DEUS EX MA(S)CHINA

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ARCHITEKTURTHEORIE.EU

INDEX

lat. ***Deus ex Machina***

English ‘god from the machine’) is a plot device whereby a seemingly unsolvable problem in a story is suddenly and abruptly resolved by an unexpected and unlikely occurrence.

Its function can be to resolve an otherwise irresolvable plot situation, to surprise the audience, to bring the tale to a happy ending, or act as a comedic device.

Deus ex Ma(s)china

Wordplay of machina and dt. Maschine (=engl. machine)

A machine (or mechanical device) is a mechanical structure that uses power to apply forces and control movement to perform an intended action.

Given this occurrence a divine character, what if this occurrence literally were to be a machine? Or rather machines? Machines and the related possible large-scale job automation could potentially resolve many social and environmental issues if it causes some major changes in political systems.

When presuming so, what would life look like for people once they work significantly less? And how could Architecture behave and change in order to uphold the positive outcomes of this possible occurrence?

Figure: Edward Burtynsky, Oil Field Nr.27, California (2004)

0 INTRODUCTION

In the anthropogenic world civilization lives in, full of advanced technologies and fascinating possibilities and advances, it has been possible for humans to shape their own world. Quite literally, as shows the example of the artificial islands in the UEA, as an example. But humanity doesn‘t always use its technologies to improve the world and with the goal of the common wealth. Technologies have often lead to destruction and selfish personal interests.
But is the human population also capable of reducing global warming and other major issues the planet and humanity are facing today? They certainly have the tools and machines to do so. But what if they also had the mindset?

Firstly, this work analyses current tendencies of human population and the planet Earth itself, and - by doing so - argues on why a big work reduction might take place in the (near) future – presenting different major changes for human population that have been considered “possible” and maybe less delusional and hence can be considered “realistic”. Then, a manifesto is presented, based on #ACCELERATE MANIFESTO for an Accelerationist Politics, from Srnicek and Williams (2013) – in order to narrow down how this future should and could work, in order to create more specific concepts rather than just a very open ideas for innumerous possible futures with more free time. Furthermore, it analyses how this could possibly affect architecture, society and life in general. It then presents architectural concepts for this kind of future with major focus on food production and how to make it more sustainable. Nature should also play a major role in the work as it should be a sustainable and green vision for specific future societies. The concepts presented in this work are not to be seen as a prediction or vision for the future but rather as hyperbolical representations of architectural solutions for future societies and possibly inspirations for some sort of setting for sci-fi or fantasy narratives or films.

The idea of the work is to set up a scenario in which this world could be seen through the eyes of a machine and beforehand created by this same machine in seek of a new world for a new society; and to find out what tools this machine could use in order to understand, create and develop this world.

Figure: Edward Burtynsky, Water, Spain (2013)

1 CURRENT ANTHROPOGENIC SITUATION

Humanity lives in a world consisting of a population of almost 8 billion people with the tendency of rapidly increasing even more. The seemingly uncontrollable growth rate of human population seems to bring many environmental and social issues with itself.

But what exactly are the tendencies? Where is it heading? And what are the major possible changes in a foreseeable future?

Humanity has developed many new and quite advanced technologies in the past, is doing so in the present and will continue doing so in the future. These new technologies that humanity has developed over the last centuries have failed to bring out something positive. They have been used more for destructive and selfish reasons. And rather than connecting, helping and interacting with humans, the existing automation has oppressed and somewhat even worsened life and work conditions for many people. Working on a production line, for example, has led to damaging and frankly even sad life conditions in many places for millions of human beings all over the world. This issue of exploitation in working environments leading to unenjoyable life is tackled quite comically and dramatically by Charlie Chaplin's movie Modern Times (1936), where Charlie Chaplin plays a production line worker whose work routine is heavily graved into his everyday life, making it unable for him to live normally.

Figure: Scene from Charlie Chaplins Modern Times (1936).

In order to create a concept for the future one must first understand the current situation of the planet and the possible and probable tendencies it is turning to. What are the main issues of today? Will these issues be solved and if so, how? How will these issues and/ or their solutions affect humanity and the planet?

Over thousands of years, humanity existed in harmony with nature, in the so-called Holocene. The Holocene was the era of human existence in climate stability – the perfect conditions for civilizations to grow and flourish. But at a certain point after industrialization – or maybe after the invention of the hydro bomb - the Anthropocene was formed. In this chronological epoch of climate instability, humans started to shape and change the world. Rationalism has taken over. Progress was started to be portrayed as being the right way of living. Even getting in touch with nature has become more of a cultural experience with for example parks etc. defined through and by law. Human choices started defining the state of nature: humans started shaping the outcomes, the negative but also the positive ones.

Architecture is one tool to manipulate, to change nature and the world. The current progression and development of choices is bringing us pollution, natural disasters and other problems of new dimensions. But this is the Anthropocene: The Age in which humankind holds the tools to change the world. For the better or for the worse. It's only a matter of how the tools are used! One must ask themselves: Can humanity live in a technological world in harmony with nature? What is nature after all? Is there a difference between Nature and Man-Made? What does natural mean? Humans live in a world in which even the animals and plants cohabiting with are products of human choices – mankind created new breeds in order to optimize them for their own interests. Are these breeds natural or man-made? In his Book 'After Nature' (2015), Jededaiah Purdy analyses the Anthropocene, addresses its problems and tries to come up with possible solutions to restore a harmonic life between humanity

and nature.

In the age of the Anthropocene, humanity has immense power as its disposal – in almost every area. But until today humanity has seemed to fail to control its power. With almost every single one of human creations that required new dimensions of power, also seemingly new dimensions of destruction and disaster have been unleashed. The more human technologically advances, the more it seems to pollute and harm the planet. And the planet reacts in its own way with, for example, climate change. New storms, earthquakes and other natural hazards of previously unthinkable magnitude have been the consequences of human advances. And every time humanity seems to become more in control through new technologies – the natural disasters seemingly become more uncontrollable and harmful. Humanity is responsible for Climate Change.

The climate instability humanity established creates problems not only in an ecological way, but also socially and economically. The relationship between society and climate stability is visualized in following short fable:

> The eagle and the rabbit village: a fable about the relationship between climate stability and social equality.
>
> Under a big big chestnut in a beautiful forest lived a breed of rabbits in a village of tunnels and bridges of roots. One beautiful summer's day the little ones would hop around and play! They would chase each other and laugh and giggle, they would dance and sing and run just to have fun, as they enjoyed playing in the shadow of the big big tree, protected from the sting of the sun. But on that same day, an eagle flew by and landed on the tree. He started chopping on the branches and ripping off the leaves. Slowly but aggressively, the sunbeams would burn straight to the ground. One of the older rabbits would storm out of his hole, look up to the eagle and shout: "What are you doing up there, Mr. Feathery Eagle??"
>
> The eagle replied: "I'm collecting some branches for my nest up in the mountains. I'm collecting the best branches that I can possibly find."
>
> The rabbit responded in fury and anger: "Can't you see that we live here under the tree? We need the shadow, the refreshing to live. Please leave the branches or else we'll have to move out and leave! Can't you choose another tree to chop off the branches? There are so many other trees without any villages of rabbits!"
>
> The eagle replied in very cold fashion: "I like these branches the most. If you want to stop me, come up here! Oh, you can't?! Too bad, because it's going to happen!" So, the eagle went on and stole even more branches. He even chopped off some just for fun, upsetting the rabbits!

Figure: The Eagle and the Rabbit Village. Collage Lorenz Foth

> And so, the summer went on and most of the village dried out! It was horrible for all the rabbits, it was a horrible drought. But they refused to leave the place that they loved. The place they have always been in and where they grew up.
>
> Their mood would worsen by every passing day. There would be less hopping around and the little ones would rarely play. As time passed the rabbits would become more solitary and hateful. The stronger rabbits would go to the weaker ones and steal their holes. Many rabbits would have to leave, and no one knows where they went on to. They were never again seen.
>
> And then came the winter with scarcity of food! Every rabbit would protect her or his rations in a very paranoid mood. The snow and ice would reach directly the roots and the holes. It was the worst winter ever; it was terribly cold!
>
> Stealing the food of other rabbits, seemingly was the only way to survive – the only thing that mattered. The once happy harmony this village was used to was now gone and past. Many rabbits would starve and only the strongest ones with all the food would last.

According to Purdy (2015, p. 18), the Anthropocene begins amid a threefold crisis. Economical, Ecological and Political. The ecological crisis lies on the fact that humans are the ones shaping the survival of the world's ecosystems (it they survive at all). It depends on human choices and at current state is critical. Economy is the dominant social science. Supply and demand should aim for more balance. The ecological crisis begins with the failure of economic harmony. The harms are created by the invisible hand. Wealth and greenhouse emissions grow simultaneously with social inequality. And the third and final crisis is the only unavoidably artificial one: The political crisis. Certain people are elected to make choices about economics and ecology for entire societies. However, until today, politics have mainly been used for selfish intentions rather than the commonwealth. This is the main reason for the huge gap in social equality humanity faces today. Political power is used as power over economics. It is wealth. Wealth is resistance against diseases or natural disasters (medicine, vaccines, more secure housing etc.). The wealthy ones are better prepared for catastrophes. If humanity wants a self-sustaining world, both socially and naturally, it must build and preserved. Stability won't come from alone. And this can happen through politics – with less selfish politics, the ecological and economic crisis will both decrease.

Furthermore, the rapidly growing global population seems to become more and more of a problem, as increasingly more people struggle to find jobs and the unemployment rate rises constantly. And with time passing, humanity makes new technological advances. Machines, intelligent systems and computers become more reliable, more powerful and more efficient every day. And it raises the question for many people. When will a machine be better suited for my job than me? Or is it already? When will I lose my job to a machine? And what will happen to me once this day comes? People start fearing for their futures. Fearing that the unemployment rate will significantly rise even more. They become afraid of losing their jobs and consequently their "life". Their money. Because without money there is no place to live, there is no food and ultimately there is no life. That's the current situation of the world. The Neoliberal Capitalism. One goes to work to make money to spend money to live an enjoyable and "happy" life. That's why everyone needs a job. Humanity lives in a very work-oriented world. Work is undoubtably the most "important" part of one's lives. People educate themselves for their work – work always has priority over anything else.

When someone asks: "What do you do?" the answer will almost always be job-related. Not about hobbies or customs. Most social contacts and even friendships are made in some sorts of work or education- (for work) -environments, people spend hours of every day working and work is viewed as a necessity in life. Unemployed people are regarded as "incomplete" and are urged to find a job. But it can't stay like that with job automation knocking on the door. Many of the routine-job workers in industry could already be replaced by machines. And it is only a matter of time for it to happen. An estimate of about 40% of all jobs on a global scale could already be replaced by machines. 77% in China and even 85% in Ethiopia. This is a big problem and could potentially lead to a disaster. Possibly – in order not to collapse – Capitalism is holding back the automation of jobs, according to Srnicek and Williams (2015). Technologies shall not replace human workers, because otherwise these unemployed humans wouldn't make money and couldn't consume, creating chaos.

‘Climate Change makes global atmosphere, chemistry and weather into Frankenstein’s monster’

- Jedediah Purdy (2015, After Nature, p. 15)

One of the main causes for the environmental problems, that the world is facing - and often viewed as the “most problematic” – is considered to be the (unsustainable) food production. Currently, the food industry is causing many environmental issues. Large scale monocultures in livestock and agriculture result in destroyed soils, deserted ecosystems, tortured animals, high CO2 and Greenhouse Gas emissions, far transportation and relative ambiental hazards and ultimately this is partly responsible for global warming as a whole.

And the food produced is largely wasted. An estimate of about 80% of all Food alone in Germany is wasted, according to Quarks (2019). Many still consumable products are considered “unsellable” because of validation date laws, and many products are even aesthetically sorted out. The food waste causes more toxic gas emissions as well as spatial and logistics problems in urban and rural areas. Meanwhile, millions of people are dying of famine... Maybe even a simple logistics change could solve multiple problems at once.

Even though there are obviously many exceptions, these environmental hazards are largely caused by the food industry and must be fought against. Bringing awareness and responsibility in terms of food consumption to the average person’s mindset would be one of the biggest steps towards a sustainable future.

As of now - with population continuing to grow; social, ecological and political issues intensifying, automation on the rise and mass unemployment and underemployment threatening; food waste, food production (sustainability) and food distribution/access problems - most people will agree that something will change in a near future. Something must change. But how could it change? What are the likely futures?

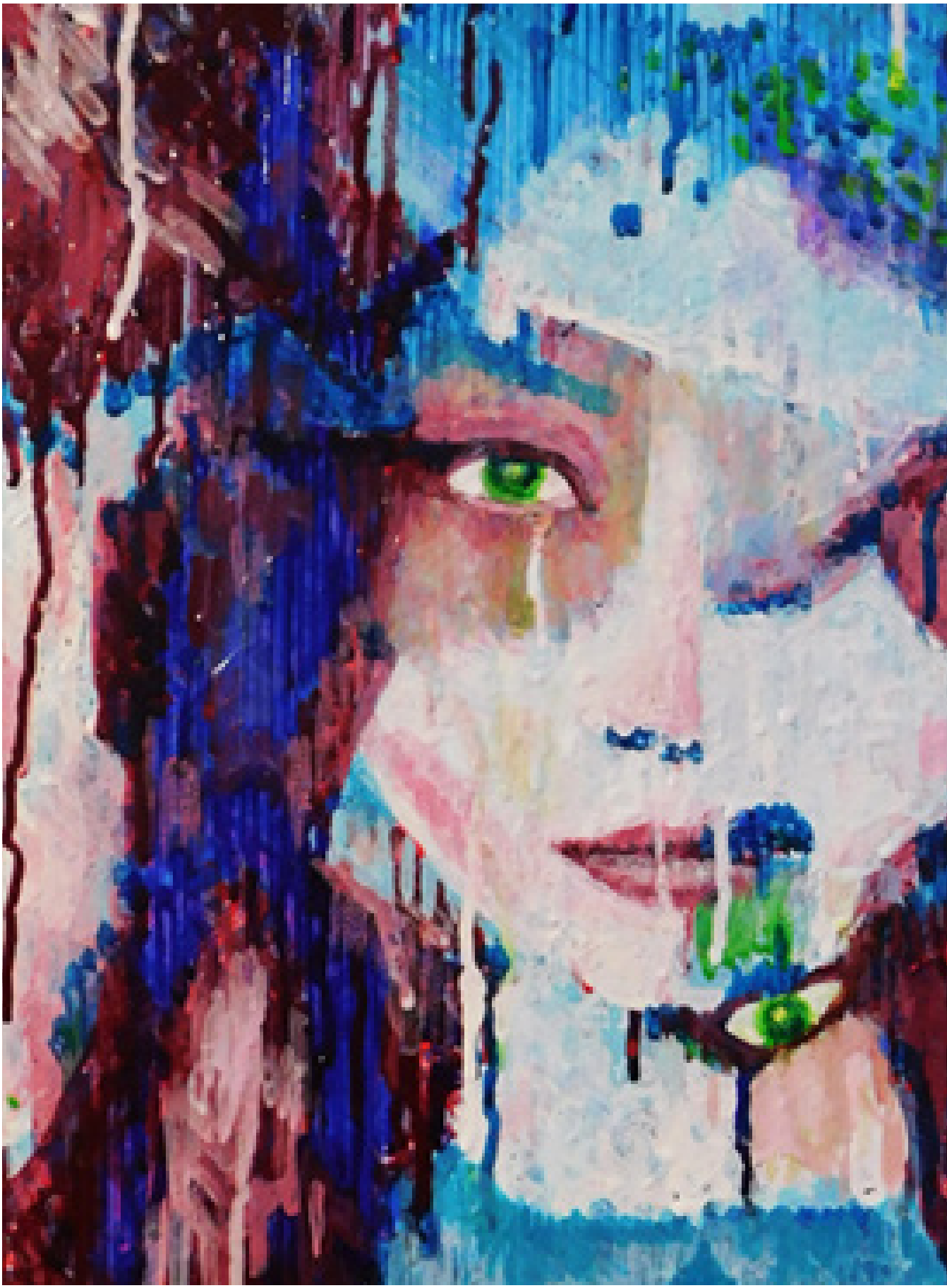

Figure: Pindar Van Arman/AI Cloudpainter. Can AI create Art?

2 POSSIBLE MAJOR CHANGES FOR HUMAN POPULATION

With AI and other technologies on an inevitable rise, work automation seems to be only a matter of time. Many “unattractive” routine jobs could obviously already be automized. But even creative works such as arts, music or architecture seem to be becoming automatable. In medicine, machines seem to be more precise and safer and technology seems to inevitably be taking over most human jobs in the future. So, some social and political changes must happen in future.

The inevitable changes mentioned previously will shape human future. But aren’t there infinite possibilities of changes? Yes. And can they be predicted? No. But one can assume them. And one can judge how probable they seem to be. This work has analyzed three major broad future scenarios, being as follows: the collapse of the current system of neoliberal capitalism – which would possibly ultimately lead to a delayed transition into one of the other two possibilities; or a new form of democracy in which work ethics is reduced, politics are more transparent and sovereign and where a big change in peoples mentality takes place, making them more responsible, sustainability-aware and more caring for other humans and the planet Earth; and finally a future in which human population decreases indefinitely without any kind of disaster or catastrophe as trigger -just naturally. Obviously, there is the possibility of sort of a mixture future between these three or even something completely different. The analysis of these three distinct possibilities was made in order to determine whether or not there are any common aspects that one might consider inevitable features of the future of humanity. As follows, the work will shortly analyze each of the three previously mentioned possibilities.

2.1 Neoliberal Capitalism Collapse

The first case scenario would be unchanged politics. According to Purdy (2015), the existing social inequality would be amplified, other existing problems such as the climate change would continue to worsen and the planet would become a man-made, unequal landscape, a dispersed and interconnected version of the feudal manor (Middle-Age sovereignty). One can see how this kind of future is becoming a reality in Israel, where people can enjoy unlimited running water, while their palestinian neighbours are struggling to find any water at all. Wealthy cities such as Los Angeles or Las Vegas, where droughts are a frequent problem, are being supplied with the help of extensive pipe systems by water sources coming from other regions in the US. Wasting potable water for luxurious needs such as irrigation of the lawn, swimming pools and water fountains. In the long run, these kinds of examples would only worsen and amplify the problems humans are already facing today. And sooner or later, no matter the politics, automation will happen. And in this scenario, it would provoke mass unemployment leading to mass poverty, amplified social inequality, more environmental issues and ultimately to the collapse of neoliberal Capitalism. Either through some kind of war or through famine and capitalisms breakdown due to a lack of consumers caused by the mass poverty. Ultimately, this would lead to one of the other two scenarios. It would only delay the transition and bring destruction. But it would lead us to one of the other two scenarios.

2.2 New form of Democracy

Purdy (2015) calls out for a new form of democracy suggesting that humanity needs to fix it, where it failed in the past! Humans need to treat their planet with more responsibility. Ecological problems have to be regarded as big issues that need to be fixed. Purdy sees food production as one of the main issues. Because of its environmental impacts. But he identifies people's ignorance towards food production and its impacts as the main issue. Food consumption must be more responsible. People have to care more. Food production has to work in a more peaceful relationship with nature. It has to be more transparent, more preserving and less exhausting. The human population is in need of a new imaginary towards nature. Nature has to be brought to the forefront of political economy. And most importantly, humans mustn't be afraid of change. And the "humane" part must be found, and a mentality change must occur – as a collective!

But the problem of automation leading to mass unemployment remains. There would be the need for a solution for it within the new politics. In their works 'Inventing the Future Post capitalism and a World without Work' (2015) and #ACCELERATE MANIFESTO for an Accelerationist Politics (2013), Nick Srnicek and Alex Williams come up with ideas for possible alternative politics for a future with automated jobs.

'Learning a musical instrument, reading literature, socializing with friends and playing sports all involve varying degrees of effort – but these are things that we freely choose to do. A post-work world is therefore not a world of idleness; rather, it is a world in which people are no longer bound to their jobs, but free to create their own lives.'

(Srnicek and Williams 2015, p. 85)

Work doesn't have to remain a necessity in life. Maybe the future is one in which only very few works. Srnicek and Williams (2015, p. 88) suggest a reduction of weekly working hours to about 15 hours, allowing more people altering to work on one job – creating more jobs. But still, there would be many unemployed people and less qualified workers wouldn't find any jobs after the industrial automation. But these kinds of jobs are not very popularly liked anyway. They are considered terrible and painful and people only work on them for the sake of making money. But that doesn't need to remain the case. The job automation would eliminate these terrible jobs and people would need to be better qualified in order to get an existing job anyhow. Therefore, the average education level could possibly rise, with people seeking to retain the possibility of working a job – even if a job isn't necessary. People will always seek for an occupation. This occupation, though, doesn't necessarily have to be a job. Weather it'd be a hobby or taking care of other people, people will stay occupied.

Furthermore, a reduction of the working week via a 3-day weekend could possibly reduce climate change with one day less work traffic and fabrics running. If only 60% of the population effectively went to work and only for half the time they work today, more time and effort could be put in by society to help the ambient and try to fight climate change – helping the ecology as well. But how will people live without working? How will they pay for their needs?
In a most recent study - as part of its "Work-Life Choice Challenge" – Microsoft found that implementing a four-day workweek led to a 40% boost in productivity. The project – in which Microsoft 's Japan subsidiary closed every Friday in August of 2019 – examined work-life balance and its effect on productivity and creativity and found that it benefited both employees and the company.

Successful tests like this one will ultimately lead to a reduced workweek being implemented on a larger scale.
The answer Srnicek and Williams (2015, p. 118) give us is very simple: Universal Basic Income (UBI). This would give the unemployed and underemployed the chance to use their free time in a more enjoyable way.

The idea to implement a universal basic income has been up for vote in different countries such as Austria and Italy, and – although only having failed for now – seems to be unavoidable in the future.

There are, of course, already similar income sources to a universal basic income. The Permanent Fund of Alaska in the United States provides a kind of basic income based on the oil and gas revenues of the state to almost all state residents, but the payment is not high enough to cover basic expenses and is not a fixed, guaranteed amount. For these reasons it is not considered a basic income. Guaranteed minimum Income in countries such as Germany, Austria, France or the UK - despite the name - differs from a Basic Income in that it is restricted only to those in search of work. Bolsa Familia in Brazil is related to basic income, but has more conditions, such as the receivers keeping their children in school until graduation. Nevertheless, all these UBI-similar examples have benefited society and their countries, and one could suggest that UBI would do so too.

The idea of UBI, where every person receives enough money to live an enjoyable life off of seems to be the perfect solution to the mass unemployment threat that humanity is facing. Work would become a choice rather than a necessity – giving people more freedom, time and possibly joy. Apart from that, UBI would work as a very effective tool to reduce social inequality. But where would the money come from? A possible solution would be to raise taxes for the very rich and for big companies who have barely paid any taxes over the past. But UBI has never been tested and no one could know what the outcomes could possibly be.

2.3 Population decrease

This work has now analyzed futures of increasing human population. And in most people's beliefs, human population is currently growing and will continue growing until necessary resources run out and people die of famine. Some sort of disaster, catastrophe, war or reason for people to move to another planet are often seen as "the only possibility" for a decline in global population. But Bricker and Ibbitson (2019) suggest the contrary – that humanity is on the brink of a massive population reduction. Not because of any nearing catastrophe, but because it has already started. The global fertility and birth rates are supposedly already decreasing and

will continue to do so for ever, according to Bricker and Ibbitson.
In their book Empty Planet: The Shock of Global Population decline (2019), Darrell Bricker & John Ibbitson predict that in a near future (within the next 50 years), a never-ending global population decline will occur.
Bricker and Ibbitson (2019) suggest that it would help humanity and the world in a social and ecological way. As smaller population means fewer workers, meaning higher wages. It would also bring environmental improvements suggesting that population reduction would make it "easier" to care for the environment – sustainable options and lifestyles will be available for a higher percentage of the population and the damage a smaller population is considerably smaller. They also suggest that a decreased fertility and birth rate would bring greater affluence and autonomy for women in developing countries and a population decline would generally reduce famine risk.

But this would also come with a problem. Aging population. Leading to a lower work rate in society. Firstly, this would lead to immigration and consequently globalization. But immigrants would not keep coming forever, long-term affecting the social and health systems as well as the economy – that somehow would have to take care of ever more elder people. Necessarily, nearly all work sectors would need to be automized, leading to even less workers.

2.4 Common aspect: *Work reduction*

In summary, in the case of a world of growing population with many people already struggling to find work and possibly with industrial automation right around the corner, the unemployment rate will tend to increase even more. In order to avoid mass poverty and famine as consequences, either more jobs must be created (possibly through a reduced work week) and/or an income regardless of work (e.g. universal basic income) will have to be introduced – extending the average person's free time. In the scenario of a foreseeable decrease in global population an increase in the average person's free time would also happen, though – because of the aging population. The aging population would create opportunity for more jobs but would ultimately force mass job automation to happen. Resulting in a scenario with less work for everyone.

Ultimately, it seems as if a significant increase in global free time will necessarily happen. How can will people live in a society with much more free time? What will have to change architecture-wise?

'The underemployed, for instance, have plenty of free time but lack the means to enjoy it. Underemployed, it turns out, is really just a euphemism for under-waged. This is why an essential demand in a post-work society is for a universal basic income (UBI), giving every citizen a liveable amount of money without any means-testing'

(Srnicek and Williams 2015, p. 118)

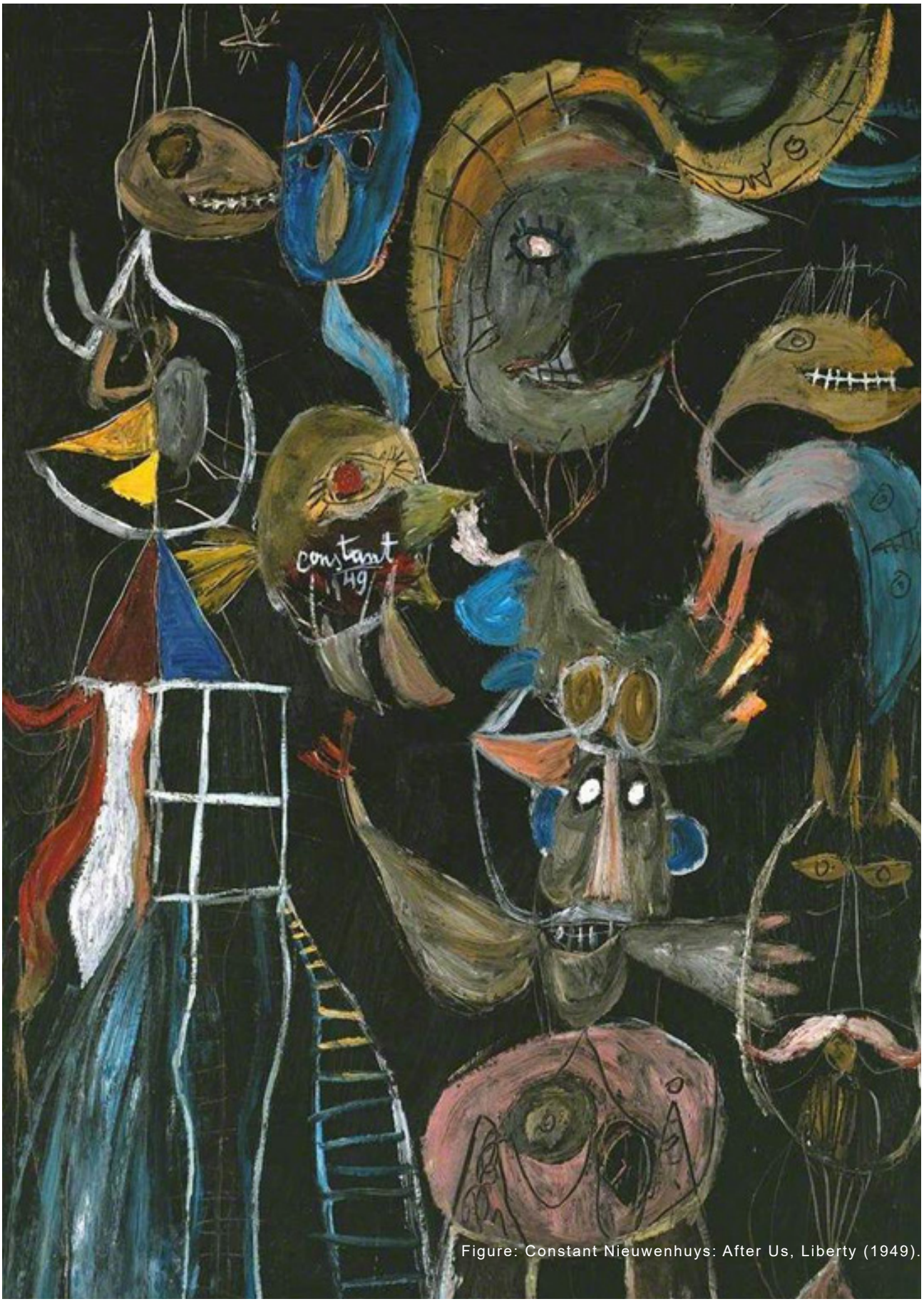

Figure: Constant Nieuwenhuys: After Us, Liberty (1949).

„We see incredible opportunity to solve some of the biggest social challenges we have by combining high-performance computing and AI - such as climate change and more.“

- Lisa Su, CEO Advanced Micro Devices

Figure: Robot Arm Wrestling

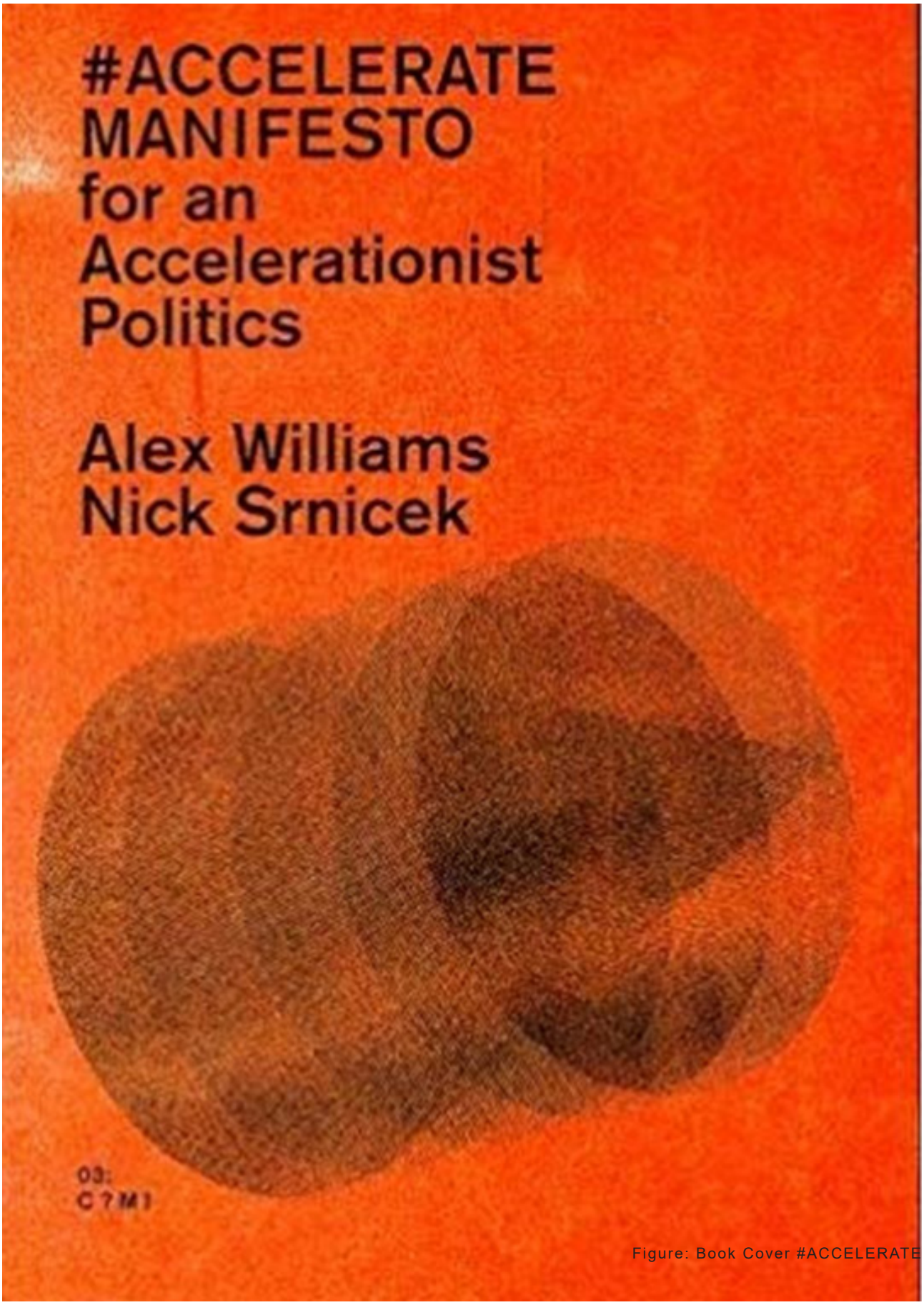

Figure: Book Cover #ACCELERATE

3 MANIFESTO

Suggesting solely that a work reduction will take place would not be narrowing it down sufficiently in order to create a new architecture. Therefore, this work will make use of an existing manifesto on how politics and society should look like in the future this work is set to work on. The chosen manifesto used in this work is the #ACCELERATE MANIFESTO for an Accelerationist Politics, from Srnicek and Williams (2013). Not because it considers it to be the most likely or the best out of the previously presented works. But rather because it considers the work reduction to be more present and stronger in it. Therefore, it allows the creation of a more extreme and exaggerated speculative architecture. This Manifesto seeks to change the world rather than interpreting it. It calls out for leftists to take advantage of every technological and scientific advance made possible by capitalist society to claim, “the materialist platform of neoliberalism” as a “springboard to launch towards post-capitalism.”

It suggests that the only radical response to neoliberal capitalism is to ‘accelerate its uprooting, alienating, decoding, abstractive tendencies’, while adopting a ‘politically and theoretically progressive attitude towards its constituent elements’.The basic concept of the Manifesto is to reduce the work ethic after labor automation, so that work doesn’t have to remain a necessity in life; and in order for that to work: reducing the weekly working hours and implementing some sort of alternative income, such as the Universal Basic Income.

The main aspects of this alternative would be that living out of creativity and exercise should be of higher importance than “work”. And the society should be more responsible and more aware in terms of sustainability and food consumption and food waste – forcing the food production and the world itself to become more sustainable.In this “new world” there should still be counties but merely for administrative reasons (e. g. to take care of taxes). All borders should be open, making a global community sense more possible.

And the extent of job automation in this case should allow for the existence of creator of environments, a DEUS (god), a machine capable and responsible for creating a new architecture and a new world for this new society.

Figure: Constant Nieuwenhuys
New Babylon

4 ANALYSIS OF A CONCEPT OF A SOCIETY WITHOUT WORK: CONSTANTS NEW BABYLON

As a main reference for its main concepts, the work intends to use the concepts of New Babylon from Constant Nieuwenhuys, a very similar work to this one.

The Dutch visual artist, Constant Nieuwenhuys, also known as Constant, invented a world with a different society and architecture between 1956-1974, a positive outlook on an anti-capitalist world. He had the dream of a post-Marxist and post-revolutionary society, with architecture intended for people without hierarchy, violence and exclusion. In this society, people should be focusing on art, creating, inventing new art, rather than sacrificing their time for labor. With labor work disappearing, collective timekeeping has no more raison d'être; the inhabitants will, on the other hand, have a considerable amount of free time. In addition, collective ownership of the land and the means of production, and rationalization of the production of consumer goods, facilitates the transformation of this energy into creative activity.

The title New Babylon explained by Henri Lefebre as „a New Babylon -- a provocative name, since in the Protestant tradition Babylon is a figure of evil. New Babylon was to be the figure of good that took the name of the cursed city and transformed itself into the city of the future. " Constant wanted to portray his New Babylon as an "ideal world". A "worldwide city for the future" for homo ludens, which can be translated as people of play. The citizens should focus on self-fulfillment and self-satisfaction through creation and being to roam freely in a world without work. Society no longer is a "ora et labora" like it used to be for centuries. The motto of this anti-capitalist approach would rather have been "be playful and creative".

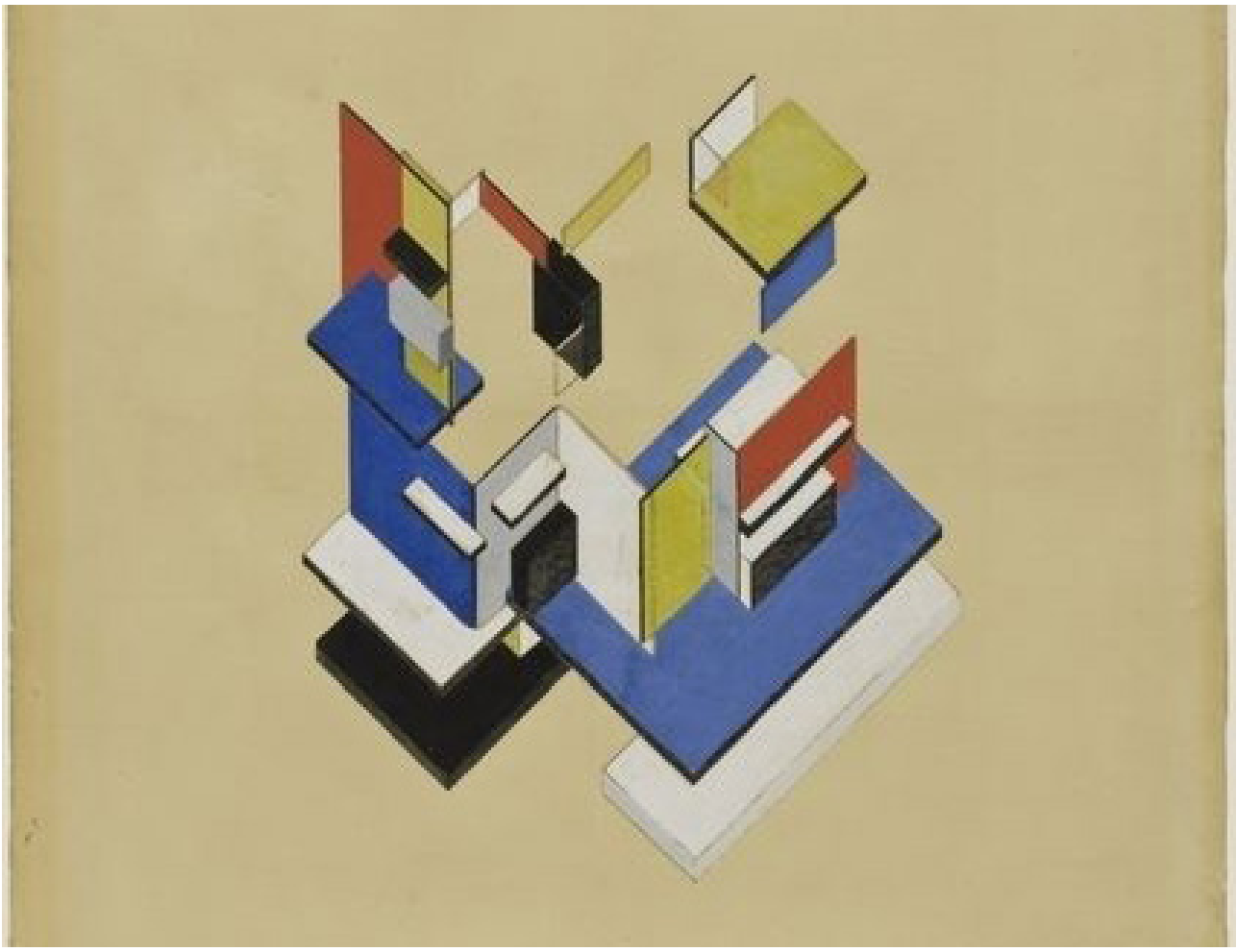

Figure: Theo van Doesburg - Contra-Construction Project (Axonometric)

Constant was influenced by the Dutch art movement De Stijl. De Stijl can be expressed as the religion of lines. Through analysis on lines and basic shapes and colors, not only has this style of art become of importance for De Stijl, but also for Constant's take on his approach to the architecture of New Babylon. In New Babylon, life represents a succession of moments, not a continuity. These moments are in constant change, new ones erase the previous ones, leaving life and the living environment being a non-fixed settlement, but a non-stop evolution throughout time.

Automation is recognized as the second industrial revolution in New Babylon and is the important aspect to the society. Norbert Wiener, the pioneer of automation, wrote a study on possible social consequences. In a world without work, time will be viewed differently than usual. "The intensity with which time is spent will take on a more continuous character". With people becoming more active rather than living a sedentary life with work being the focus, they no longer need fixed residences for dormitory needs. Time and energy are spent differently in the world of New Babylon.

New Babylon is a web, a network covering the entire world. It's not a city in a traditional sense, like back than in the Middle-Age functioning as a fortification, in the Renaissance acting as a trading sphere and in the Industrial era a functioning city. It's no long a "utility" city. For Constant, New Babylon is a network, a world with countless rooms for people to stay at, as mankind no longer has to settle down to a specific place, he now is able to roam the world freely, as labor isn't keeping him behind anymore.

It is one large structure spread across the entire globe as a megastructure, formed

Figure: Constant‘s New Babylon Model

with only the most basic architecture elements needed for the citizens. The goal of this minimal environment is to enable to continuously change and create a new space for the needs of every individual. New Babylonians are nomads, who roam freely around the city with the goal to create a revolutionary architecture with a suitable society for this constantly changing world, free of work.

The concept was of a city in a series of interconnected platforms that would host different environments for living in a decentered, multi-layered space for living, with underground and ground levels, as well as numerous layers above ground with air traffic and related landing platforms, sporting fields and green spaces. Automated factories and working machines would be held underground.
The network New Babylon would be an environment covering the entire globe, with no borders, countries etc. This network would be divided into different sectors with different colors. The different colors would be associated with different moods and different emotional states and would be reserved for people in these respective moods. This way, Constant tried to give people the possibility to spend time in the visually ideal spaces for their current moods.

Space in New Babylon is a psychogeographic one, which means that its ambience has a psychological influence on the individuals. It is an artificial landscape that is in constant movement. The inhabitants are able to change the mood of their environment and enable new forms of behaviors within these spaces.

New Babylon is portrayed as a revolution in architecture. One could say that it’s an anti-architecture. But at the same time, it’s an entire network of architecture. Constant was

‘The project of New Babylon only intends to give the minimum conditions for a behaviour that must remain as free as possible. Any restriction of the freedom of movement, any limitation with regard to the creation of mood and atmosphere, has to be avoided. Everything has to remain possible, all is to happen, the environment has to be created by the activity of life, and not inversely’.

– Constant Nieuwenhuys

a believer of technology, which was a crucial aspect in New Babylon. Back then, it was the radio which fused people together. People were no longer separated by space. The radio was a revolution, making sharing news, music and ideas between everyone possible. For Constant, the evolution in technology makes lives easier. That is why the creation of A.I. and robots taking over the working world is such an impactful change in the way of living, making enjoying life in its absolute completeness possible.

New Babylon is probably one of the largest scaled projects in the architectural world, as architects would call it a “megastructure”, yet it was never realized. For Constant, it was more important to put the idea of this kind of a society of self-satisfaction and self-fulfillment into the heads of people, but he didn’t want to tell them how to live their lives. This is something which everyone must figure out on their own. However, if people changed their point of view on life, then it would be possible for the society to change. Space in his vision is the social space created through architecture. It’s the meeting point of different ideas and concepts to create something superior, but also a space where humans share the planet, the economy and information.

Constant’s work is still of important relevance today. As humankind are approaching the era of A.I., possible solutions are needed for a new functioning society. Despite his 20-year long research of this concept with plenty of models, paintings and drawings, it also causes many questions to contemporary issues which remain unanswered. In which ways can architecture change social and political aspects? How can an architect contribute to this change? Is it possible for design to change the world? There are plenty of questions which will have to be figured out over time. Nonetheless, New Babylon is a great starting point and inspiration for a post-capitalist society.

Nowadays, humanity is living in an age with social media being platforms for expressing themselves creatively in the best possible ways. Platforms such as Instagram and Youtube have fulfilled the abilities for people to experiment with new medias, like photography, videography, entertainment, graphic and fashion design etc. in such a way that hobbies can become their jobs.

Some architectural features of New Babylon are timeless and can well be integrated in contemporary concepts. In New Babylon, Constant introduces the concept of multi-layered, changing spaces and paths through labyrinth-like latter paths that could be arranged according to people’s needs and desires. The idea to have these multilevel, overlapping, interconnected and changing spaces is a timeless feature which would always make a space or environment more interesting. With the possibility of multiple different arrangements, exploring it to its very last corner remains exciting. The world should be transformed into an adventurous playground for all age groups. A place that can be explored at all times.

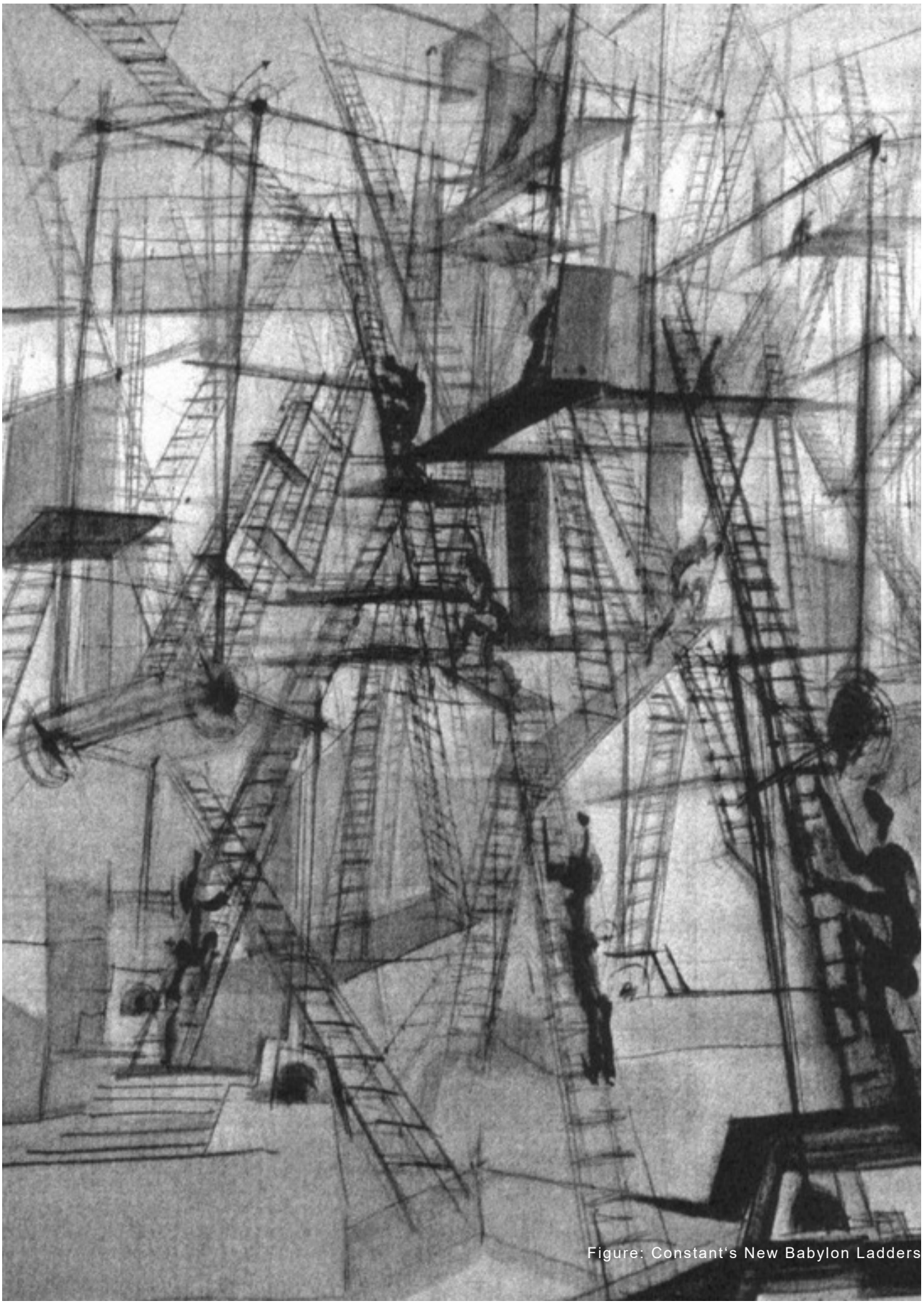

Figure: Constant's New Babylon Ladders

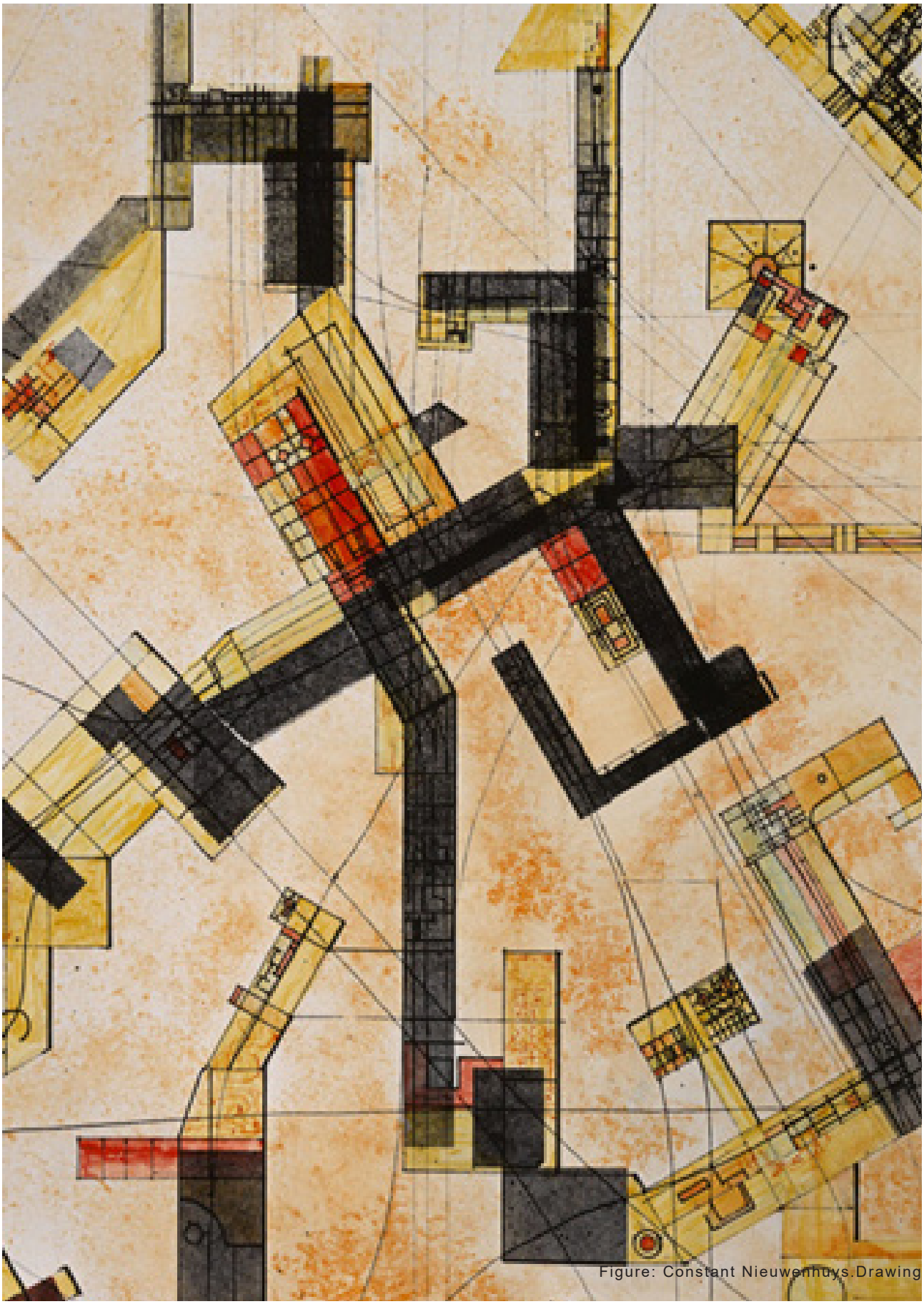

Figure: Constant Nieuwenhuys.Drawing

The timeless architectural features are the constantly changing and transforming spaces; as well as the labyrinth-like complex contorted paths connecting multiple levels in complex systems: A space hard to fully understand - that wakes curiosity and excitement - and functions as a space to be explored and (re)discovered at all time; As well as the interconnected platforms that host different environments for living in a decentered, multi-layered space for living – in a multilevel and interlaced, interconnected and entangled system.

New Babylon was never realized, though. For different reasons. Unfortunately, instead of the rise in automation in society freeing time for people to use on leisure activities, it has led to more violence and has been used for the purpose of destruction and asserting powers. And work reduction has not happened at all – much for the contrary. But with the tendency of that changing soon.

The project New Babylon is utopian in its ideals of liberation, its projection of a harmonious society freed from utilitarianism, and the obsolescence of human labor. It is also utopian in its belief in the possibility of absolute collectivity and its imaginary where pleasure and imagination become the primary forces in humanity. It is also very optimistic in believing that society could entirely be driven by automation.

Therefore, our work, unlike New Babylon, is directed towards a society in which human labor does still exist, but in a very reduced way. It is not to be seen so much a global megastructure, but rather as an urban concept applicable over the globe.

Another notable aspect about New Babylon is the absence of nature in any of its concepts. Our concepts should include nature as one of the main and most important aspects. It should be a sustainable and green vision for previously specified societies.


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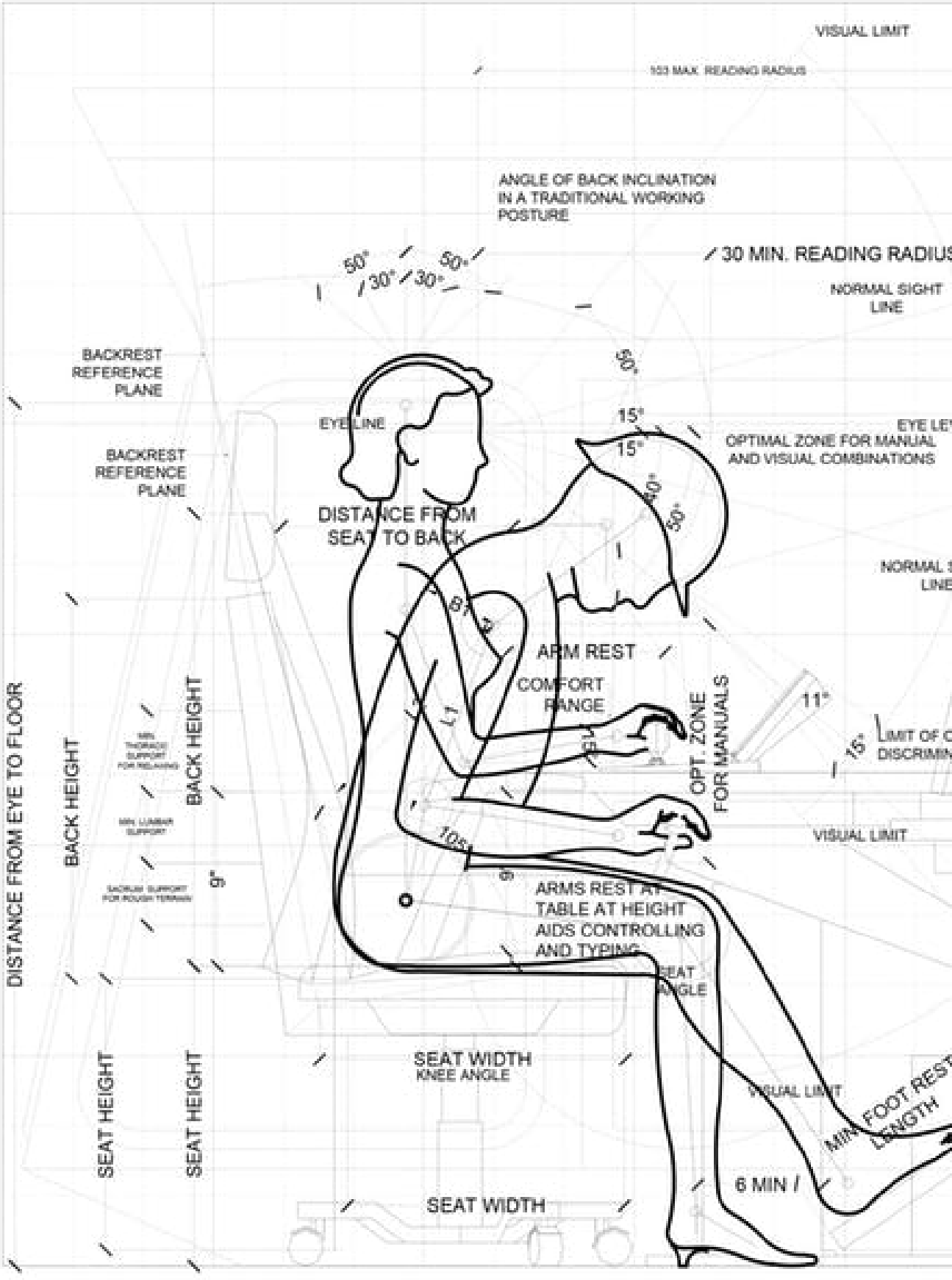
Figure: Constant Nieuwenhuys: Symbolische voorstelling van New Babylon (detail) (1969)

„Exploration is really the essence of the human spirit“

- Frank Bormann, US-american astronaut

Figure: Constant Drawing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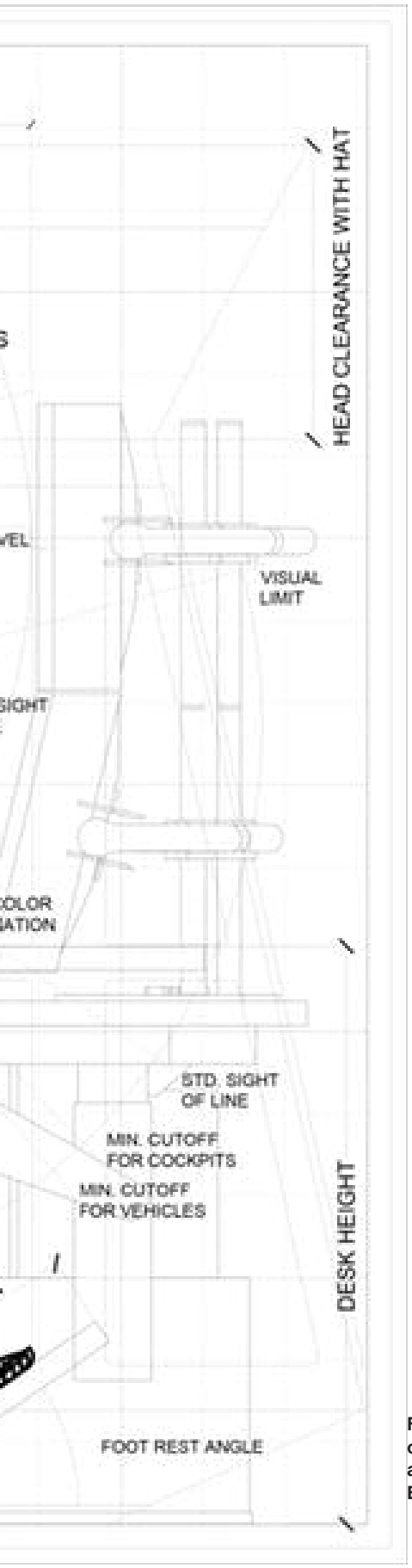

Figure: Gallery of Dutch Pavilion at 2018 Venice Bienale

5 WORK, BODY, LEISURE (2018):

ARCHITECTURE AND SOCIETY AFTER DISRUPTIVE CHANGES IN LABOR

As another main reference, this work uses the work Work, Body, Leisure by Otero Verzier and Axel (2018). Work, Body, Leisure explores the spatial configurations, living conditions, and notions of the human body engendered by disruptive changes in labor, its ethos, and its conditions.

The work was published in conjunction with the Dutch Pavilion at the Biennale Architettura 2018 and it tackles Constants New Babylon, trying to refresh it for the present (of 2018) as well as studying various other research topics.

The book presents a series of different architectures in the Netherlands and elsewhere in which bodies are categorized and transformed: These spaces include beds, offices, farms, windows, factories, playgrounds, virtual spaces, and doors. These are supposedly familiar-looking but still important for the transformation of labor. It seeks to create new forms of creativity and responsibility within the architectural field related to new technologies of automation. The work features mainly research and innovation and has been manifested in various publications, podcasts etc.

The work suggests that the Netherlands have been and continue to be a testing ground and pioneers for the future of labor when reimagined.

This was the case – for example - before and after the legalization of prostitution, when new architectural typologies (such as many garages at e.g. docks) started appearing. This new form of labor created new spaces and typologies as well as new customs.

A more recent example would be the massive areas covered by hundreds of greenhouses in the Netherlands. This is a “newer”, more

Figure: Frank Hagens: Aerial of greenhouses / glasshouses in the Westland area in The Netherlands

controlled food production method, where outside conditions no longer influence the success rate and where automated harvesting is easier.

The book questions current work ethics, claiming that work is the most important factor in human life's today. People orient their whole lives towards work and try to find a lovable work. People either live to work or work to live, with many lesser wealthy people trying to survive and avoid famine through inhumane jobs.

The book also urges new jobs to be created, with more ordinary functions being paid – such as housework. Especially for lesser wealthy women who have no choice other than housework – and should be rewarded and paid for their work and commitment. In this context, the book cites examples of automation innovations for homes such as the first "fully automated" kitchen by Hasso Gehrmann called Elektra-Technovision (1970).

It also cites the slave abolition to show the complexity and difficulty of real freedom and leisure. The no more owned slaves weren't free after the abolition and had to go through arguably even worse times afterwards, as they suffered with a lot of prejudice and without any education were forced into almost slave-like working conditions. So, what is true leisure?

According to Axel and Otero Verzier (2018), true leisure is the highest experience if intellectual freedom and requires a space outside if need and ritual. So, in order to experience true leisure, one must explore new spaces and try new activities.

Furthermore, the book calls attention to the importance of the human body for everything. The comfort of the human body is essential for productivity, happiness etc. Playing and resting areas in e. g. educational or working spaces are regarded as essential. And Axel and Otero Verzier (2018) claim that the

Figure: Hasso Gehrmann: Elektra-Technovision

automation and technological advances of the past have been harmful to the human body. Advances such as the introduction of the production line in industry have worked against the human body, worsening health and psychological conditions for many people. The authors call out for that to change and for machines to start being helpful and sparing to the human body. Machines should not force us into situations or point us to the wrong direction. They should rather help humanity to get where it wants to get to.


WAGES FOR

Figure: The women of wages for houswork.

Figure: Picasso‘s Portrait de Marie Therese Walter with 21st century gadgets.

6 FUTURE WORK REDUCTION:

CONSEQUENCES

A future work reduction would ultimately result in people having more free time to spend on “fun” activities and enjoy their life’s. In a future of work reduction, people will spend more time with their leisure activities. And even though there are already infinite possibilities, more spaces for common leisure activities must be built. And with more free time to spend, people will travel, stroll and explore more, including in their home habitat. Therefore, every human habitat must be (re) designed/kept in a way that exploring it to its very last corner remains exciting. The world must be transformed into an adventurous playground for all age groups, where people can live out their creativity to the very last.

Obviously, many hobbies and leisure activities that were common in the 1950s to 1970s still remain popular as they have for centuries. Such as various forms of art, music, traveling, sports, strolling, sunbathing etc. These types of leisure activities will always endure.

But since Constant’s work, foreseeably technology has progressed significantly. Creating new possibilities on how people can spend their free time. From multiple – to Constant’s time unavailable/inexistent – gaming consoles and smart mobile devices people carry with us at all times to future trends in technology with computational intelligence and machine learning progressing rapidly as well as the virtual and augmented reality devices seemingly unavoidably being integrated in peoples every-day life in future.

When Constant started his work New Babylon in the 1950s, not even cellphones, let alone smartphones, had been invented. Today, almost every person possesses a smart phone, which they carry around almost at all time. Carrying around devices - that help us make everyday choices, understand

everyday issues and that give us information about almost whatever people want to know independently of thir location and time – was – although foreseeable – very unthinkable at the time.

Nowadays, people spend much more time with technology than even two decades back. One can see people using smartphones and similar devices almost everywhere at any time. And with AI and robotics constantly making progress, it only seems to be a matter of time until friendships with robots or intelligent systems can be made.

Honda‘s ASIMO (created in 2000 but constantly being further developed) is one of many examples of humanoid robots, that can communicate with humans and even seem to develop more and more social skills. And with other robots such as the Spotmini (a robot that quite accurately imitates movements of cheetahs) being and acting similarly to animals, it seems as if humanity could soon see robotic pets. Will it at some point be normal to have robotic family members? And what else could be whiteness soon?

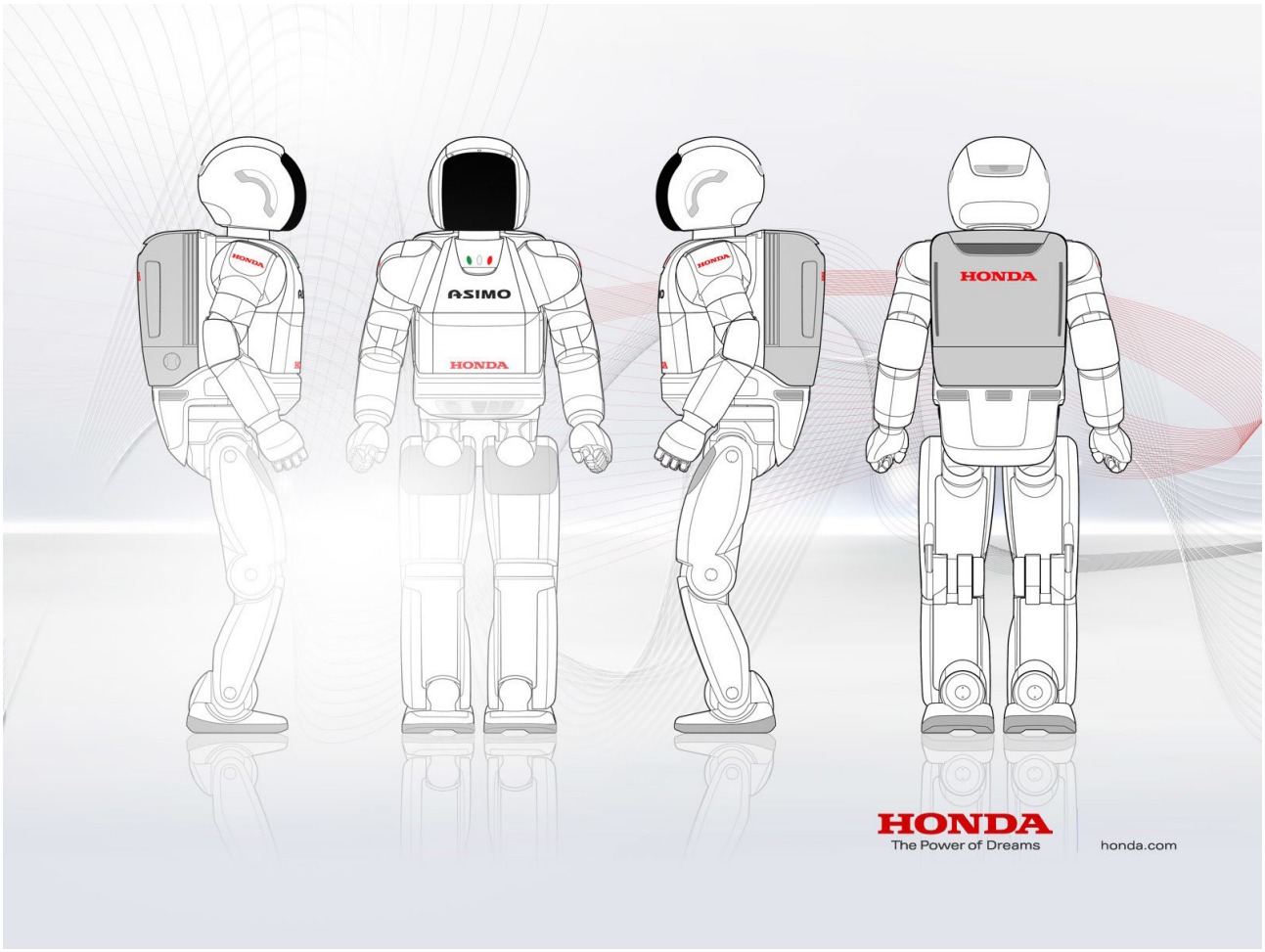

Figure: Honda‘s Asimo

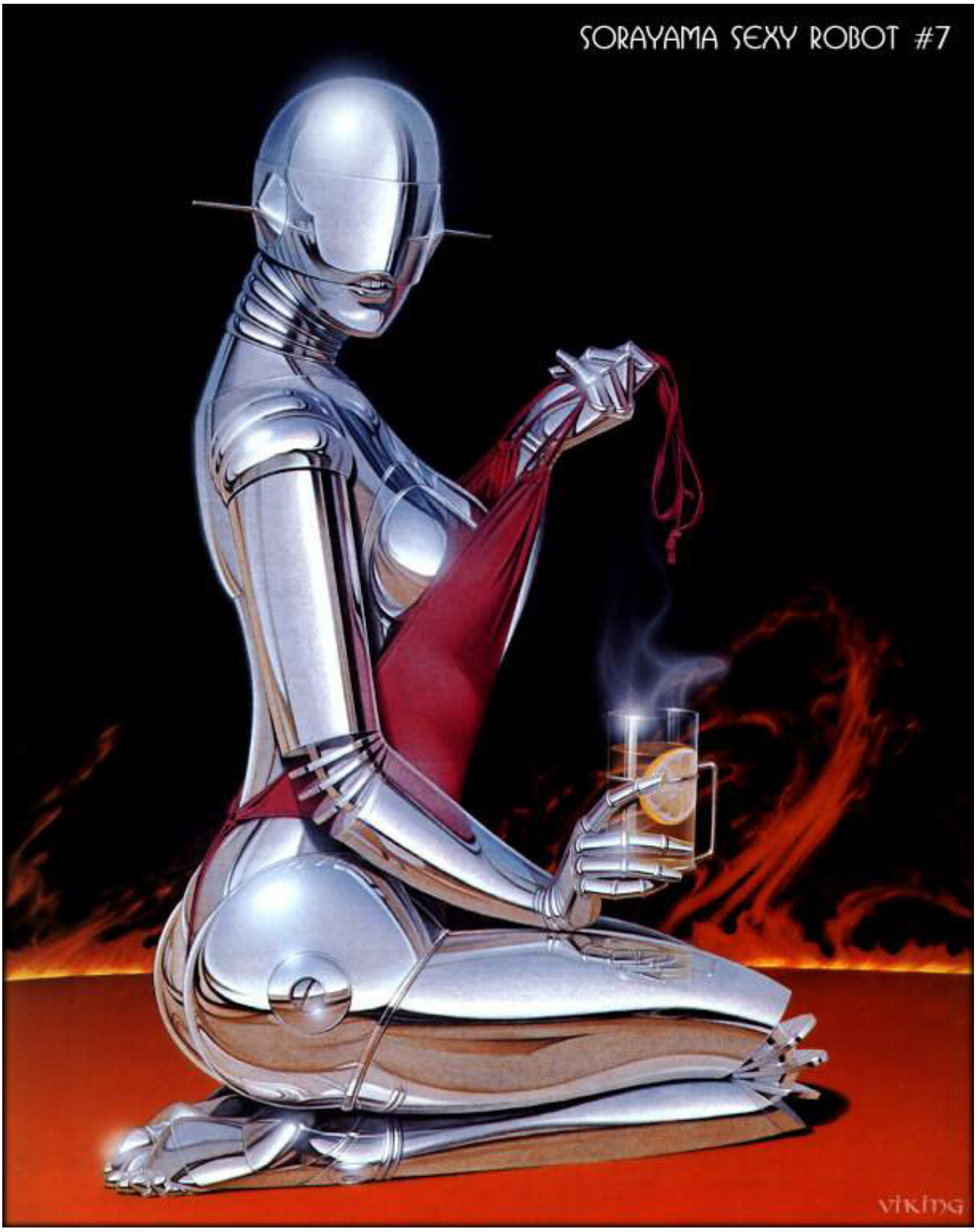

Figure: Sorayamas sexy robot from Genesis 3

Figure: The AT-ATs. Inspired by Dali's Elephants

6.1 AR and VR as the *"missing piece"*

The devices people carry around tend to become smaller, more practical and more advanced. With virtual reality, diving into a computer generated, imaginary world has become possible. Through technology, one can dive into whatever environment one wants to (at least visually and audio), regardless of location. This is how Virtual Reality goggles work.

The film Ready Player One (2018), a science-fiction adventure film, envisions a future where most people live significant parts of their life's in a virtual reality, where they make money they can spend in the physical reality as well. The virtual reality, called "Oasis" is a universe where every character/person can look, live and be however and wherever the person in control wants to. One can play sports, musical instruments etc. and it all feels "real" as a result of special suits and treadmills as game controllers. Every person can live their creativity and imagination and even have jobs in the "Oasis". Society lives in a global hobby, where they make money and live as the characters and in the way they would enjoy the most. This feature of having a global hobby universe hidden in virtual reality is a very interesting factor in order to create a world where creativity can be lived out to the very last and everything can be changed and adjusted to ones will.

And with augmented reality – such as the HoloLens - progressing equally rapidly, it seems to be only a matter of time until most people walk around with goggles or glasses that function the way that smartphones do. These augmented reality devices will be able to give people visual information about everything in their sight range (if requested so) and can change their perception on their surroundings – possibly adjusting them for their needs. Through augmented reality, some spaces may not have to be equipped according to their function. Multifunctional spaces can be adjusted by augmented reality in order for them to function the way one needs them to. AR and VR also allow these functions to be located to whatever space one wants them to happen in. E.g. a school classroom can be an augmented reality vision almost everywhere. This will also give people the possibility to have eye to eye conversations and meetings without actually being next to each other location-wise.

And with technology and machines becoming more intelligent by every day, the idea of friendships between human and artificial becomes more and more realistic.

These changes will not only change the leisure time, but also the work – and every other aspect of life. So, how drastic will these changes be? And how do they affect free time

Figure: People in Ready Player One (2018)

Figure: The Void

and what special/architectural adjustments will they require?

In New Babylon, citizens themselves would determine the extension and uses of the spaces they inhabit. The idea was to have a transformable spatial labyrinth in which macro-structures would support transformable interior environments whereas micro-ambiences would configure the visual, haptic and audio conditions according to the occupant's desires.

Creating mechanisms in order for this to happen, is quite unimaginable and complicated, though, considering that not two different desires could be fulfilled at once when two citizens occupied the same space. But, thorough the technology of AR and VR, spaces could be adjusted to occupant's desires at will at any time in multiple different ways at once – for each occupant to have the exact special conditions that they are looking for. Everyone could shape, color and light space according to their personal desires.

There even is an existing business enterprise, called "the VOID", where one can enter a virtual reality inside a room designed for this virtual reality, making it feel "real". The space in this room is designed with the same characteristics, obstacles etc. as the VR so that one can move around and actually feel what they are seeing. This very elaborate concept could possibly be seen as a mixture between AR and VR, as one experiences a VR that is completely adjusted to the physical reality. Or in this case, the other way around.

Furthermore, with Machine Learning (application of AI that provides systems the ability to automatically learn and improve from experience without being explicitly programmed) making huge progress as time passes, VR and AR could be used in order for machines to learn more about human behavior, human preferences and human life – in case these technologies become globally used a lot by people. This could potentially be an important tool for a machine responsible for designing and creating a new world: The Deus ex Ma(s)china.

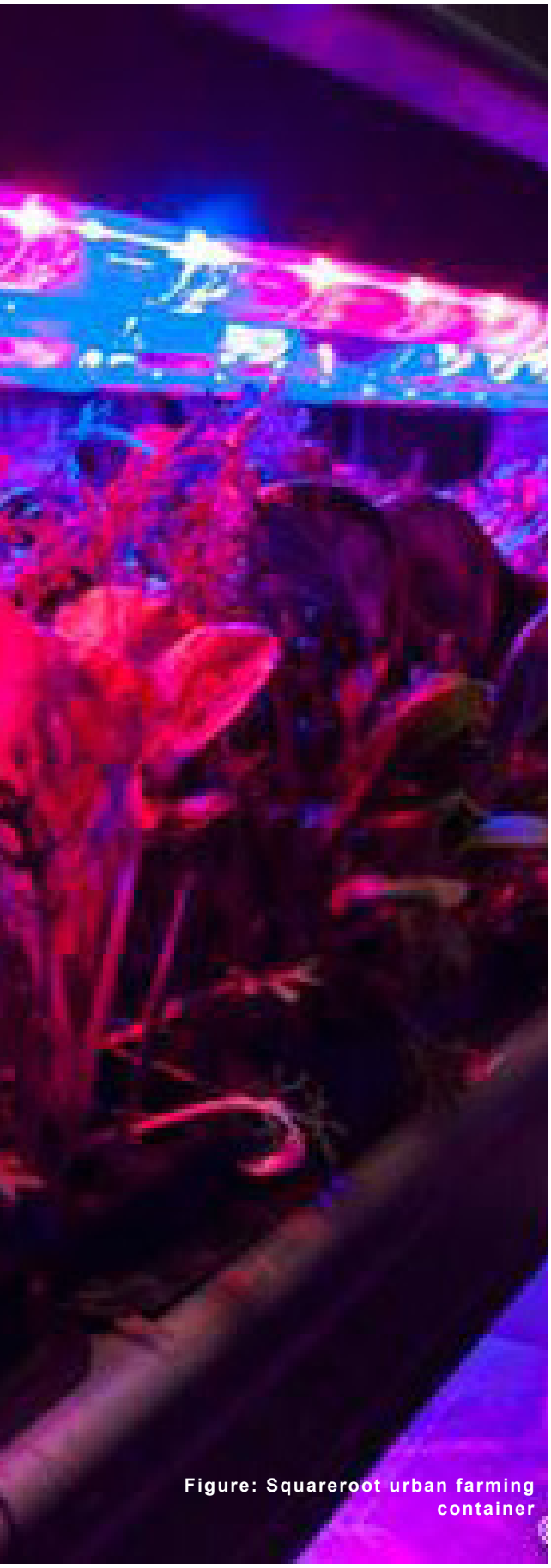

Figure: Squareroot urban farming container

7 A SUSTAINABLE FUTURE OF FOOD PRODUCTION

As the works research established changes in the food production as one of the more important factors in order to move towards a sustainable future, this work sets its focus on an architecture of food production as the most detailed and hyperbolically speculative part of this work.

What could the Deus ex Ma(s)china identify as important and relevant possibilities? If the machine were to identify rural agriculture as a major hazard source, how could it transfer food production inside urban areas?

The first and most obvious solution that comes to one's mind is Biodiversity in Farming replacing the problematic monoculture spread over the globe. In the film Our Biggest Little Farm from John Chester (2019), a couple moves from LA to the countryside of California to a dried out former monoculture-based orange farm and they successfully restore an ecosystem through biodiverse farming and end up living in harmony with nature. The outcome is a restored ecosystem in which every species has a function and nature balances itself out, naturally preventing plagues or similar – making the use of pesticides or chemicals unnecessary. Although the film is more of a more of a splendid commercial - as opposed to an argument, it gives us hope. And shows, that one can accelerate a process of restoring ecosystems as well as showing that biodiverse farming could end the issues of destroyed soil and with the proximity between animal livestock and agricultural plants, e.g. transportation and soil fertilization would become cheaper and more practical. And less chemicals and pesticides would have to be used, as e.g. animal manure or highly rich soils such as the Amazonian Terra Preta could be used as fertilizers. Biodiverse farming does not exist on a really large scale, though, and is hardly imaginable. It cannot

fully replace all monoculture food production. But with a more biodiverse approach towards farming, no matter where, local farmers would produce a great variety in products and less foreign products would have to be shipped in. And in terms of low transportation costs and related pollution and GHG emissions, the possibilities for urban farming are currently being researched a lot. It can be practiced either through horticulture (the growing of flowers, fruits and vegetables, and of plants for ornament); or through traditional cultivation systems (occurs in small growing beds, and it is widely diversified, ranging from leafy vegetables and others to grains, ornamentals, herbs, and fruit trees); or through innovative cropping systems (mainly simplified hydroponic systems: without use of the soil, instead the root system is supported using an inert medium such as perlite, rockwool, clay pellets, peat moss, or vermiculite) such as vertical farming or e.g. Kimbal Musks Square Roots Containers (New York 2017) - containers that produce a vast amount of leafy greens such as lettuce or arugula and can be placed around cities and are capable of producing as much food as a 2-acre large outdoor field would, with the use of only 5% of necessary water compared to conventional fields without the need of soil (which only works on a small scale, though) - as indoor farming methods. The practice of urban farming must be further developed in order to become a real alternative to current food production, but in the modern world every progress is rapid.

The next option would be meat produced in the lab. It seems to be the next big thing in meat production history after hunting, domestication and industrialization, although it is still being optimized, researched and developed. But it is in the coming. How does it work? In order to produce animal meat, Small amount of animal tissue is filtered and isolated so the cells they can grow. They are provided with warmth, oxygen, salt, sugar, proteins, “tricking” the cells into thinking they are inside their “owner”. They consequently naturally replicate like in the body producing muscle, fat and connected tissue. The benefits accompanied by this are that cultured meat could deliver reduced water use, greenhouse gas emissions, and less land use compared to conventional livestock meat production (approximately 78–96% less greenhouse gas emissions, 99% less land use, 82–96% less water use, and 7–45% less energy use, according to Stephens N. et all (2018). Additionally, cultured meat

Figure: Alternative Food. Collage Lorenz Foth

could be less prone to biological risk and disease through standardized production methods, and through tailored production it could contribute to improved nutrition, health and wellbeing. It aims to use considerably fewer animals than conventional agriculture and when considering food waste, cultured meat provides a new opportunity, whereby the prime cut alone is produced for consumption or processing rather than the whole carcass. There is also opportunity for each producer to create their own version of the product therefore giving them diversity and competitiveness in the market. Overall, cultivated meat embodies a much more sustainable and more ethical way of food production than the conventional livestock production.

And finally, an already - in parts of the world – widely spread costume, is eating insects. Insects are a highly nutritious and healthy food source for humans, with high fat, protein, vitamin, fiber and mineral content. Although viewed with quite some skepticism in the western world, insects are considered to be delicious and enjoyable. Insects are portrayed as one of the possible solutions in order to fight food scarcity, excessive food waste and to reduce greenhouse gas and ammonia emissions in food production and consumption.

According to Durst P. B. et all (2010) the volume of water required to raise an equivalent weight of edible insects is considerably lower than for other livestock. The greenhouse gas and ammonia emissions are also very much lower, and most insects do not even produce CH4 at all. Next, there is the fact that insects occupy considerably less space and hence take up a much smaller area for their harvesting. Additionally, insects have a very high fertility and reproduction rate, reducing the magnitude of potential diseases and epidemies, as they can restore their original population size rapidly. This, and the fact they take up little space, makes them less of a workload than other livestock. Furthermore, insects are extremely effective in converting what they eat into tissue that can be consumed by others, compared to other livestock. And one can even assume that insects are the missing link in the food cycle. By feeding them peoples food wastes and leftovers (which they will happily eat), and later on consuming the insects themselves, the food waste could possibly be solved, as well as the “food scarcity “problems, simultaneously. Furthermore, farming insects presents itself as an opportunity to create many jobs (possibly for machines), especially in lesser developed countries (for humans). But one must be careful with harvesting insects in the wild. Insects play important roles in their ecosystems and their wild populations must be preserved. There is not yet any large-scale insect harvesting yet. But many architectural concepts for insect farming have been developed and even built, such as Terreforms Cricket Shelter (New York 2016).

A big problem in various parts of the world are insect plagues. Insects destroy the agriculture and lands, forcing farmers to use chemicals and pesticides to combat the plagues. The fact that many of these insects are edible can actually be seen as an opportunity. Killing and eating these insects would decrease their population significantly (partly or even fully solving the plague problem) as well as preserving the environment from chemicals (that would otherwise be used in order to combat the plague) and providing the population with food.

Below, a little short story about insect consumption as solution for plague hazards: The Legend of Prins Eon: A short story on how insect consumption can combat plagues.

> In a small peaceful African village on a colorful blooming hill with a view to the widest horizon humanity has ever seen, crowned by an African Baobab Tree as old as 15 generations of Elephants, lived 53 strong men, 56 beautiful women, 102 playful happy children and one very wise old man. He went by the name of Stil Arend. The silent eagle. Stil was known for his quiet ways and for looking into natures’ soul. He would speak to the spirits of the fallen animals seeking to establish a spiritual harmony between the village and nature. But one cold rainy, very dark night, the village was attacked by golden armored white soldiers possessed by blood lust and evil. And even though the strong men from the village managed to keep everyone safe and protected, unharmed and healthy, the big Boabab would stand in flames, crying tears of resin and screaming sparks of anger. For the first time in 25 full moons, Stil Arend opened his mouth for the village. He said in a shivering voice full of horror and fear:
>
> “The Boabab is screaming for revenge on humanity! There are dark days in front of us! Only the actions of an innocent prince can help us now!”

Figure: Boabab Village. Collage Lorenz Foth

And so, the tree burned down to its very last ashes, leaving the village in sadness and tears. And on the following day already, a dark cloud would approach from the horizon in unmatchable speed. But it was not a cloud, it was an endless swarm of grasshoppers who were searching for food. They would eat all the grass and the flowers and the fruits and the leaves. They would even eat the roofs' straw; the people's hats' and they would even eat the light of the day. The grasshoppers wouldn't stop coming for days, for weeks. No one knew how much time had passed, they only knew that the night of the grasshoppers blocking the shine of the sun, was a night that was longer than the wide wide horizon. With no food to eat and no sun to enjoy, the villagers became weak and feared they would starve. Every single villager had lost weight, strength and hope. Every single one except for young Prins Eon, the 3-year-old with the shiny golden eyes. Eon had a big healthy belly and would wear a beautiful smile that covered his entire little face! He would run around and chase the grasshoppers and play and have fun, but he was the very very only one....

Stil Arend, though, couldn't help but notice the healthy happy little Prins Eon filled with energy and joy. So, he observed what Eon was doing in hope of finding the sunlight and life of the village that needed to be restored. And what he saw was brilliant - Eon would pick grasshoppers from the ground, from the air and from the walls. He would eat them and giggle and continue playing and running before grabbing more grasshoppers and eating some more. So Stil Arend shouted in excitement, hope and delight!

"Natures' revenge was a plague and it brought darkness and hunger, but the path out of the dark cave is the same path that brought us inside. The plague is the solution to the plague itself. We need to feast on the plague and fill our bellies. We need to feast on the gift that nature provides for us."

Figure: Peter Menzel: Tha Meb 2

> And so every villager started eating the grasshoppers, filling their bellies with food and their hearts with the hope and joy that the grasshoppers had taken. And with every passing day more and more joy, strength and hope were restored, and less grasshoppers would endarken the days. More and more plants would start growing and blooming and eventually, on the day now known as the day of Prins Eon, the plague was gone and from the ashes of the burnt down ancient Boabab a new little Boabab leaf would peek out of the dark past reaching for the sun.

And although insects could partly help reduce the food waste problem, people must take care of it themselves! The YouTube Video „Lebensmittelverschwendung vermeiden“ from Quarks (2019) presents a sustainable cantina - that buys unwanted food and reuses leftovers for more food and as combustive for biogas powerplants, generating power - as example to be followed to change this excessive food waste humans are producing. It shows that with discipline and the right approach, this issue can be reduced.

Figure: Hansel and Gretel

Figure: Bridges in Khasi and Jaintia Hills

7.1 Food as Architecture?

Obviously, architectural solutions must be provided for insect harvesting, meat cultivation, urban farming etc. But in a more audacious, hyperbolical approach of food production related architecture, what if food becomes architecture? The idea of edible architecture, living inside of food – is one that has been present in for centuries and can be seen all the way back in the Brothers Grimm Fairytale Hansel & Gretel with the Gingerbread House of the evil witch. But what if it becomes common? What if food becomes architecture?

If Deus ex Ma(s)china were to analyze the behavior of other living species, could it possibly identify parasitic behaviors as beneficial for humans? Could it come up with ideas and solutions for people to inhabit their food sources?

There have, obviously been numerous projects and “jokes”, where houses similar to the Gingerbread house have been constructed. But using food as construction material seems to be wasteful, extra work and not very effective... But what if one could grow architecture? What if humans lived inside of growing food? What if people become the parasites of their own architecture/biotecture?

Of course, growing/living architecture is something that exists already and has existed for centuries (e.g. bridges in Khasi and Jaintia Hills (India) being over 500years old) but the idea of this living architecture being edible is fairly recent.

A concept by Architect Mitchell Joachim from Terreform – Fab Tree Hab (2006) - suggests that people could grow their own consumable houses out of growth-direction-manipulated trees from which they could consume the fruits, leaves and possibly animal and fungi inhabitants or cohabitants.

As opposed to many concepts of “green architecture”, such as vertical farming, where architecture is built and nature is subsequently added, this biotecture concept of using nature as architecture is a much more nature-preserving and ecosystem-aware approach to green architecture.

Biotecture could also be part of the urban architecture in future. Parks are regarded as essential for cities and in a society of much leisure time must necessarily continue being so. But parks are mostly uninhabited by humans and work as empty spaces (Housing wise) in cities. But if people can grow their habitats, they could make parks inhabitable. Whole forests could become urban districts giving cities more variety in aesthetics and atmosphere – creating more opportunities for exploration in leisure time. And making the city greener and more sustainable.

And with gene manipulation it has also become possible to grow plants carrying up to 40 different fruit types. If humanity develops these technologies further, it might become possible to have a great variety of edible housing opportunities by only growing one anthropogenic plant “species” (created by humanity).

Growing architecture means that spaces will change and transform constantly according to this growth. Therefore, one of the timeless features of Constants New Babylon – the transforming and changing spaces - is automatically integrated in the concept of these edible urban biotecture forest districts.

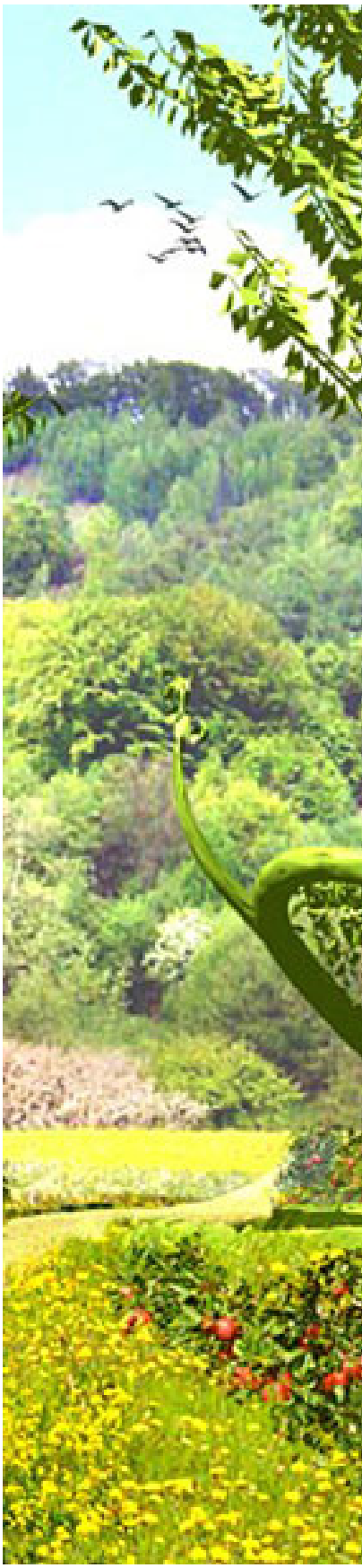

Figure: Terreform: Tree Fab Hab

Figure: AR/VR Picasso

8 ARCHITECTURAL CONCEPT

With the way things have been going, humans must seemingly create some drastically new architectures. With the increasing number of the population an accelerating destruction of the world, new typologies of living might have to be created. These are 3 examples how architecture could change over the next century. In China, with the massive amount of inhabitants, it has become the center of futuristic architecture. They are continuously researching and looking for solutions on how to accommodate their 10 million and more inhabitants per city. More and more megastructures are appearing with solutions of having a closed ecosystem and an entire indoor infrastructure system. Other examples in case of massive flooding would be underwater or aerial architecture. But these are only concepts on a world if human population continues like it is currently doing.

As this work envisions a change in societies mentality (in the Manifesto) and sustainability this doesn't remain a necessity for people. This concept does not need to be built in any new typology of living. But it must include special/architectural solutions for society highly active in AR and VR and also include special features related to these technologies. It must also include playground-like "fun" environments integrated into the architecture and there must be biotecture districts in these urban areas. As follows, the work (and consequently also Deus ex Ma(s)china) will analyze and determine how exactly each of these features may work and look like:

8.1 AR and VR related Architecture

The technology of VR is the simulation of an environment which is experienced through a human-machine interface, where one either interacts with it through an immersive or a non-immersive way. It's a tool which could be used in many areas, especially after this

engine has improved over time, transforming the current VR world into a more realistic approach to real life with a high level of detail. It can be used for educational purposes, where people can e.g. relive a historic event with all of its details and nearly authentic atmosphere. Users could enjoy strolling around Rome during the Roman empire, experiencing gladiator fights in the colosseum, or they could discover how life was in the 19th century in the UK during the Industrial Revolution. Not only do users profit from these possibilities to broaden their knowledge in history, but also those who are recreating these sceneries. It's a job opportunity for anyone interested in architecture, history and gaming design.

Being engulfed by the surrounding room can have a very powerful impact on the psychology of the experiencer. Seeing something on a screen cannot be compared to being completely part of something. Being part of something is certainly more influential than only being an observer of video. This is where the spatial aspect of architecture comes into play. An architect's task is to create a space for a user where they can feel at ease or admire the beauty of a building, a room. The play of shapes, light and shadow, the acoustics and size of a space will have different effects with each modification to the user.

For that reason, experiencing history or any scenario through the spatial sensation will be certainly more memorable and exciting compared to a history class through a passive, one-sided way of teaching facts.
But of course, VR is a major tool for experiencing any kind of adventure, to each of their own. Like in Ready Player One (2018), anyone can escape into an imaginative world which can be more or less realistic. You could be exploring the deepest alleys in a cyberpunk skyscraper jungle or fight on a post-apocalyptic battle ground and just basically anything else possible through imagination. Through these uses of VR, the creation of landscapes is unlimited. It is a way of fusing the spatial experience of real-life architecture with game design, where creativity has no limits, into an interactive new world. It is a platform where creators work together on an interdisciplinary level, making imaginary landscapes which you can explore freely just a click away.

In the real-life built environment, VR, but also AR, can not only be used as a tool to visualize ideas for architectural, landscape and urban design, but also to analyze construction, facility management and to test the lifecycle of a building. It can also radically improve the communication and visualization of a concept, which results in making everyone able to participate in the design process.

It optimizes management and productivity of the building process, enabling a smooth procedure of the actual construction on site. With the AR inventions such as Microsoft's HoloLens, Morpholio's AR Sketchwalk and DAQRI's Smart Helmet, on-site analysis become easier. 3D models in AR are portrayed as immersive large-scale 3D environment. This way, the workers can compare work-in-progress with the original design and keep the construction procedure in sync with an all-digital workflow. Everything can be followed through lenses, goggles and tablets.

Augmented Reality can be used not only by professionals, but by literally anyone. For the concept, AR is used as a tool where everyone can customize their surroundings to their

"I observed people in tears after both immersive experiences, with a longing to explore the topic further. It demonstrates how virtual reality can blur the boundaries between real and imaginary worlds and forge a strong emotional bond between people and the content they are exposed to. This magic of being present changes everything."

- Gordian Overschmidt, Zenvision.

Figure: Ready Player One (2018)

current needs. Through lenses, a space is being adjusted through lighting, ambience, sounds and anything else which one fancies for the moment being. This way a group of people could be physically in the same room, but through AR everyone can experience it in a different way, making meet ups with friends and colleagues even more exciting and special. The spatial sensation could be improved to these technologies.

AR would allow people to experience the environment, objects and their surroundings in a different way and possibly in a more detailed way. People could examine objects, turn them around virtually and hence understand things better and easier by solely using AR.

VR and AR, although only fairly recently developed to a stage near where science fiction foresaw it to be, is a very old concept and has featured in many literature works as well as in filmography – e.g. in Back to the future 2 (1989).

Interestingly, even though these technologies seemed to be quite distant back in 1989, the first virtual reality device had already been released decades before, for example in 1962: The “Sensorama”. It was a machine that is one of the earliest known examples of immersive, multi-sensory technology. It was introduced by Morton Heilig and is considered as one of the earliest virtual reality systems. This device was very big and not movable, though. One could only move their head and eyes, experiencing this virtual environment.

And even in architecture there have been famous similar ideas. Between 1968 and 1970, Archigram designed the “Holographic Scene Setter” as part of the project “Instant city”. And with no technology yet invented that could successfully create an accurate hologram without any dust, water or other particles in the air, AR seems to be the only current possibility to realize this idea. With AR one could successfully create holograms (which could be switched off and only seen by those who want to see them).

And it embodies the perfect machine learning tool in order for Deus ex Ma(s)china to learn about and analyze human behavior. Today, online platforms such as Google or Facebook are already capable of using machine learning and AI in order to decide on which Ads to display for every person – based on their online activities and even location. With AR and VR technologies, platforms (such as Deus ex Ma(s)china) could potentially follow a persons every move, recording even their subconscious customs and actions. The machine could potentially record and remember visual, audio and even haptic experiences a person makes.

Figure: Scene from Back to the Future 2 (1989)


ron herron : archigram : july 1969

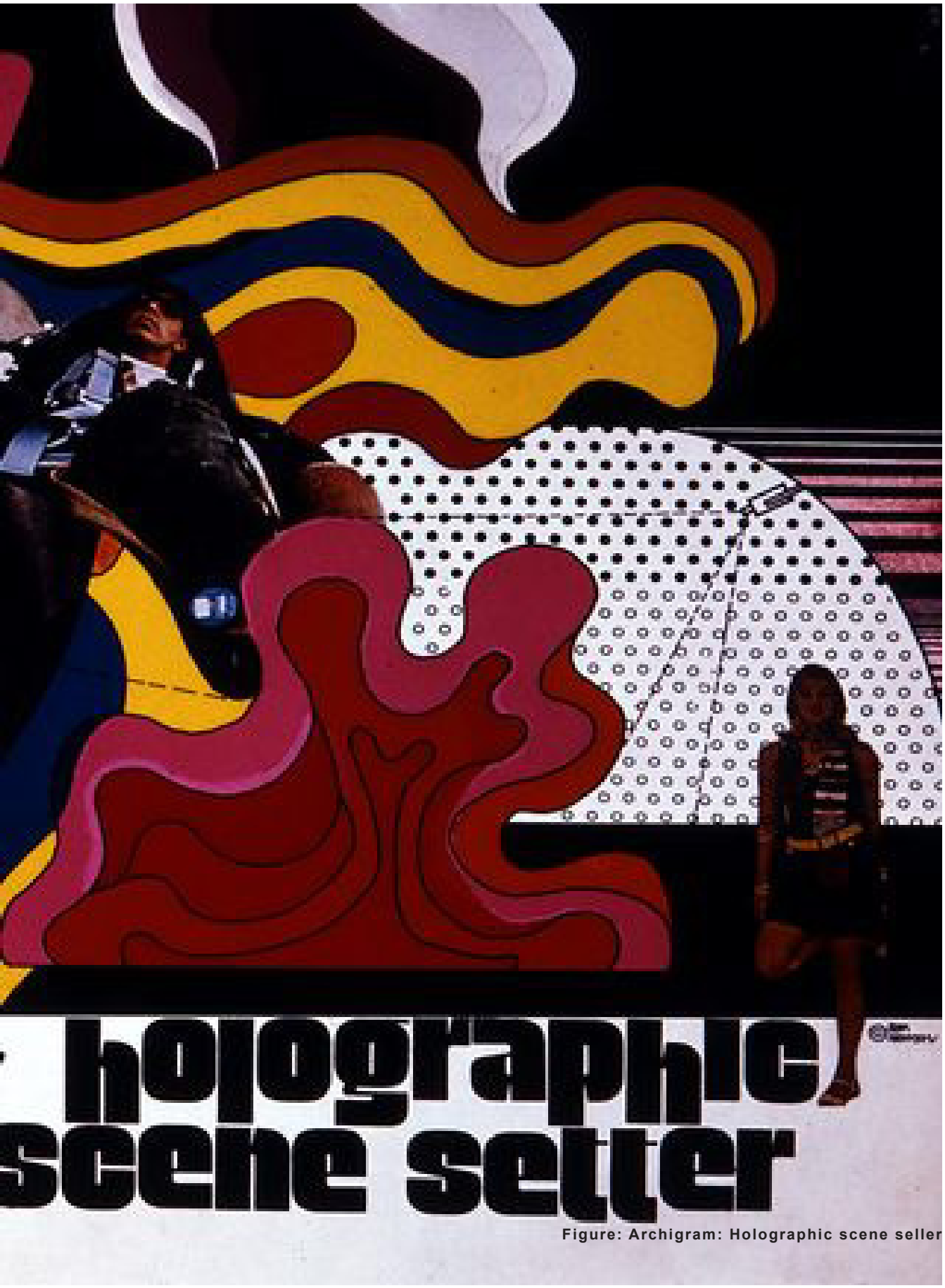

Figure: Archigram: Holographic scene seller

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Figure: Sensorama (1962)

8.2 Playground-like urban environments

As mentioned before, the intention (of this work and of Deus ex Ma(s)china) is to create architecture that one can explore and enjoy to the very last. Playful environments and spaces that transmit their playfulness onto people. Somewhat of adventurous playgrounds for all age groups. Everywhere. Urban environments as huge playgrounds in which people live.

Many studies show that - for children - moving and playing several times a day is very important in order to raise productivity, learning capacity and concentration capacity. And for adults it's no different. Many companies have started opting for "corporate playground offices" with slides, table tennis and more, to give their workers the possibility of having fun, moving and playing during small breaks. The results presented are mostly higher productivity, innovation power and healthy and happy workers. This would Playing and moving will be a daily habit again.

These indoor playgrounds in working environments are something this work seeks to include in its concepts. But in a world where many people don't work, where will they have their possibilities of fun and playing on a daily basis? The goal must be to create playground-like architecture accessible for everyone – at all times.

Obviously, these playground-like environments can easily exist in a virtual realty world in which people could possibly spend much of their time in. But the real world should remain of great importance for humanity, as the goal would be to make it more sustainable and likable and loveable to live on. It should be appreciated and wake joy and happiness in people with all of its daily features. But what exactly does it mean to have playground-like features in "normal" urban environments?

Well, one example would be to add slides and ladders as additional alternatives to staircases e.g. Creating more possibilities on how to get to different vertical levels. Slides in particular are a fast way to get to lower vertical levels and are always regarded as "fun", as they feature on most playgrounds as well as in most amusement parks.

One example of a slide would be the "Parabelrutsche" in Munich from Brunner-Ritz (2002) at the university TUM. A slide from the 3rd floor to the ground floor. The slide

Figure: Brunner-Ritz: Parabelrutsche

is an absolute success, as many students use their breaks to go for a slide, meaning that they move and have fun, raising their concentration capacity for later lectures. It can also be used to get from the 3rd floor outside faster, when in a hurry. And the effect the slide has on students, professors etc. is instantly noticeable. The building has a much happier atmosphere, there are more smiling faces than in other university buildings and it noticeably raises the joy level.

Having playgrounds for children to increase their learning progress and have more fun and joy on a daily basis is viewed as very important. So why should it not be the case for adults too?

Much like in Constants New Babylon there could also be a network of moveable ladders in order to create a changeable path network according to where a person wants to head to.

Another idea would be to have net structures – similar to three-dimensional spider webs – instead of and/or additionally to the ladder networks. This would be a more fun three-dimensional vertical path solution and wouldn't necessarily require any changes or movements. By simply remaining in one same state it could still offer unimaginably many different possibilities of path choices.

These previously mentioned options could of course feature almost everywhere but are mainly reasonable for indoor solutions replacing or complementing e.g. staircases. A good example for such an indoor playground would be the "Spielturm" in the Kristallwelten in Wattens (Tyrol) from Snohetta (2013-2015). Although this is a playground tower for children, without any other function, it still embodies a great example on how slides and string nets/webs can work as alternatives to staircases and elevators. And how it successfully raises the joy level.

Slides, webs and ladders can also feature in outdoor environments, but it doesn't make as much sense as indoors, as they might take away big areas. So, what can outdoor playground-like solutions look like? It could be labyrinths. And what better labyrinth

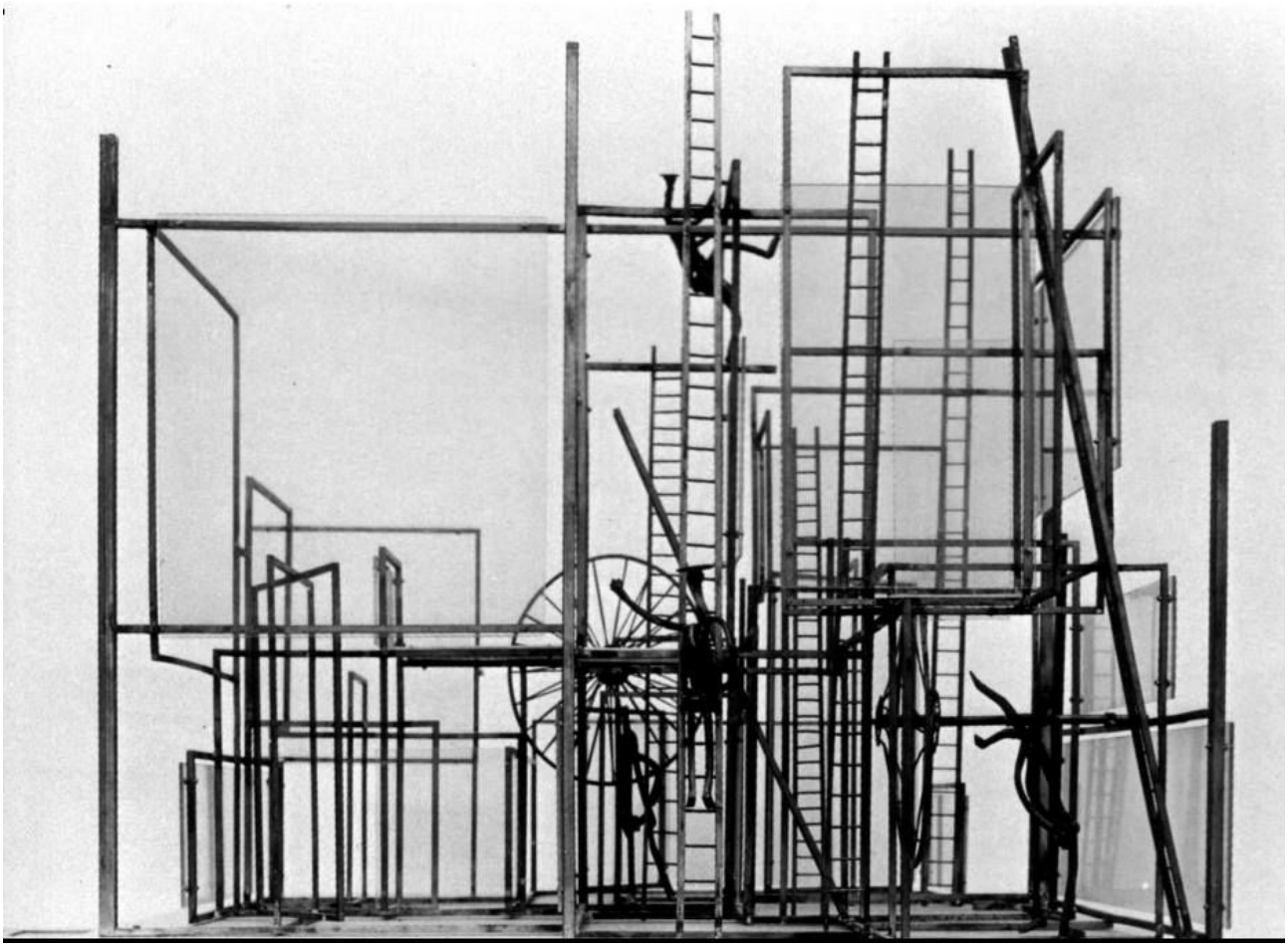


Figure: Constant Nieuwenhuys: Labyrinth of Ladders (1967)

than one where paths change and become unrecognizable? Travelling through these labyrinths could be adventurous! But how would it work?

Basically, through changing architecture. Buildings that rearrange and adjust themselves. Different arrangements for more diversity and more interesting environments. Changing architecture is a rather old concept that has been addressed a lot in the past.

One example would be the “Walking City” by Ron Herron (1966). In this particular example, a city would no longer be fixed to one location, but rather move around. People would not fully become nomads, as they could continue having fixed homes inside urban environments. But the cities would move and hence the environments around the cities would be in constant change.

Another example would be the “Plug in City” by Peter Cook (1964) where a massive framework would support many rearrangeable smaller units. These units could hence be arranged according to personal preferences and needs of the moment. This would allow a great diversity in urban configurations and could be logistically great for situations or events that require new configurations.

The idea creating multiple small units and assembling them into one big structure has been quite popular, especially in Japan with, for example the capsule tower in Tokyo, by Kisho Kurokawa (1972) – where many small capsules (units) make for the big tower.

This is an Idea that has also been used by MVRDV for their competition entrance KoolKiel (2018). Similarly, this project consists This project consists of several rearrangeable small units and makes use of a flexible design system, rather than some unchangeable and fixed plan. The design can be adjusted and adapt to needs and desires of the community. It consists of various cubic blocks topping an existing building. The number and sizes of cantilevers can be adjusted according to needs and desires.

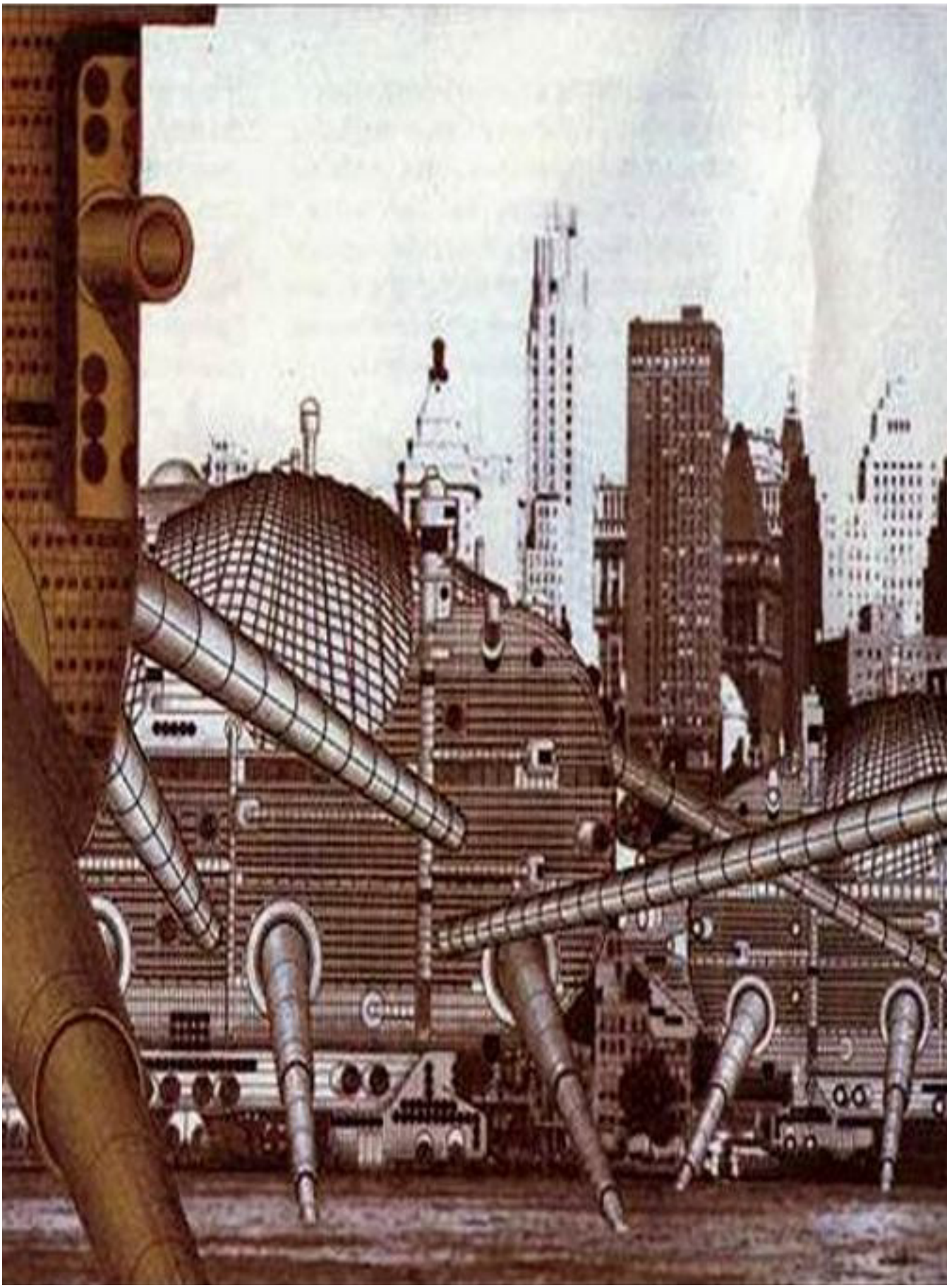
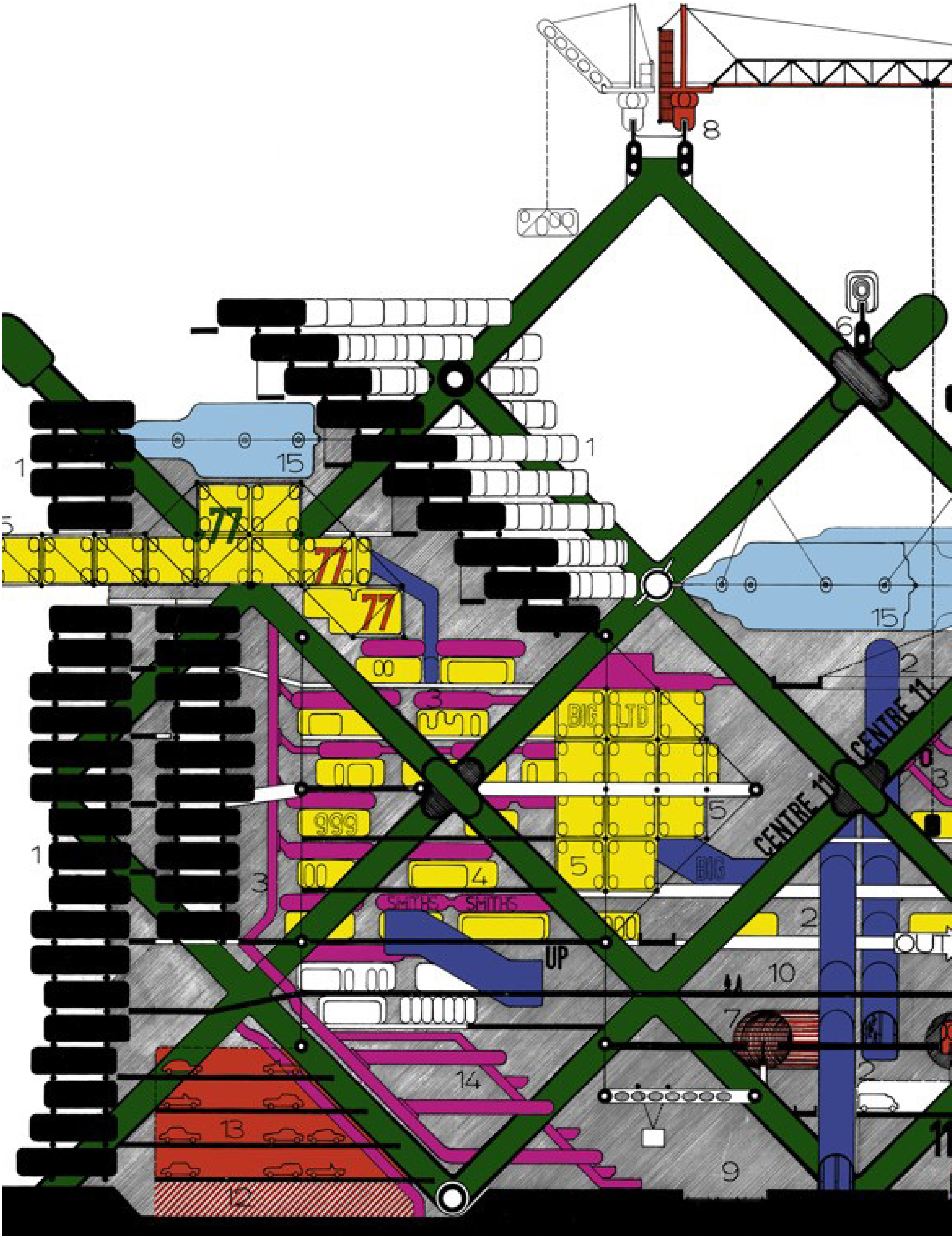


Figure: Archigram: Walking City



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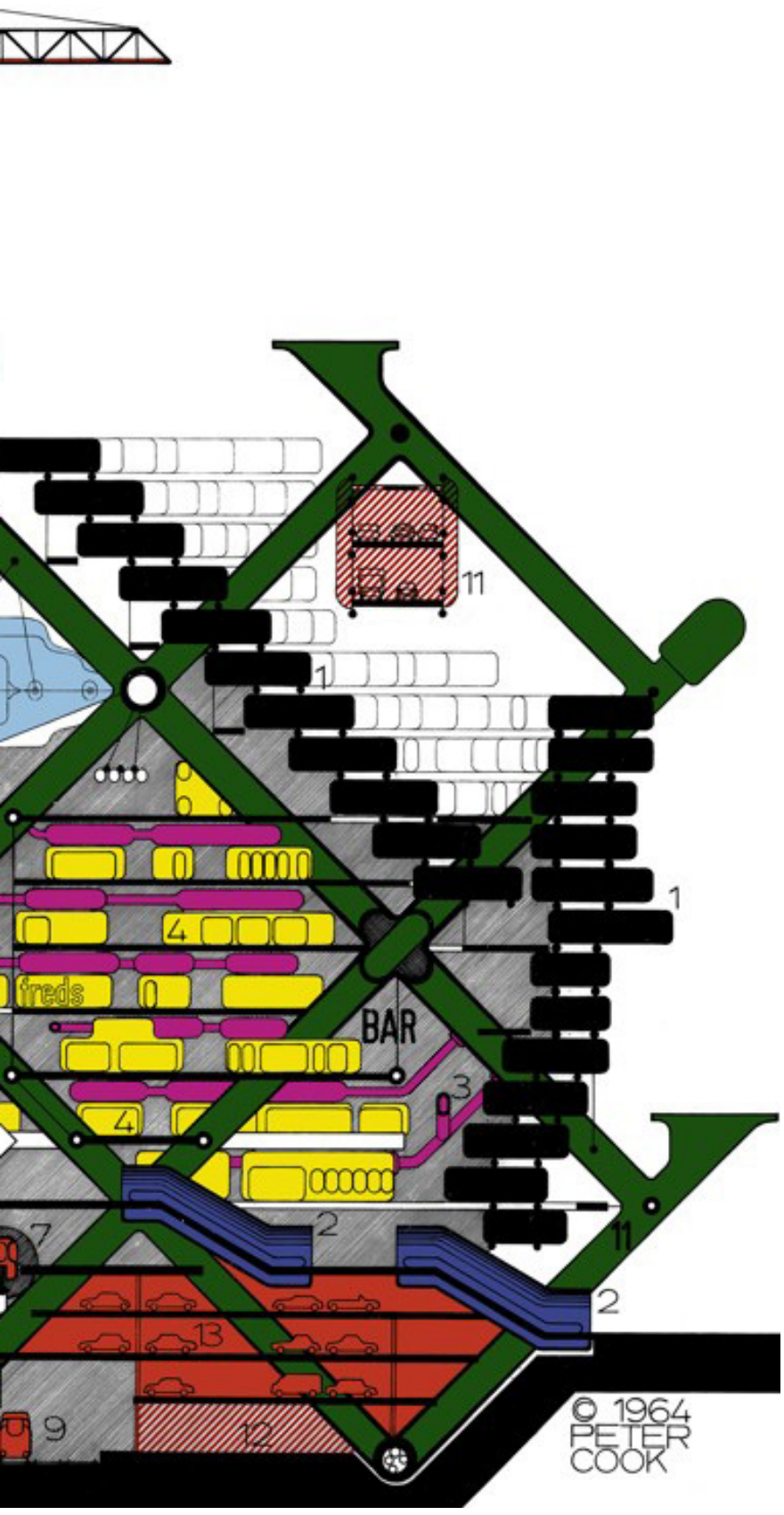


Figure: Archigram: Plug-in City

Figure: Kisho Kurokawa: Capsule Tower

Figure: MVRDV: KoolKiel

Figure: The Interlace, Ole Scheeren

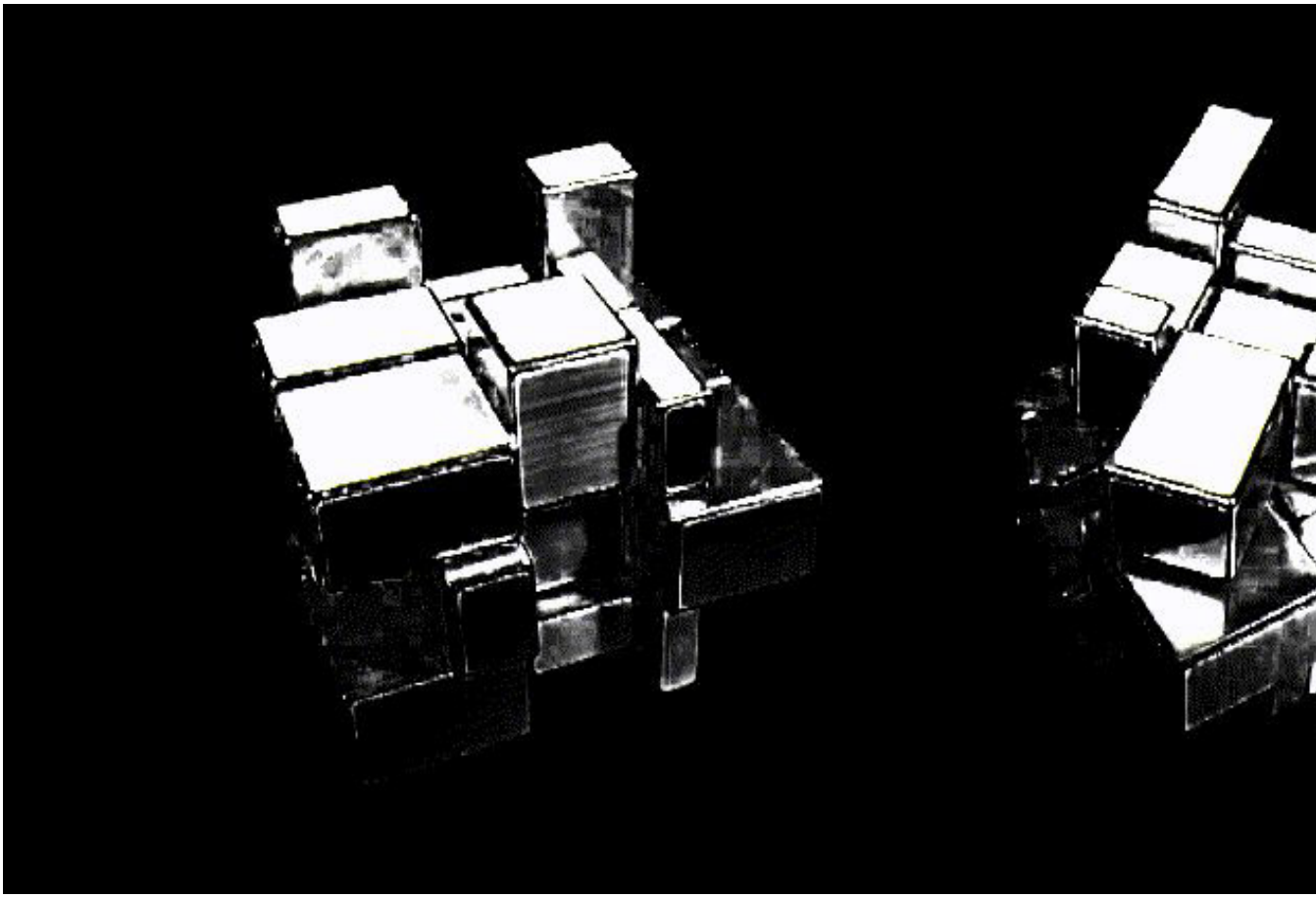
The idea to have multiple similar units is of many advantages when it comes to the construction and production. Even though terrace houses and mass production/ construction in architecture (after the principles of the Taylorism and Fordism) have been massively criticized for being monotonous, repetitious, boring and seeming very far, big and infinite – and hence being frustrating, it is undeniable that their production and construction is logistically much easier, faster and more efficient.

If these constructions were to be changeable and consisted of rearrangeable units, this monotony could be removed and multiple different arrangements and changing arrangements could possibly even make for an exciting labyrinth-like environment.

But giving terraced houses variety in color has been tested and done a lot “unsuccessfully”, with the monotony and boring aesthetics remaining. Although variety in color could still be used, in order to get rid of there unwanted characteristics, one would have to create changeable architecture that could change drastically and hence form multiple very distinct arrangements.

Differently-arrangeable architecture could potentially induce people to logical thinking and training their skills in logical induction. It would basically be architecture as educational tool in a person’s daily life. Architecture that induces creativity and logic thinking.

The great diversity allowed within the same design, by simply using different combinations/arrangements. even with many “equal” buildings brings great diversity and great adjustability and changeability to the urban environment, the architecture is located in. So basically, what would be created are adjustable spaces without originally defined functions. Functionality could be adjusted to whatever is needed in the moment.



„the Interlace was a redefinition of a building as something that was no longer just an object, but a connective tissue that would form a huge community. The way the building blocks are stacked up forms huge gardens and courtyards, so it was about defining the space to live in that would allow you an incredible degree of freedom to decide for yourself. I think that's what ultimately makes for an incredible quality of life in that place."

- Ole Scheeren

Figure: 3 Mirror Cube Combinations.
Collage Lorenz Foth

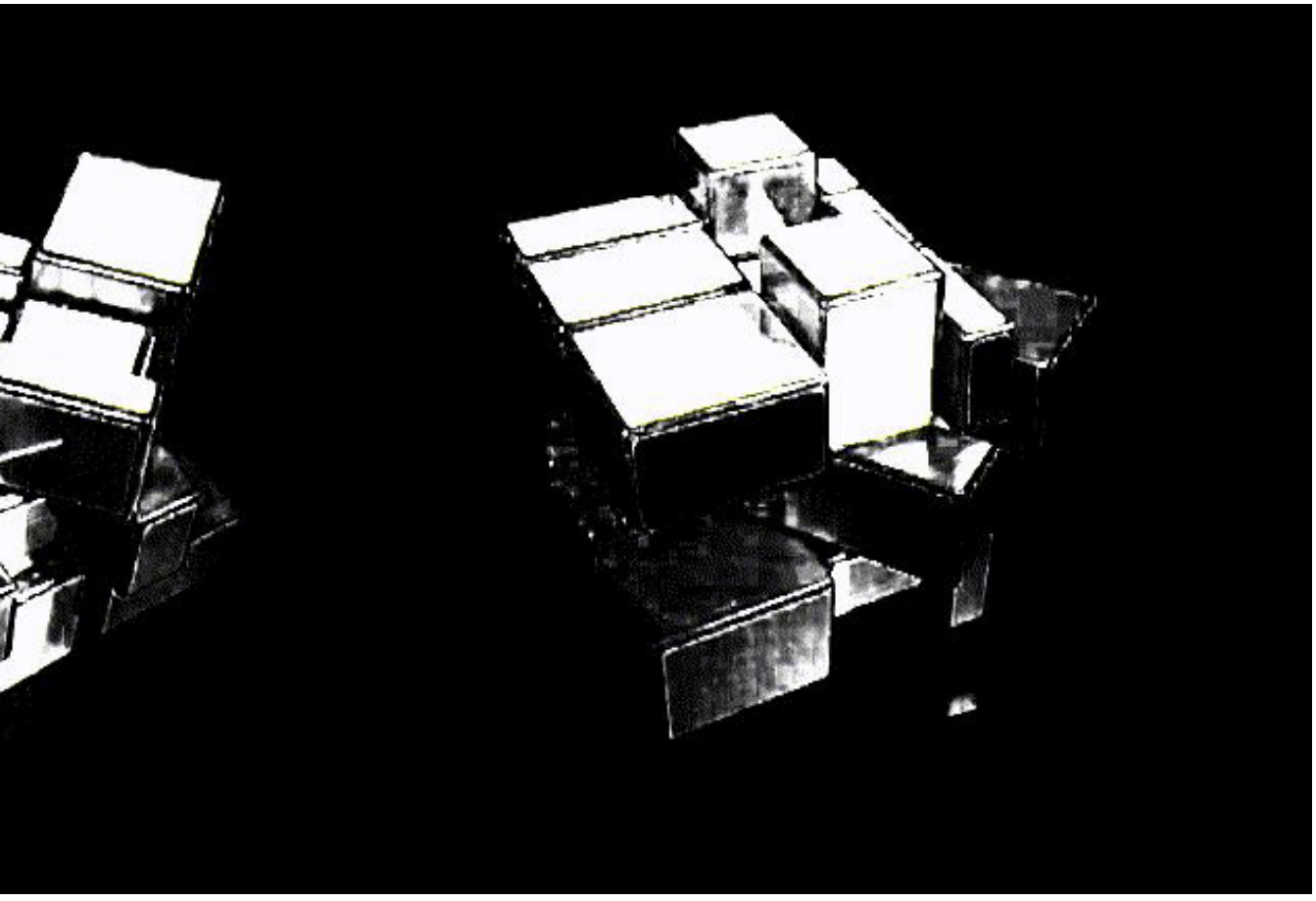


Figure: Mountain Dwellings, Bjarke Ingels

In order to visualize better how changeable architecture can induce people to logical thinking, a short story about a little kid playing with LEGOs:

Jerry the builder of LEGOs.

Jerry Sanchez was a little 8-year-old boy living in the suburbs of Columbus, Ohio. The Sanchez family – a single mother and her 5 sons - originally came from Puerto Rico and lived a rather modest life in the US. Every once in a while, they would be presented with toys from wealthier children with no further use for them. Jerry was a dreamy little boy, dreaming of becoming an innovative architect building shifting structures that could allow people to move between social conditions. The other children in school would make fun of his irrational and illogical thinking and would tell him to give up on his dream and rather become a marine. But Jerry was willing to take his chances and to prove them all wrong.

One day, the Sanchez' received a huge set of LEGOs as sorted out toys from wealthier children. Jerry immediately started playing with the LEGOs, playing his dream of an architect. He would start building whole cities, amusement parks etc. filling the entire living room with LEGOs – to the horror of his mother.

Once, his classmate Jonny would come by to play. Jonny was a skinny and short Caribbean-descendent orphan child who would often sleep at the Sanchez' house. He was almost part of the family and could even fluently speak Spanish. Solely from spending time with the Sanchez'.

Jonny jumped and yelled in excitement when he first saw the LEGO collection! With absolute fascination the two would spend hours and hours almost everyday playing together with the LEGOs.

One day Jonny hesitated and reflected for a while. Before asking:
"Say Jerry... Didn't you want to build something for people to jump between being rich and being poor?"
"No Jonny. That doesn't make sense. I wanted to build something for a world where no one is rich or poor." Jerry replied. "But where people can transit between big and small homes, between the way we live and the way the rich kids do... Sometimes I want to be like the rich kids. And sometimes I love my life with you and my mom and my brothers... Except for Tim. Tim is always annoying me."
After a short moment of silence, Jonny asked: "Do you want to try it?"

So the two went on and tried many different things. Rotating pieces; springs that could make small units jump, mobile units changing spots etc. Whether they succeeded or not, no one knows. But they did try to come up with something brilliant. They tried out many variants and used their logic and math skills in order to find a solution. Their improving of logical problems solving skills was guaranteed, irrelevant of their success.

And even though it is somewhat different when a machine learns something, Deus ex Ma(s)china could potentially go through a similar learning process in order to learn how buildings could potentially be changeable and how it would be most beneficial for the variety of possible functionalities assigned to given architecture.

8.3 Biotecture Districts

Using biotecture and integrating growing architecture to urban environments could create greater urban variety in aesthetics and atmosphere. Something Deus ex Ma(s)china might consider in its design. Furthermore, the ma(s)chine could potentially analyze the behavior of other living organisms, living inside other organisms (e. g. Squirrels in trees) in order to identify and evaluate new possibilities for humanity. Possibly concluding that in the right scale similar behaviors for humans would make sense. Deus ex Ma(s)china – imagined as a divinely powerful being - could also manipulate genes in order to create a fitting biotecture host.

It is the idea to grow architecture in which humans could potentially live during plants growth and/or after the host or hosts has or have already died. Manipulating the growth allows the possibility to braid branches and create intertwined strand networks that form inhabitable architecture. This can be done with more than one plant and smaller plants can be used for it.

An example here for would be the works "Sanfte Strukturen" from Marcel Kalberer, where both dead and living branches are bent and twisted and braided in a way that pavilions and arches are formed.

The other option would be to hollow out plants and create architecture/infrastructure inside the dead plant, potentially saving historically or beautiful special specimen from collapsing and decomposing.

A great example for hollowed out plants as architecture would be the competition entrance “Tribute. The Monument of Giant” from the Korean architects Ko Jinhyeuk, Cheong Changwon, Cho Kyuhyung, Choi Sunwoong. In this example, architecture becomes active as an artificial organ to replace the trunks rotten away, preserving the beautiful landscape. In South Africa and also in other countries, there are various cases of naturally (after e. g. a lightning stroke) and artificially hollowed out massive Boabab trees that were transformed into bars/restaurants and even housing solutions. There are obviously other options on how to combine man-made architecture and growing nature in a way that, aesthetically, the natural part seems to overtrump. Trees could be used as columns, walls etc. or branches as roofs etc. And there is also the possibility to create a universal artificial architecture as support and growth manipulator for specific plants. This is the case of the Fab Tree Hab from Mitchell Joachim and Terreform (2006), where an artificial exoskeleton forces trees to grow in certain directions and ultimately creating small biotecture buildings. This particular example also suggests that these biotecture buildings could grow food and hence help in the food production. Making it a food production and a housing solution both at once.

The type or possibility of biotecture creatable depends on region, the climate and the ecosystem. For example, in a rainforest the biotecture could be denser and potentially easier to create with e. g. hanging roots and massive trees.

But with gene manipulation being further developed, one could see plant size and shape becoming extremely controllable all over the entire globe.
The main goal with the biotecture districts would be to create architecture inside “wild” nature. For cities. So even caves, wholes or regular treehouses could also work for these districts. The idea would be to create inhabitable architecture inside of urban parks.

Figure: Marcel Kalberer: Sanfte Strukturen

Figure: Tribute. The Monument of Giant

This would give inhabitants the choice of where to live - whether they want to live in common urban architecture, or in nature – without leaving the city. It would also create the opportunity to connect more with nature and for humans to feel like part of nature and the planet itself rather than feeling like parasites that aren't really useful or wanted/ needed. Which is quite ironic, because in the case of humans inhabiting other living organisms, humans would actually become parasitic living organisms.

It would also allow cities to become greener with large green areas without reducing the population density.

And as mentioned earlier, it could be combined with food production as well. Biotecture could be shared with livestock which could then later on be harvested. And as these biotecture districts would be located in forests or other "natural" ecosystems, there could be wild animals and edible fruits that could be harvested on a small and controlled scale – preserving the ecosystems.

These biotecture districts would be in constant change, as they would exist among "real natural" matters that would move and grow and change – just the way they do in the wild. These changes would mostly be rather slow but yet very present. And once again, this would make these environments much more exciting and adventurous and worthy of exploring. And, obviously, it would give the city as a hole more variety and diversity.

But where would these biotecture districts be located? Mostly in peripheric districts around cities mostly and in existing urban parks in existing cities. In new cities they could be everywhere and spread all over the cities.

The creation of such districts would obviously be very costly and complicated but would ultimately add something new and positive as well as sustainable to a city!

Following short story should help to understand how living inside living organisms could potentially work:

Lost in the Forest.

> A weird man inside a weird story would once travel over weird islands in a weird Pacific ocean, flying in a weird flying mini-Zeppelin. Alone. Weird. And in a weird turn of events, his weird Zeppelin crashed on one of the weird islands. Weirdly, the weird man survived.

On the uninhabited weird island, the weird man saw that a weird dark storm was approaching.

The weird man thought to himself:
"Weird"
He even spoke it out loud:
"Weird!"

And as weird as the weird man was, he thought what kind of weird thing he could do to survive the weird storm. He started observing the weird animals on the weird island. He spotted a weird and possibly retarded crab, storming into his hole ahead of the storm.

The weird man thought to himself:
"The crab storms away from the storm..."
Then he said:
"Weird"

The he spotted a bird, flying like a Zeppelin.
"Weird"

And then he saw a squirrel hiding inside a weird hole in a tree.

Next to that tree he spotted another tree of weirdly gigantic size. With a weird hole the size and shape of a Zeppelin. Did he possibly crash into that tree? Weird... But the weirdest thing was: How could he possibly not have noticed the gigantic weird tree before?

He thought to himself:
"Weird"

He took shelter in the weird hole in the weird tree. And the weird man survived.

But the real question is: Why did he not take shelter in his crashed Zeppelin? Weird...

No one knows where the weird man is today. A weird legend says that he still lives on the weird island living a weird life of a weird man-squirrel. Weird.

8.4 Architectural solutions for

insect harvesting, meat cultivation, urban farming

As mentioned earlier, insect harvesting, meat cultivation and urban farming seem to be the most likely new sustainable food production options in the coming. As the goal is to create urban solutions for sustainable food production, this work seeks to create a concept in which all of these options become possible in an urban environment.

The most reasonable and obvious and probably also the best option would be to create large scale conservatories and greenhouses.

So basically, massive areas covered by greenhouses, similar to the example from Axel and Otero Verzier in Work, Body Leisure (2018) of the Netherlands mentioned earlier would make this possible.

The urban food production would happen mainly in these conservatories/greenhouses. Where there could be layered in forms of vertical gardens or shelfs as is the case of the earlier mentioned Square Roots Containers. These conservatories could also feature larger-scale insect farms and separated labs for meat cultivation.

But the goal is to make every corner of the urban environments exciting and attractive for tourists and visitors. How could it be made possible for that to happen?

These greenhouses and conservatories could feature different themes and ecosystems working as fun and interesting, visitors-attracting botanic gardens where some animals could be kept in fair conditions and could be used for the extraction of stem cells. They could even feature the earlier mentioned trees that can grow multiple fruits in order to

Figure: Gardens by the Bay. Singapore

grow fruits more efficiently. It could be seen as a fun and beautiful educational place that people could enjoy visiting and where they could learn a lot about food production.

Even a cities food wastes could be brought there as compost for plantations and in order to feed - for example - the insects.
Obviously these conservatories' sustainability might be questionable - as natural resources from other places might be exploited and therefore they should be kept as „local "as possible in terms of ecosystems. But in a efficient-food-producing way.

Similar existing examples would be the gigantic greenhouses in Singapore, such as the "Gardens by the Bay".

The main advantage these urban food production solutions would bring are less transportation costs and distances through local urban production. As well as embodying even more urban diversity and even more interesting and exciting attractions for people with lots of free time to enjoy.

As follows, a short story that shows how food production can work as an exciting attraction:

The journey through the food park.

> Once upon a time there was a little ant called Rick. Rick would follow all the orders from his queen and bring her all the resources she asked for. Rick was an exemplary ant in a strong team of united ants. He always felt like a great ant. Rick was a proud ant.
>
> One day, after offloading perfectly and precisely cut leaves to his queen, Rick asked her in shy manner:
> "I know that I am one of the leaf cutters and that's my job... But I would really like to know what happens in the food sector. I want to know what Jacob and Roy and all the others from the foody trips do... Can I maybe take a day off and join them once? Just once?? They always look so happy and full of energy! Can I join them? Pleeeeeaaaaseee???"
> The queen replied: "I am sorry, were you talking to me?? I wasn't listening, I was watching a YouTube Video about human labor structures. It's hilarious! You should totally check it out! The guys are absolute morons when it comes to logistics and organization. But yeah... I have to get going. Whatever you said before, my answer is yes. I'm in a good mood today! ... ...Humans... Absolutely hilarious!" And so, she wondered off.
>
> Full of excitement and happiness for being allowed to join his food production friends, Rick completely forgot to check out the YouTube Videos...
>
> With a huge smile on his face and all jittery, jumpy and hopping, Rick would join the food labor ants the following day. They would march south to the "big food source". All of them singing and chanting and smiling and grinning and laughing and giggling and jumping and spinning. Once they reached their food source – a lollipop a human had dropped – they started feasting on it. Then they would wonder around it, examine other objects and potential food. Until Rick asked:
>
> "Don't we need to get the food to the queen?"
> His best food-production friend Jacob quickly replied: "Relaaaax, Rick! We want to have fun! Food production is about efficiency and good work, yes! But it is also about exploring, learning, enjoying, having fun and spending time in exciting places!"
>
> And so, they enjoyed the rest of their working shift as food producers before returning home with all the resources and food requested. Rick was fascinated. Food production was an adventure! Not only for him- as the new guy! But for everyone!

8.5 Deus Ex Ma(s)china

What could Deus ex Ma(s)china potentially be? How can we imagine a "god"-like machine? Well first off, Deus ex Ma(s) china could not possibly be one machine. It must be a network of intelligent machines responsible for different functions – capable of communication between machines. Basically, a system controlling many different machines. This system must be capable of learning, so a machine learning application of artificial intelligence should be responsible for its development after already existing. This network would require no human interference, although allowing it if necessary. The system would be responsible of creating technologies, devices, tools and machines in order to build and develop other machines for various functions.

The source for its learning should primarily be the human body, behavior, and human

society. But also, the environment, different ecosystems, other living beings and the planet itself. The machine should have access to any kind of recorded human knowledge, and it should be capable of accessing various sensors and recording devices (existing and self-created).

In a society where AR and VR could be used a lot, these technologies could be part of the machine network and transmit information on human behavior, preferences etc. to the system, from which machine learning could further take place.

After precise analysis, the system would become responsible for creating the new architecture and potentially even new technologies, new progress. Deus ex Ma(s) china would be the symbol of automation. A technological network capable of fully taking care of human and technology development, the ultimate assistant to the human body and mind.

A deep and precise analysis of human behavior and possible future trends in order to create large scale architectural networks is something that already exists. The concept of smart cities. Cities created from scratch for people to move in after the city already fully exists. This is the case of the city of Songdo in South Korea, where the city was planned and designed based on people's behavior and then built in order for people to move in years later after the overpopulation in other urban areas got out of hands. It can be seen as precautious measures for overpopulation. So that people can simply move into existent new spaces rather than these having to be created in real time.

Figure: Songdo, South Korea

9 STORY COLLECTION

This work contains a few self-written stories in order to illustrate its topics better – giving the reader the opportunity to psychologically dive into them. In this chapter, these stories are remembered and separated from any other text.

10.1 The eagle and the rabbit village

Under a big big chestnut in a beautiful forest lived a breed of rabbits in a village of tunnels and bridges of roots. One beautiful summer's day the little ones would hop around and play! They would chase each other and laugh and giggle, they would dance and sing and run just to have fun, as they enjoyed playing in the shadow of the big big tree, protected from the sting of the sun. But on that same day, an eagle flew by and landed on the tree. He started chopping on the branches and ripping off the leaves. Slowly but aggressively, the sunbeams would burn straight to the ground. One of the older rabbits would storm out of his hole, look up to the eagle and shout: "What are you doing up there, Mr. Feathery Eagle??"

The eagle replied: "I'm collecting some branches for my nest up in the mountains. I'm collecting the best branches that I can possibly find."

The rabbit responded in fury and anger: "Can't you see that we live here under the tree? We need the shadow, the refreshing to live. Please leave the branches or else we'll have to move out and leave! Can't you choose another tree to chop off the branches? There are so many other trees without any villages of rabbits!"

The eagle replied in very cold fashion: "I like these branches the most. If you want to stop me, come up here! Oh, you can't?!

Too bad, because it's going to happen!" So, the eagle went on and stole even more branches. He even chopped off some just for fun, upsetting the rabbits!

And so, the summer went on and most of the village dried out! It was horrible for all the rabbits, it was a horrible drought. But they refused to leave the place that they loved. The place they have always been in and where they grew up.

Their mood would worsen by every passing day. There would be less hopping around and the little ones would rarely play. As time passed the rabbits would become more solitary and hateful. The stronger rabbits would go to the weaker ones and steal their holes. Many rabbits would have to leave, and no one knows where they went on to. They were never again seen.

And then came the winter with scarcity of food! Every rabbit would protect her or his rations in a very paranoid mood. The snow and ice would reach directly the roots and the holes. It was the worst winter ever; it was terribly cold!

Stealing the food of other rabbits, seemingly was the only way to survive – the only thing that mattered. The once happy harmony this village was used to was now gone and past. Many rabbits would starve and only the strongest ones with all the food would last.

10.2 The Legend of Prins Eon

In a small peaceful African village on a colorful blooming hill with a view to the widest horizon humanity has ever seen, crowned by an African Baobab Tree as old as 15 generations of Elephants, lived 53 strong men, 56 beautiful women, 102 playful happy children and one very wise old man. He went by the name of Stil Arend. The silent eagle. Stil was known for his quiet ways and for looking into natures' soul. He would speak to the spirits of the fallen animals seeking to establish a spiritual harmony between the village and nature. But one cold rainy, very dark night, the village was attacked by golden armored white soldiers possessed by blood lust and evil. And even though the strong men from the village managed to keep everyone safe and protected, unharmed and healthy, the big Boabab would stand in flames, crying tears of resin and screaming sparks of anger.

For the first time in 25 full moons, Stil Arend opened his mouth for the village. He said in a shivering voice full of horror and fear:

"The Boabab is screaming for revenge on humanity! There are dark days in front of us! Only the actions of an innocent prince can help us now!"

And so, the tree burned down to its very last ashes, leaving the village in sadness and tears. And on the following day already, a dark cloud would approach from the horizon in unmatchable speed. But it was not a cloud, it was an endless swarm of grasshoppers who were searching for food. They would eat all the grass and the flowers and the fruits and the leafs. They would even eat the roofs' straw; the people's hats' and they would even eat the light of the day. The grasshoppers wouldn't stop coming for days, for weeks. No one knew how much time had passed, they only knew that the night of the grasshoppers blocking the shine of the sun, was a night that was longer than the wide wide horizon. With no food to eat and no sun to enjoy, the villagers became weak and feared they would starve. Every single villager had lost weight, strength and hope. Every single one except for young Prins Eon, the 3 year old with the shiny golden eyes. Eon had a big healthy belly and would wear a beautiful smile that covered his entire little face! He would run around and chase the grasshoppers and play and have fun, but he was the very very only one....

Stil Arend, though, couldn't help but notice the healthy happy little Prins Eon filled with energy and joy. So he observed what Eon was doing in hope of finding the sunlight and life of the village that needed to be restored. And what he saw was brilliant - Eon would pick grasshoppers from the ground, from the air and from the walls. He would eat them and giggle and continue playing and running before grabbing more grasshoppers and eating some more. So Stil Arend shouted in excitement, hope and delight!

"Natures' revenge was a plague and it brought darkness and hunger, but the path out of the dark cave is the same path that brought us inside. The plague is the solution to the plague itself. We need to feast on the plague and fill our bellies. We need to feast on the gift that

nature provides for us."

And so every villager started eating the grasshoppers, filling their bellies with food and their hearts with the hope and joy that the grasshoppers had taken. And with every passing day more and more joy, strength and hope were restored, and less grasshoppers would endarken the days. More and more plants would start growing and blooming and eventually, on the day now known as the day of Prins Eon, the plague was gone and from the ashes of the burnt down ancient Boabab a new little Boabab leaf would peek out of the dark past reaching for the sun.

10.3 Jerry the builder of LEGOs

Jerry Sanchez was a little 8-year-old boy living in the suburbs of Columbus, Ohio. The Sanchez family – a single mother and her 5 sons - originally came from Puerto Rico and lived a rather modest life in the US. Every once in a while, they would be presented with toys from wealthier children with no further use for them. Jerry was a dreamy little boy, dreaming of becoming an innovative architect building shifting structures that could allow people to move between social conditions. The other children in school would make fun of his irrational and illogical thinking and would tell him to give up on his dream and rather become a marine. But Jerry was willing to take his chances and to prove them all wrong.

One day, the Sanchez' received a huge set of LEGOs as sorted out toys from wealthier children. Jerry immediately started playing with the LEGOs, playing his dream of an architect. He would start building whole cities, amusement parks etc. filling the entire living room with LEGOs – to the horror of his mother.

Once, his classmate Jonny would come by to play. Jonny was a skinny and short Caribbean-descendent orphan child who would often sleep at the Sanchez' house. He was almost part of the family and could even fluently speak Spanish. Solely from spending time with the Sanchez'.

Jonny jumped and yelled in excitement when he first saw the LEGO collection! With absolute fascination the two would spend hours and hours almost everyday playing together with the LEGOs.

One day Jonny hesitated and reflected for a while. Before asking:
"Say Jerry... Didn't you want to build something for people to jump between being rich and being poor?"
"No Jonny. That doesn't make sense. I wanted to build something for a world where no one is rich or poor." Jerry replied. "But where people can transit between big and small homes, between the way we live and the way the rich kids do... Sometimes I want to be like the rich kids. And sometimes I love my life with you and my mom and my brothers... Except for Tim. Tim is always annoying me."
After a short moment of silence, Jonny asked: "Do you want to try it?"

So the two went on and tried many different things. Rotating pieces; springs that could make small units jump, mobile units changing spots etc. Wheather they succeeded or not, no one knows. But they did try to come up with something brilliant. They tried out many variants and used their logic and math skills in order to find a solution. Their improving of logical problems solving skills was guaranteed, irrelevant of their success.

10.4 Lost in the Forest

A weird man inside a weird story would once travel over weird islands in a weird Pacific ocean, flying in a weird flying mini-Zeppelin. Alone. Weird. And in a weird turn of events, his weird Zeppelin crashed on one of the weird islands. Weirdly, the weird man survived.
On the uninhabited weird island, the weird man saw that a weird dark storm was approaching.

The weird man thought to himself:
"Weird"
He even spoke it out loud:
"Weird!"

And as weird as the weird man was, he thought what kind of weird thing he could do to survive the weird storm. He started observing the weird animals on the weird island. He spotted a weird and possibly retarded crab, storming into his hole ahead of the storm.

The weird man thought to himself:
"The crab storms away from the storm..."
Then he said:
"Weird"

The he spotted a bird, flying like a

Zeppelin.
“Weird”

And then he saw a squirrel hiding inside a weird hole in a tree.

Next to that tree he spotted another tree of weirdly gigantic size. With a weird hole the size and shape of a Zeppelin. Did he possibly crash into that tree? Weird... But the weirdest thing was: How could he possibly not have noticed the gigantic weird tree before?

He thought to himself:
“Weird”

He took shelter in the weird hole in the weird tree. And the weird man survived.

But the real question is: Why did he not take shelter in his crashed Zeppelin? Weird...

No one knows where the weird man is today. A weird legend says that he still lives on the weird island living a weird life of a weird man-squirrel. Weird.

10.5 The journey through the food park

Once upon a time there was a little ant called Rick. Rick would follow all the orders from his queen and bring her all the resources she asked for. Rick was an exemplary ant in a strong team of united ants. He always felt like a great ant. Rick was a proud ant.

One day, after offloading perfectly and precisely cut leafs to his queen, Rick asked her in shy manner:
“I know that I am one of the leaf cutters and that’s my job... But I would really like to know what happens in the food sector. I want to know what Jacob and Roy and all the others from the foody trips do... Can I maybe take a day off and join them once? Just once?? They always look so happy and full of energy! Can I join them? Pleeeeeaaaaseee???”

The queen replied: “I am sorry, were you talking to me?? I wasn’t listening, I was watching a YouTube Video about human labor structures. It’s hilarious! You should totally check it out! The guys are absolute morons when it comes to logistics and organization. But yeah... I have to get going. Whatever you said before, my answer is yes. I’m in a good mood today! ... ...Humans... Absolutely hilarious!” And so she wondered off.

Full of excitement and happiness for being allowed to join his food production friends, Rick completely forgot to check out the YouTube Videos...

With a huge smile on his face and all jittery, jumpy and hopping, Rick would join the food labor ants the following day. They would march south to the “big food source”. All of them singing and chanting and smiling and grinning and laughing and giggling and jumping and spinning. Once they reached their food source – a lollipop a human had dropped – they started feasting on it. Then they would wonder around it, examine other objects and potential food. Until Rick asked:

“Don’t we need to get the food to the queen?”
His best food-production friend Jacob quickly replied: “Relaaaax, Rick! We want to have fun! Food production is about efficiency and good work, yes! But it is also about exploring, learning, enjoying, having fun and spending time in exciting places!”

And so they enjoyed the rest of their working shift as food producers before returning home with all the resources and food requested. Rick was fascinated. Food production was an adventure! Not only for him- as the new guy! But for everyone!

10 AFTERWORD

In summary, this work analyses current tendencies of the world and humanity and sets up possible changes in architecture that could happen after automation. This set up could possibly be used in a narrative in which a near-divine network of machines is responsible for a new architecture. This (machine learning) network could make use of technologies such as VR and AR in order to analyze (human) behavior and accordingly develop its architecture, possibly with urban food production, biotecture and changing spaces.

Furthermore, this work presents a set of creative short stories illustrating the book. All listed in the previous chapter.

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