world alter, so does a system, or better yet, a segment of the system that has to adapt accordingly.

But in a world of civilization and a long history of hard embedded rules, norms, guidelines, laws, taxes, etc., how can an individual influence a change? How can one incite a transformation of a set belief of habitat environment?

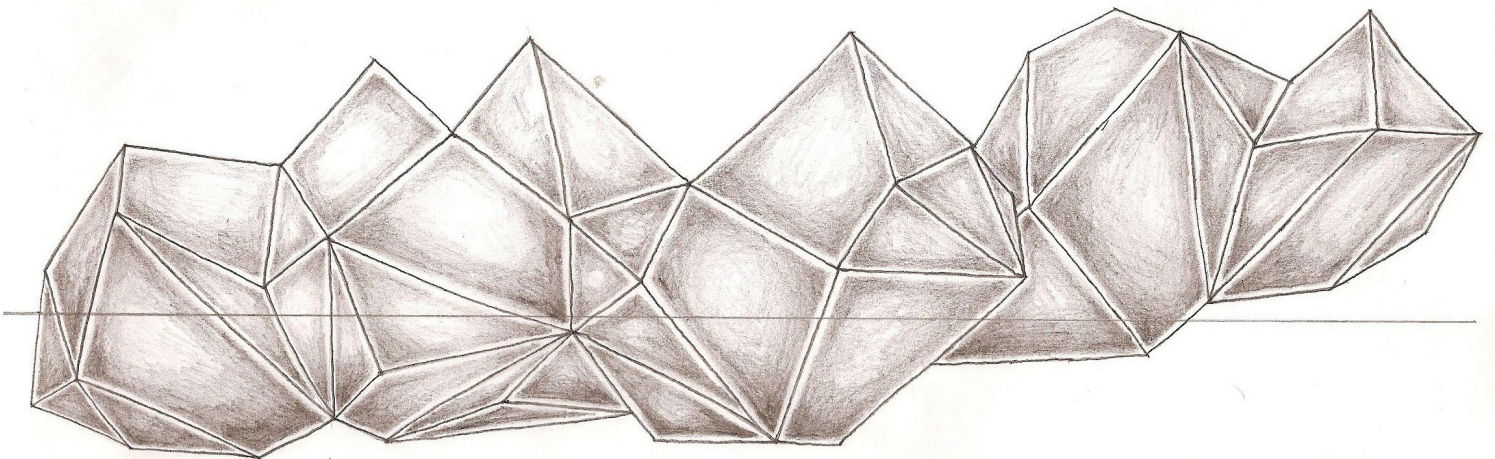
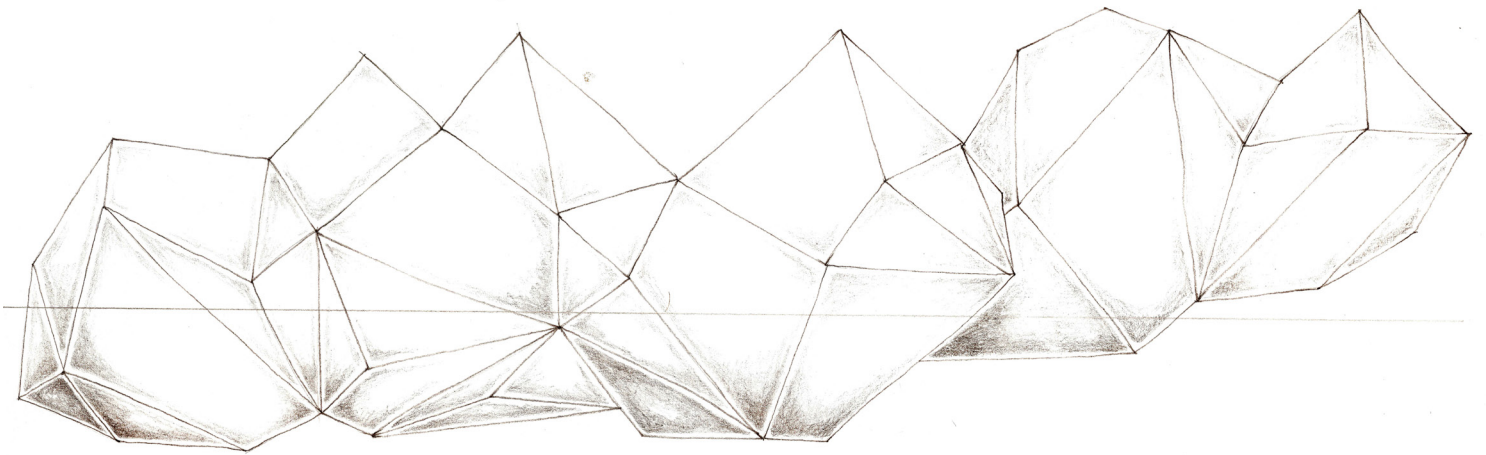
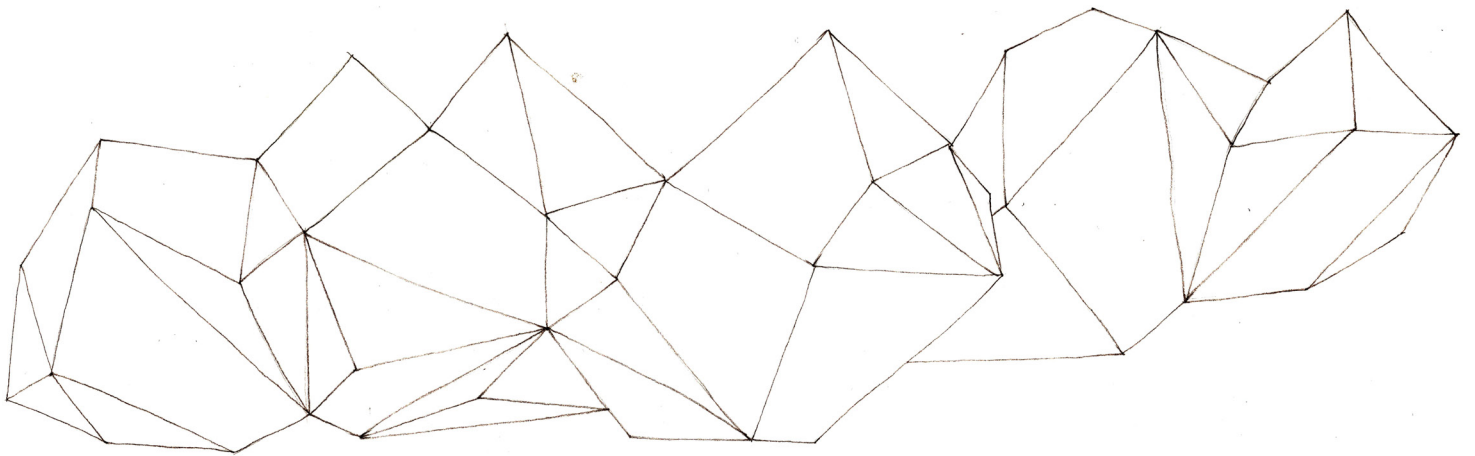
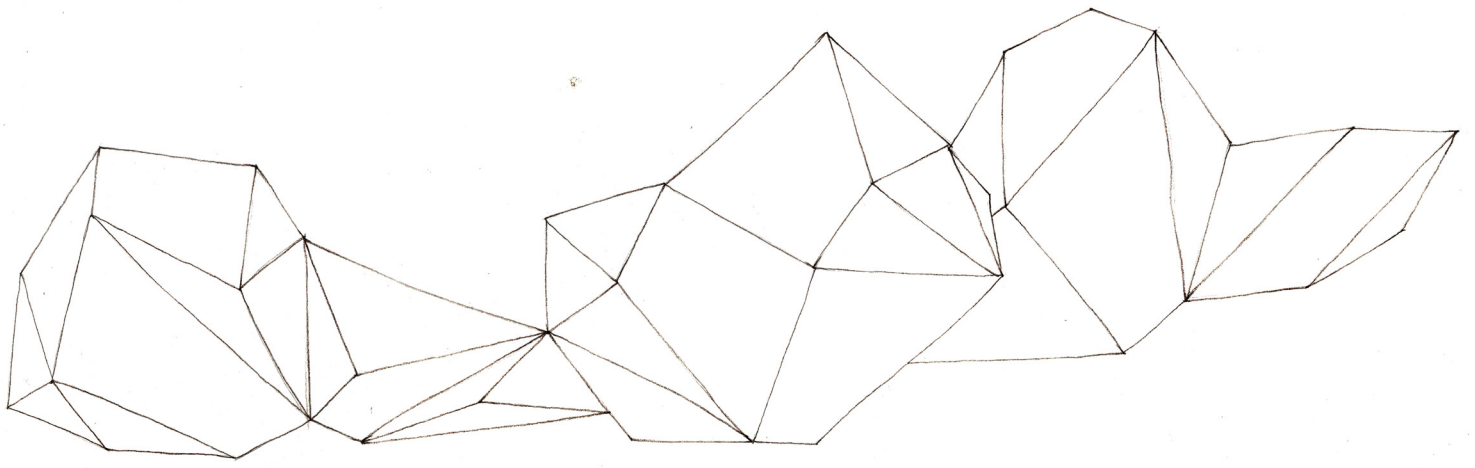
To be able to solve this riddle, I focused on the notion of freedom. And where else to find it than in a 'no man's land'? The sea does not have official proprietors, it is therefore a non-dependent off-the-grid space, a white canvas for great ideas for a new habitat without meddling with its own habitat ritual. The modules and its terrestrial refugees can search for a new life in a no man's land.

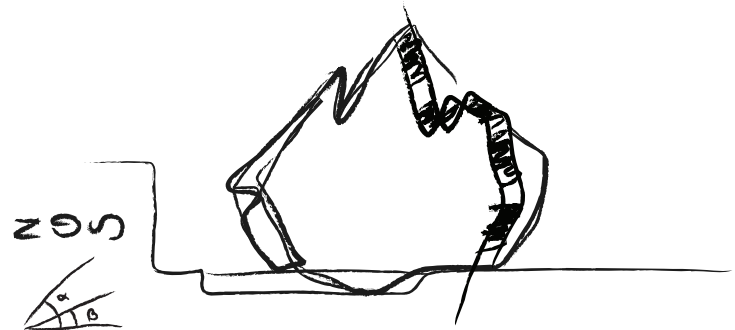
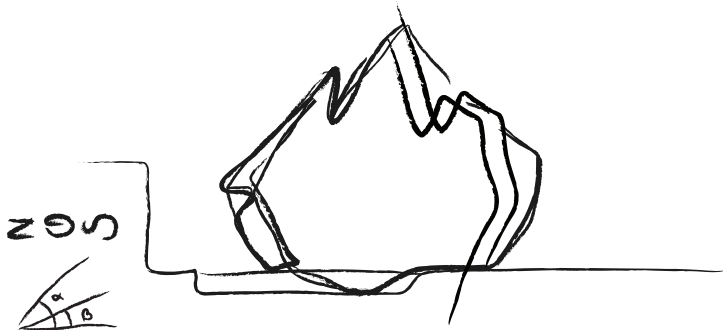
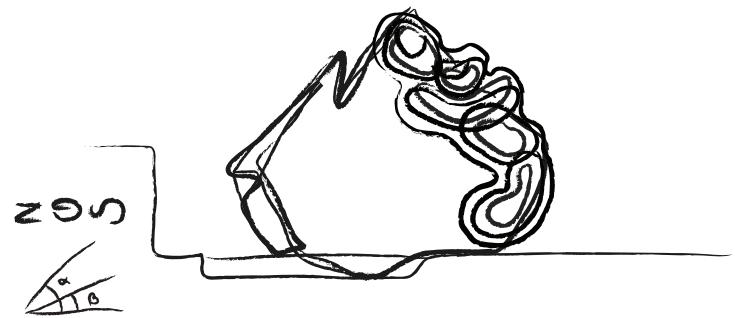
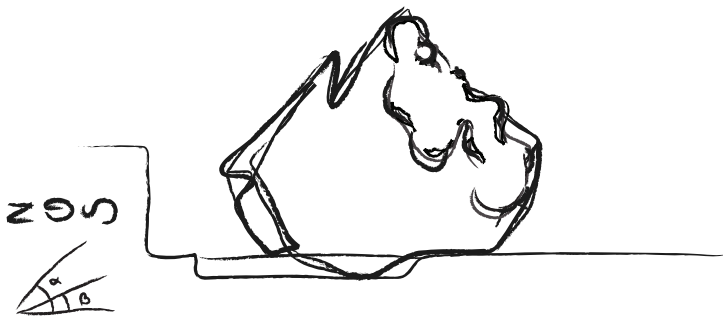
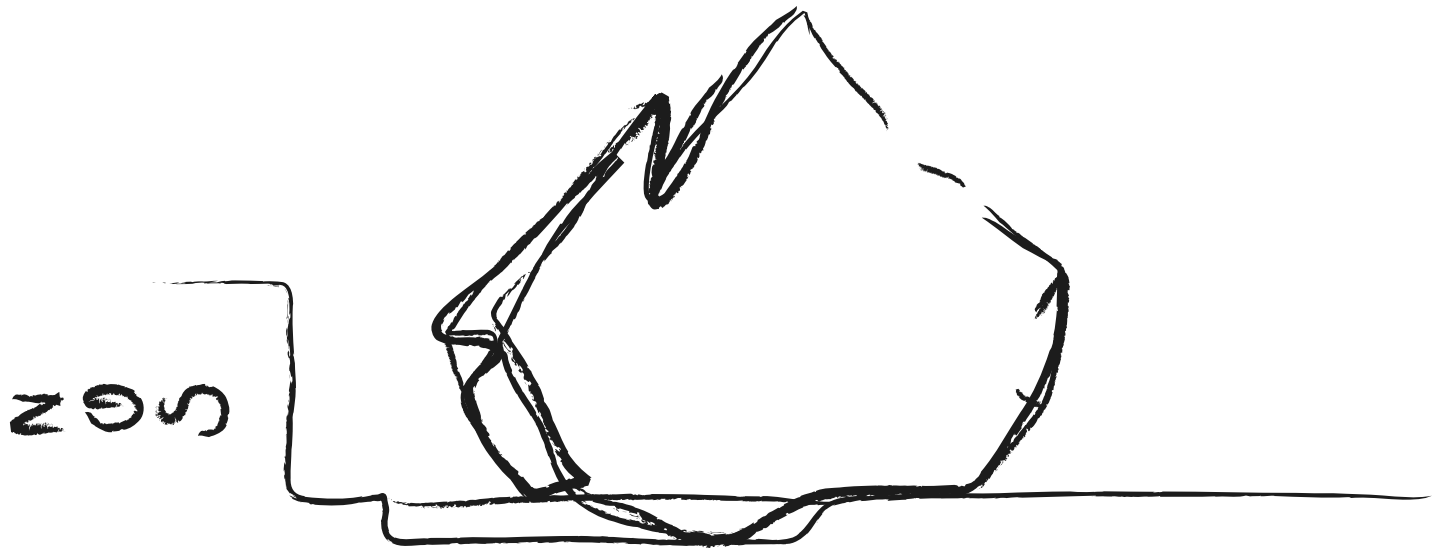
A module is able to join other floating modules in a completely organic unification. It can also split whenever its populous see fit.

To construct a prototype module that could, in its basic form, encourage its inhabitants to design their own surroundings to be able to avoid aesthetical staleness and to further engrave the notion of freedom, led this project to completion.



When an idea of Buckminster Fuller's obsession with the sphere conjured up in my mind, I felt inspired and commenced an idealization of a form that would easily assimilate to the life on water. As Fuller's geodesic domes, so should my form be able to incorporate all parameters relevant to its purpose.





In this project I saw beauty in crystals. It is said that the growth of a crystal is defined by a geometrical motion of steps based on time sequence. Not all crystals grow alike. The perfect crystal grows slowly, while a real crystal grows rapidly, and water among other resources are a huge factor in their growth process.<sup>120</sup>

With challenges we are facing, this factor – a shape – is an important one. A structure needs to be adaptable, mirroring the human's willingness to adapt to new ways of living. It needs to be interchangeable, expandable, and even destructible at any time.

The symmetry of a crystalline form can be best observed when it's embodied in its space group.<sup>121</sup> This harmonizes the module's versatility and also one of its main functions – forming communities that evolve into societies without harming the aesthetic of multiple-module construct or the aesthetic of a single entity.

When I finished the first sketch for this project, I understood that the expansion factor defined the process. As shown in the enclosed picture, it is boundaries that characterized a further development. The factors for the sketched design for the development were solar rays. With that, the shape grew skyward, leaving a gap on the top so that the sun could reach all corners of the interior at some point of the day – on a clear weather. The gap at the top indicates that the design was actually meant to be hollow. By gradually giving the sketch a body and preserving the progress by photographing the steps, a physical perception of the material occurred to me. During the process of sketching, I was confronted by a dilemma of leaving the arrangement as a monumental composition, where a needed space would simply be carved out. However, in the following stages of development it became clear to me that such a dense structure could harm its airy and delicate appearance.

"Beauty is that reasoned harmony of all the parts within a body, so that nothing may be added, taken away, or altered, but for the worse. It is a great and holy matter, all our resources of skill and ingenuity will be taxed in achieving it; and rarely is it granted even to Nature herself, to produce anything that is entirely complete and perfect in every respect."<sup>122</sup>

- Alberti

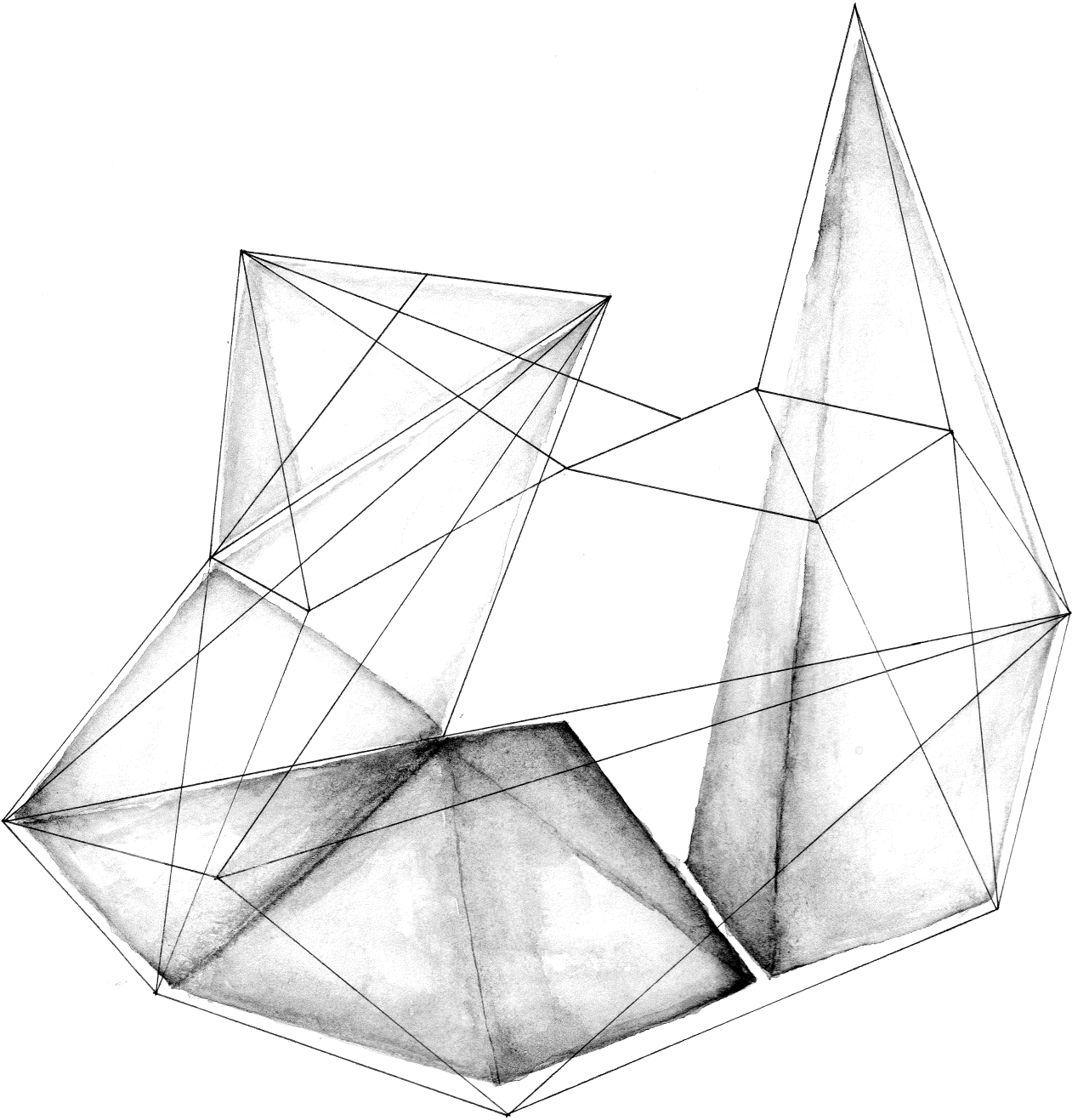
Applying aesthetics into the design, which was well described by Leon Battista Alberti in his book 'De re aedificatoria', and by keeping the Vitruvian beliefs in mind, the design of this project reached back to the archetypal notions of the human, nature, and habitus interrelationship.

<sup>120</sup> cf. Dhanaraj i.a. 2010, 4.

<sup>121</sup> cf. Dhanaraj i.a. 2010, 4.

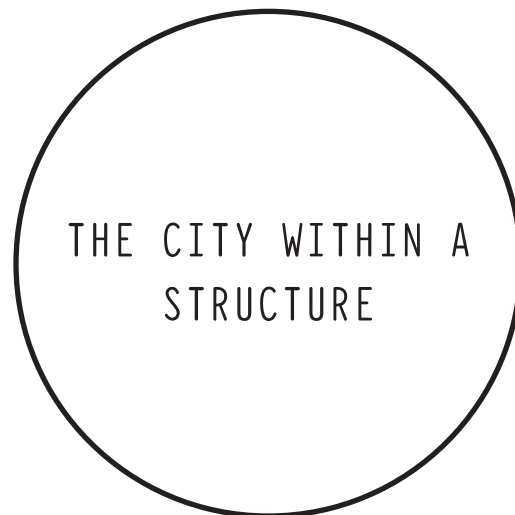
<sup>122</sup> Alberti 1991, 93-94.





"Beauty is a form of sympathy and consonance of the parts within a body, according to definite number, outline, and collocation, as dictated by concinnitas, the absolute and fundamental rule in nature. This is the main object of the art of building, and the source of her dignity, charm, authority, and worth."<sup>123</sup>

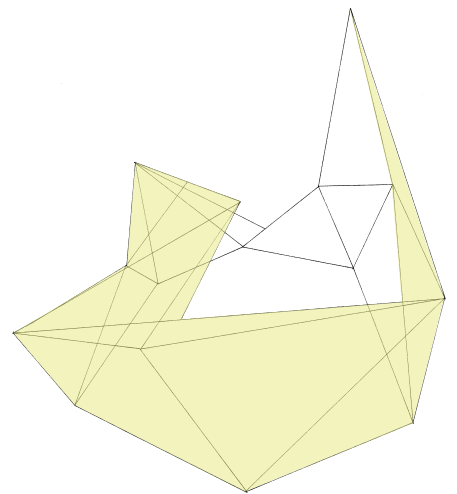
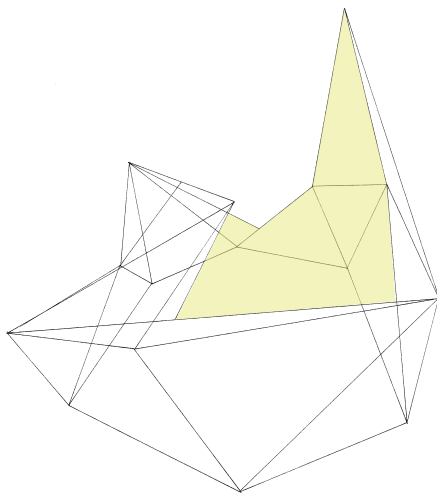
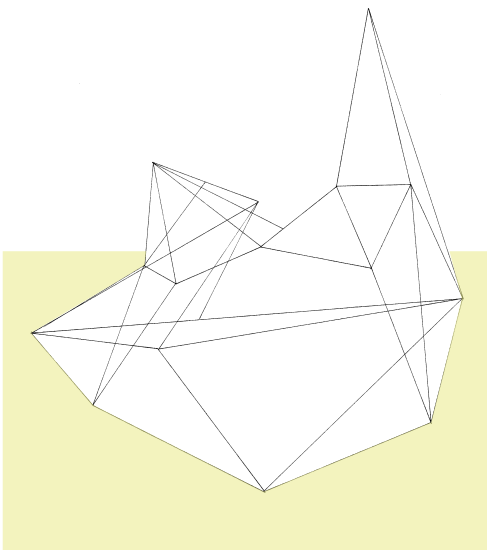
- Alberti

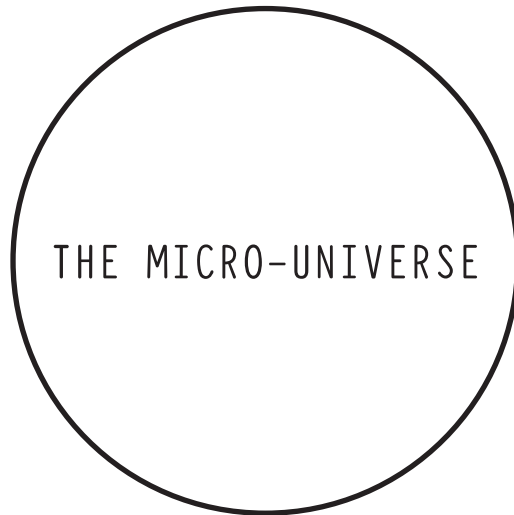


A structure, as the one presented in this project, should be able function like a city. It is built to prevent social and political imprisonment, hyper-consumption, waste, segregation, pollution, and ecological catastrophes.

The challenge was to assure the capability to do so and to additionally provide occupants and workers with quality conditions and space to live in. Because of the problems of designing a quality place of this character, having a background in extreme situations, every parameter had to be thought through and implemented in the best possible way. When building such a structure it becomes a mechanism. It is no longer a defined type of a building; it rises above the meaning of the definitive term by becoming a broader one.

<sup>123</sup> Alberti 1991, 302.

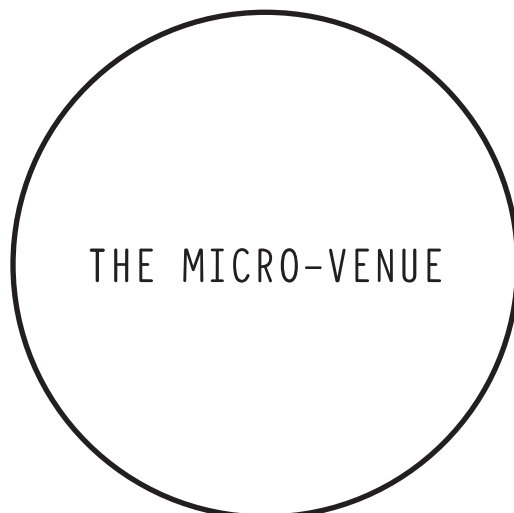




## THE MICRO-UNIVERSE

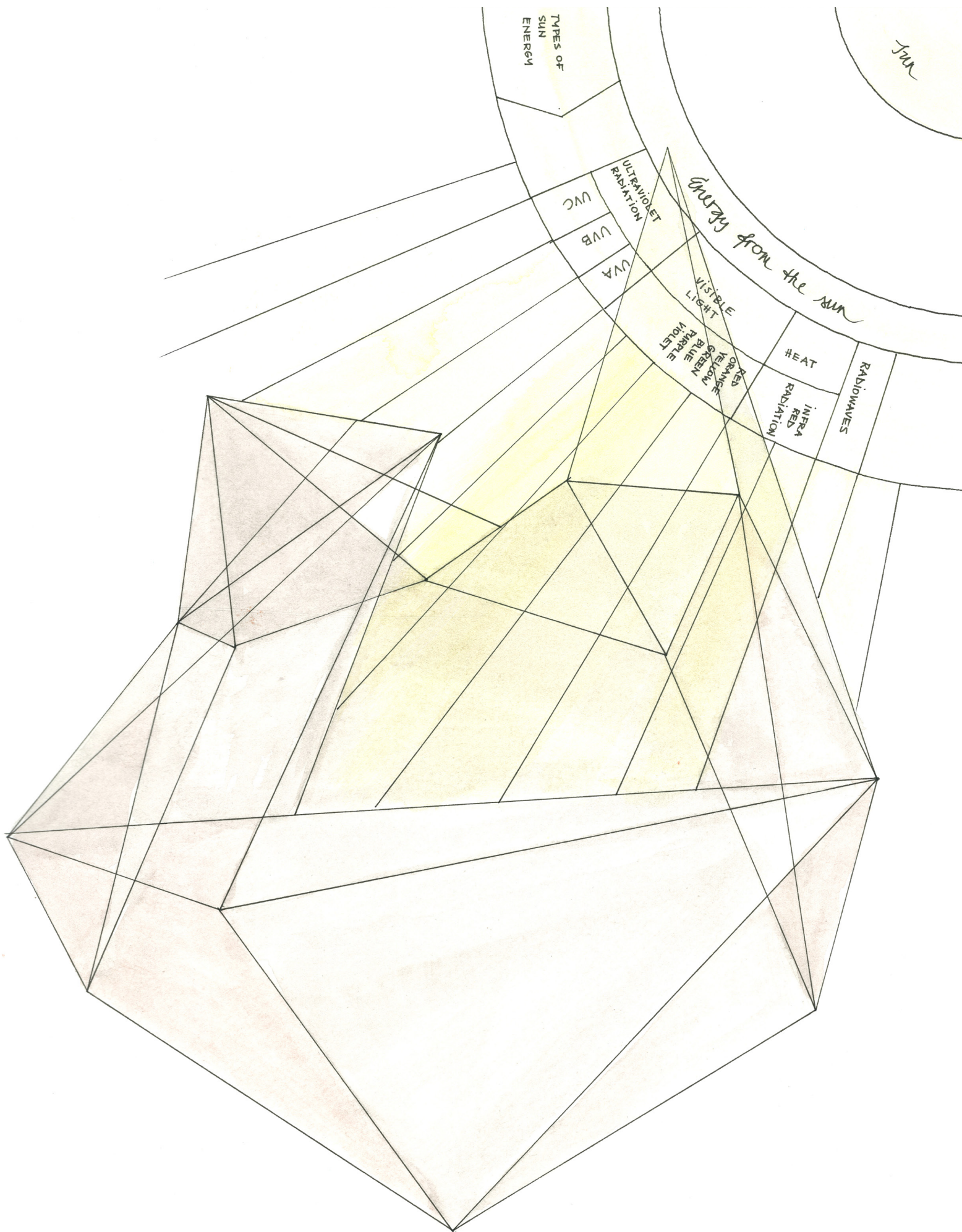
It is crucial to think about the organization. With the dilemma of whether the modules should be mono-, or multi-functional, I embarked on the final stages of the project. Since modules need to be able to merge with one another, it was imperative to insure that every following step during the development provided the same ratio of functions. With that, one can prevent weak points within the complex, or any other possible shortcomings. When I imagined the very first inhabitants moving into the first module, I knew that self-sufficiency is key, which means that the system of expansion would have to be programmed so that it meets the entirety of people's needs.

Every module is set to be a multi-functional micro-universe pertaining to basic segments of a normal living situation. The idea was to include an ensemble of capacities so that in hypothetical circumstances every person could be bound to the interior of one of these modules and not only survive, but also live a quality life within the confinement of its walls and no outside assistance.



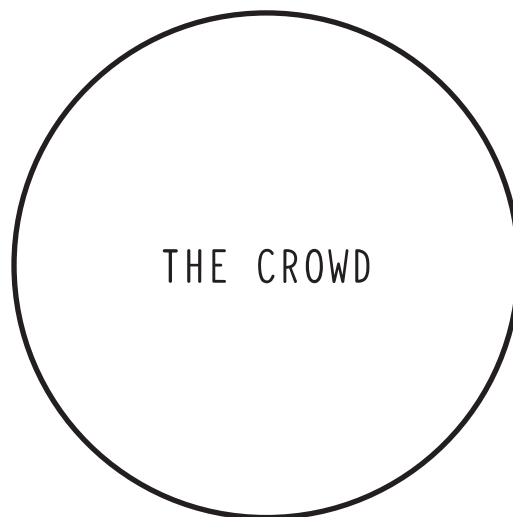
## THE MICRO-VENUE

The placement of each function within the module depends on its needs of height, sunlight, view, circulation, and accessibility. It is mandatory to secure the appropriate and optimized position of sociological and agricultural performance in the module. The sections representing the



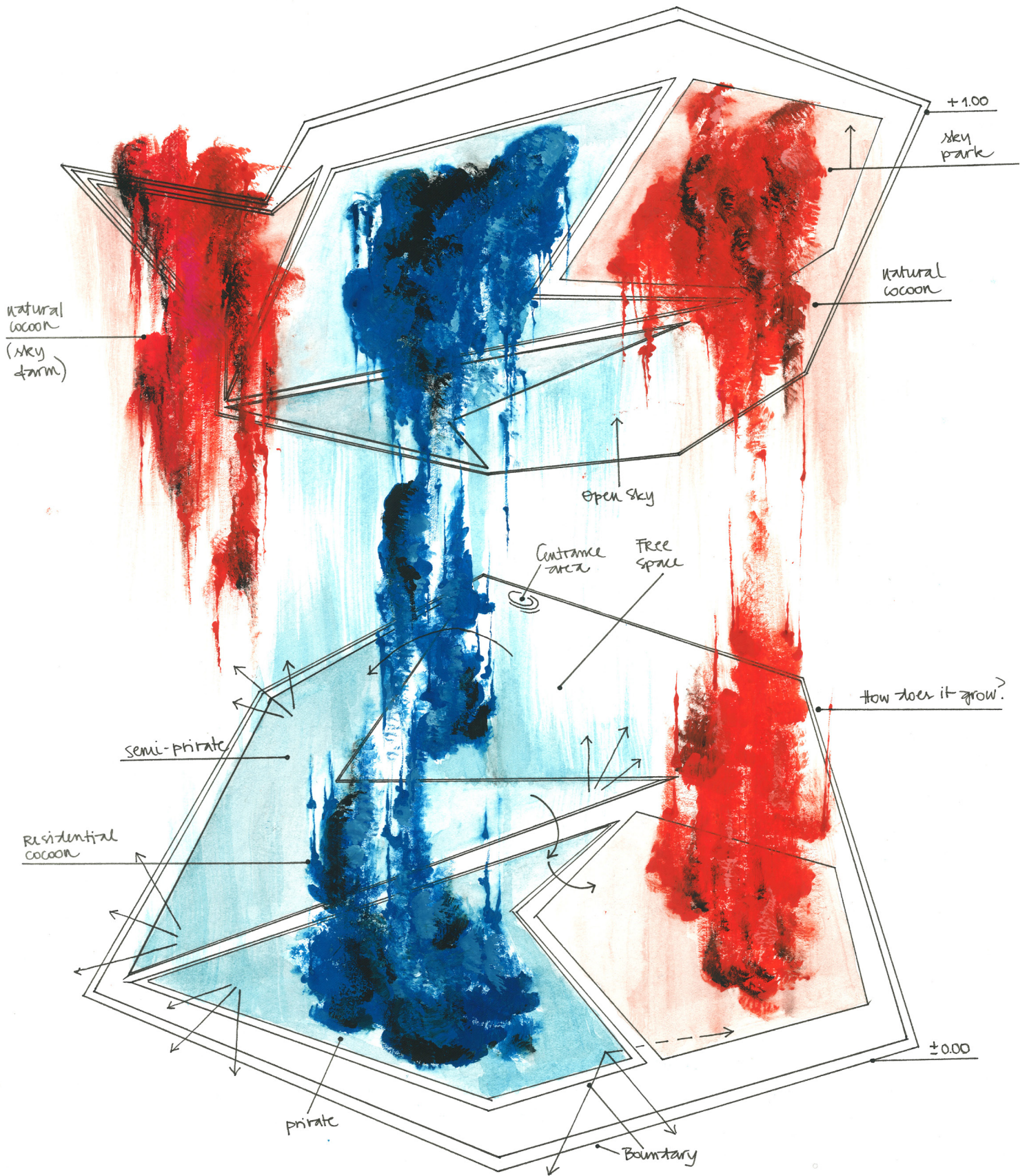
functions are distributed throughout the entire module. The agricultural section takes one position, while all of the other functions move to the other side. Agricultural section is solved purposefully and very efficiently with the vertical farms that can blossom on sunrays while facing upward to the sky.

The first sketches illustrate how this thought process helped me figure out how to organize the function and define their look precisely. They showcase a distinctive contrast between the organic flow and a fractal arrangement. While the organic aesthetics could mirror the living interior, the fractal ones could be able to blend in the boundaries of the module and thus reflect the adaptability and harmony of the module as an entity.



The project tackles the issue of overcrowding with its adaptable properties. The module's ability to unify with other modules promises future residents a home, while at the same time leaves a land on Earth intact - it stretches horizontally only when it reaches its vertical limit - thus ensuring efficiency and sustainability which meet the new worldly restrictions.

Given the module's location, it does not disturb the environment. Acknowledging the fact that overcrowding is a serious matter, I strive for a quality usage of the module's space by not limiting it or deciding prematurely to expand too abruptly. It expands when and if it is absolutely necessary. The production of modules would be based on an assumption that the world's population will grow rapidly, thus ensuring sustainability of its promises and preservation of the Earth as a homogenous being. The structure will expand solely on a parallel level.



Sketch: Study of the mass. 67



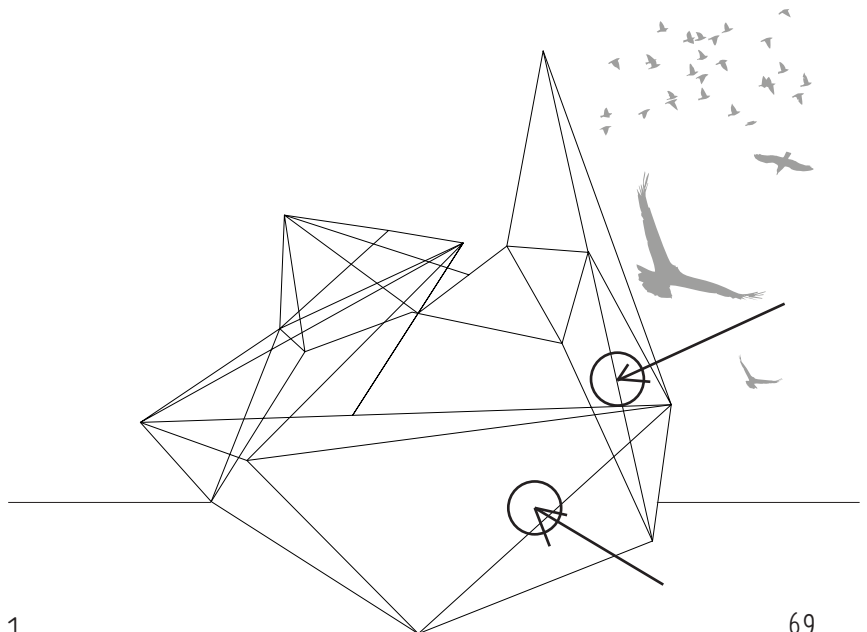
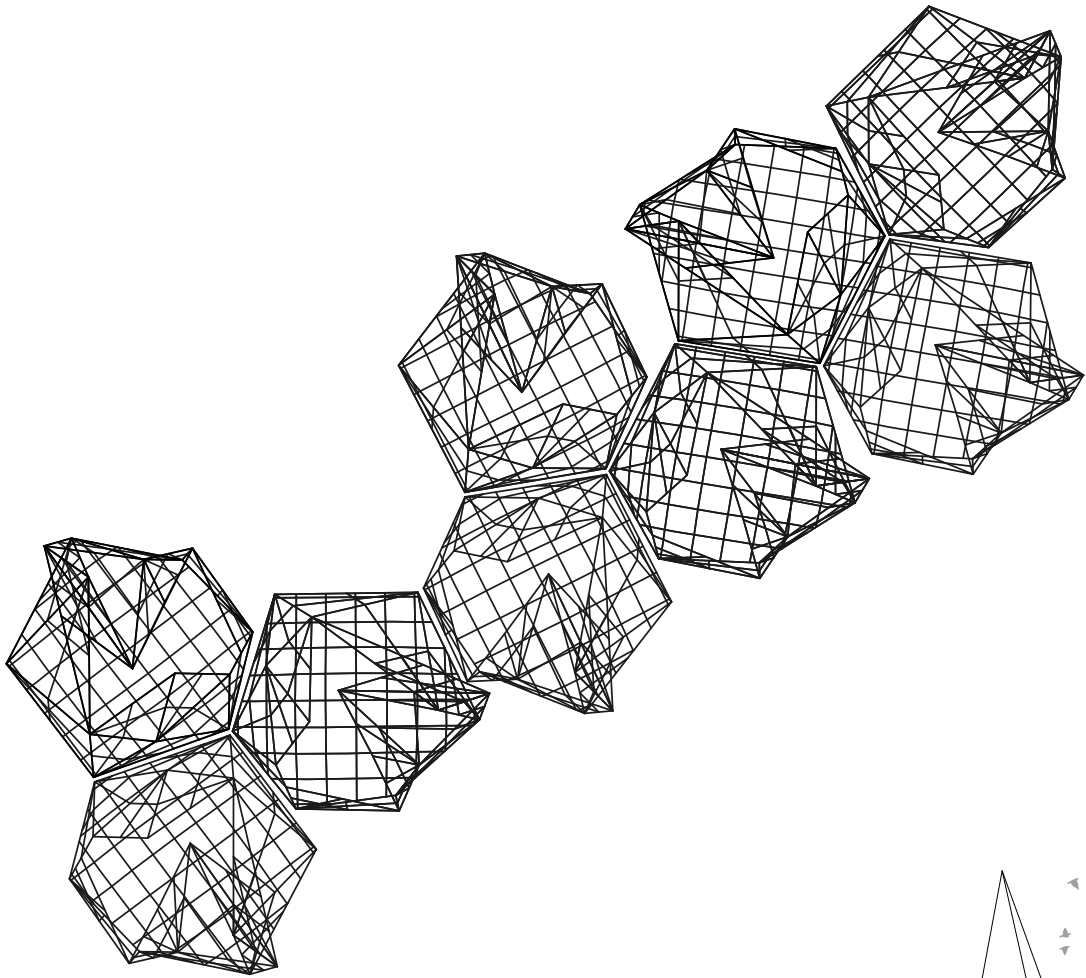
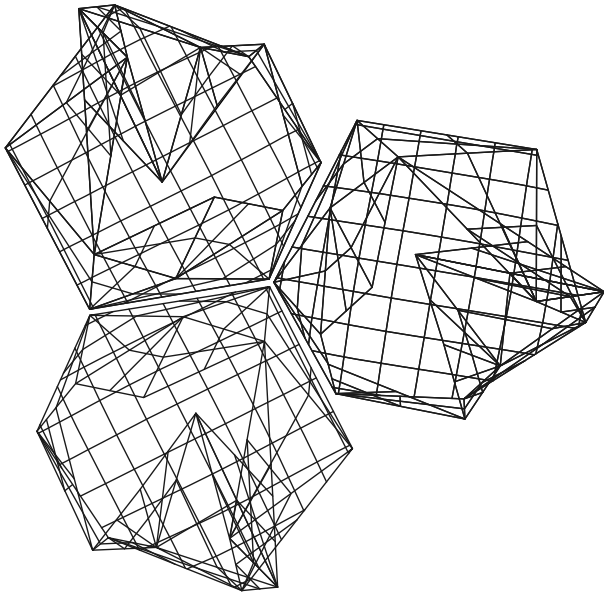
## HARVESTING IN THE MODULE

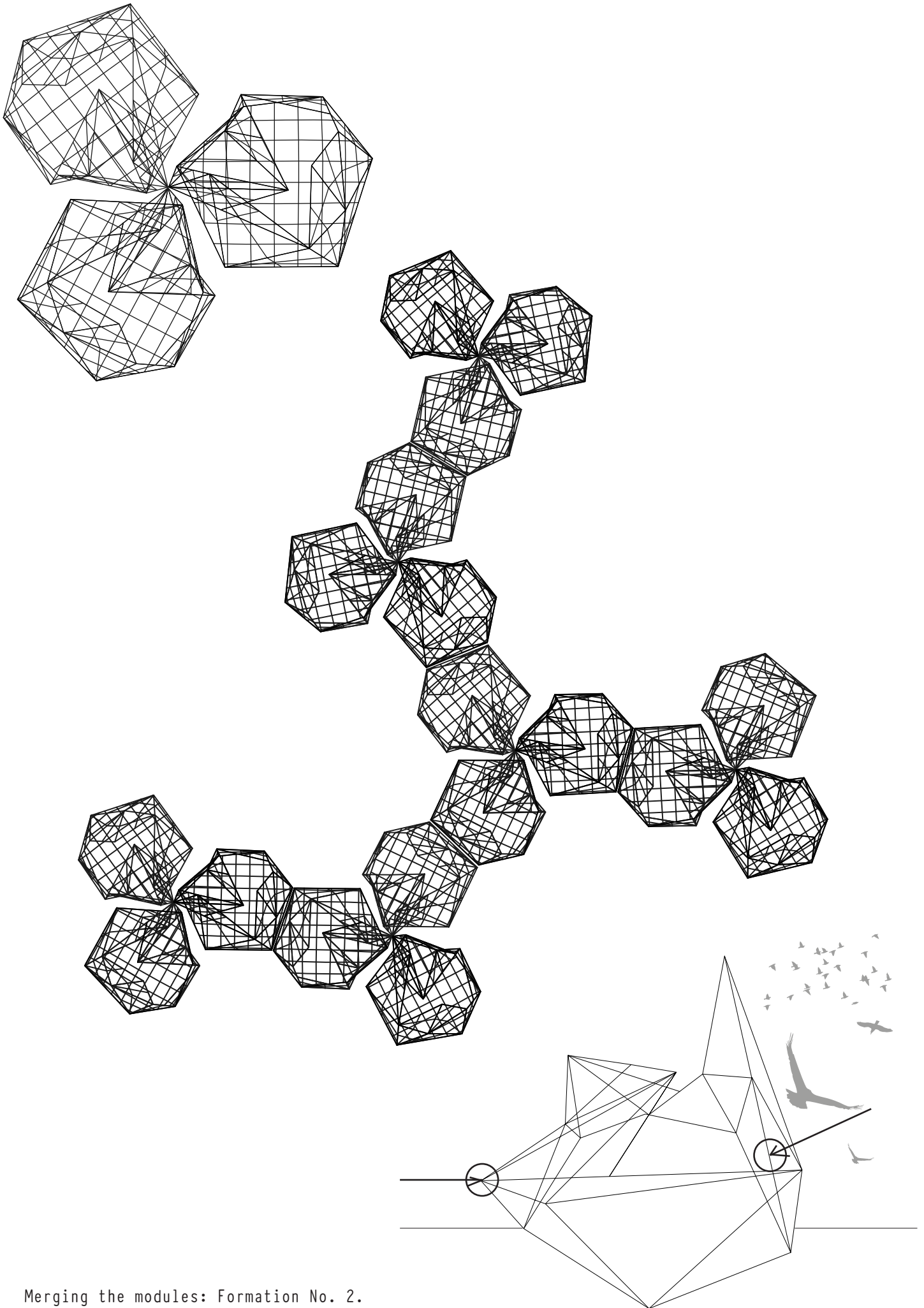
We struggle to imagine how much space we need to survive, because the production fields are usually far away, in a scarcely inhabited rural areas, with the majority of food being imported from distant countries. This is why we have a hard time relating to the scale to truly understand its proportions. The vertical farm included in every module is a system which could be described as a 'hanging garden'.<sup>124</sup>

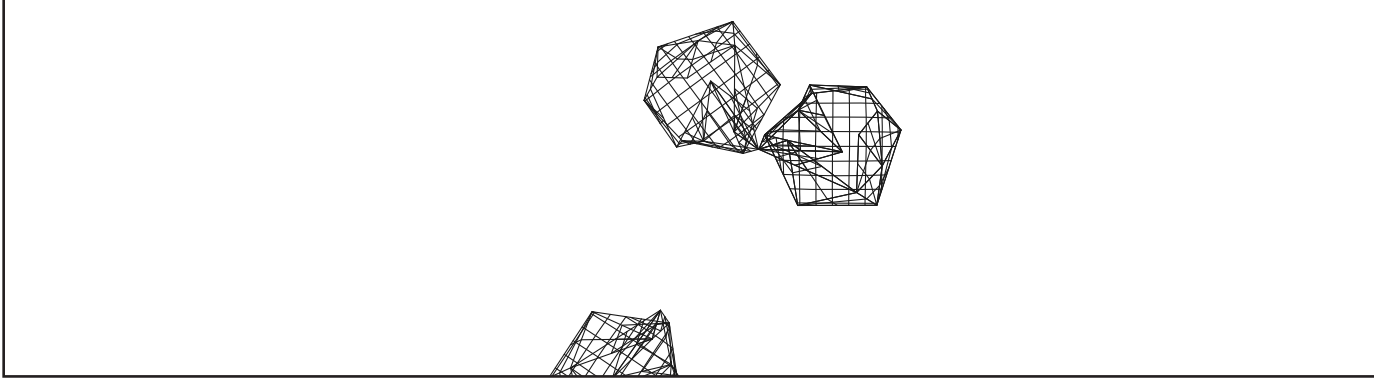
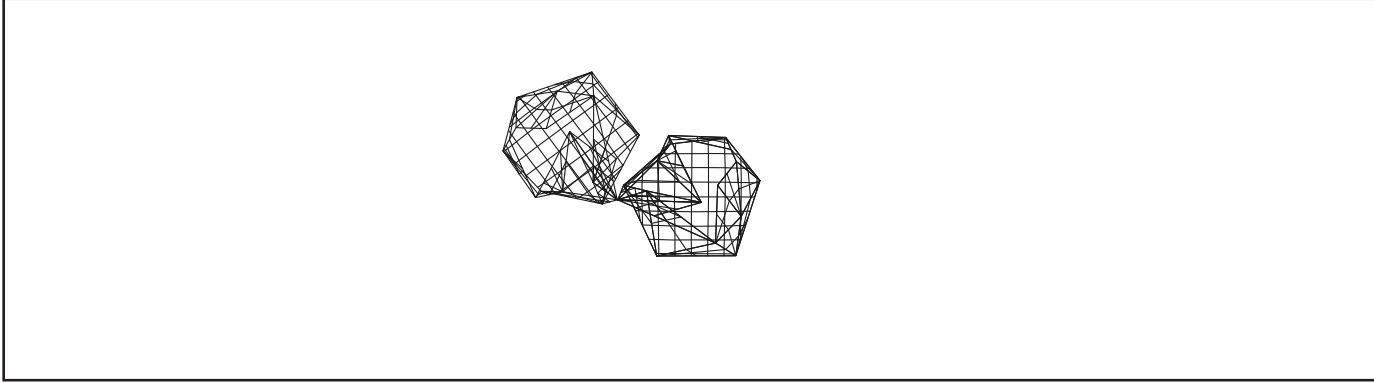
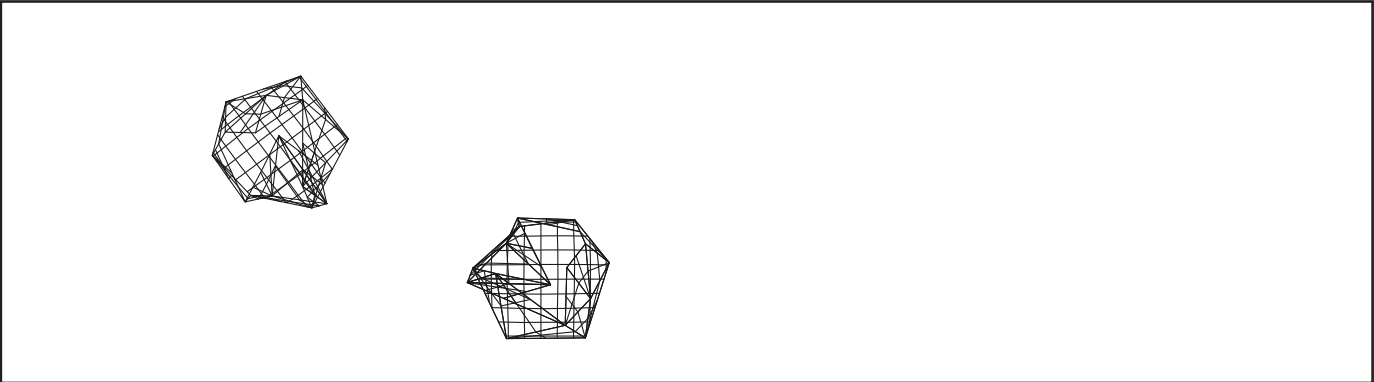
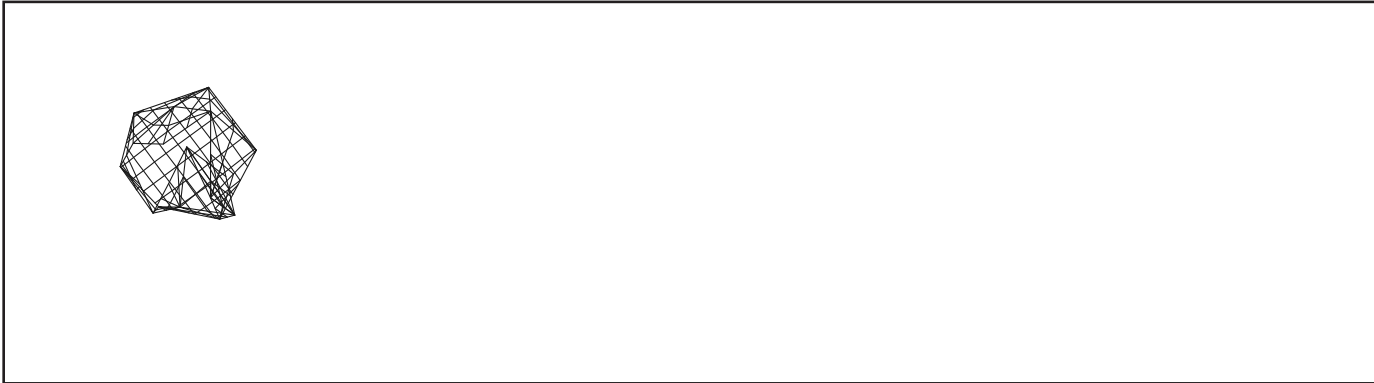
The arrangement consists of wired-blocks that reach through the complex. The intention and challenge was to insure that the plants in the vertical farm had enough sunlight in all the corners. That is why the structure is orientated based on the flow of sunrays in all seasons.

<sup>124</sup> cf. Bardot, Bringing back the hanging gardens of Babylon.





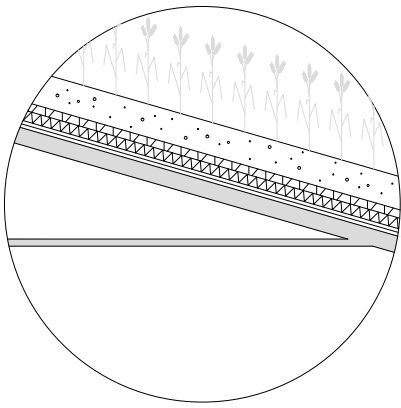
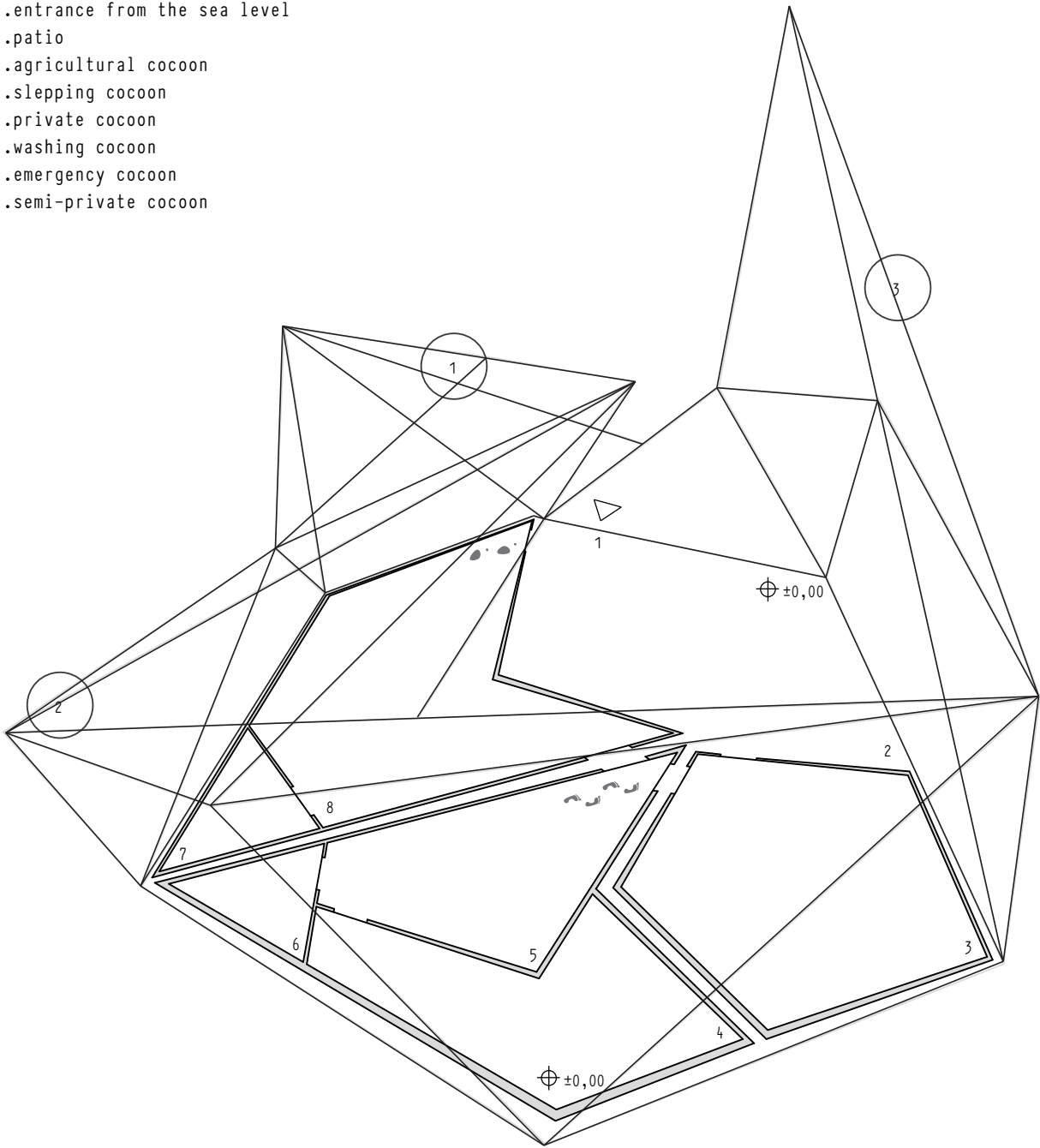




# FLOORPLAN

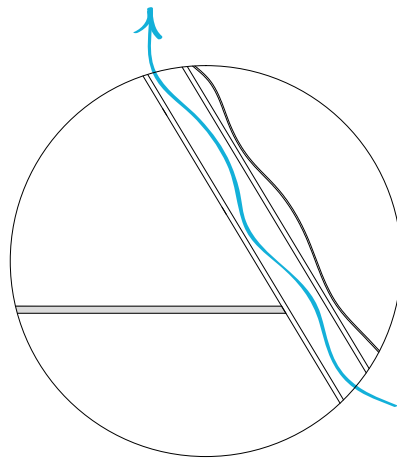
## LEGEND:

- 1...entrance from the sea level
- 2...patio
- 3...agricultural cocoon
- 4...sleeping cocoon
- 5...private cocoon
- 6...washing cocoon
- 7...emergency cocoon
- 8...semi-private cocoon



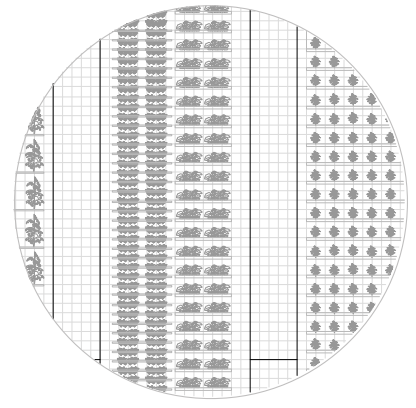
1

roof crops



2

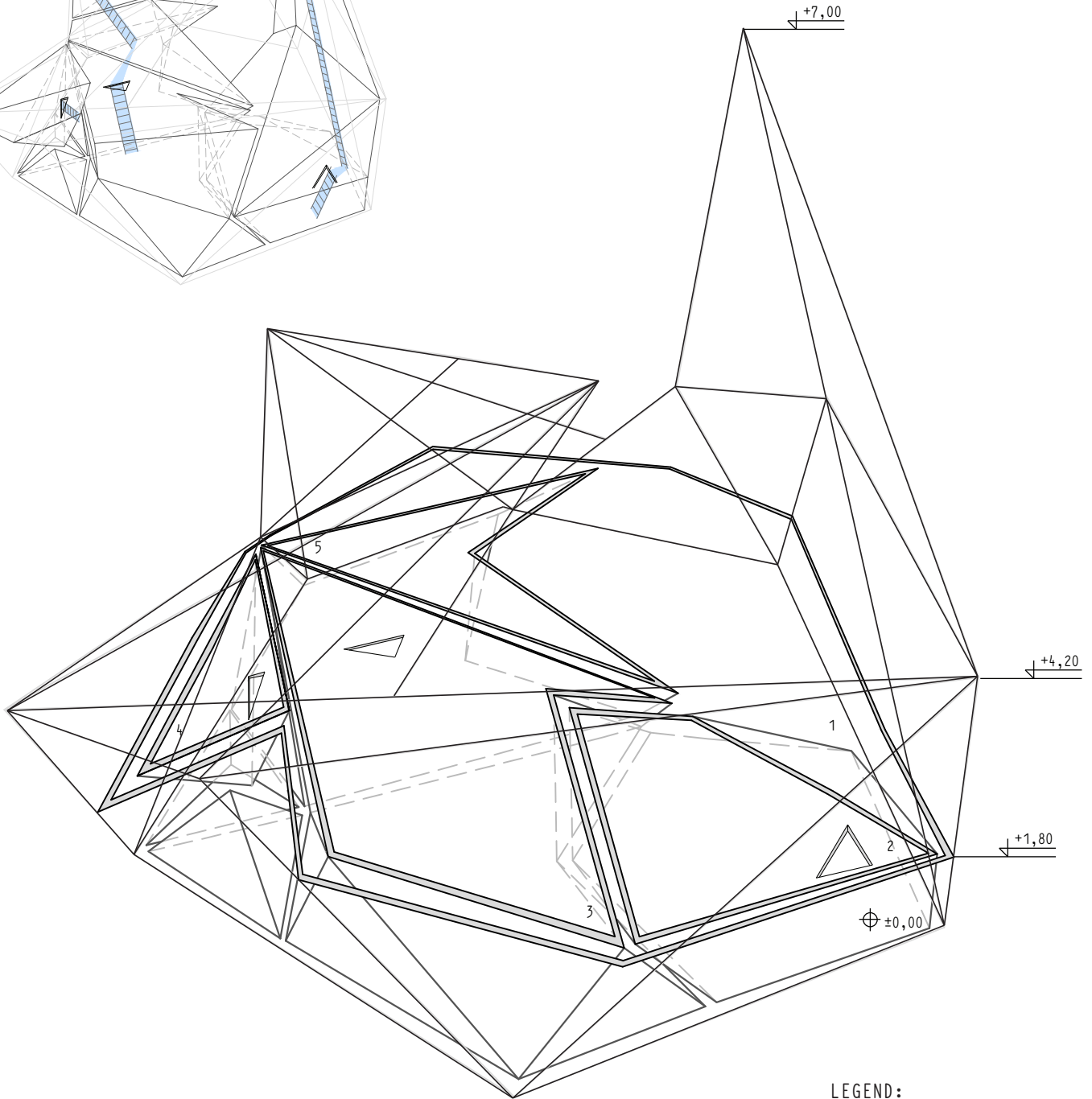
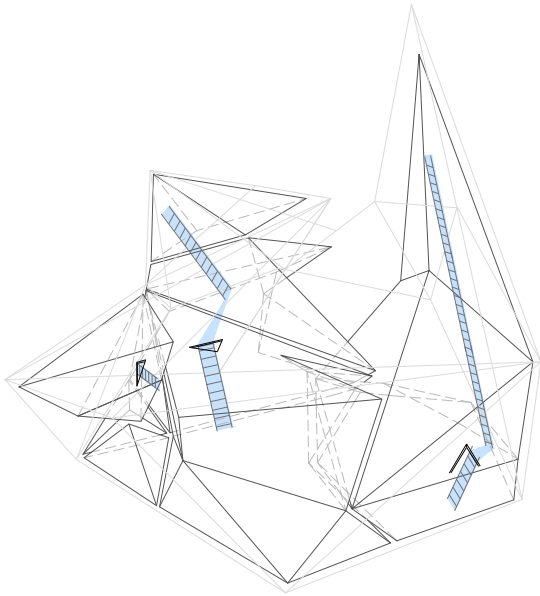
double-skin facade



3

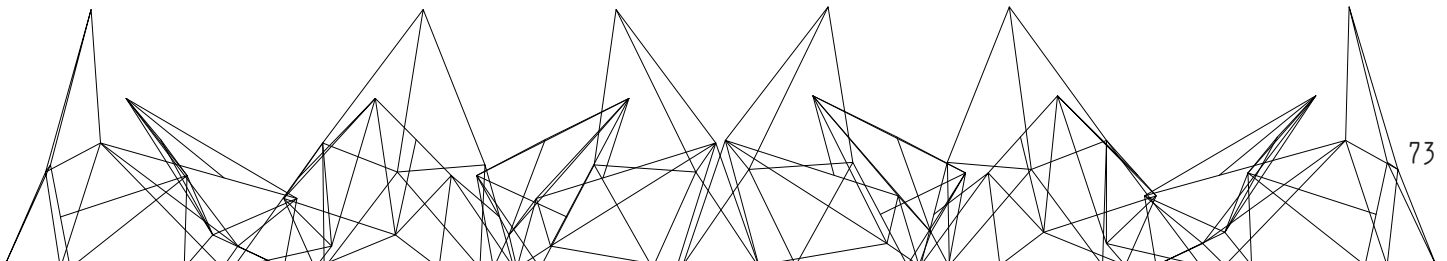
food-graden

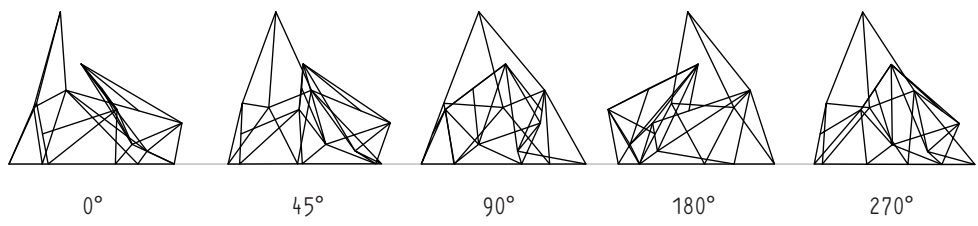
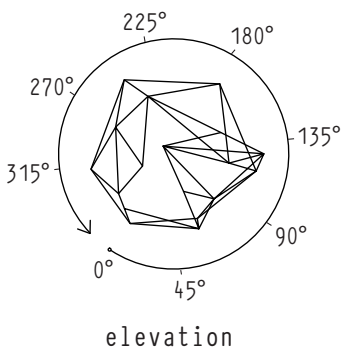
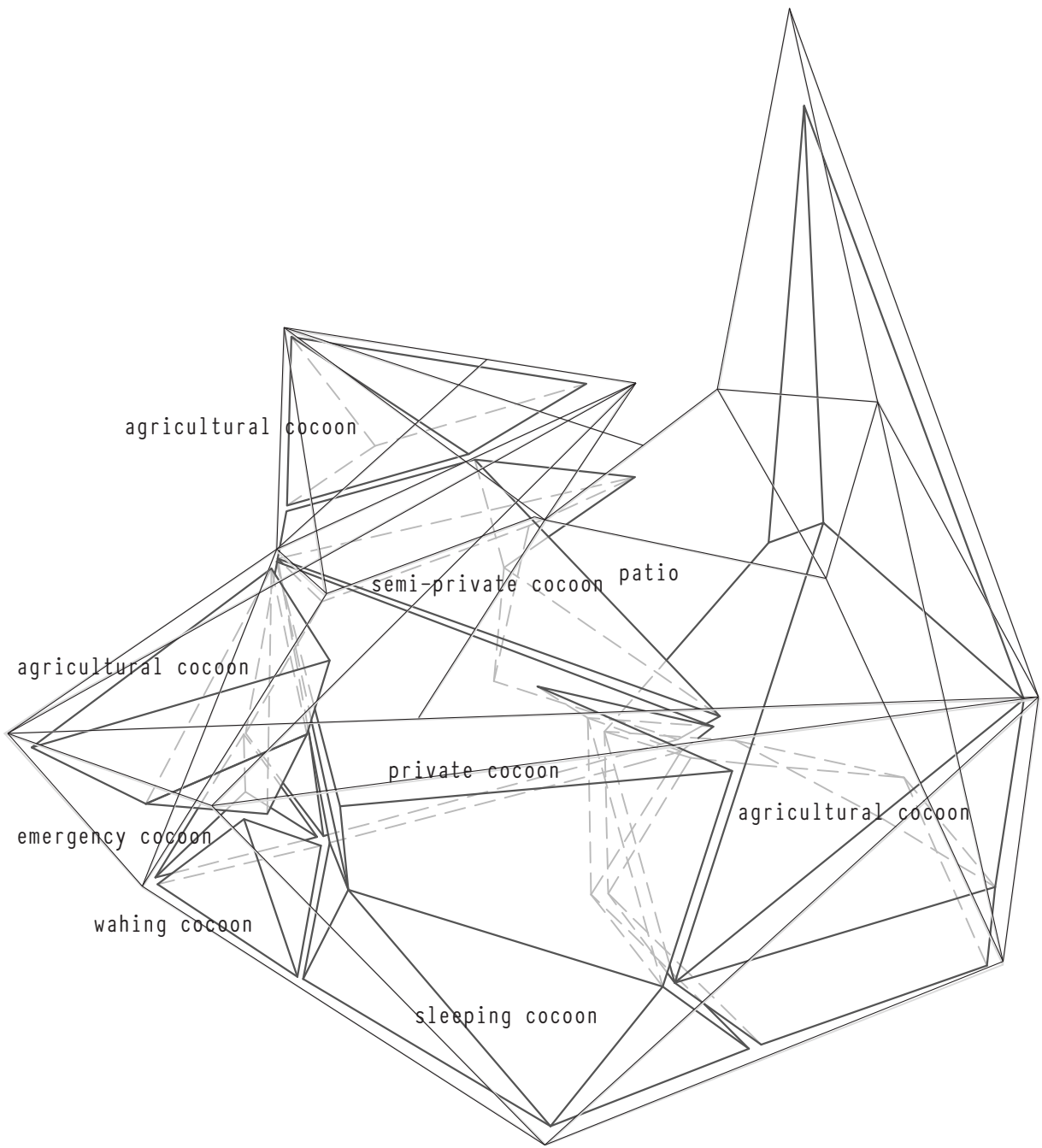
FLOORPLAN and CIRCULATION



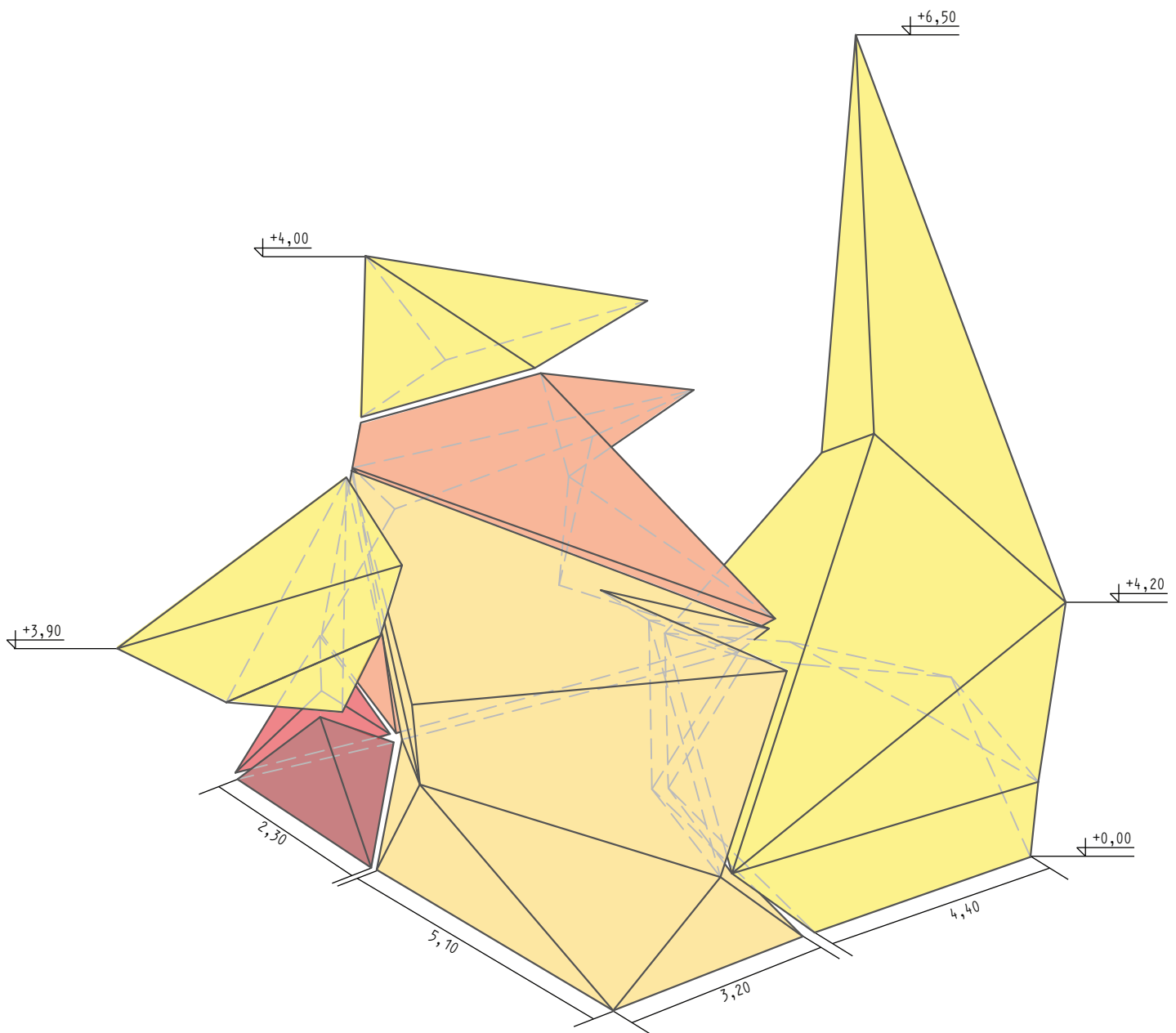
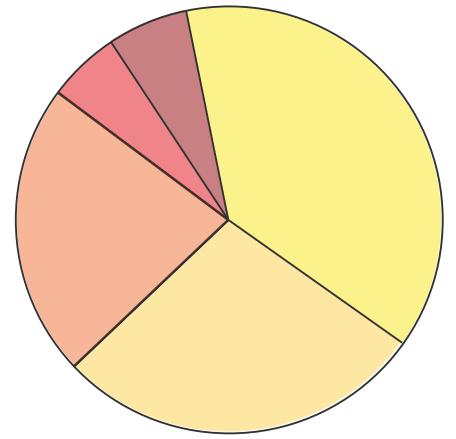
LEGEND:

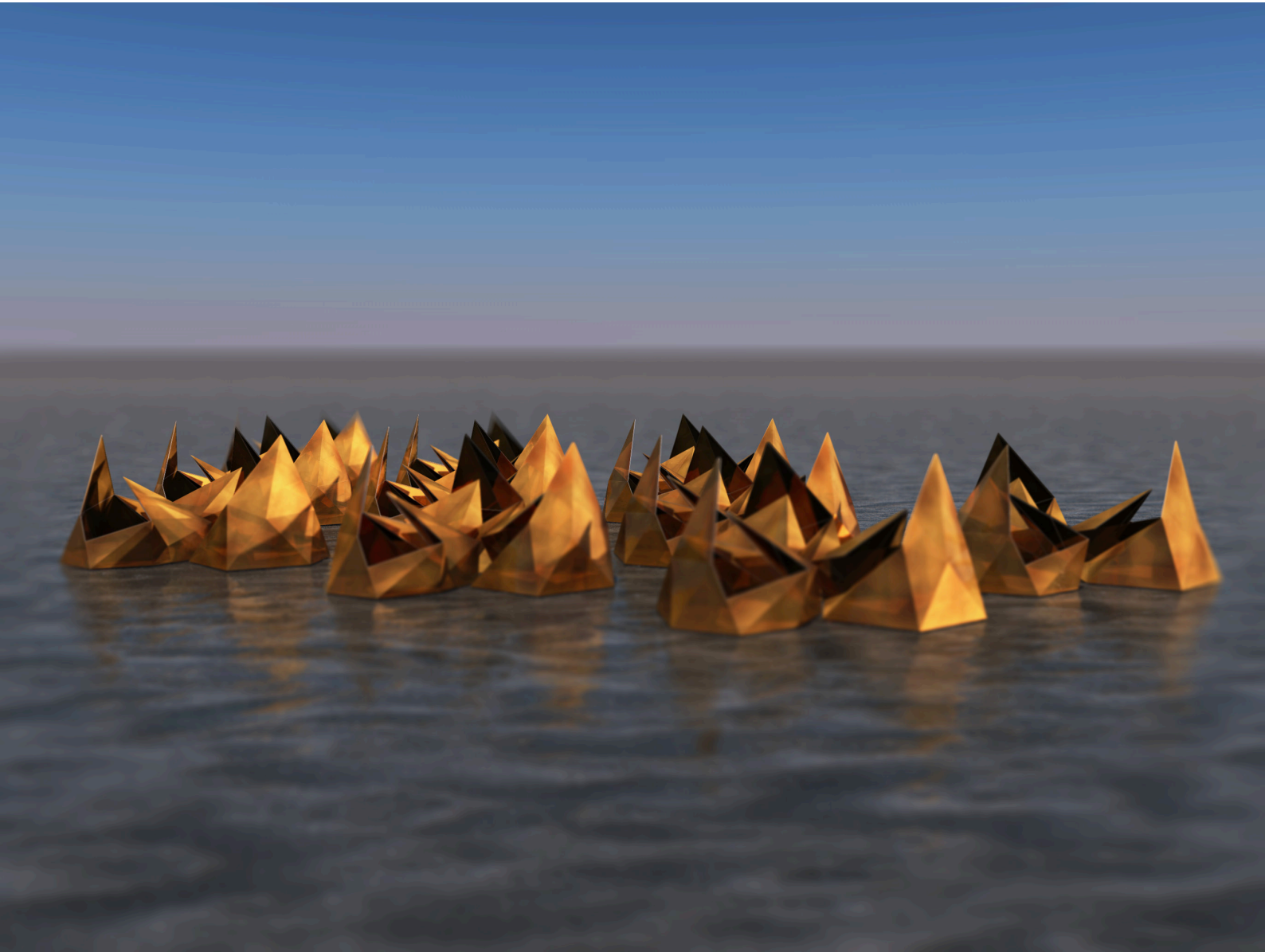
- 1...patio
- 2...agricultural cocoon
- 3...private cocoon
- 4...agricultural cocoon
- 5...semi-private cocoon



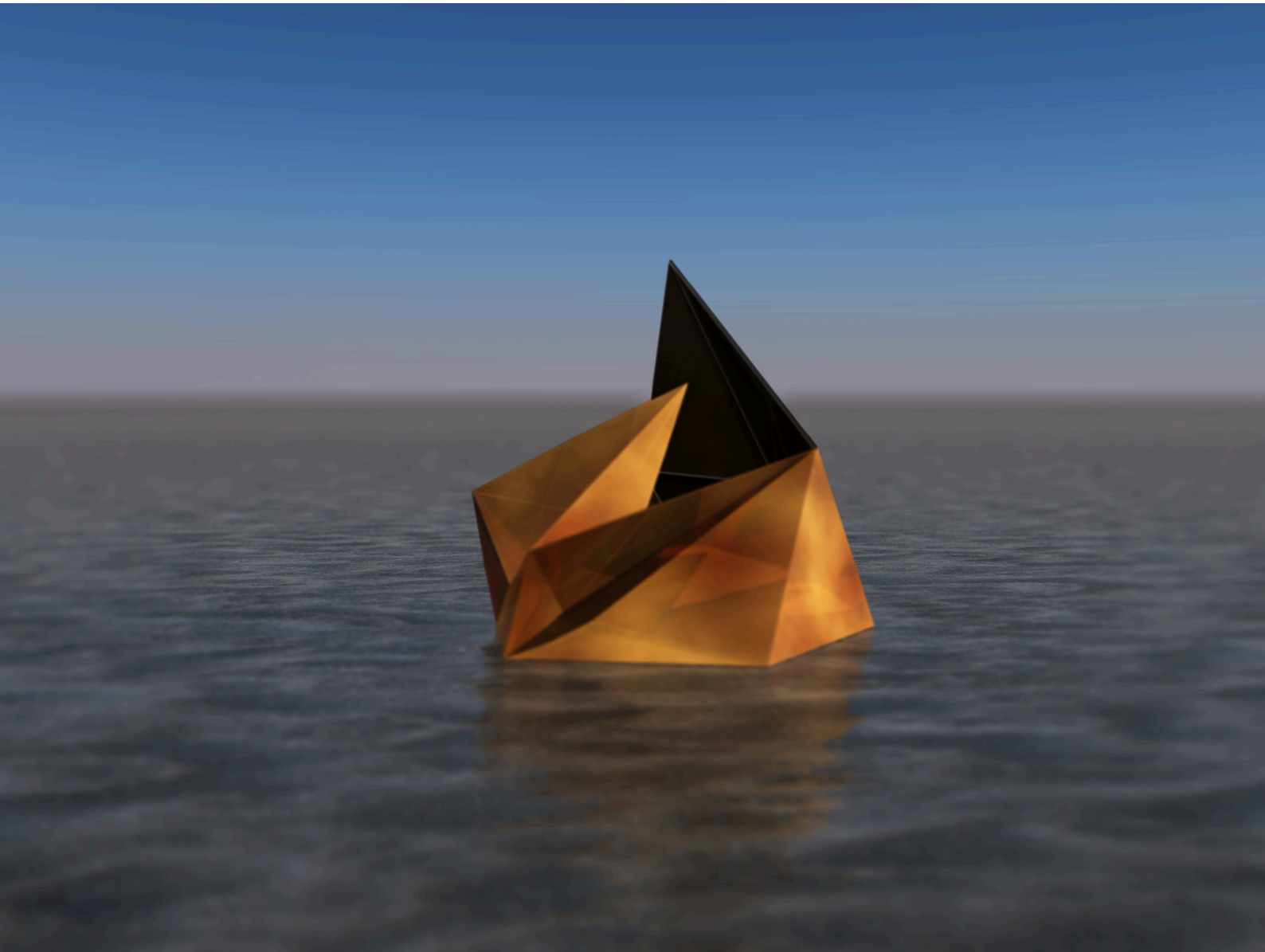


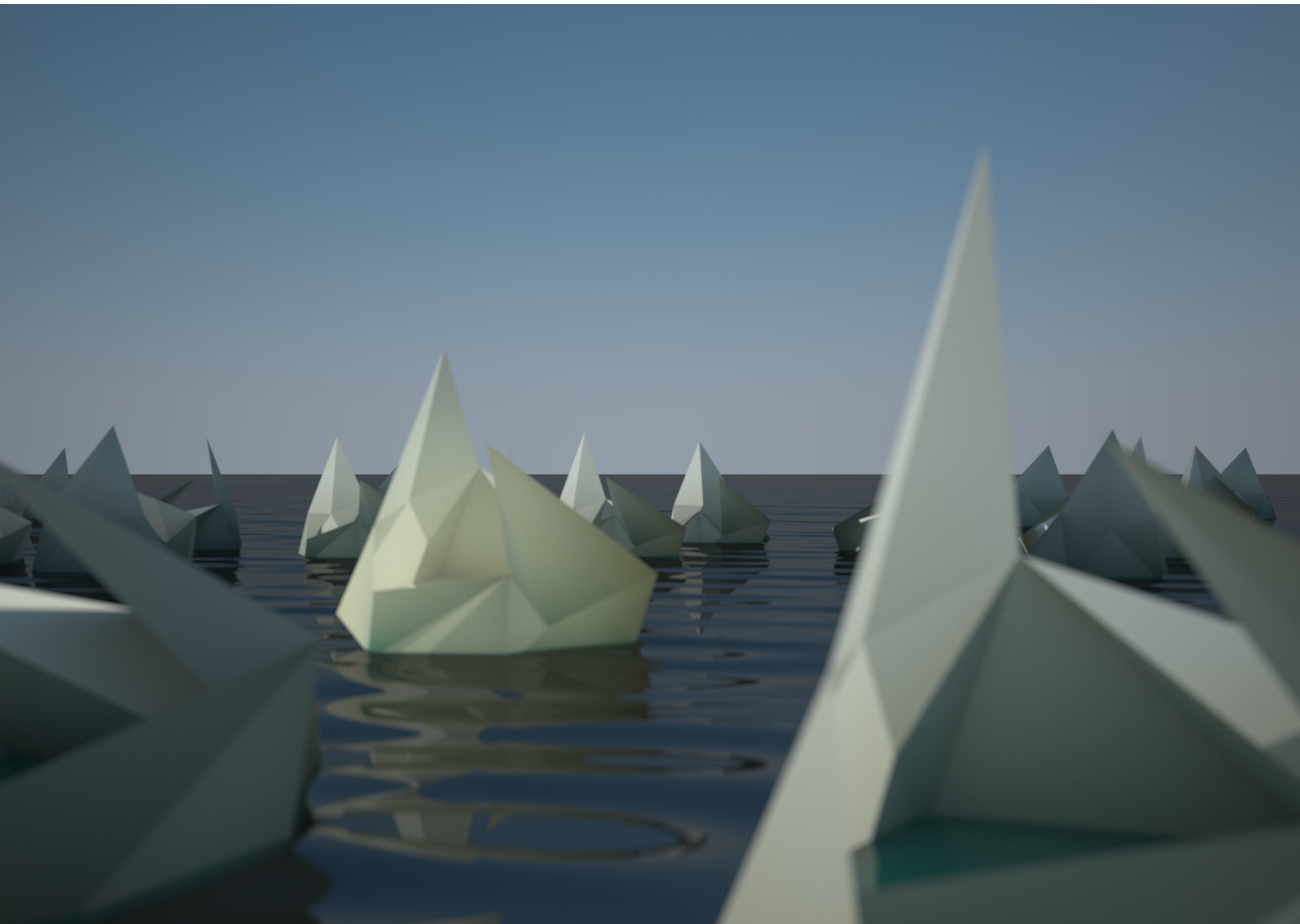
- agricultural cocoon
- private cocoon
- semi-private cocoon
- emergency cocoon
- washing cocoon
- sleeping cocoon











## CONCLUSION

A world devoid of artists would be a completely different place; we would have nobody to tell our tale, paint our sorrow, defuse our anguish, draw our smile, photograph our kiss, shape our strength, or sing our destiny. But a world without an artist would also be deprived of a free thinker, the courageous warrior that awakes for another day of battle against the unspoken. It would be a world destined to stand on anemic pillars of innovation.

When a man forgets that his home is a planet on a lease, when seasons change but winter becomes the new spring, when experts collect the worrying numbers and draw apothic conclusions, it is art that can inspire elucidation carrying a solution.

Fossil fuels are running dry and population of the world is growing. We are running out of land to produce enough food to feed everyone. We have built a world entwined with road infrastructures, splitting the animal kingdoms, we have crowded the sky with our planes and waters with ships. We try to recycle, but there's still too much pollution. We made the eco-system suffer.

Fortunately, we live in a world where artists have a vision and experts have the means. We also live in a world filled with aspirations and tendency for hope. Our minds are prone to solutions. We are examining and testing; we are trying. Trying to accommodate our lives to a better-handling of our resources, living habitats for ever-growing population, and restoring the eco-system.

As we were able to scrutinize the works of contemporary artists that are creating possible alternatives for our future lives, we can surely be very optimistic. Be it Kosice's controversial 'Hydrospatial City' or Zittel's 'Indy Island' we can find refuge on the realms of our oceans. Not only are oceans unoccupied, they are also government-less, which offers new societal pragmatism and new cultural frontiers. With floating cities as a possible alternative habitat, we can create, environment friendly cultural freedom with renewable energy.

In contrast to Callebaut's wonderful idea for Lilypad, I offer my vision in a smaller floating entity with capability of merging. My module, named Crystal Drop, is a self-sufficient home for communities with common aspirations that can willingly form assorted societal organisms.

Crystal Drop entails a vertical farming as the answer for our faulty foodprint production. It is 'a hanging garden' that invites enough sunlight to all its corners and allows for bio-waste and water to recycle within. As a mobile unit it is not dependent on only one type of weather.

As its name suggests, the design was given a lot of thought for I did not want the Crystal Drop to be an aesthetical invader floating on seas. It is built to prevent social and political imprisonment, hyper-consumption, waste, segregation, pollution, and ecological catastrophes.

Crystal Drop is an assemblage of artists and experts alike creating a new living habitat. It is my answer to our future, a drop into the sea of ideas that may one day have a significant role in human evolution.





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