Melanie Hofmeister
Maxime Victor

TRANSHUMAN TERRITORY

CONTENT

1

INTRODUCTION

„I still think, that within a few generations it will be possible to transform the substrate of our humanity.“

Nick Bostrom

INTRODUCTION

Humans have always striven for something higher. Whether it is overcoming death or attaining a state of omniscience. This ambition has driven humans for thousands of years and has brought many new discoveries and inventions to light. Nowadays, the confidence in technology as well as the current state of research regarding the topic of living longer or overcoming death is greater than ever before. Even today, immortality is still an attainable goal for many human beings, and with the new technological possibilities, the chances to turn that wish into reality rise.

Even though there is a clear desire for the eternal life, we have to bear in mind that the climate change, as well as constant natural catastrophes and epidemics could make it harder to survive on earth.

According to some philosophers and scientists, humans could get upgraded with machine parts and learn abilities with the help of new technologies which allow them to better adapt to future changes on earth. This development leads on to the fact, that humans wouldn't be tied to the biological rhythm of life anymore and that they could live longer than usually. This kind of upgraded human beings could be one solution to prevent the human species from a possible extinction. These thoughts and goals are the guidelines of transhumanism. Transhumanism is a philosophical movement that emerged from Posthumanism. However, it is not clear whether they are two completely different theories or if Transhumanism is based on Posthumanism. The concept of Transhumanism has a lot of parallels with the futuristic visions of science fiction movies or books whereas some of them have already become reality. However, you are mostly not aware of it yet.

Transhumanistic concepts can be found in many areas like in research on mind-uploading or artificial intelligence, the development of cyborgs and how machines already influence the body, or the practice of cryopreservation. In addition to that, art has also been dealing with this topic for a long time. Furthermore, characteristics of the movement can even be recognized in architecture.

In the following book, Transhumanism is analysed in detail. It will be illustrated how omnipresent different ideas are already in today's society and how they are applied to different areas. In the end, the question of whether transhumanist ideas are to be considered futuristic visions of the future or a possible reality is going to be discussed.

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THE SIXTH EXTINCTION
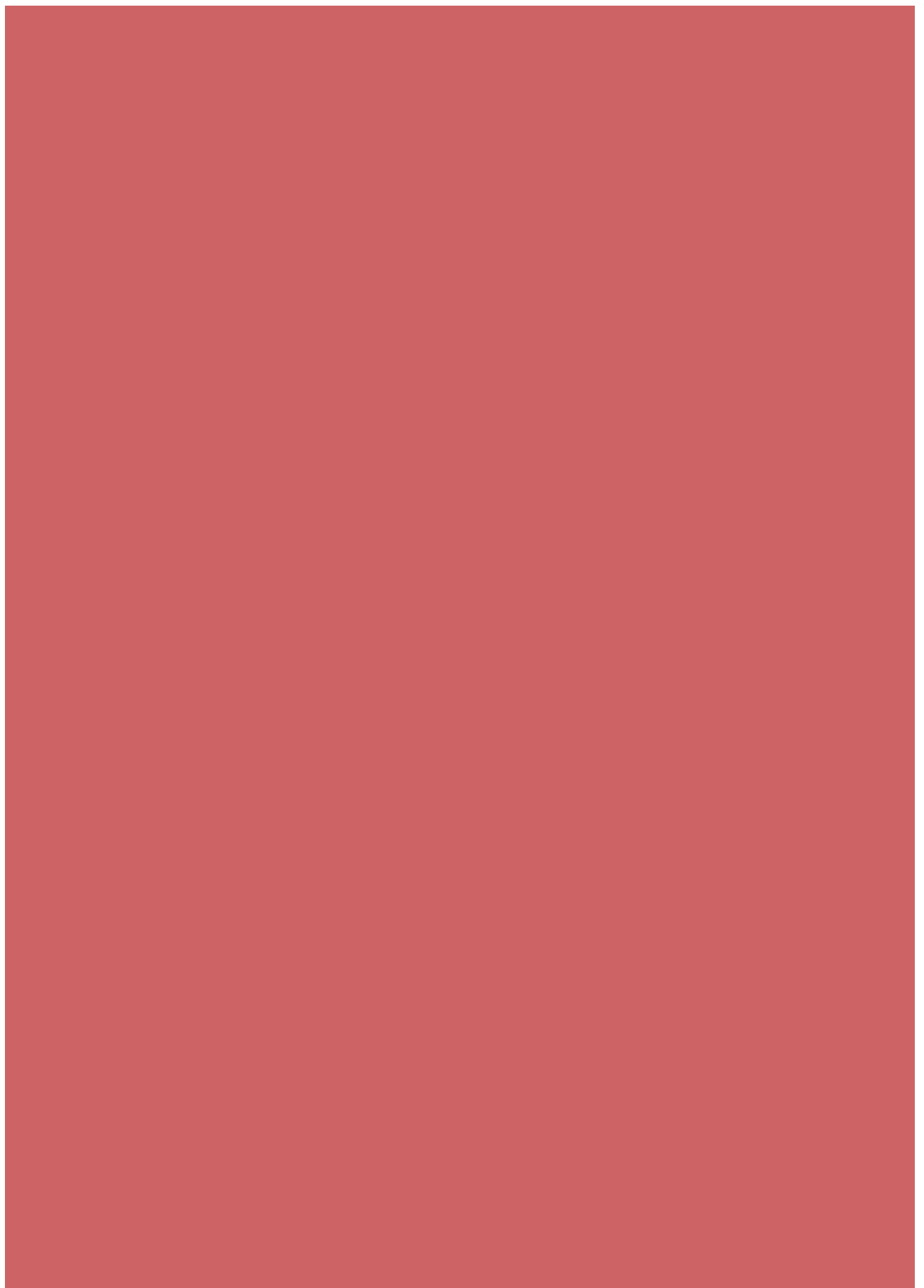
„People are usually afraid of change because they fear the unknown. But the single greatest constant of history is that everything changes.“

Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow*, 2015

Fig. 2.1 The Garden of Earthly Delights | Hieronymus Bosch

THE SIXTH EXTINCTION: PATTERNS OF LIFE AND THE FUTURE OF HUMANKIND

Richard Leakey and Roger Lewin

Richard Leaky was born on the 19 December 1944 and is a Kenyan paleoanthropologist, conservationist and politician. He has worked in institutions of archaeology and wildlife conservation.
Roger Lewin, born in 1944, is a British anthropologist and author. Leaky and Lewin have written three books together. „The Sixth Extinction: Patterns of Life and the Future of Humankind" was published in 1995.

The text by Leaky and Lewin deals with the extinction of species and the fact that one day the human species will no longer exist. However, people are not aware of this.

Humans are the product of evolution and occasional catastrophes. This point of view comes from the revolutionary thinking of Charles Darwin and Charles Lyell, both geologists and naturalists. The accumulation of tiny changes builds up all the huge geological formations in our world, such as deep canyons and high mountains; and they populate the continental surface and deep sea with an extravagant variety of life, of which Homo Sapiens is only one kind among many millions. The most important and central aspect of the Darwinist view is that the flow of life is guided by an endless struggle for existence in which the strongest survive and the least fittest die. As a result, after each disaster, some groups are replaced by new and more developed forms of life which better adapt to actual living conditions. Therefore, we must accept the fact that the living world to which we belong is only one of countless possible worlds, not the only inevitable one. In fact, it is only a conditional point of history.

Darwinian evolution is exposed during biotic crises. Biotic crises are caused either by environmental impacts such as floods, volcanic eruptions, earthquakes or meteoroids, or by infectious diseases. It depends on characteristics such as the geographical distribution of species groups (the more widespread they are, its better) and body size (large species are more vulnerable than small ones). The inevitable

Fig. 2.3 The Garden of Earthly Delights | Hieronymus Bosch

conclusion is that the survival of a species during mass extinction has as much to do with luck as with good genes to use David Raup's catchy phrase. These factors, not natural selection, determine which species survive and which don't, so mass extinction plays an important role in shaping patterns in the history of life.

Humans arrived late in the evolutionary scene at a time when the diversity of life on the planet was almost unprecedented. Homo sapiens is not the first living creature with a dramatic impact on the Earth's biosphere. The advent of photosynthetic microorganisms about 3 billion years ago began to transform the atmosphere from a low oxygen content to a relatively high content, which making life on earth possible. However, the evolution of human intelligence has contributed to the fact that today there are almost 6 billion people on earth. The enormous population growth pushes various species from the animal and plant world out of their natural environment which provokes their extinction.

There are three main aspects in which humans endanger the existence of species. First, the direct exploitation, such as hunting. Second, biological damage caused by the occasional introduction of exotic species into new ecosystems, whether deliberately or accidentally. Third, the destruction and fragmentation of habitats, especially the unstoppable deforestation of tropical rainforests. The continuing growth of the human population in all parts of the world intervenes daily in wild habitats, whether through the expansion of agricultural land, the construction

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of cities and communities or the associated transport infrastructure. If we accept the easy extinction of several, then perhaps the period of Homo Sapiens is less secure than we would like to believe.
If we continue like this, we may be destined for extinction.

Harvard biologist Robert MacArthur and Edward Wilson developed a method in 1963 by which ecologists calculate the fate of species in habitats that are reduced in size. They noticed that the flora and fauna of islands around the world show a consistent relation between the area of the island and the number of species living on them. The larger the area, the more the species.
So the theory seems robust. But anyway there are antialarmists like Julian Simon who says that

Wilson`s mathematical model is based on nothing but speculation. Maybe he's being willfully ignorant of the facts underlying the theory. The arithmetical relationship based on the theory predicts that 50 percent of the species will go extinct, some immediately some over a period of decades or even more.
The sixth extinction is not being caused by an asteroid impact, it is being caused by one of Earth inhabitants. So homo sapiens is poised to become the greatest catastrophic agent since a giant asteroid collided with the Earth sixty-five million years ago.
Over the next two decades the population number began to rise extremely, species go extinct and the value of biodiversity contracts. Humans evolved within a world of nature. They need for. We risk

Fig. 2.5 Harrison Atelier | Veal

eroding the human soul if we allow the erosion of the richness of the world and the nature around us. The loss of species reduces us in some ineffable way.

Future technologies could replace a small section of the material resources that we presently derive from the natural world, but it also blinds us. Many of us are living in this artificial urban environment and we do not see the relationship between the inputs and outputs of the natural economy of Earth. The entire biota of the Earth operating as a complex dynamic system. Like the fungi network and rhizome. Species and communities of species are not infinitely resilient, they are vulnerable. Daily cutting of tropical forests and the intervention on wild habitats sounds like a less dramatic process than an asteroid impact, but in the end the effect is the same.

Evolution is a wondrously and powerfully creative process that rapidly fills the void left after each mass extinction. On geological scales our planet will take care of itself and let time clear the impact of any human bearing. So what it matter to us and the rest of the worlds´ biota what we do while we are here?

Its an ethical principle. If we understand that there is an intimate connection with the rest of nature in terms of our origin as part of that whole, not as a privileged species that exploit it and give us any license to do whatever choose while we are here.

Halting the destruction of those resources is humanities greatest challenge for the next century. Homo sapiens will not break the biological rule and continue

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forever. The belief that homo sapiens is separate from and above the rest of the world of nature isn't true. Homo sapiens is an equal footing with each and every other species here on Earth.
For each of the Big Five there are theories of what caused them, some of them compelling, but none proven. For the sixth extinction, however, we do know the culprit. We are.

Performances, installations and art exhibitions explore the closing gap between human and animal existence.
A 2005 show, Becoming Animal, at the Massachusetts Museum of Contemporary Art, presented exhibits by twelve artists whose work concerns the effect of technology in erasing boundaries between the human and the non-human. The artists are fascinated by this thin membrane separating human, non human and animal life.
Veal is a performance and installation work by Harrison Atelier, which shows the life-cycle of the industrial animal, revealing through choreography and designed objects.
By means of these art projects they try to uncover the structures that govern the natural world.

3

THE AGRONAUT
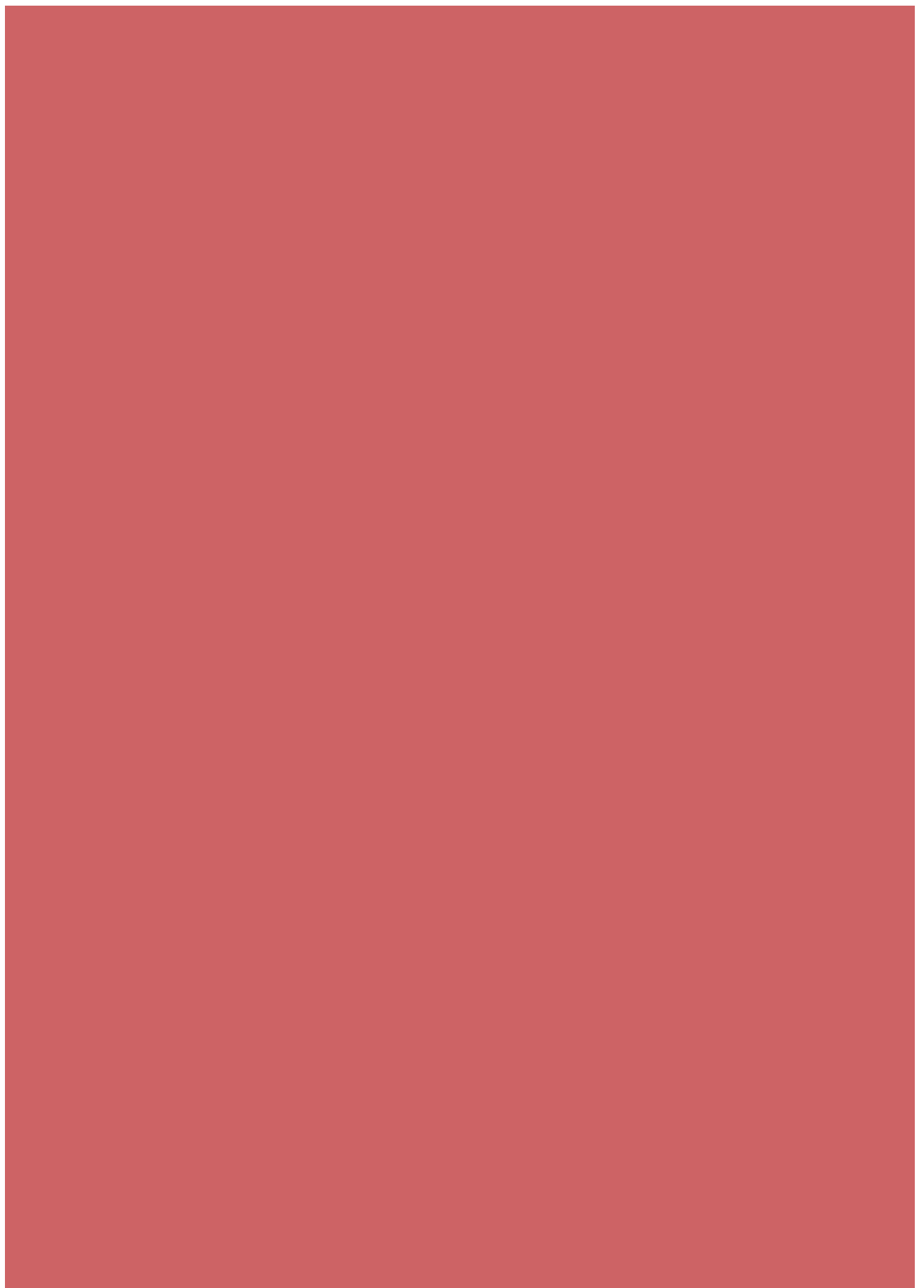
„History isn't a single narrative, but thousands of alternative narratives. Whenever we choose to tell one, we are also choosing to silence others. Human"

Yuval Noah Harari, *Homo Deus: A Brief History of Tomorrow*, 2015

THE AGRONAUT

Kjersti Vetterstad

„There ought to be recognition of precariousness as a shared condition of human life (indeed as a condition that links human and non-human animals) ... Precariousness implies living socially, that is, the fact that one´s life is always in some sense in the hands of the other.... I am already in the hands of the other when i try to take stock of who i am." (Beatriz Colomina & Mark Wigley, 2016, P.124)

Kjersti Vetterstad, born on the 7th of March 1977, is a Norwegian artist. She lives and works in Drammen, Norway. Vetterstad studied at the Bergen Academy of Art and Design, Norway and Konstfack University Stockholm, Sweden. Her work includes video, installation, drawing and performance. In addition to that she participates in several collaborations.

The movie „The Agronaut" is a documentary about Montserrat Canudas Jorba and her life as a hermit at a farm in El Bruc, Cataliona. She explains the nature and takes us on a journey through time and presents the viewer a cyclical perspective on life, a life in acceptance of the mechanism that shape our surroundings. The first screening of the documentary was in 2014 at the Art and Music Festival in El Bruc. The title „The Agronaut" is a wordplay of the argonauts of the greek myth of Jason as a navigator of the landscape.

Jorba explains different plants, how they grow and shows how the land changes in the last years. The grapes are used to produce wine. She explain that leaves which aren't around the blossom have to be picked off in order to allow the plant to put all her energy in the fruit and not in leaves.

Furthermore Jorba explains the fast transformation of nature by means of a fig tree which has no leaves at this moment. But in some weeks the tree will be completely green and it will have a lot of fruits. She also says that if humans don't force the tree to grow faster, the roots will only take the nutrients it needs of the soil. Therefore the soil will never be low in nutrients when you let nature take its natural course.

Water is also very important according to Jorba. She explains the different water levels and the creatures living in it by showing us a small pond. Without water, life wouldn't exist on earth. Insects breed in it, animals, humans and plants need it to survive and water even transforms the soil into loam which can used to build houses. To demonstrate the transformation of nature in the last years, Jorba shows some caves in a forest. In the past they could be used to cool down the food. She says, that you could even produce ice cubes for your coke there. But today it doesn't work anymore due to the climate change.

On the tour through the forests around El Bruc, Jorba shows places with sand and fossils of shells. It indicates that million years ago there was a beach at the same place. According to her opinion, the sea level will rise, and a beach will be here again in the future. Considering the climate change and the melting of the northern caps this isn't unrealistic. Jorba speaks also about a repetition of life. The film captures moments in a specific time and place. It seems like a documentation the mundane but is indicates moments that would otherwise not be noticed. In the past there were bigger animals and large forests. At this point, human was only a small species. However human survived all the catastrophes, whereas other animals and plants died. Nowadays humans populate the whole planet and are the dominant species. So, if a repetition of life really exists, it can be possible that one day humans will also become extinct.

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This opinion allows us to relate the video to the book „The Sixth Extinction: Patterns of Life and the Future of Humankind" by Richard Leaky and Roger Lewin. Its main topic was also the extinction of mankind. So perhaps the period of Homo sapiens is less secure than we would like to believe. If we continue like this, we may be destined for extinction.

Wolfgang Laib finds spirituality in the simplicity of everyday, organic substances—milk, pollen, beeswax, rice—that provide sustenance or engender life.
Like Montserrat, he lives in a remote region and communicates with the nature world outside his house. During the spring and summer months he collects pollen, including dandelion, hazelnut, pine, buttercup and moss varities, from the fields around his home. He shapes this laboriously collected, brilliantly pigmented material dust into cones, as in *The Five Mountains Not to Climb On*. Though intimate in scale and fragile as this hazelnut-pollen sculpture is, it alludes to the monumentality suggested by its title.

Fig. 3.3 Without Place–Without Time–Without Body | Wolfgang Laib

„From the start the greatest planetary terraformers (and reformers) of all have been and still are bacteria and their kin… No species, not even our own arrogant one pretending to be good individuals in so called modern western scripts, acts alone; assemblages of organic species and of abiotic actors make history, the evolutionary kind and the other kinds too." (Donna Haraway, 2016, P. 100)

Anthropocentrism regard humans as separate from and superior to nature and holds that human life has essential value while other entities are resources that may justifiably be exploited for the benefit of humankind. The importance of the relationship of us humans to our environment is reflected in the contemporary historical course of various characteristics. We construct and distribute roles that could not be more hierarchical.
By exploring the inconstancy of the world in which we live, we can distance ourselves from a linear of time and come closer to more cyclical perspective of live.
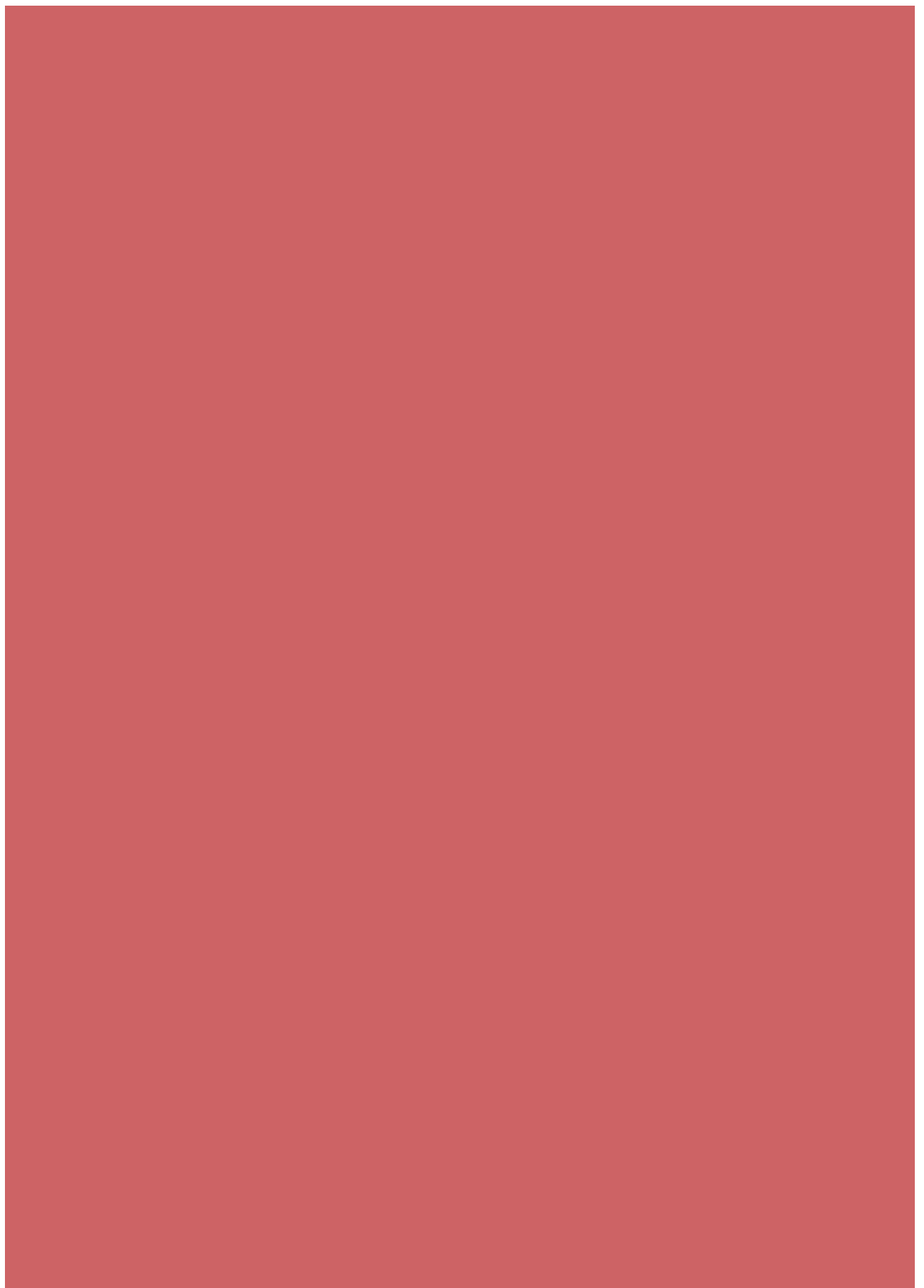
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Fig. 3.5 Anthropocentrism

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THE INHUMAN - REFLECTIONS ON TIME

„Technology wasn´t invented by humans. Rather the other way around.“

Jean- François Lyotard

Fig. 4.1. The world in 2384: Is it possible to achieve immortality? | Picture of the Netflix series „Altered Carbon"

THE INHUMAN - REFLECTIONS ON TIME

Jean-François Lyotard

„Technology wasn´t invented by humans. Rather the other way around."

Jean-François Lyotard was a french philosopher, sociologist and literary theorist. He was born on the 10th of August 1924 and died on the 21st of April 1998 in Paris at the age of 73. He became famous for his analysis of the impact of postmodernity on the human condition. His text „The Inhuman" was translated by Geoffrey Bennington and Rachel Bowlby in 1991. The original title was „L'Inhumain: Causeries sur le temps", published in1988.

In the chapter „Can thought go on without a Body?", the author speaks about the explosion of the sun in 4.5 billion years and if it is possible to protect human's mind from extinction although the human body is transient.

It isn't in human's nature to think that one day everything will end. But if the sun will explode, life on earth wouldn't exist anymore. Science-fiction novels describes the world often after a such catastrophe. The death of the sun will leave a devastated human world behind. Perhaps there will be at least one single survivor who could tell the story of what's left and write it down. The difference in this case is that if one human dies, he stays in mind of other people, but if the whole humanity and all living creatures die, who will remind the next generation of them? Lyotard described this as follows: „The death of sun is death of mind, because it is the death of death as the life of mind." (p.10) That is why it is important to find a way to conserve human's mind.

For Lyotard technology isn't an invention of humanity. He says, that any material system is technological if it filters information which are useful to its survival. At this point humans aren't different from other living creatures. However, they can absorb data, deal with this information and react on them. Furthermore, they can remember things. Humans mind forms a sophisticated software where the body is the hardware. The problem is how to provide this
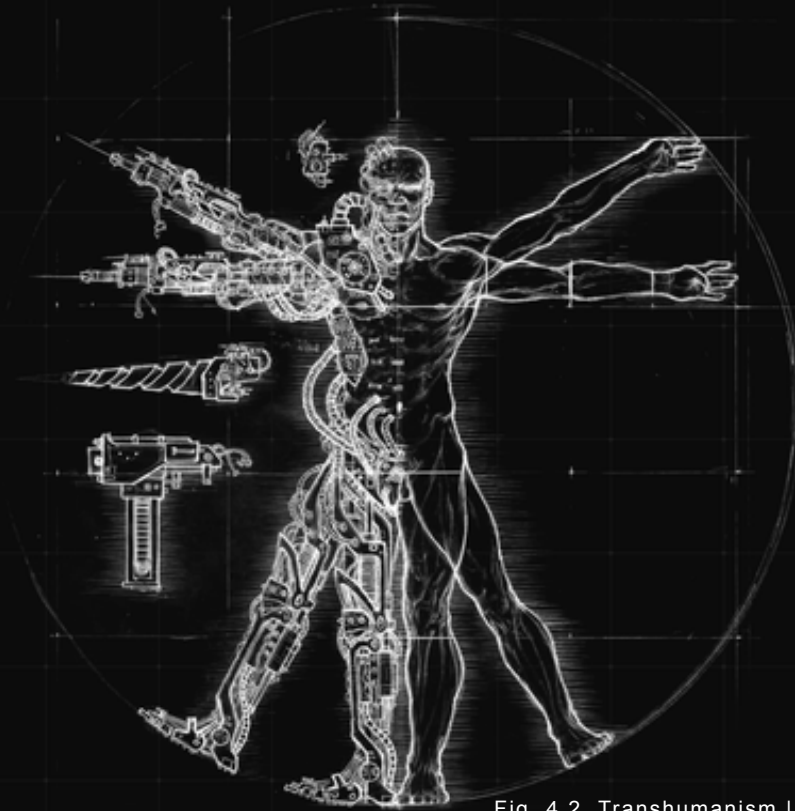
Fig. 4.2. Transhumanism | Human as cyborg

software with a hardware that is independent of the conditions of life on earth. The software of which Lyotard speaks can be compared to artificial intelligence.

The text „Self-design, or productive narcissism", published in 2016, by Boris Groys relates the ideas of Lyotards essay to today's society. Narcissism is a total concentration on oneself, as a lack of interest in society. But today, people are unable to like themselves if they're are not liked by the society in which they live. That is why they produce their own image to be liked. Self-design becomes important. Contemporary subjects cannot rely on the looks they were born with. They must practice self-design and produce their own image with the goal of becoming liked in society. But self-design doesn't stop here.

We also produce aesthetically relevant things and surround ourselves with things we believe to be impressive and seductive - in order to be admired by others. The desire for recognition, for becoming an object of society's admiration and love.
According to Alexandre Kojève, the desire to be desired is specifically human and it distinguishes us from animals. But the desire for desire isn't natural because it is ready to sacrifice all natural needs and even „natural" existence for an abstract idea of recognition. By the creature of images of ourselves, design transformed our society into an exhibition space. The internet becomes a place for self-presentation. Social media platforms as Facebook, Youtube or Instagram give everyone the possibility to find and receive

recognition and admiration. Self-design becomes the mass cultural practice.

This anxiety of not being accepted brings us back to the essay of Lyotard from 1988, where mankind's fate was powerfully expressed. For Lyotard the practice of self-design prefigured the problematic of the post- and transhuman condition. He describes it as follows: „Self-design means rewriting inner, psychological, political attitudes or economic interests on external media: self-design creates a second, artificial body that potentially substitutes and survives that of the human." Maybe the internet prefigures the condition Lyotard envisioned: mankind's persistence in a state of explosion.
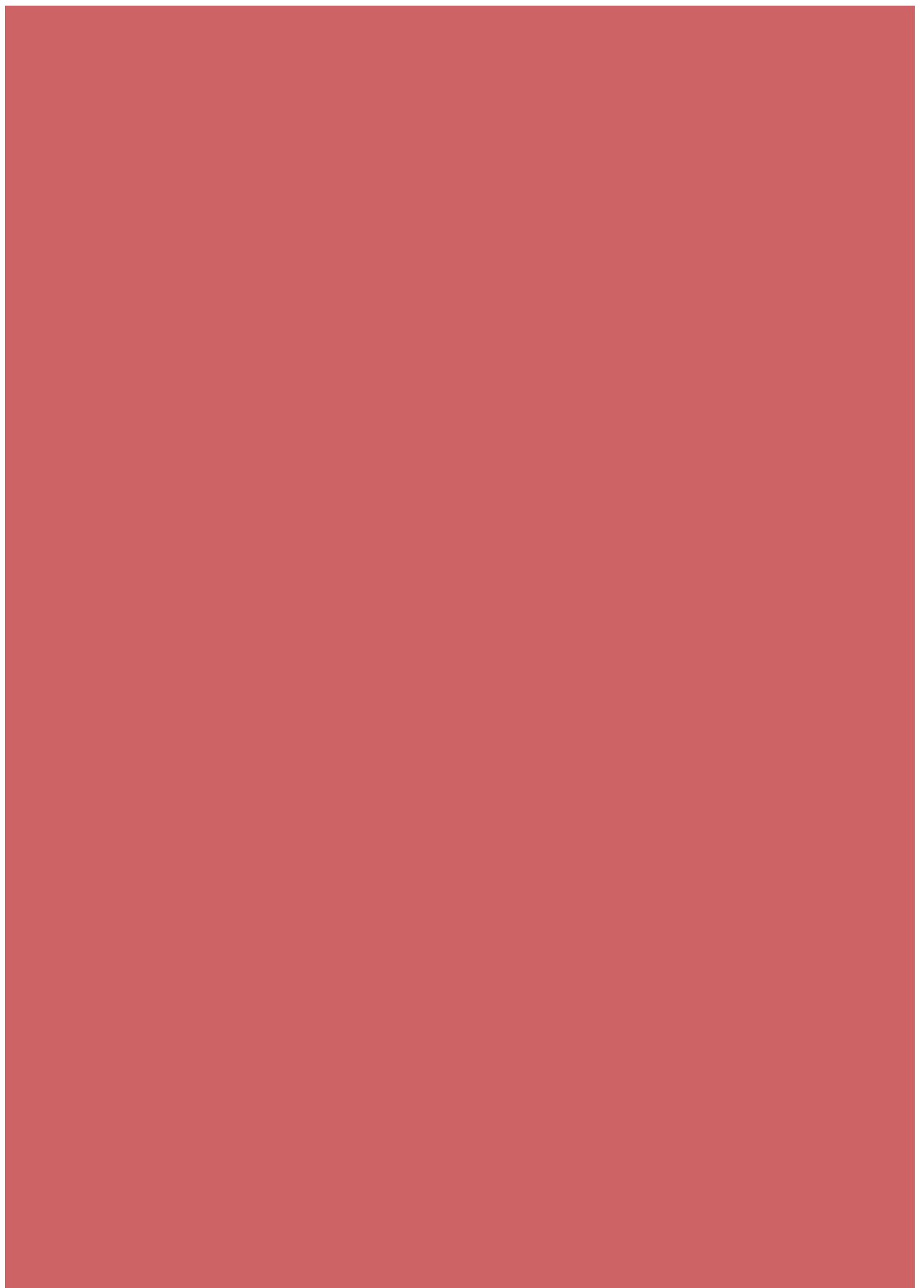
But the desire of other's desire is permanently haunted by the possibility of mankind's final disappearance - the physical death of human spectators after the metaphysical death of god.

Jean-Francois Lyotard begins his essay „*Can Thought Go On Without a Body*" with the reference to the scientific prediction that the sun will explode in 4.5 billion years and writes further: „*That, in my view, is the sole serious question to face humanity today. In comparison everything else seems insignificant. Wars, conflicts, political tension, shifts in opinion, philosophical debates, even passions - everything's dead already - if this infinite reserve from which you draw now your energy... dies out with the sun.*" Jean-Francois Lyotard, 1988, P.9)

Fig. 4.3. Annette Lemieux | Black Mass | 1991 | Latex, rhoplex, gesso, and oil on canvas

5

WHAT IS TRANSHUMANISM?

„The human species can, if it wishes, transcend itself – not just sporadically, an individual here in one way, an individual there in another way, but in its entirety, as humanity. We need a name for this belief. Perhaps transhumanism will serve: man remaining man, but transcending himself, by realizing new possibilities of and for his human nature."
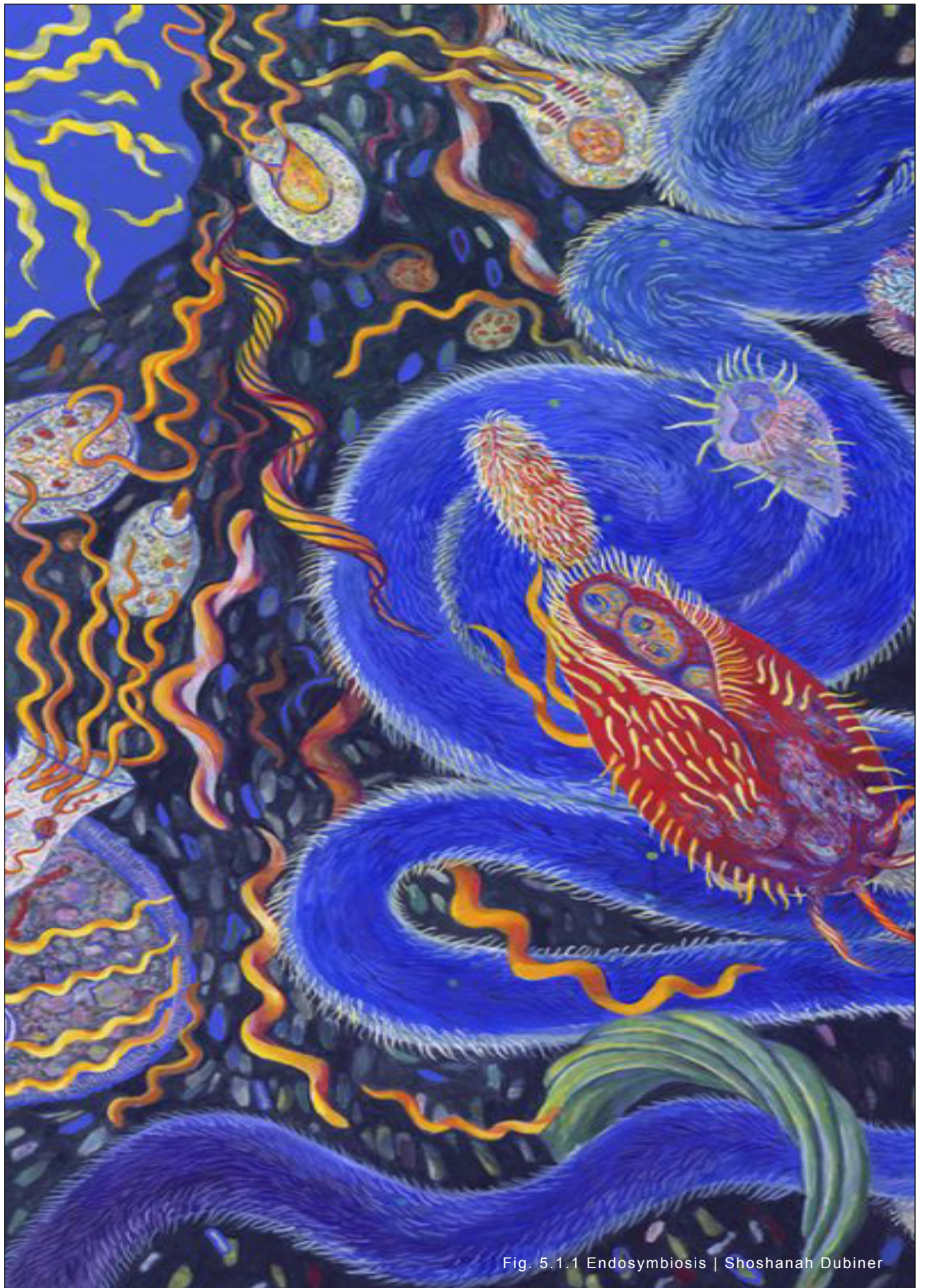Julian Huxley, 1957

Fig. 5.1.1 Endosymbiosis | Shoshanah Dubiner

WHAT HAS BEEN THE DAY AFTER TOMORROW?

Transhumanism attempts to develop the physical and mental characteristics and abilities of human beings through the use of science and technology. Thus, transhumanism could be seen as an interface that is no longer purely human, but can be evolved into a posthuman. A further development of the human being and beings who take place of humans in order to generate the superhuman. In Transhumanism, body and mind are often thought separately, with the aim of calming the body (mind uploading).
Humanistic values about nature, the control over our environment and dualistic thinking are often criticized. The question is, what happens if all people live forever and never die? Do all people live forever or only a few selected ones?

The term posthumanism is applied to a number of contemporary theoretical positions. For these contemporary theoretical positions, posthumanism denotes a series of breaks with foundational assumptions of modern Western culture: in particular, a new way of understanding the human subject in relation to the natural world in general.
Humanity thinks differently, no longer according to the humanistic ideal.
Posthuman theory claims a new epistemology that is not anthropocentric and therefore not centered in Cartesian dualism.
The postmodern theorist Ihab Hassan coined the term with his 1977 essay „Prometheus as Performer: Towards a Posthumanist Culture?"

Anti-racism movements and feminist movements take up the concept of posthumanism to overcome the state of transhumanism, which is probably an extension and intensification of traditional humanism rather than its rejection.
Donna Haraway was a key figure in exploration the porous nature of these boundaries on the continuum machine - human - animal. She has developed the cyborg as a contemporary cultural metaphor to capture the contradictory situation of contemporary man, whose bodies are open to forms

Fig. 5.1.2 The Garden of Earthly Delights | Hieronymus Bosch

of technological modification and intervention. As Katherine Hayles, a postmodern literary critic, it is no longer about improving the human being and the body as such, but about showing that the concept of the human being can mean something radically different.
They are concerned with blurring a boundary, namely that between human and non-human.
From their perspective, a central feature of humanism is its insistence on an unbridgeable divide between human and animal and the long outdated dualistic thinking.
Important to them is the rejection and enlightenment of the values of the traditional humanistic subject.
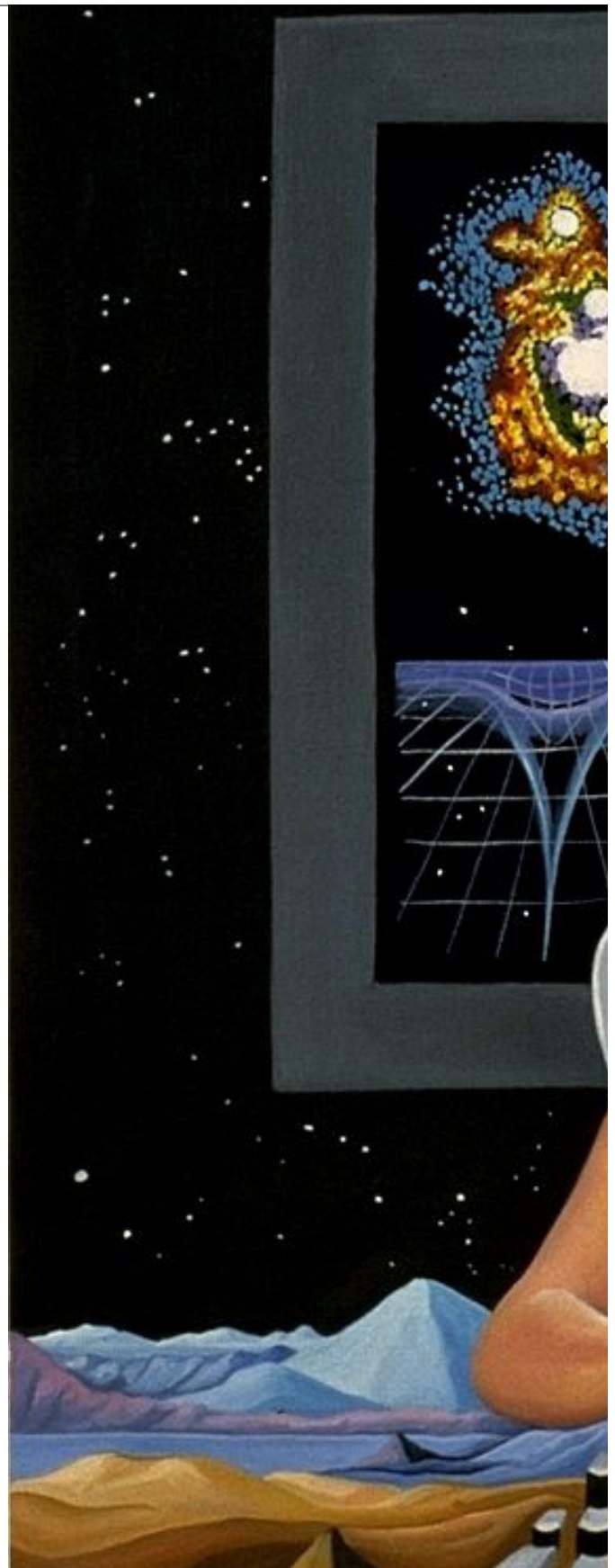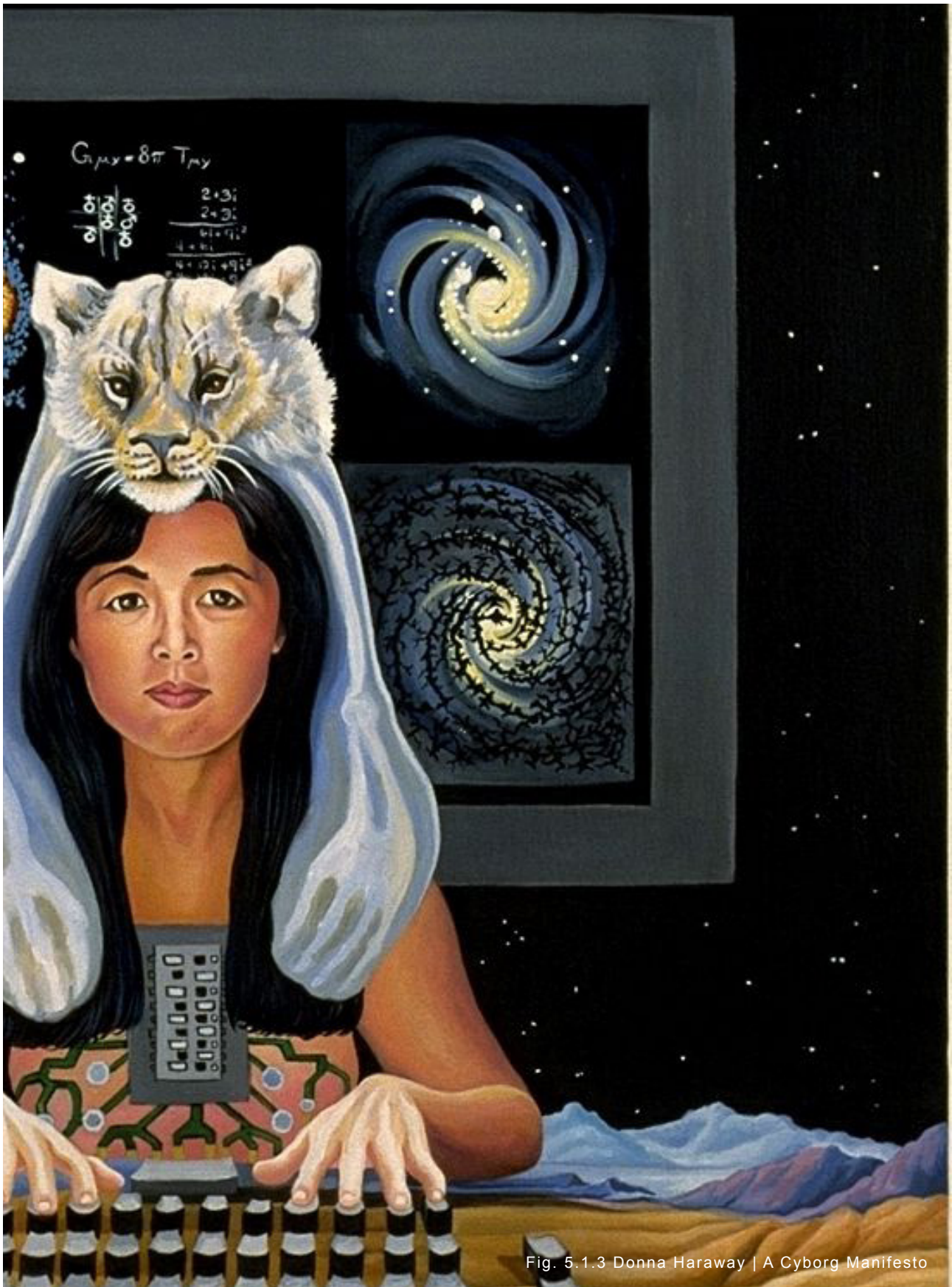
Fig. 5.1.3 Donna Haraway | A Cyborg Manifesto

Fig. 5.2.1 Becoming Animal | Minimaforms

THE HUMAN GOD

To transform people through technological improvement is the greatest intension of the transhumanists. They therefore rely on the fusion of man, human intelligence and technology, artificial intelligence. The international movement and mindset is looking for ways to overcome biological boundaries and change them through technology and science.
This could also imply the transformation to posthumanism and enable the overcoming of humankind.

In the book Homo Deus the Israeli author, Yuval Noah Harari, presents a vision of the future in which, in view of the new technological possibilities, we will construct a Homo Deus who only seems to strive for happiness, immortality and God-like powers.
Due to his intelligence, humanity has silenced animals and plants. By gaining scientific knowledge, humankind has made itself the most powerful ruler of the globe. With the help of biotechnologies and computer algorithms it will be possible to change our existence, our body, our brain and our spirit and create a new world. We are developing machines with new forms of intelligence that are not influenced by consciousness. The homocentric worldview of humanism can thus be replaced by a datacentric worldview.

Science converges to a comprehensive dogma, which says that the organism are algorithms and life is data processing. Intelligence decouples from consciousness and non-conscious but highly intelligent algorithms may soon know us better than we know ourselves.

„What will happen to society, politics and daily life when non-conscious but highly intelligent algorithms know us better than we know ourselves?" (Yuval Noah Harari, 2015, P.462)

Transhumanists assume that the next evolutionary stage of mankind can be reached through symbioses between man and machine. Technology and man merge. The cyborg is born.

TRANSHUMAN THINKING

We have always used technology to expand our senses and our self. So the question arises: Aren't we all cyborgs already? Transhumanism is a logical continuation in a new context with completely new technological possibilities. The Cyborg reflects the way in which developing technologies pervaded the everyday lives of humans in a industrial society. Biotechnology, information, communication and medical advances technology, mechanization for industry were all prominent part of our culture and society in the 1980s.

There is also a distinction between artificial senses, where stimuli are captured by technology, but intelligence is created by man, as opposed to artificial intelligence, which is created by the machine itself.

The interaction and relationship between technology, the human body and its environment, makes us think about whether it would be possible to use these insights to further develop and possibly inhabit our future environment.
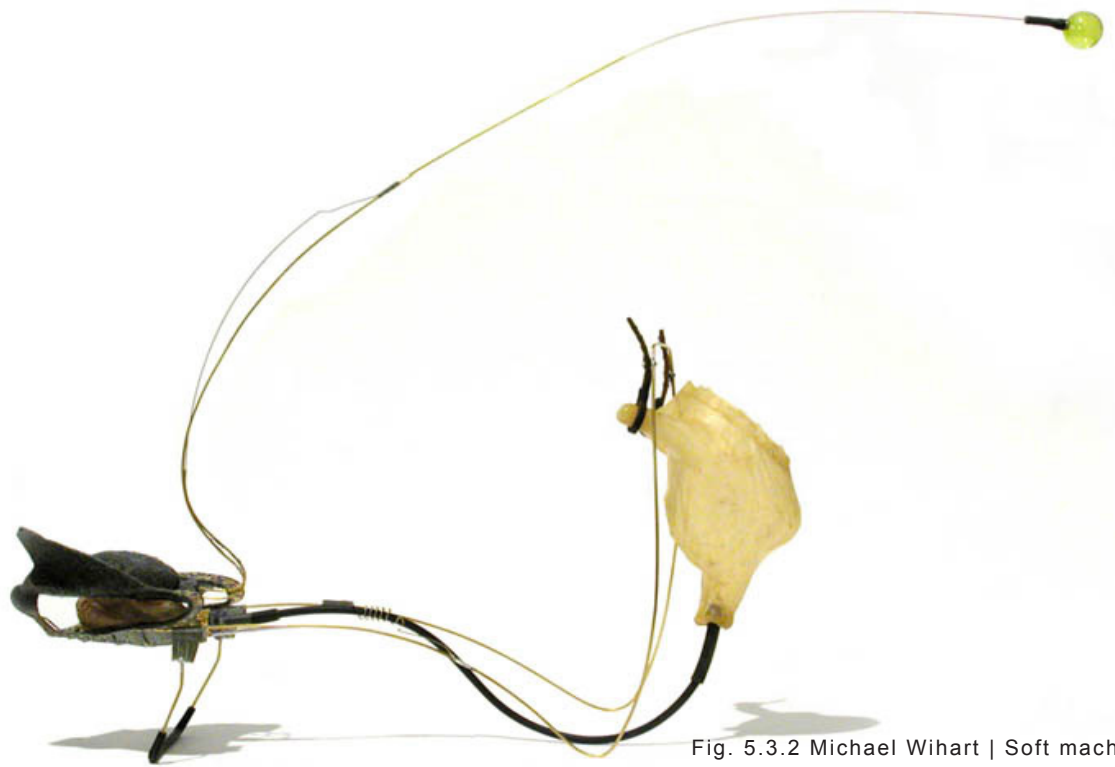
Fig. 5.3.1 Clean Air Pod | Ant Farm

Fig. 5.3.2 Michael Wihart | Soft machine

The following examples from Michael Wihart and Minimaforms examine the relationship between architecture, human body and technology.
New forms of communication between material and the human body will be explored and tried to make them accessible to everyone through models and installations.

Michael Wihart is an architect, educator and researcher based in Berlin. He investigates the relationship between architecture, human being and technology through the agency of soft machines.
Soft machines embody ideas of architecture as transformative, compliant, sensitive and sensual body.
The idea of his work is to develop machines that can co-constituting relationships with the human body. (Wihart.net)

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Fig. 5.3.3 Michael Wihart | Soft machine

Fig. 5.3.4 Petting Zoo | Minimaforms

Minimaforms was founded in 2002 by the brothers Stephen and Theodore Styropoulus.
With their projects, they investigate architectures and designs that can represent new forms of communication. Minimaforms' work is interdisciplinary and focuses on digital design and fabrication coupled with communication technologies to construct social and material interactions.

„Communication is the enabling agency at the heart of all forms of interaction" (Minimaforms)

Petting Zoo is one of their projects. It´s about generative robot arms. These creatures of artificial intelligence can learn to react to their environment and to communicate with it. This is done using kinetics, light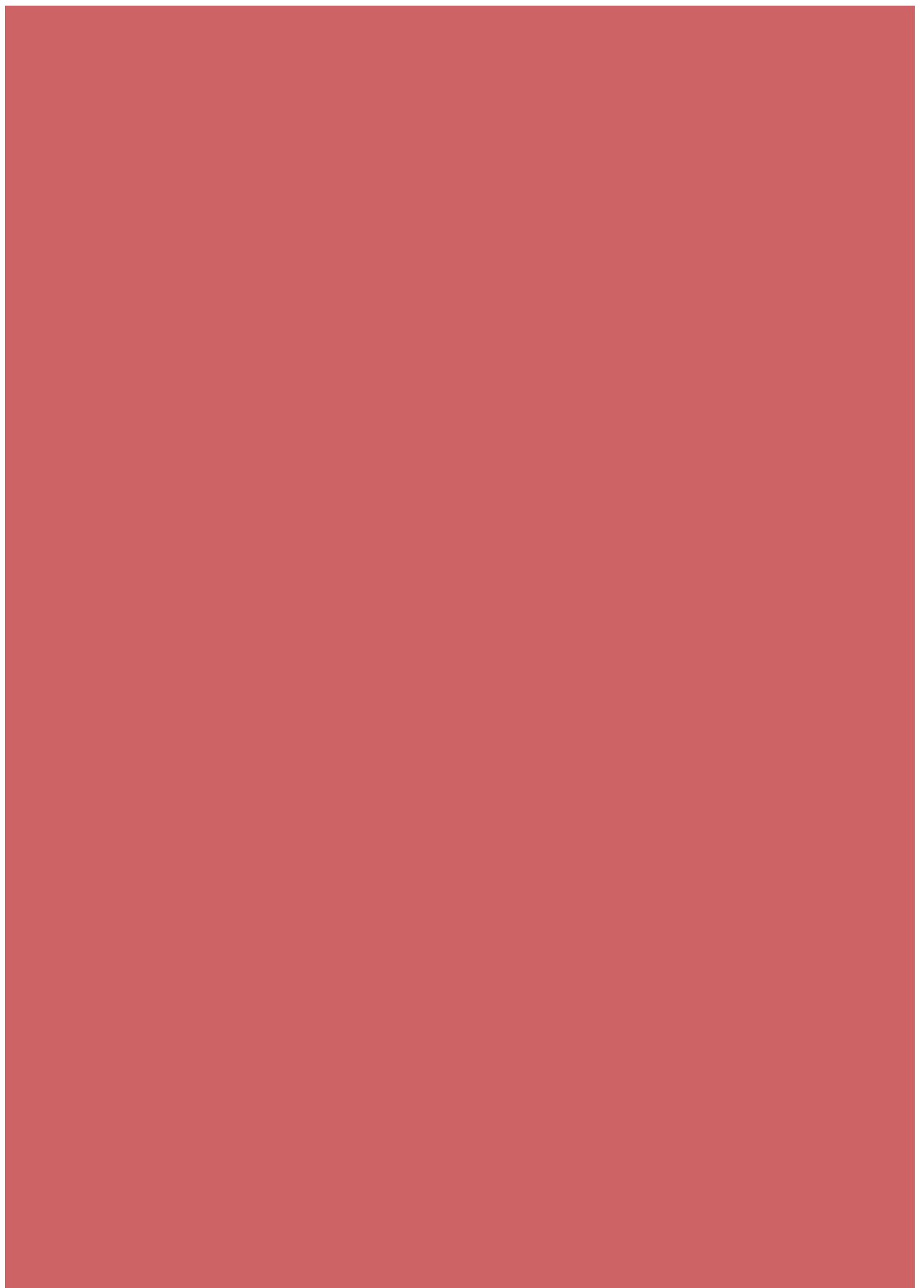 and sound. In the course of the exhibition, these personalities are developed through human interaction, which enables an intimate and immediate exchange that are playful, emotional and capable of development. This installation stimulates us to think about how we can evolve together and inhabit our future environment and cities.

Emotive city, is a framework to develop a mobile and self-organizing model for the contemporary city. The intersections of information, life, machines and matter, which are of immense complexity, force architecture to radically rethink its response to new social and cultural challenges in an environment of accelerated urbanization. Emotive City can be seen as a life model, an adaptive ecology that deals with information-rich environments.

Fig. 5.3.6 Emotive city | Minimaforms

6

TRANSHUMANISM - METHODS

„We just shouldn't be in the biology game anymore. It's just not the right game for us, as a species. It requires too much wanton cruelty."

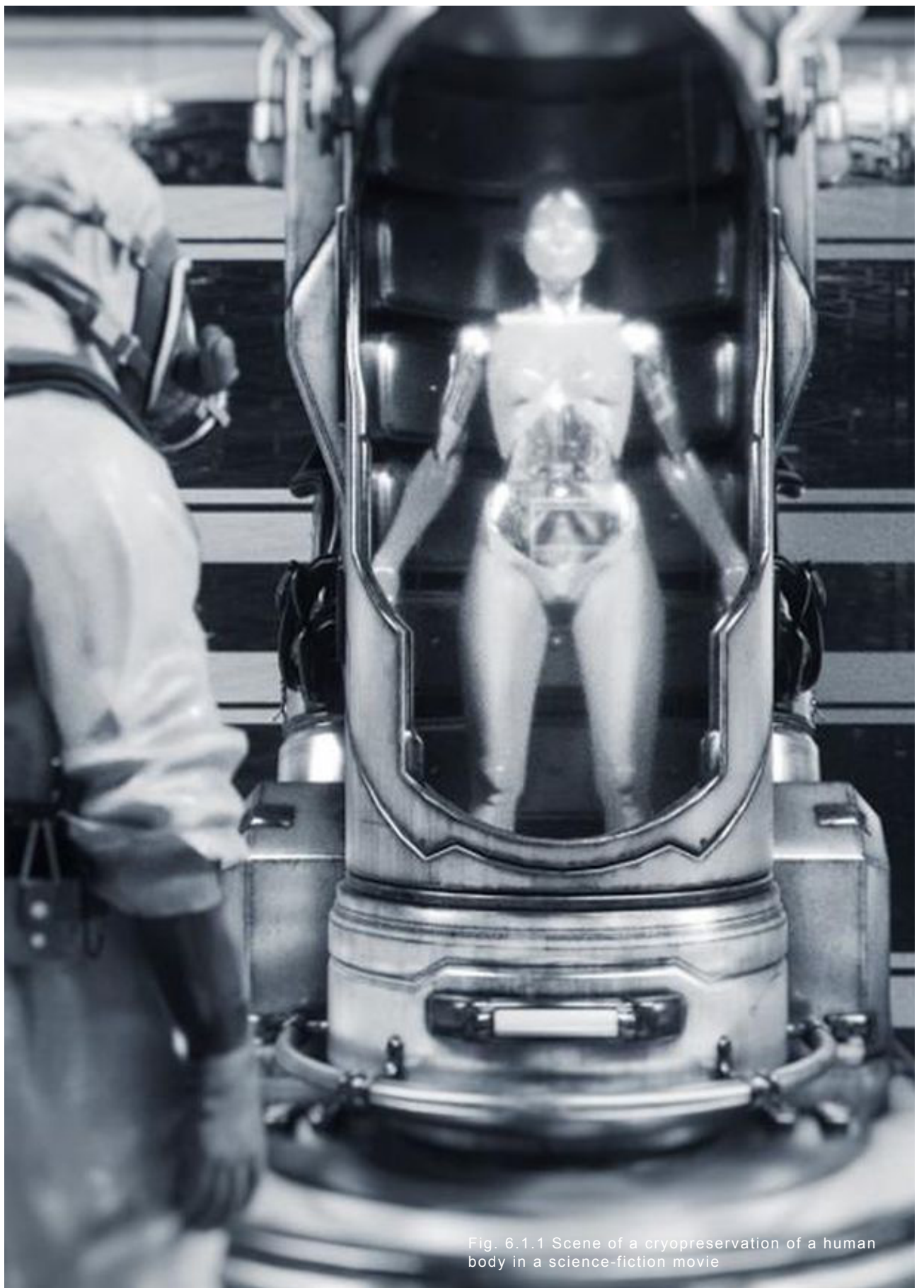Tim Cannon, Leader of the Grindhouse Wetware Group

Fig. 6.1.1 Scene of a cryopreservation of a human body in a science-fiction movie

CRYOPRESERVATION

ALTERNATIVE TO DEATH?

Transhumanism, as already mentioned, has the goal of overcoming death and improving the human body through new technologies. A superhuman who will be able to better adapt itself to changes on earth, will be created. To achieve that, there are different approaches. One of them is the preservation of the human body. The idea behind it is that in the future there will probably be methods to revive a conserved body, which makes it possible to escape death. This is very similar to the idea of mind-uploading. But there, only the human mind will be conserved by uploading it to a kind of supercomputer. The body, as a medium of the mind, is transient.

In science, research on the possibilities of preserving human cells and tissue has been going on for a long time. The aim is to develop methods and collect experience on how cells, tissues, organs or blood can be removed from a human organism and transplanted to another one, so that they continue to function as before. In 1963, Robert W. Driscoll published a study called „Engineering Man for Space: The Cyborg Study", in which he

showed that red blood cells can be preserved for up to four years. Furthermore, organ transplants are an evidence that the preservation of organs over a short period of time is possible thanks to modern technology. Organ-transplantation is the practice of removing an organ from a recently deceased or healthy person and transplanting it into a patient whose proper organ is malfunctioning or ill. Therefore, both patients must have the same blood group and the transplantation must take place as quickly as possible. After the removal operation, the organs are cooled in liquid solutions at temperatures around freezing point in order to slow down the metabolism. In this state it can be preserved for up to twelve hours. However, cooling still involves a number of risks, such as the formation of ice or even damage of cells. It is also not always certain if the body accepts the new organ or rejects it as a foreign bodypart. Nowadays, such operations occur very often and save the life of many people. In contrast to donor organs, tissue is not transplanted directly after the removal operation. It is first conserved and temporarily stored. Afterwards, it is examined,

Fig. 6.1.2 A scientist freezing cells

and treated and processed with different procedures. The packed tissue can be stored until a suitable recipient is found. This shows that there are already some methods of preserving organs, blood or tissue. Whereas the preservation of a complete human body is still highly controversial. (https://bit.ly/375loLw, 2009)

According to transhumanists, the preservation of the body is already realizable today. Their aim is to avoid death and become immortal. Thanks to this preservation it will be possible to be cured of a disease in the future, which would have killed you today. Furthermore, this method can extend the biological life on earth. Therefore, journeys to the different solar systems would become feasible, because the aging process of

the body could be stopped for a certain period of time. Max More, self-proclaimed founder of the movement, leads the institute „Alcor Life Extension Foundation“, where so-called cryopreservation is practiced. (Mark O'Connell, 2017)

Cryopreservation is a method to preserve a human's body by using very low temperatures to freeze them. They can be conserved in liquid nitrogen for decades or centuries until a future medical technology can restore that person. Cryonics is a pseudoscience because it isn't clear if it is possible to resurrect them back to life. Cryopreservation means the same as cryonics, the process to preserve structurally intact living cells and tissues by using very low temperatures. (https://bit.ly/2R54XJu, 2019)

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Alcor Life Extension Foundation was founded in 1972 by Fred and Linda Chamberlain. At this moment the organization was incorporated as the Alcor Society for Solid State Hypothermia. The name changed in 1977. It is a rational, technology-oriented cryonics foundation which works on technologies to become immortal due to the procedure of cryopreserving. Another institute, which preserves human bodies (and pets) is the Cryonics Institute. It was founded in 1976 by Robert Ettinger. In total, there are four cryopreservation facilities. Three in the United states and one in Russia. (Mark O'Connell, 2017)

The Alcor Life Extension Foundation is located on the outskirts of Phoenix, in Scottsdale. It isn't by accident that an organization of cryopreservation is based near Phoenix, because a phoenix is a mythical bird, who obtains new life by arising from the ashes of the predecessor. The headquarter is next to the Scottsdale Municipal Airport for an efficient delivery of the freshly dead people. The building itself has a very simple architecture. It seems unspectacular and unimposing. (https://bit.ly/2NAZAQ9, 2019)

According to the numbers of September 2019, Alcor has 1,283 members and 172 patients. The organization calls the bodies and heads which are already cryopreserved patients to be more respectful. There are two different ways to become immortal. You can preserve your whole body for $200,000 or only your head for $80,000. If you are a neuro-

Fig. 6.1.3 Scene of the movie „Passenger"

patient, your brain or mind can later perhaps be uploaded into some kind of artificial body. To pay this big amounts of money, Alcor's clients have to keep up annual membership during their natural lives and pay their bills with their life insurance money. (Mark O'Connell, 2017)

Before a body can be conserved, biological death must occur. But how should this person continue one day to keep on living in a body, that by now is already too weak to function as it should? Alcor ignores this question and offers no answer. The ideal death for cryopreservation is a clinical and predictable death, where Alcor can prepare everything to cool the body after death occurred. Success depends on the predictability of the death. Therefore, cancer, for example, is a very good cause of death whereas a heart attack is less good, because it is difficult to predict when it's going to happen. An aneurysm or stroke is even worse because of possible brain damages. Accidents and other disasters are the worst case to be cryopreserved afterwards.

After death, your body will be cooled down. On a tilted operating table, small holes will be drilled into your skull to judge the condition of your brain. If you are a whole-body patient, your chest will be opened to gain access to your heart. Blood and body-fluids will be flushed out and replaced as quickly as possible by a cryoprotect agent, kind of medical-grade antifreeze. It will guard against the formation of ice-crystals. As a neuro-patient your head will be removed from the body. Your detached head is now referred as a cephalon. This is a zoological term, which is referring to the head section of segmented arthropods. The brain isn't removed from its casing of bone, its personal integument of muscle and skin because is providing extra protection during the period of cryopreservation. Afterwards the cephalon is taken to a Perspex container known as "the cephalon box". (https://bit.ly/2R54XJu, 2019)

If the patient is prepared for the cryopreservation, he is stored in an eight-foot-tall stainless-steel cylinder. These cylinders, which look like gigantic thermos flasks are filled with liquid nitrogen. One of them contains sufficient room for four whole body patients in a circular arrangement of compartments around a central column in which several cephalons can be stacked. The cylinders are stored in a large, high-ceilinged warehouse called "the patient care bay". Unfortunately, this large room doesn't look futuristic like in science-fiction movies and the containers don't have windows where you could see the bodies in it. The body takes on a passive role from here on. The active role is played by the cylinder. It provides constant cooling and protects the body from external effects such as temperature differences and weather conditions. However, it is not clear if it should protect the bodies against environmental disasters and wars too. It could be possible that Alcor's warehouse will not remain at its place forever and may be destroyed by various disasters. These aspects let us think about the realistic implementation of the storage of preserved bodies in cylinders over a longer period of time. It would be necessary to build a bunker to make it more possible, but even then, we can't be 100% sure that the cylinders would outlive everything.

The first preservation was performed in 1966 by Robert Nelson. The patient was James H. Bedford, a professor of psychology at the University of California. He was born in 1893. If one day the resurrection of cryopreserved bodies would be possible, Bedford would be the oldest person on earth.

Max More's point of view of cryonics is a little surprising. He said in an interview: "[...] But the idea of sitting in one of those tanks, not being in control of my own destiny, doesn't actually appeal to me very much. It's just that it's obviously better than the alternative." (Mark O'Connell, 2017) But the question is, if the unknown of the future is really better than death. At the end we never know what happens afterwards. Mark O'Connell described it as follows:"

The point is that cryonics, as both a business and a tactic for evading the fate that awaits us all, is an at least theoretically scalable model." (Mark O'Connell, 2017)

However, at the moment, nobody really knows if it will be possible to resurrect the cryopreserved bodies in future. So if you make the choice that your body or head will preserved in a large cylinder after you die, you will have the same uncertainty about what happens next as in the case of a "classical" death.

But imagine, purely hypothetical, that in the future, the resurrection of cryopreserved bodies would be possible. The question arises, where would we wake up?

The probability of waking up in a laboratory or clinic is high. Maybe

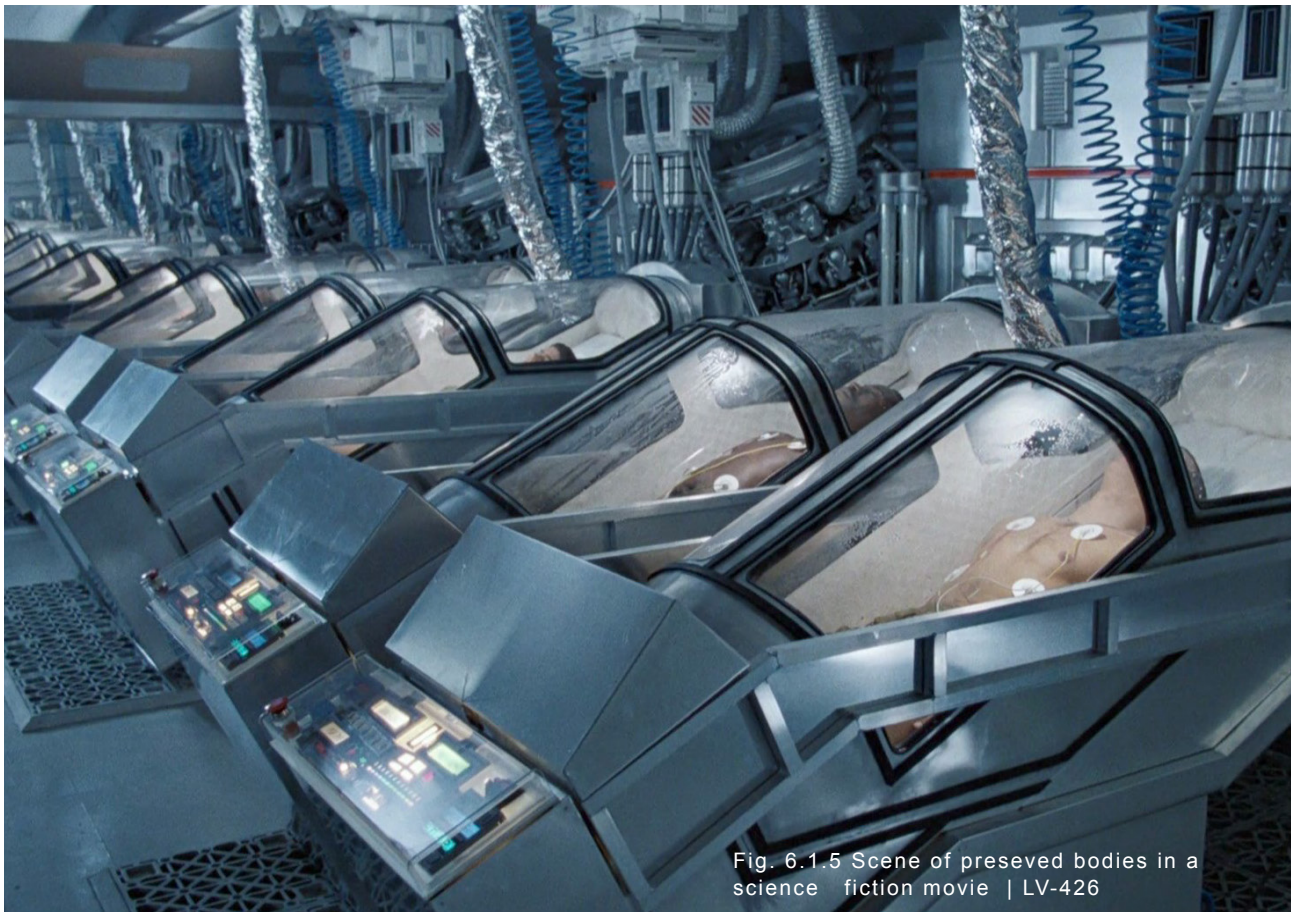Fig. 6.1.4 Alcor's Warehouse with cylinders filled with liquid nitrogen

Fig. 6.1.5 Scene of preseved bodies in a science fiction movie | LV-426

even in the same one where you got preserved. But how would people in the future would look like and how would they react to the preserved people of the past. Would they be afraid of them or would they treat them as underprivileged or like-minded? Moreover, the preserved body may not be adapted to the climatic conditions of the future. If this is the case, there will probably be a room for acclimatization. The revived people will have to spend some hours, days or weeks before they will be released to the outside world. However, there is also the possibility that these people will be used as research and demonstration objects. As an example of how people used to look and live like in the past. They could be kept in a kind of zoo or be part of a freak show.

In conclusion, we can say that the preservation of human bodies is still in its infancy. Nowadays it is not yet certain whether it will one day be possible to resurrect a preserved body and what life in the future will look like. Furthermore, the question arises whether the uncertainty of what will happen to you one day is really better than biological death. However, the method of cryopreservation may be useful in relation to space travel to solar systems located far away from earth. Because the duration of the travel to such a solar system could exceeds the lifetime of a human being, the preservation could stop the aging process and people could overcome the long distances without aging.

Fig. 6.1.6 First cryopreservation, 1966, patient was James H. Bedford

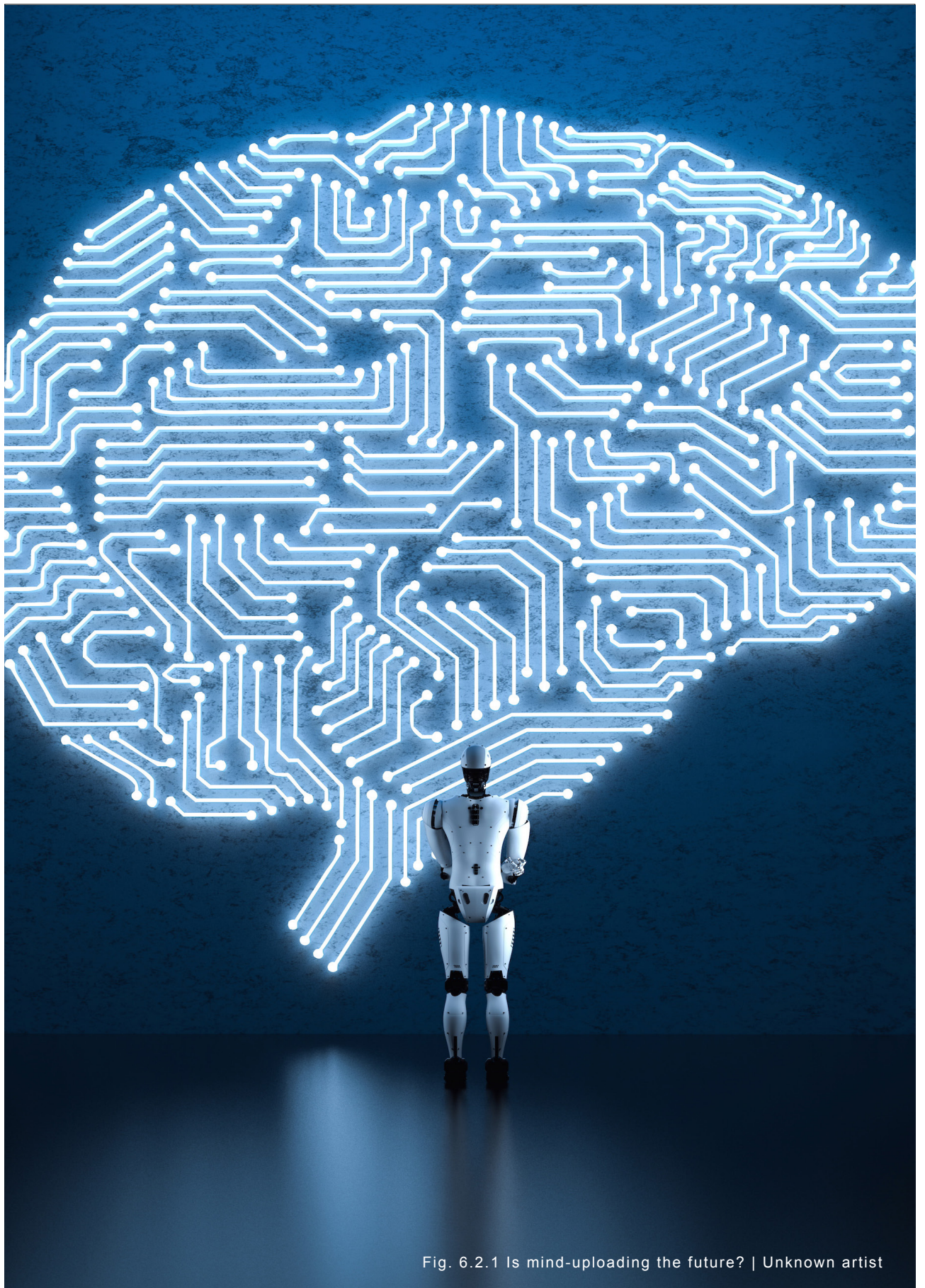Fig. 6.1.7 Collage | Freakshow

Fig. 6.2.1 Is mind-uploading the future? | Unknown artist

MIND UPLOADING

Mind Upload, Whole Brain Emulation or Brain Upload is the hypothetical futuristic process of scanning and copying the mental state of a human to a computer. The mind is separated from the biological body, and therefore would no longer be transient. The computer would act as a medium and is supposed to be the simulation software that performs the information processing of the brain.

Researchers are already working on the realization of Mind Uploading, but it is still in its early stages. On one hand, there are some small lack of knowledges concerning the connections within the brain, the formation of thoughts or the subconsciousness. On the other hand, the computers, even those with the highest and best performance, aren't developed far enough in order to save a mental state of a human.

Many people, especially transhumanists and scientists, are fascinated by the fact that mind uploading may one day become possible. By separating from the transient body, the mind would become immortality. Some believe that this is the best way to preserve the identity of the human species, as an opposition to cryopreservation. Randal Koene, neuroscientist and founder of the organization „Carbon Copies", which promotes research in this area, describes the possibilities of this achievement in the interview with Mark O'Connell as follows: „I couldn't optimize problems in my head the way a computer could. I couldn't work on some problem for thousand years, or even travel to the next solar system, because I'd be long dead by then. There were so many restrictions, and I realized they all came down to the brain. It was clear to me that the human brain needed enhancement. (Mark O'Connell, 2017, p.46) Mind uploading could also serve as a backup or permanent security for the mind and thoughts. In this way human culture and knowledge could survive a global catastrophe.

Some scientists and futurists suggest that brain emulation could also be used as an approach to artificial intelligence. It is possible

Fig. 6.2.2 Virtual Body for your uploaded mind | Jim Cooke
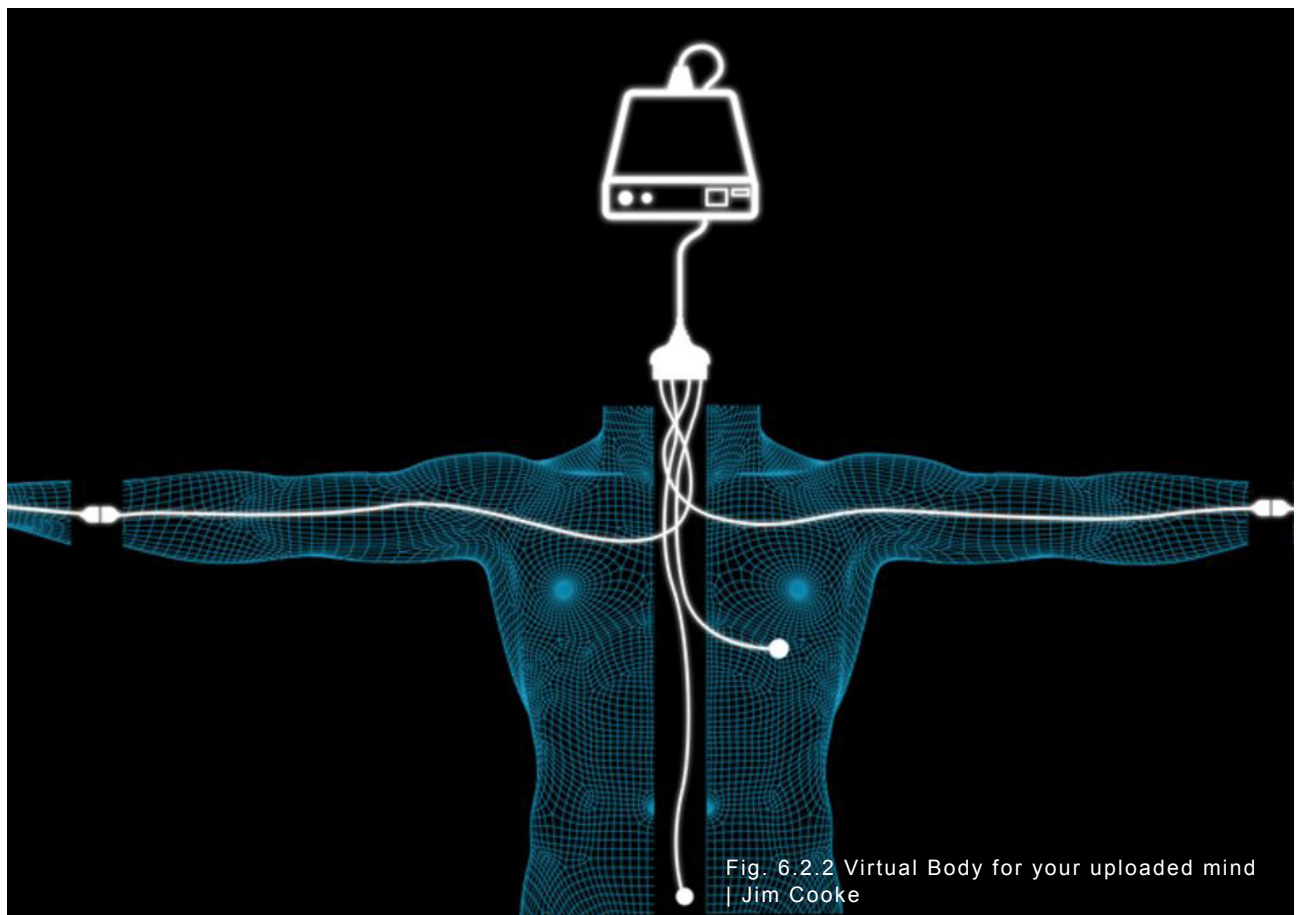
that computer-based intelligence, like an upload by supercomputers, can think much faster than a biological human being. In addition, the question arises as to if it is possible to combine the digitalized information of another upload in order to increase intelligence and obtain a „superbrain" and, if this artificial superbrain could become a danger to humans. The researcher Marvin Minsky comments on this as follows: „It is unreasonable to think that machines could become nearly as intelligent as we are and then stop, or to suppose that we will always be able to compete with them in wit or wisdom. Whether or not we could retain some sort of control of the machines, assuming that we would want to, the nature of activities or aspirations would be changed utterly by the presence on earth of intellectually superior beings. (Mark O'Connell, 2017, P.91)

In science, consciousness is a material product, which is not created by magical or extra-worldly elements. It depends on mathematics, logic and the laws of physics, chemistry and biology, although some of them aren't yet known and researched. They believe that consciousness is created by the processing of information in the brain. It results from large neuronal networks and high-level organizational patterns. Therefore, we can assume that these organizational patterns can also be realized in other processing devices. The human mind is represented through the current neural networks and the weights of the brain synapses and not, as supposed in philosophy, through

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the dualistic and mystical soul and spirit. The mind or soul can be defined as an information state of the brain.

However, it is not clear whether mind uploading will allow you to overcome death. Susan Schneider, philosopher and transhumanist, believes that uploading would create a copy of the mind of the original person. She agrees that consciousness has a mathematical base, but this doesn't mean that we can survive by uploading our minds to a computer. The process of the upload will probably kill that person. The illusion, that this person is still alive, is only maintained from an observer's perspective because the computer with the uploaded data of the brain reminds them of this person. Schneider finds it implausible that

your consciousness can leave the brain and continue to function in a distant place. Physical objects don't act like that. They cannot be here and elsewhere at the same time. In her view, mind uploading makes a copy of the original mind. However, there are many other and very different assumptions about how uploading will affect the person, the consciousness or the brain. A concrete answer, how Mind Uploading will work and which consequences it will bring with it, cannot be given at the moment. (Susan Schneider, 2014)

Even if Mind Uploading would be possible one day, we still don't know how it would work in common practice. There are different scenarios, which mainly show ethical problems. For example, there could only be a limited
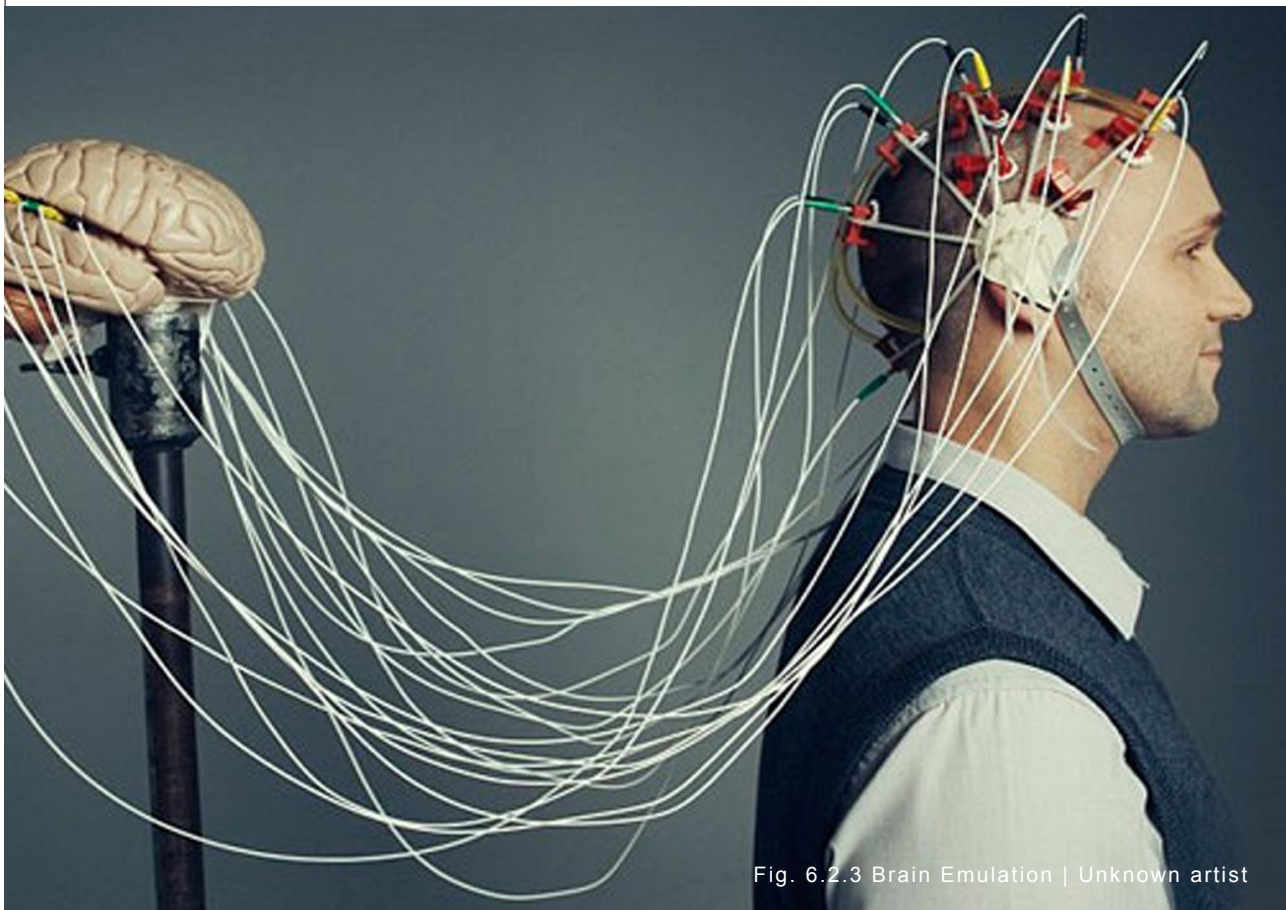

Fig. 6.2.3 Brain Emulation | Unknown artist

amount of brain emulators because of the size and complexity of the supercomputers needed for the brain emulation. This low number of brain emulators could entail that using them would be very expensive and therefore, only the wealthy class could afford it. In consequence, the gap between the rich and poor would become bigger, and only the rich could afford an eternal life, whereas the poor would have to die in a normal way. Another consequence of the brain emulation would be the overpopulation. Overpopulation is an existing problem of the present and would be further encouraged by using any method to overcome death. Fortunately, all of the above are, until now, assumptions and nobody can exactly tell, what the future will look like.
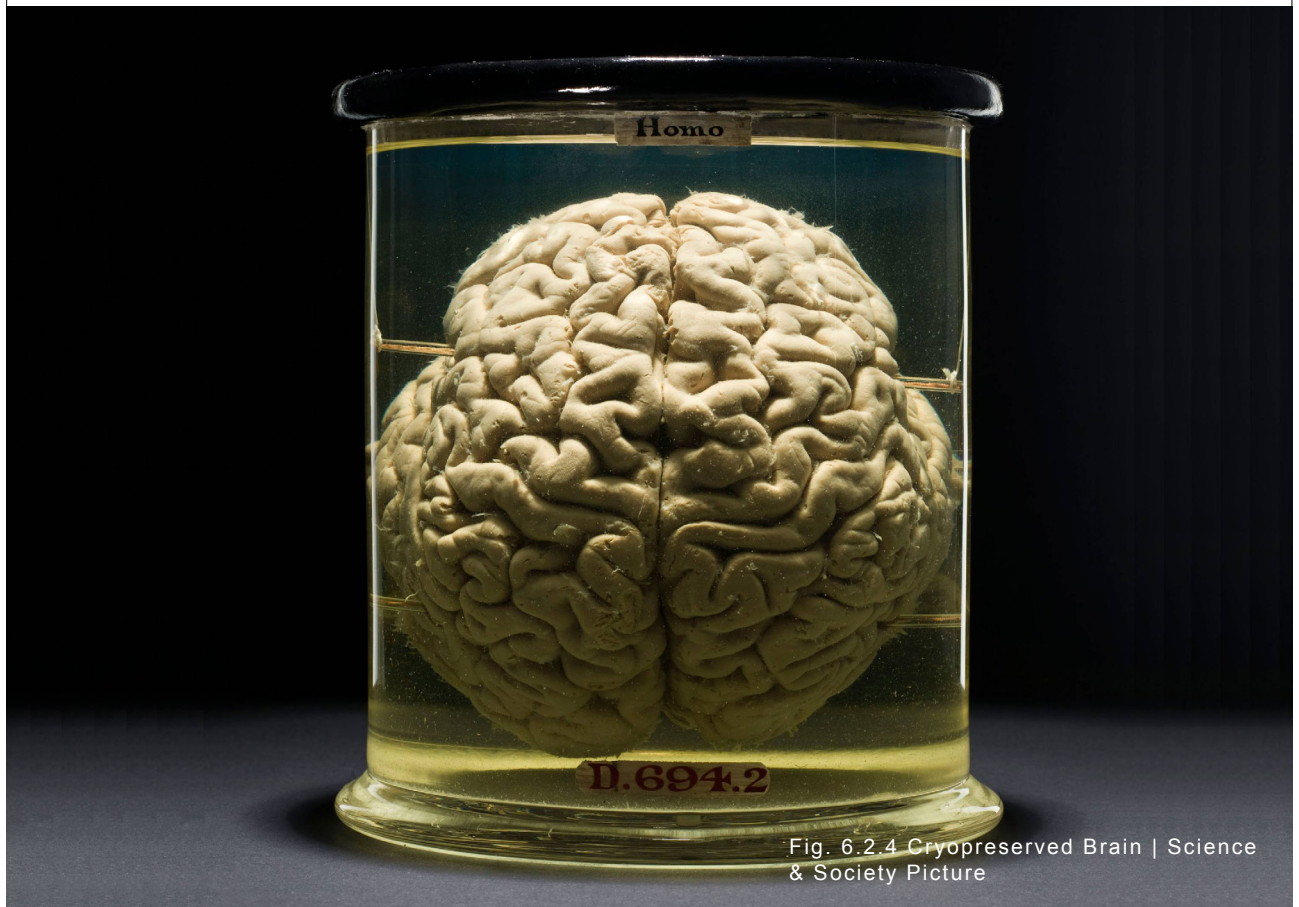

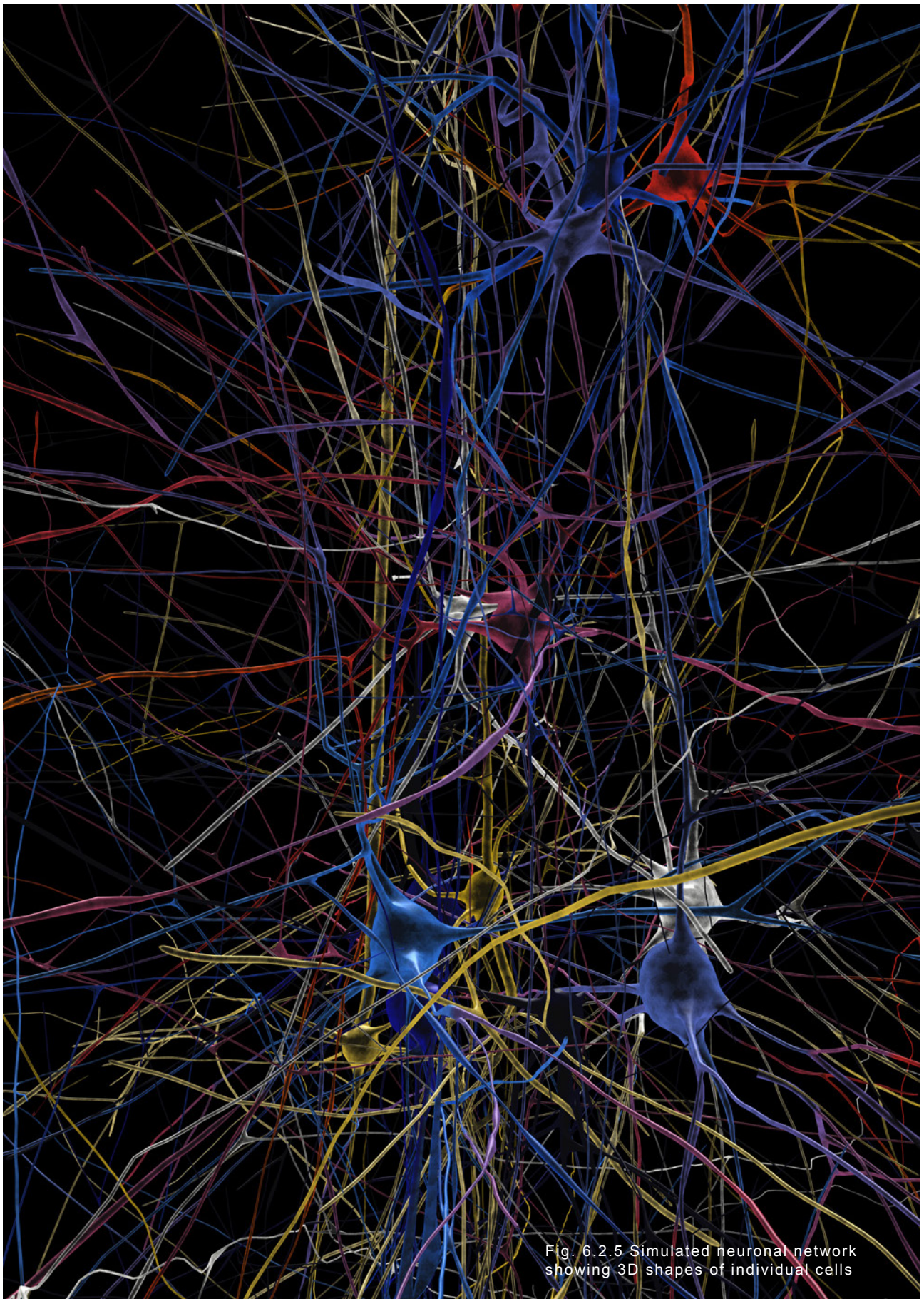Fig. 6.2.4 Cryopreserved Brain | Science & Society Picture

Fig. 6.2.5 Simulated neuronal network
showing 3D shapes of individual cells

Fig. 6.3.1 Neil Harbisson | Cyborg Artist

CYBORGS

FUTURE OR PRESENT?

The term cyborg is an acronym and is derived from the word „cybernetic organism", which is an organism, often a human being, that has certain physiological processes that are amplified or controlled by mechanical or electronic devices, especially when they are integrated with the nervous system. It is a mixture of living creature and machine, not to be confounded with robots and androids. Cyborgs are humans, but also animals, who attain an improved form of their biological body with the help of mechanical components and new technologies.

The idea of human-machine hybrids was already widespread before the Second World War. A superhuman should be used primarily for military purposes and to restore peace. Through the newly gained technology, man was to become a Übermensch, as Nietzsche would call him. In Transhumanism, the overcoming of the current human stage up to the so-called cyborgs is one of the main theme. The goal is to create a creature that can far exceed the abilities of a modern human being. The Posthuman is

therefore a hypothetical future creature, which will be modified and improved by nanotechnology, genetic engineering and other new technologies or machine parts. In Posthumanism you can find similar motives. Whereby it is not clearly defined whether Post- and Transhumanism are two different movements or if Transhumanism is derived from Posthumanism.

The motif of the cyborg is very popular in art. Already in the Dadaism of the 1920s the idea was often depicted in sculptures and paintings. One example is the pre-industrial representation of „L'Horlogère". It is a painting of a clock with the upper part of a woman's body. What these two elements had in common was their description at the time - complex, mechanical, useful, decorative. The painting can be seen as an early prototype of later conceptual models of the cyborg. Nowadays, the idea is mainly used in performance art. In the foreground is the artist's body, which has been modified by extensions through machine parts or transplanted technological
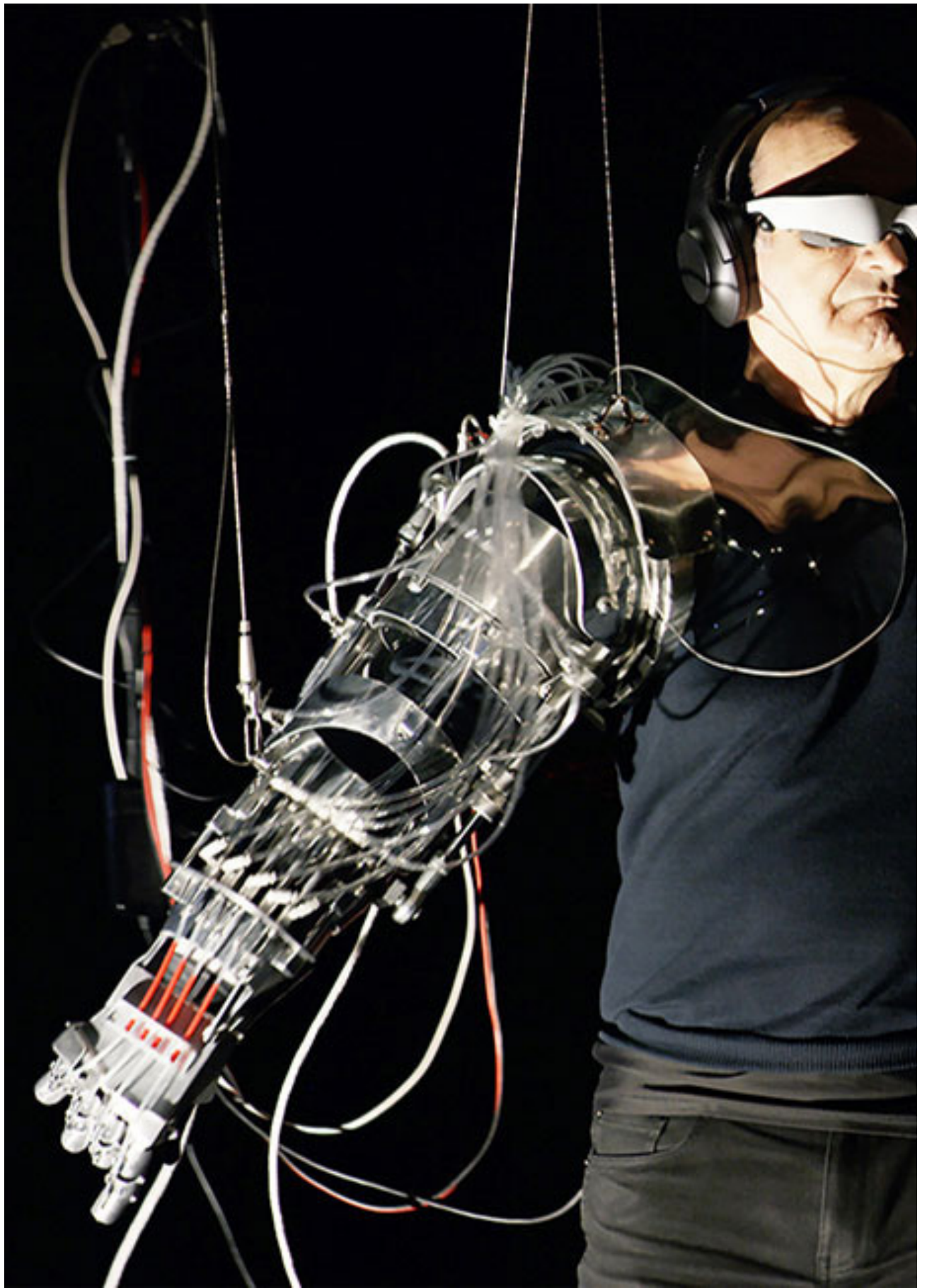
Fig. 6.3.2 Stelarc | Cyborg Artist

devices. Neil Harbisson and Moon Ribas are two such so-called cyborg artists. Harbisson, a contemporary, color blind artist and cyborg activist is known for having an antenna implanted in his skull. The antenna allows him to perceive visible and invisible colours via audible vibrations in his skull including infrareds and ultraviolets as well as receive colours from space, images, videos, music or phone calls directly into his head via internet connection. (https://bit.ly/30tLmWN, 2014) On the other hand, the Spanish Artist Moon Ribas has developed a seismic sensor, which is transplanted into her foot that can recognize earthquakes by their vibration. (https://bit.ly/2R6Gow9, 2016) Artists like Stelarc and Steven Mann, in contrast, don't transform themselves into cyborgs, but invent and develop technical and mechanical devices which can be controlled by the body. An example of this is the exoskeleton of Stelarc. It is a spider-like construction with six legs in which you can move around by using your body weight. Stelarc has been studying the relationship between man and machine for over 30 years. He also experiments with biohacking, an improvement of the body with transplants of technical elements. In one of his performances where he experiments with prosthetics, robotics and virtual, he ha, for example an ear transplanted to his forearm. (https://bit.ly/2RoWYWV, 2019) The Canadian engineer Steven Mann, who works as a professor, is known for his inventions that combine technologies with the body, such as Wearable Computing. Mann is also the founder of InteraXon and manufacturer of the Muse and Muse2 brain-sensing headband.

(https://bit.ly/2RtwLq2, 2019)

However, cyborgs have no longer been found only in art and science fiction films and novels for quite some time, but have become part of our everyday lives. This is possible above all due to the progress in medicine.

If you think of a cyborg as a human who has been improved with machine parts, then anyone who has a prosthesis is a cyborg. A prosthesis is an artificially created product, which is supposed to replace body parts within its function. There are different types. We distinguish between prostheses that are outside the body, such as leg, arm or hand prostheses, these are called exoprostheses and those that are inside the body. Then they are called implants. Furthermore, you can also distinguish between endoprostheses, a closed implant, such as an artificial hip joint, and an open implant, which are anchored in the bone. These include dental implants and implants for fixing leg prostheses, for example. They help people who have been disabled by an accident or illness to return to a normal life. Since the 20th century BC, the Egyptians already used simple prostheses to compensate deficits of the human body.

The definition of a cyborg can be extended further, so that every intervention of new technologies transforms a person into a cyborg. Therefore, a biomedical intervention, which means any surgical operation, would be a reason or trigger for the transformation. Today, new advances in medicine make it possible to treat many diseases. However, this usually requires an intervention in the human organism.

Be it through medicine, through an operation or other methods. All measures should serve to heal the patient and to improve his current, bad state of health. This is achieved by the use of small machines, if you put it simply. A pacemaker, for example, helps people with heart problems such as arrhythmia to live a normal life again. In addition, machines outside the body, as for dialysis, can increase the life expectancy of a person with kidney failure. A dialysis machine is used to cleanse the patient's blood and can therefore replace the function of the kidneys. (Chris Hables Gray, 1995)

Transplantation of organs and tissue can also turn a person into a cyborg. An organ is removed from a healthy or recently deceased person and transplanted to a patient who needs a new one due to ill or malfunction of his organ. In this way the patient's quality of life can be improved again. (Chris Hables Gray, 1995)

Even newborns can become cyborgs, or even be born as cyborgs. In this case, either an operation is performed on the fetus, which is still in the womb, or the mother dies before the birth. If the second case applies, the mother is usually kept alive by using life-sustaining machines such as artificial respiration, even if she is already brain dead. This allows the fetus to develop in the womb. However, only after brain death can the fetus be considered as an individual patient. The mother become a machine that keeps the

fetus alive. (Chris Hables Gray, 1995)

However, not only vital interventions can trigger a transformation into a cyborg, but also cosmetic surgery, which only serves to change the external appearance. Human has a constant desire for modification. Beatriz Colomina and Mark Wigley describe this in their book „Are we human" as follows: „There is no such thing as the naked human body. The human becomes human in changing itself. Darwin said we even designed our nakedness. The body is an artifact, the product of protocols and technologies." (2016) Cosmetic surgery has made it possible to completely change your appearance. Extreme cases have distanced themselves far from their original biological body. However, this isn't necessarily the way to a posthuman, who is supposed to overcome today's man through extended abilities, but rather only a kind of pleasure in experimenting with their own body and to overcome your original appearance.

On the other hand, the biohacking scene is specifically experimenting with equipping the human body with new abilities. Biohacking is a subcategory of transhumanism and not an accepted science. The goal is to prepare the way to the posthuman, through practice and experimentation. Followers of the scene transplant chips, motherboards or other technologies to obtain new skills, such as the recognition of magnetic fields and Bluetooth or the acquisition of night vision. These mostly very risky


Fig. 6.3.4 Implanted chip in hand

Fig. 6.3.5 Implanted motherboard in the arm of Tim Cannon, leader of the Grindhouse Wetware Group

transplants are never performed by official doctors in hospitals, but by so-called flesh engineers in the ateliers of the biohackers. The Grindhouse Wetware Group is one of the leaders in this specific area. Tim Cannon, head of the group explains the reasons behind it: „We just shouldn't be in the biology game anymore. It's just not the right game for us, as a species. It requires too much wanton cruelty." (Mark O'Connell, 2017)

Finally, we can conclude that cyborgs are already part of everyday life. Due to the development of new technologies, each of us is becoming more and more one. Therefore, the future-oriented thinking and the desire of biohackers to become the first cyborgs has long become reality.

7

TRANSHUMAN TERRITORY - HOW DOES
ARCHITECTURE RESPOND ?
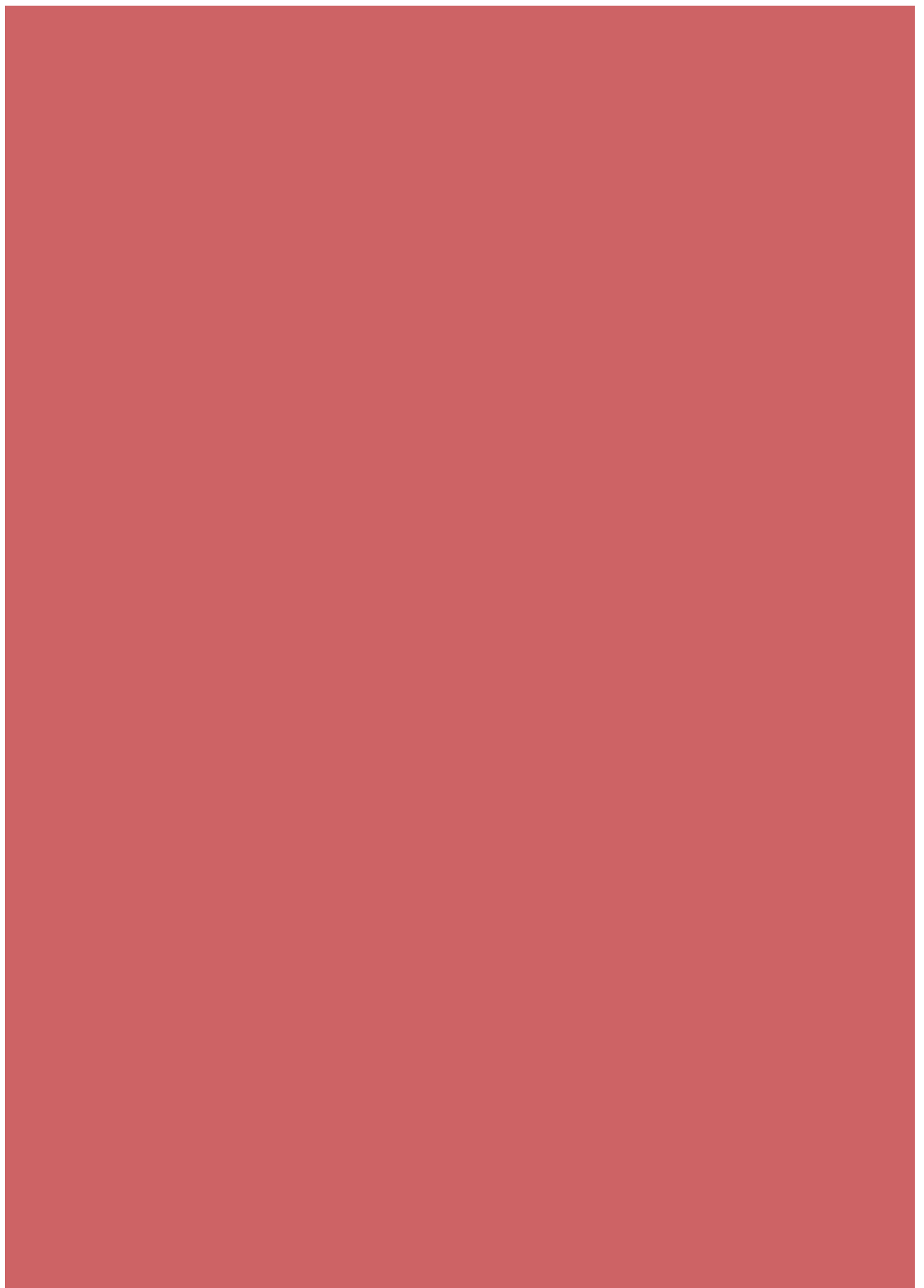
„Artifacts are part of the body and brain. They are thoughts. But equally they are the potential of new ways of thinking.”

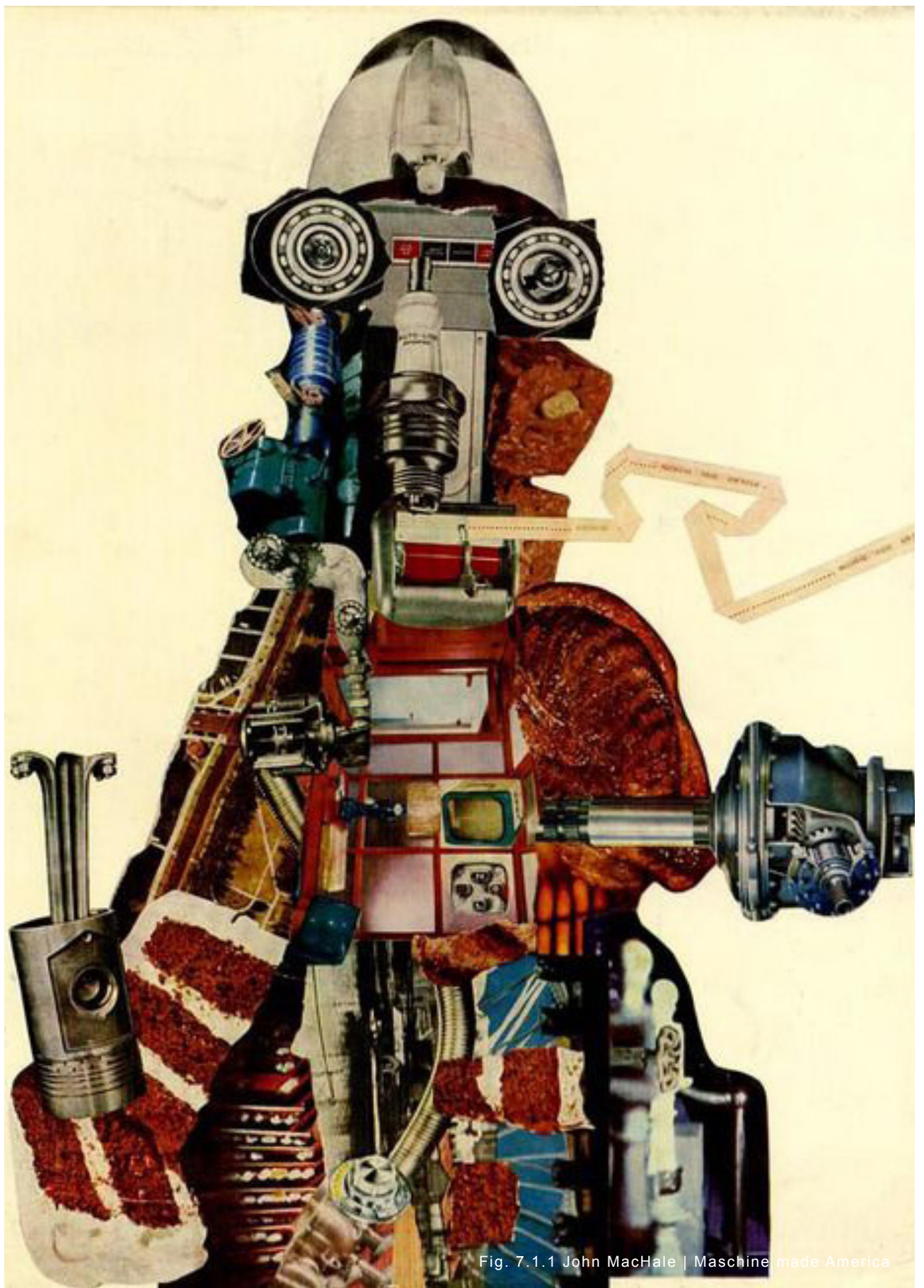Beatriz Colomina & Mark Wigley, *Are we human?*, 2016

Fig. 7.1.1 John MacHale | Maschine made America

TRANSHUMAN TERRITORY

These organic and technological
categories provoke new questions
for architecture.
To characterize the dynamics
between architecture and
environment in the Anthropocene.
Architecture for Hybrids?

In architecture, the term
transhuman is still more a gesture
towards a blurred, technologized
future.
The most common references for
the idea of a transhuman future are
based on science fiction visions.
But between this image there is a
posthuman territory that reflects
the intertwining of the relationship
between human, technology and its
environment.

In this chapter we want to show
the application and handling of
technology in terms of its use in
architecture and reveal how this
relation to technology has changed
by means of examples.
A networked, responsive or even
transhuman architecture.

Endless House
Technology as an experimental tool

The diverse works of Friedrich
Kiesler (1890-1965) are inspiring,
above all because of his cross-
border thinking. The Austrian-
American architect, artist, designer,
stage designer and theorist was
a visionary who saw a significant
connection between art and
science.
The Endless House (1950) was
intended to be a second skin and
to adapt flexibly to the needs
of human. He was interested in
exploring the interrelationships
between nature, technology
and human and the creative
implementation of his findings.
Friedrich Kiesler describes it as a
living organism that can respond to
the needs of its habitants, whether
as individuals or as a group. It
offers a continuous succession of
rooms, but with individual places
of retreat. Kiesler thought of the
rooms of his house as extensions
of the bodies of its inhabitants.

„All ends meet in the „Endless" as
they meet in life. Life's rhythms
are cyclical. All ends of living meet
during twenty-four hours, during a
week, a lifetime. They touch one
another with the kiss of time. They
shake hands, stay, say goodbye,
return through the same or other
doors, come and go through multi-
links, secretive or obvious, or
through the whims of memory."
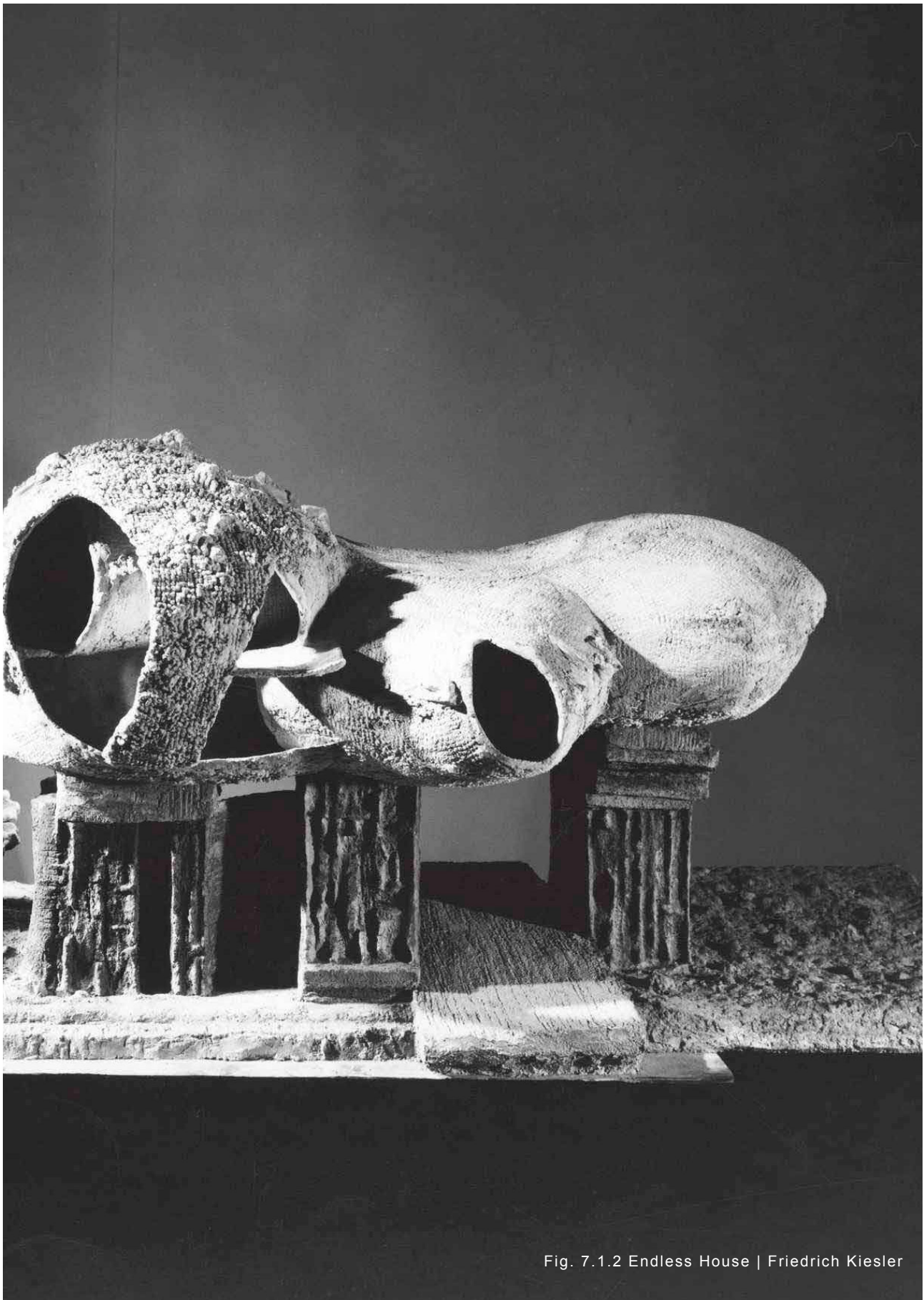(Friedrich Kiesler, Arch Daily, 2011)
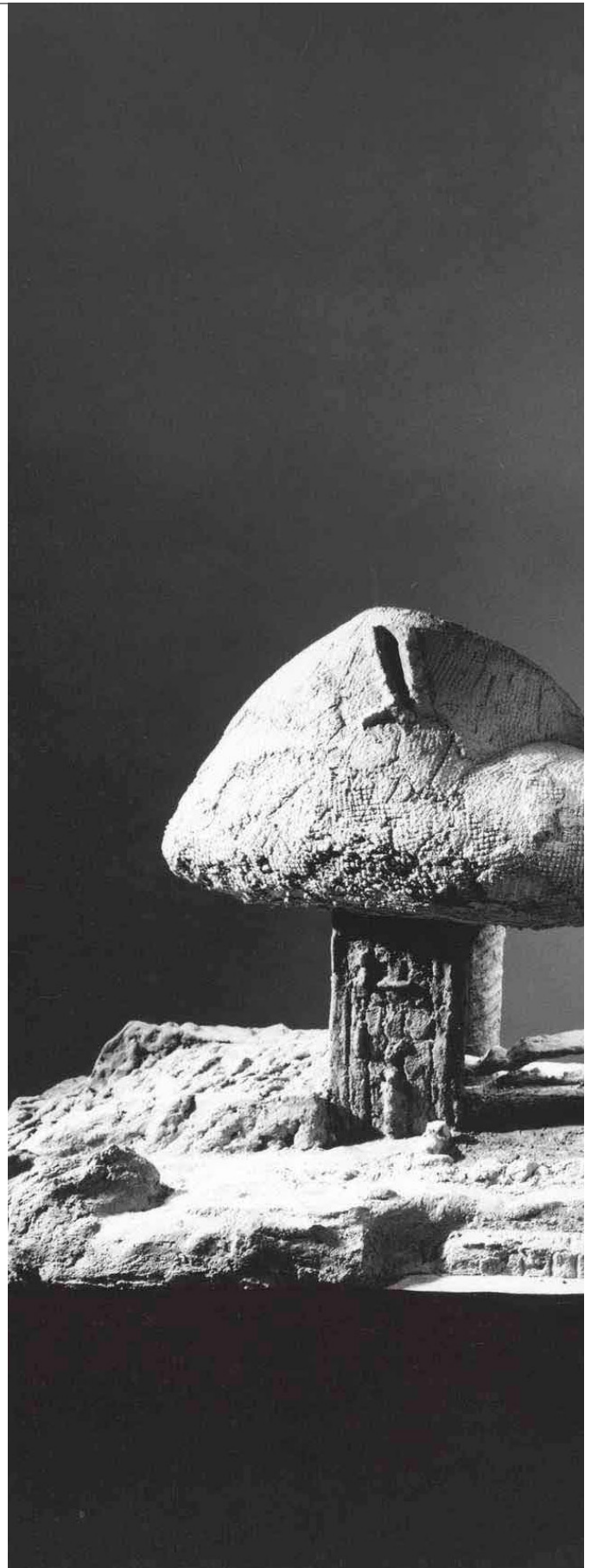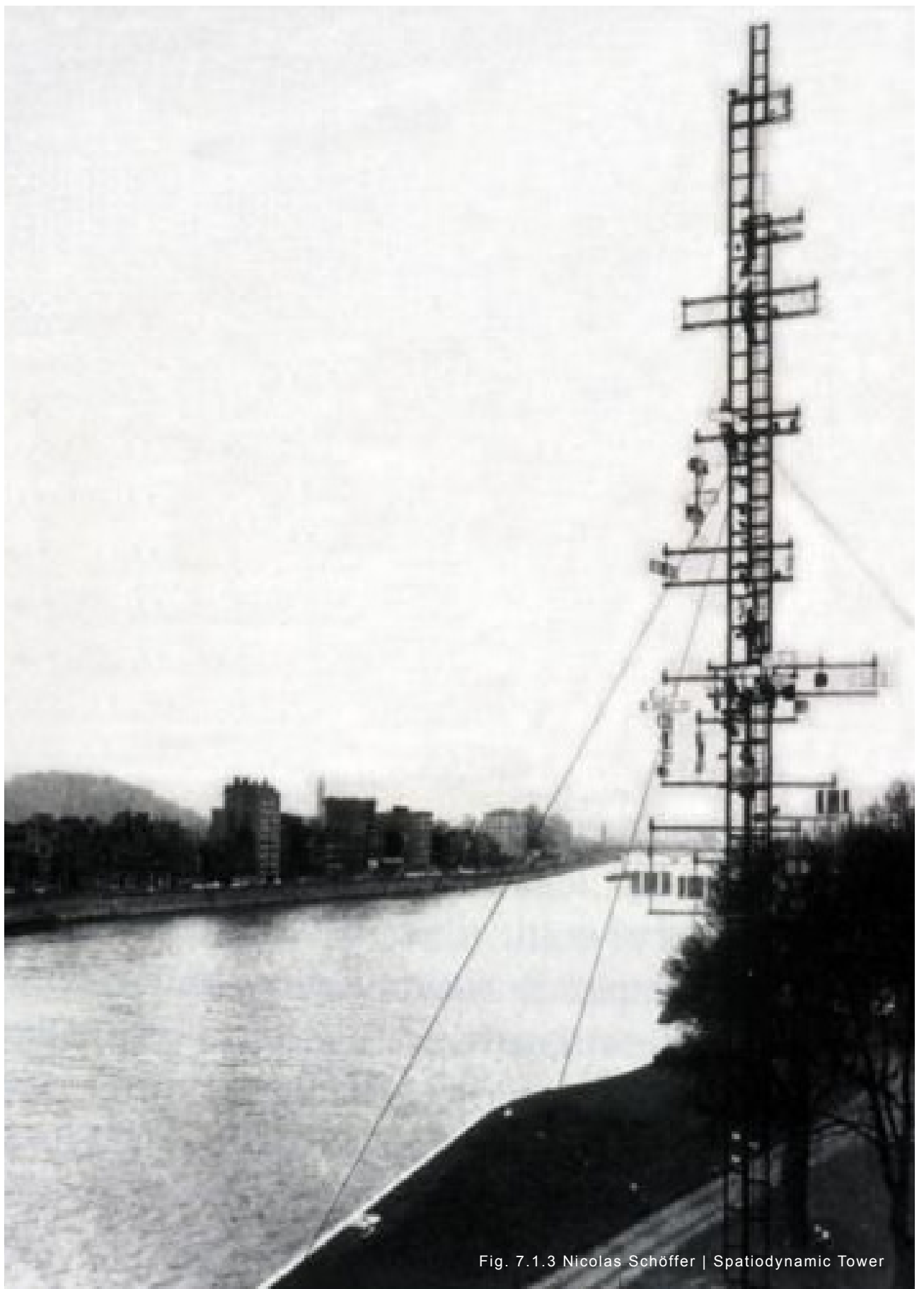
Fig. 7.1.2 Endless House | Friedrich Kiesler

Fig. 7.1.3 Nicolas Schöffer | Spatiodynamic Tower

CYBERNETICS
The art of steering

Cybernetics, is the science of control and regulation of machines and their analogy to the behaviour of living organisms and social organisations. The study of how humans, animals and machines control and communicate with each other.
The term describes the way in which devices receive stimuli in order to control reactions to their environment.
This potential of cybernetic technology has been incorporated into architecture as a reactive medium by architects and artists and attempts to animate physical constructions and buildings.
The use of technology could awaken the body and create new forms of living. But there are several ways to use cybernetics. In this following projects by Nicolas Schöffer, space could be seen as an environment that is activated by human perception.

Nicolas Schöffer(1912-1992) was a Hungarian-born French cybernetic artist. Since the early 1950s, Schöffer worked on the production of cybernetic sculptures that could act autonomously without any subsequent human intervention. By equipping his sculptures with electronic motors and sensors, he introduced real movement and an element of indeterminacy into the plastic arts and constructed a relationship between man and machine.

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An example of these kinetic
constructions is a fifty-meter high
Tower of the French-Hungarian
artist Nicolas Schöffer (1954).
With vibrating, self-supporting
rods and cables and panels that
tilt in the prevailing wind and a
mechanized soundscape, Schöffer's
Spatiodynamic Tower created a
field of sensory effects.

With his first cybernetic sculpture
called CYSP-1 (1956). Schöpfer
created a eight metres high
sculpture, having total autonomy
of movements as well as axial
and eccentric rotation. The whole
sculpture is set on a base , which
contains the mechanism and the
electronic brain (developed by the
Philips Company). Microphones
detected sounds while photoelectric
cells sensed color, so that CYSP-1
can react to its environment. The
color blue, for example, led to fast
movements, while warm colors
made the sculpture calm.
The Robot dancer interact
with ballet dancers, creating
a lively, new and harmonious
interplay between the articulated
movements of human bodies and
its transparent, orthogonal and
metallic structure.

Another example of cybernetics as
targeted interaction between man
and machine is Nicolas Schöffer´s
Creator's house with invisible
walls (1957). A future housing as a
laboratory to test new technologies.
In this project Schöffer created
two environmental conditions in
one room. He contrasted a heated
room, tinted with infrared light and
one bathed in blue fluorescent
light to construct an invisible wall.
A physical separation to create a
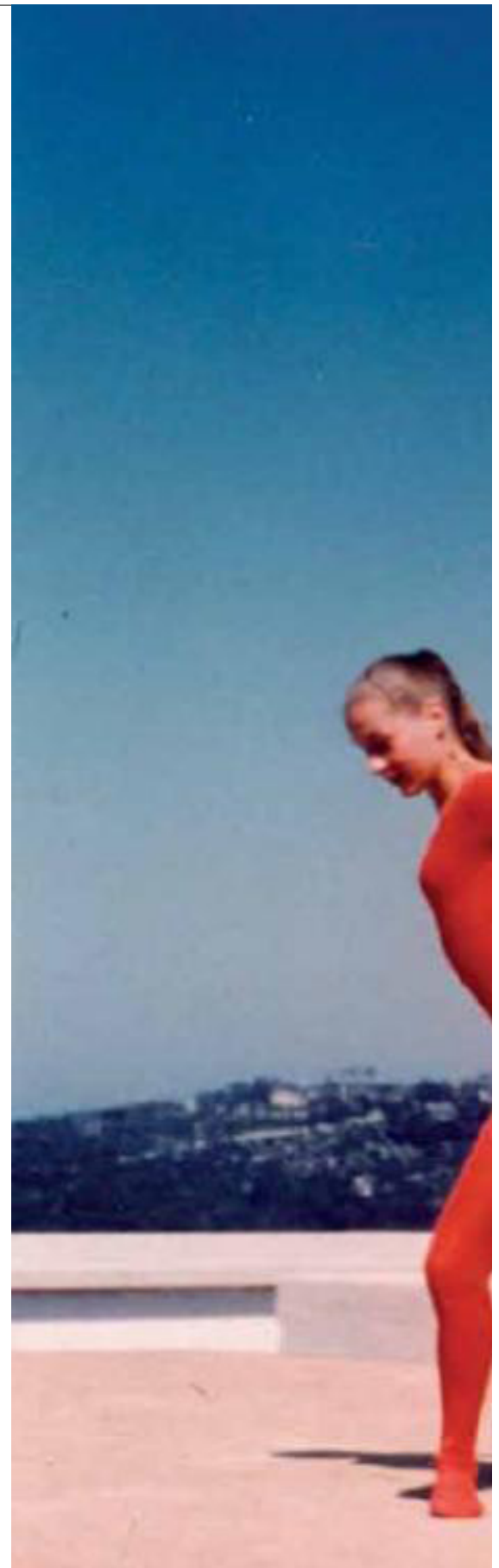sensual experience of architecture
through technological experiments.

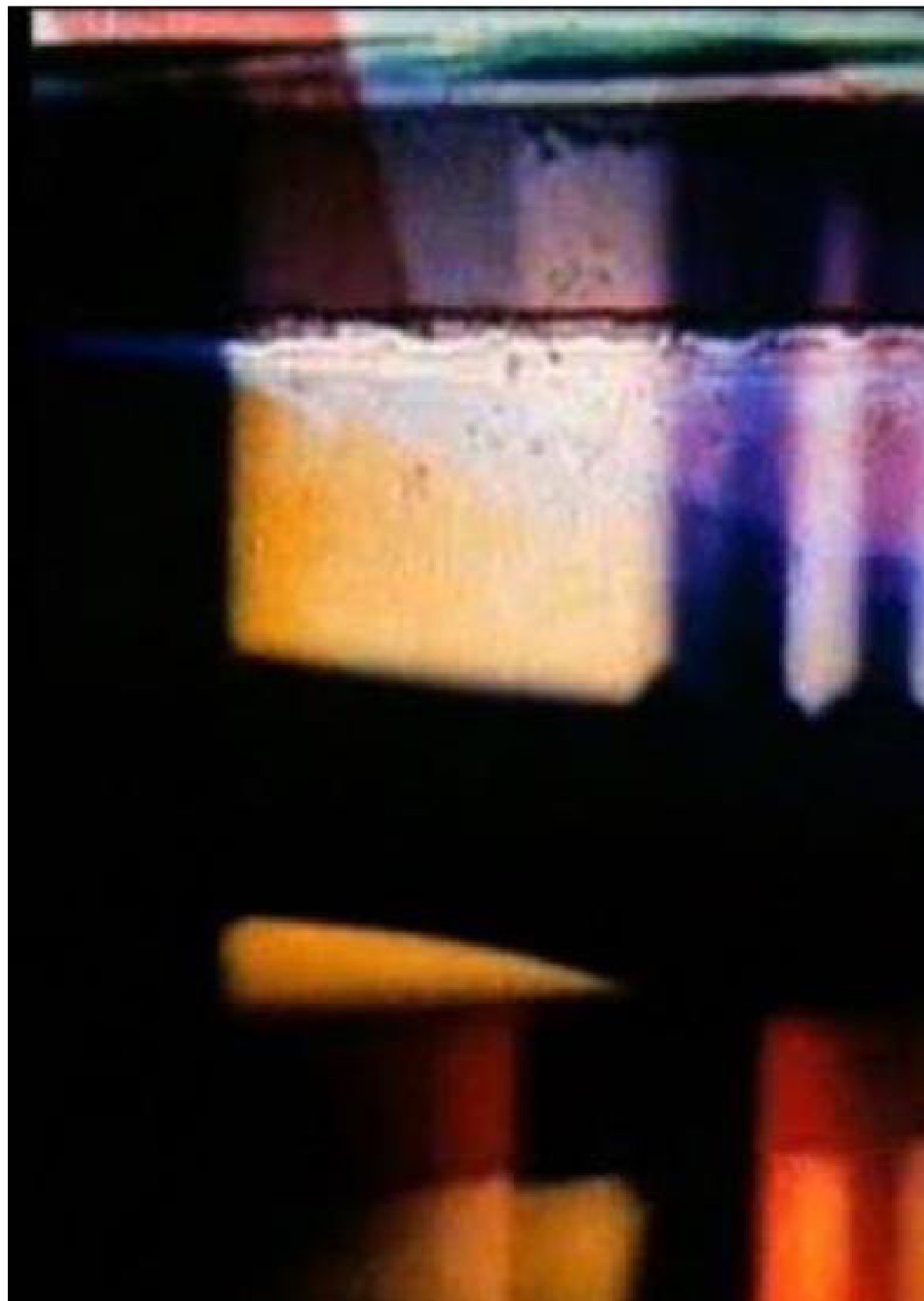Fig. 7.1.5 Nicolas Schöffer | CYSP 1

Fig. 7.1.6 Nicolas Schöffer |
Maison a cloisons invisibles

BONJOUR PHILIPPINE
+ dernière

LE MAGAZINE D'UNE VIE PLUS HEUREUSE

N° 7
OCTOBRE-NOVEMBRE
1957
40 FRS

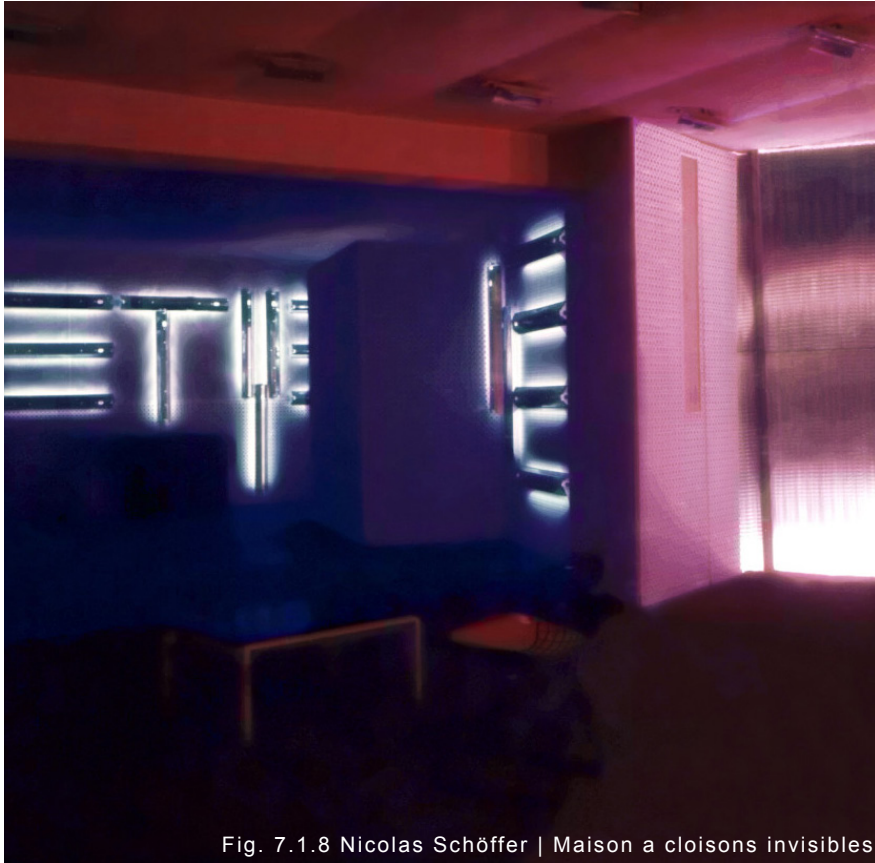Fig. 7.1.7 Nicolas Schöffer | Maison a cloisons invisibles

Fig. 7.1.8 Nicolas Schöffer | Maison a cloisons invisibles

Fun Palace

Cedric Price (1934-2003) was an English architect, influential teacher and writer on architecture. His interests include examining how new technologies such as sensors, robotics and artificial intelligence can make architecture more responsive to human´s needs, as Cedric Price had been questioning in the early days of Cybernetics.

The Fun Palace (1961-1964) was designed without a specific location, proposed integrating human with mechanical and information systems within the building envelope. He integrated cybernetics into the program for the Fun Palace, which was planned as an open steel structure and operated by moving cranes. Individual elements of the building (walls, platforms, escalators), as well as entire rooms are constantly being reassembled, moved, rearranged and scrapped. The Fun Palace should have its own spirit, consisting of machines. It is in constant interaction with the inhabitants, serves them and controls their behaviour.

Central to his practice was the belief that through the proper use of new technologies, the public could have unprecedented control over their environment, resulting in a building that could respond to the needs of visitors and the many activities that would take place there.

Through the use of cybernetics, unlike Schöffer's projects, technology becomes a tool for generating a relationship between human and space. He explored the implications of technology for program rather than form.
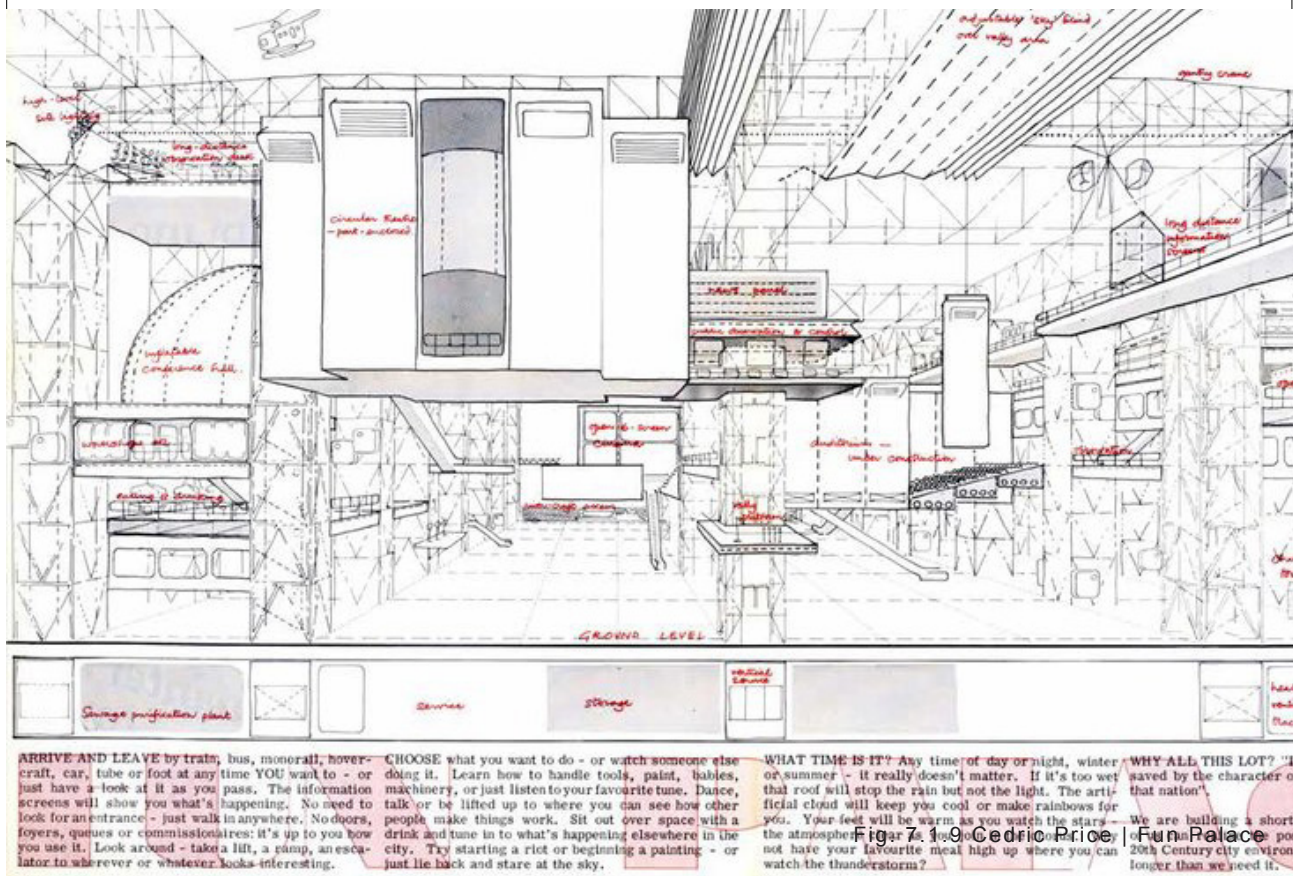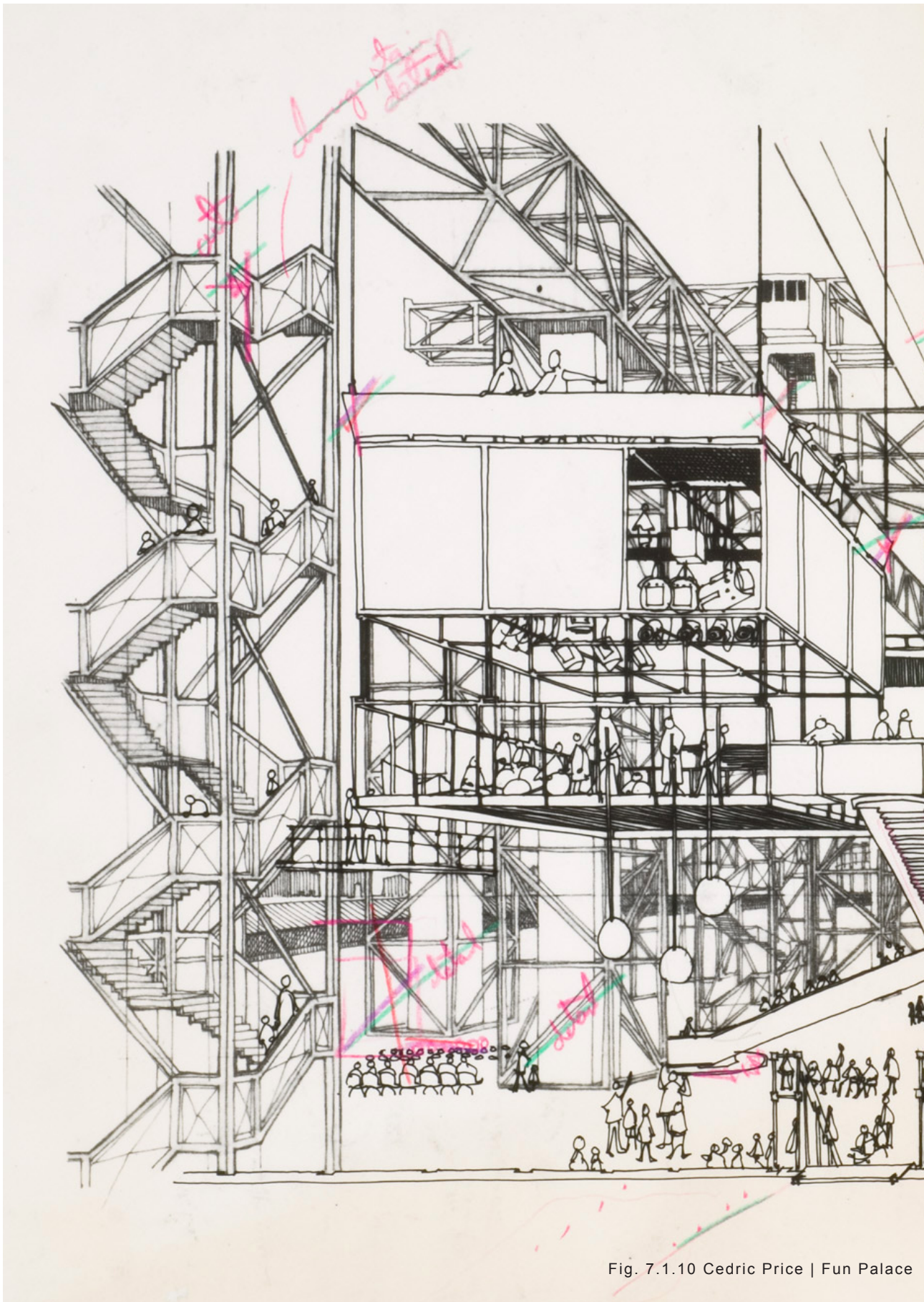

Fig. 7.1.9 Cedric Price | Fun Palace

Fig. 7.1.10 Cedric Price | Fun Palace

PLASTIC MOVES UPTOWN

This man is hearing great stereo sound, enjoying a sense of isolation, and seeing pleasant green visions. His helmet, which produces these effects, was designed by three architects, Laurids, Pinter, and Zamp, of the Haus-Rucker-Company of Vienna. It is made of plastic; no other material would do as well. For years, plastic was ersatz wood, bogus leather, fake bone china—okay for airport lounges and motel rooms but not fit for the discriminating head of household. But a growing movement of designers now recognizes that plastic is wonderful as long as it's being itself and not imitating anything. A glimpse of your plastic future, not in every case available on the market as yet, follows.

Fig. 7.1.11 Environment Transformer | Haus-Rucker-Co | 1967

Space Invaders

The Relation to technology has changed, Haus-Rucker-Co are dealing with the consciousness of humanity about how lastingly it is changing the planet and what drastic effects human-induced changes have on the earth. With the following examples the focus has changed to the body rather than its technological envelope.

Haus-Rucker-Co was an Austrian group of architects and artists who became famous especially in the 1970s and 1980s, due to their sculptures and installations in public space and contributions to a special perception of architecture and urban design with the aim of expanding consciousness. Influenced by Kiesler and with the help of cybernetic

technologies they only try to create environmental effects.
Their designs often consisted of inflatable bubbles, full body suits and astronaut-like helmets.

One example is her legendary Mind Expander/Flyhead Helmet from 1968, a green helmet made of double spherical shells. The declared purpose of the helmet was to change the wearer's perception to such an extent that he or she enters into a new relationship with the environment. The underlying idea behind this and many other works by Haus-Rucker-Co was to expand the cognitive abilities of the users and to achieve a greater understanding of the interrelation between human body and its environment. (Frieze, 2015)

Fig. 7.1.12 The Flyhead, The Viewatomizer and The Dizzler | Haus-Rucker-Co | 1967

Another well-known installation by Haus-Rucker-Co is „Die Grüne Lunge" (The Green Lung) from 1973 in front of the „Kunsthalle" in Hamburg. It was an installation where everybody could pass by and breathe in fresh air from nature instead of the dirty city air. An interesting fact is that nowadays there is an event in Beijing where you can also breathe in fresh air. This may not look as futuristic as Haus-Rucker-Co, but it has the same concept. However, more or less 50 years after „Die Grüne Lunge" there is a real need for clean air in several big cities and the former artworks become necessary installations.
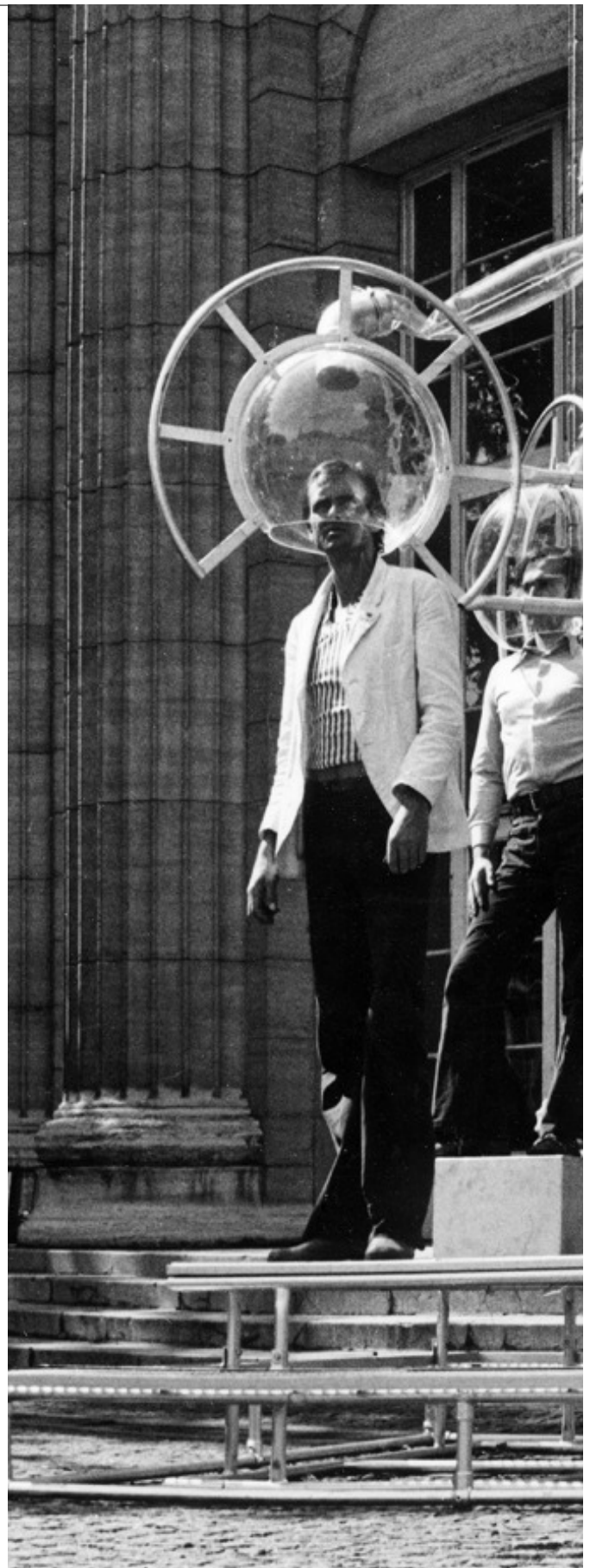
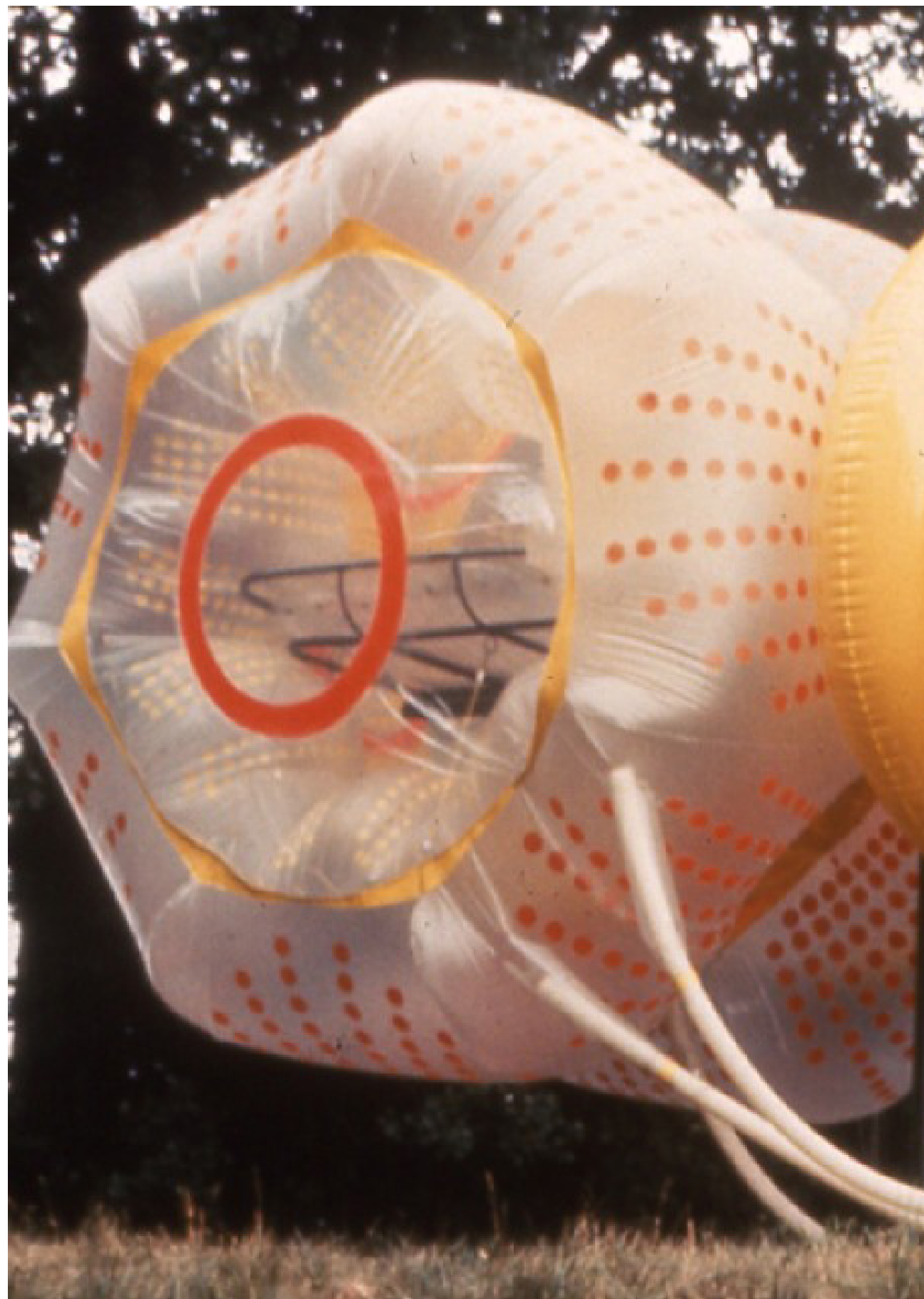Fig. 7.1.13 Die Grüne Lunge | Haus-Rucker-Co | Kunsthalle Hamburg | 1973

Fig. 7.1.14 Haus-Rucker-Co |Gelbes Herz

Fig. 7.1.15 The White Suit | Coop Himmelblau | 1969

Face Space
Cybernetics as an interactive experiment.

Starting in 1968 Coop Himmelblau developed an interest in interacting systems that allowed the manipulation of a space in response to the users mood.
They address the problem of an enhanced relationship between the architectural device and emotional state of the inhabitant.
Coop Himmelblau attempts with projects like the Face Space - Soul Flipper and The White Suit to explore relationships between the architectural environment and our individual perception of this environment.

The Soul Flipper manipulate the formation of space through harnesses the responses of the human body to sensorial stimulations and reacts to movements of the facial muscles and skin, thus transmitting optical and acoustic signals. The White Suit consists of a large helmet and an additional pneumatic vest. Video images are projected inside the helmet. Additionally, matching odours in the helmet and pulsation of the vest are transmitted.

They are responsive apparatuses that needed an individual with sentiments to be complete. The object of architecture and the object of the human body allowing to enter into a conversation on equal terms.

Fig. 7.1.16 TheSoul Flipper | Coop Himmelblau | 1969

Fig. 7.1.17 Villa Rosa | Coop Himmelblau | 1968

Coop Himmelblaus project Villa Rosa (1968) was constructed as a prototype of an inflatable housing unit, which served more for a behavioural psychological than a technical-programmatic performance. The air density is used to modulate individualised spaces - a total of eight PVC plastic bubbles can change the volumes.

Villa Rosa consisted of three different rooms. The pulsating room was equipped with a rotating bed and different projections and sounds were played. Supply air was used to add suitable smells to the audio program. The dimensional room could vary its volume by using balloons, which could change their size pneumatically. The third room was the mobile room or also called room in a suitcase. It was an inflatable room, which you can take with you in the suitcase.

Accompanied by sound, colours and scents, Villa Rosa presents a sensual experience that involves the entire body. Fascinated by shifting and variable spaces, the designers resort to devices that stimulate the body's imagination and ability to react. The Architecture no longer exists as form, but has become a technological device, a psychosensory environment.
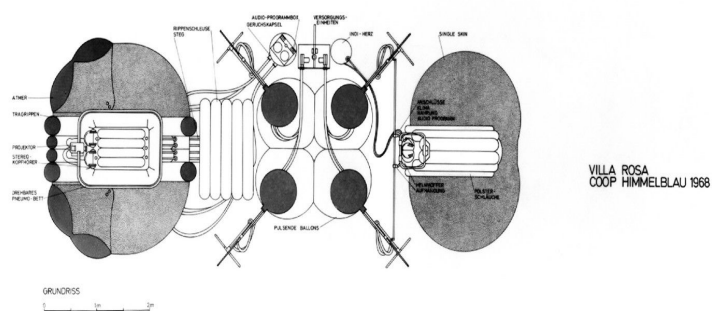
Fig. 7.1.18 Villa Rosa | Coop Himmelblau

Fig. 7.1.19 Coop Himmelblau | Hard Space

Cybernetics as an interactive experiment

Their early work, until the late 1970s, consisted of performative installations and actions in which the audience was involved as participants. Using cybernetics, Coop Himmelblau produced a work that explored the use of new technologies to create early versions of responsive interactive environments.
Ecological and political constraints are becoming increasingly evident despite the ability of technology in architecture.
The project Hard Space (1970) used the heartbeats of three people to trigger a series of explosions across Vienna. They created a „space" for the duration of 20 heartbeats. Though the heartbeat of three people, 60 explosions were released. The explosives were laid out in a two kilometers long lines across the field. Coop Himmelblaus project Soft Space (1968) filled a street in Vienna with soap bubbles.

„The cloud of dust created in an instant an animated and highly complex spatial entity that disappeared almost as quickly as it emerged" (Matias del Campo,2017, P.51)

Fig. 7.1.20 Coop Himmelblau | Soft Space 1970

Interactive Experiment
Computer Art

SMDK - Simulationspace of
Mobile Datasounds, (1993) is
an interdisciplinary project of
Knowbotic Research, which
was created by an interaction
of media artists, computer
musicians and computer scientists.
The installation is interactive
environment, with the use of
contemporary technological tools.
It consists of a database containing
sounds that can be contributed via
internet from all over the world. The
sounds become mobile elements
and forming a self-organizing
system through simple rules. A
visitor equipped with a tracking
sensor can interactively explore the
system in a physical walk-in space.
He will trigger sounds and influence
the organisation of the sound

elements by manipulating their
duration, volume and direction.
The monitor attached to the head
will provide the visitor with textual
information on his orientation. This
abstract description of the virtual
space emphasizes the contrast
between the visitor's physical
action and his simultaneous
presence in digitized, artificial
space. (Hannes Leopoldseder,
1993, P.98)

Fig. 7.1.21 KNOWBOTIC RESEARCH
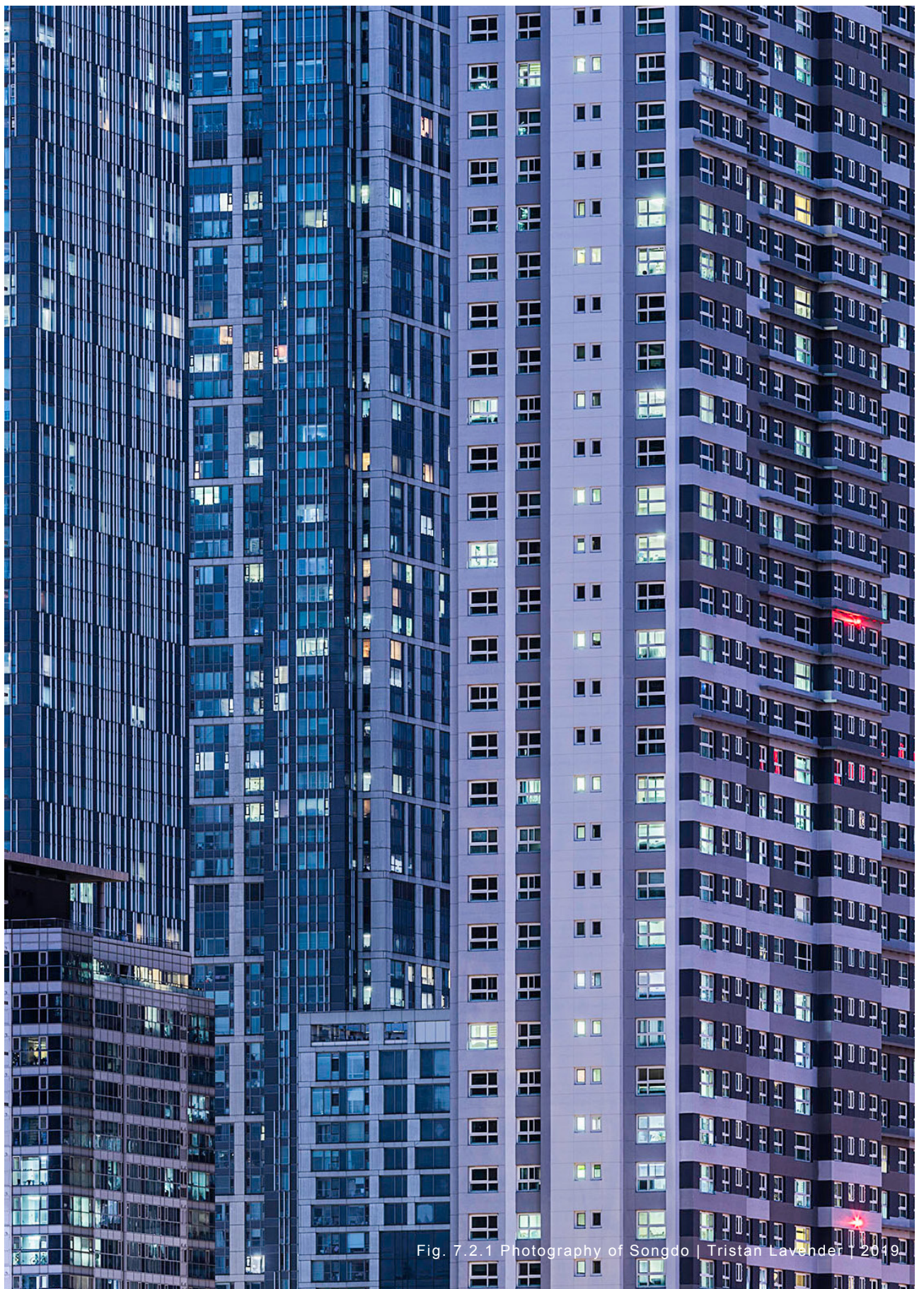
Fig. 7.1.22 KNOWBOTIC RESEARCH | SMDK

Fig. 7.2.1 Photography of Songdo | Tristan Lavender | 2019

SMART CITY

Can Smart Cities be regarded as transhumanistic?

When we speak about the influence of technologies in architecture, there is no getting around the topic of the Smart City. Today, almost everyone knows the term Smart City, but there are different opinions regarding of whether a city is smart or not.

The common definition describes a Smart City as a developed urban area that creates sustainable economic development and high quality of life by excelling in multiple key areas; economy, mobility, environment, people, living, and government. Excelling in these key areas can be done so through strong human capital, social capital, and/or ICT infrastructure. (https://bit.ly/2TDbSeD, 2020)

The idea of the Smart City started in the 1970s where the term was got created by Nicholas Negroponte and the Architecture Machine Group at MIT. Negroponte believed that computer-generated constructed environments were a way of architecture to better respond to people's needs and respond more appropriately

to problems such as inner city decay or ethnic segregation as for example seen in the US. It also aims to provide a faster and better response to disasters caused by climate change or the economy. This was followed by the deployment of smart infrastructure in various cities. Small prototypes were developed in order to test how the cities react to them. The step by step introduction of new technologies made it possible to test them and to improve the system as needed. Therefore, Smart Cities are constantly in a state of experimentation, of a continuous prototype development. It is a permanent process and not a finished product. (Arch+ 236: Posthuman Architecture, 2019) This phenomenon can be observed in cities like Barcelona, Copenhagen, Amsterdam and New York.

Smart Cities can be regarded as cybernetic organisms. New technologies create an environment that reacts to humans. Since transformation to the cyborg has long begun, transplanted chips and sensors have become reality. Up to 2015 small implants have
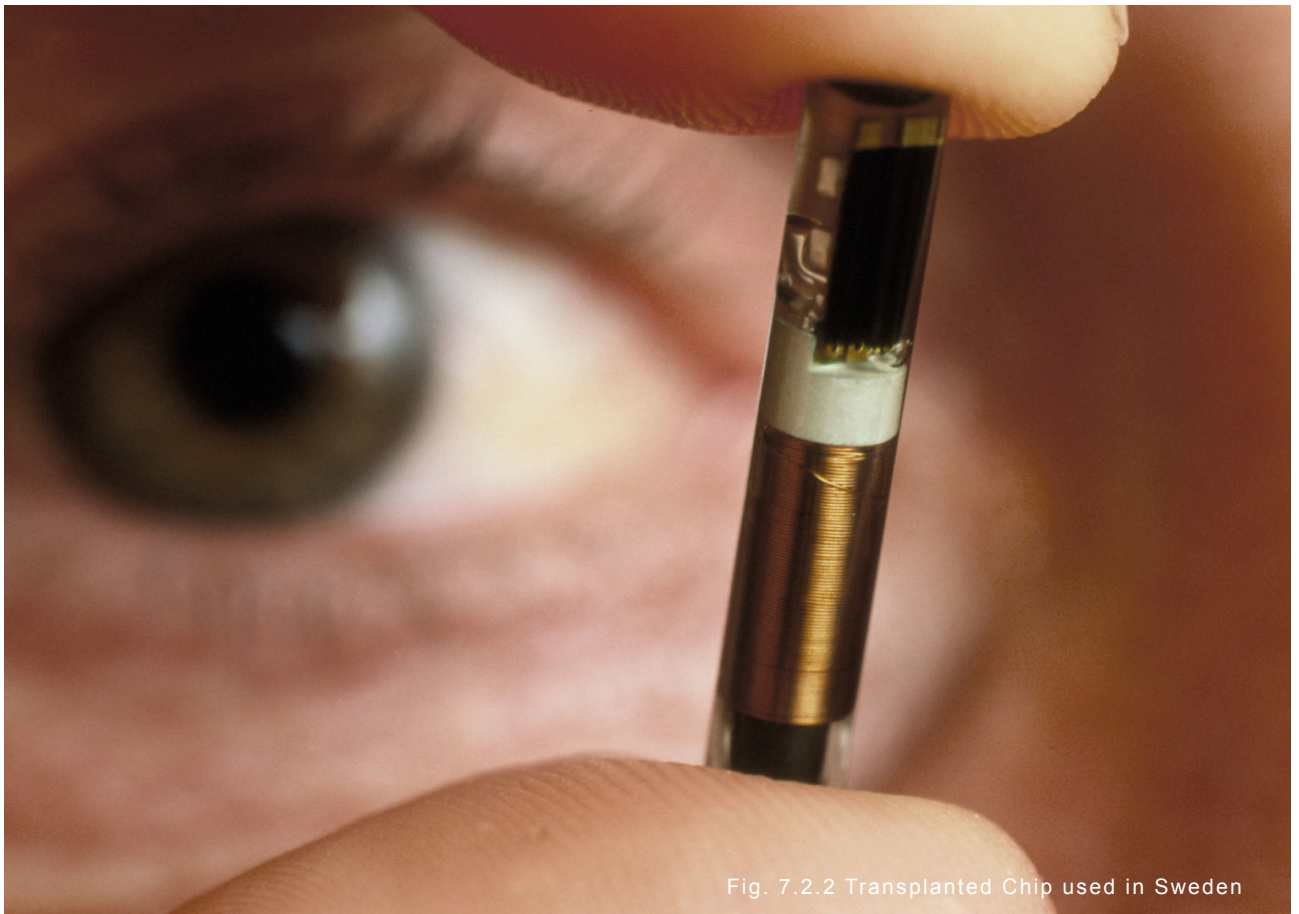
been tested in Sweden. More than 3,000 Swedes now carry a microchip under their skin. The chips can be used to pay, enter buildings and book public transport tickets. They make life easier by replacing a wallet. You always have all important documents and cards with you. The satisfaction rate is therefore also very high in surveys. However, in order for it to work, the environment must also be designed for the new technologies. (https://dailym.ai/2uv15ce, 2018) As a result, Smart Cities are emerging. This shows that there is a connection between Smart Cities and the transhumanistic thinking of transforming humans into an improved version of themselves by means of new technologies and extensions through machine parts. The environment also needs to adapt to the modern human,

as both need to configure with each other to fully exploit the new possibilities.

In Asia, they often plan entire new cities or urban districts instead of expanding existing ones. Due to the large population growth it isn't possible to do it otherwise. Therefore, there is a different approach to urban development projects there than in Europe, for example. Like this, it is possible to respond to the current and sometimes even future needs of the inhabitants. As a result, megacities are created for thousands of people, which are almost empty in the first few years, until gradually more and more people move to these areas.

One example is the city of Songdo, located southwest of Seoul, South

Korea. It is a planned city as part of the megacity Incheon for about 300,000 people, whose focus is on research and development in the high-tech sector. At first view, the planned city looks quite banal. Many high-rise buildings with some green spaces and parks in between. You don't notice any of the technologies behind it. Besides the high-tech infrastructure, the city should also be designed in an efficient, sustainable way that protects the climate and conserves resources. (https://bit.ly/376f9Hf, 2017)

It was built in three different construction phases from 2003 to 2020. Songdo is seen as a platform that tries to perfectly align business interests and consumer lifestyles and to create a safe and optimized environment. In addition to a diverse range of services from high-tech infrastructure for business administration to a variety of consumer landscapes, the city also has a university education landscape. The large Global University campus includes local universities as well as international ones such as the University of New York, the University of Utah, the University of Ghent, and the University of St. Petersburg. Furthermore, Songdo offers a fibre optic infrastructure, smart power grids, public transportation and a futuristic underground waste disposal system. (Arch+ 236: Posthuman Architecture, 2019)

Furthermore, sensors, chips and cameras can be found everywhere in the city. They are supposed to regulate the consumption of electricity and energy, as for
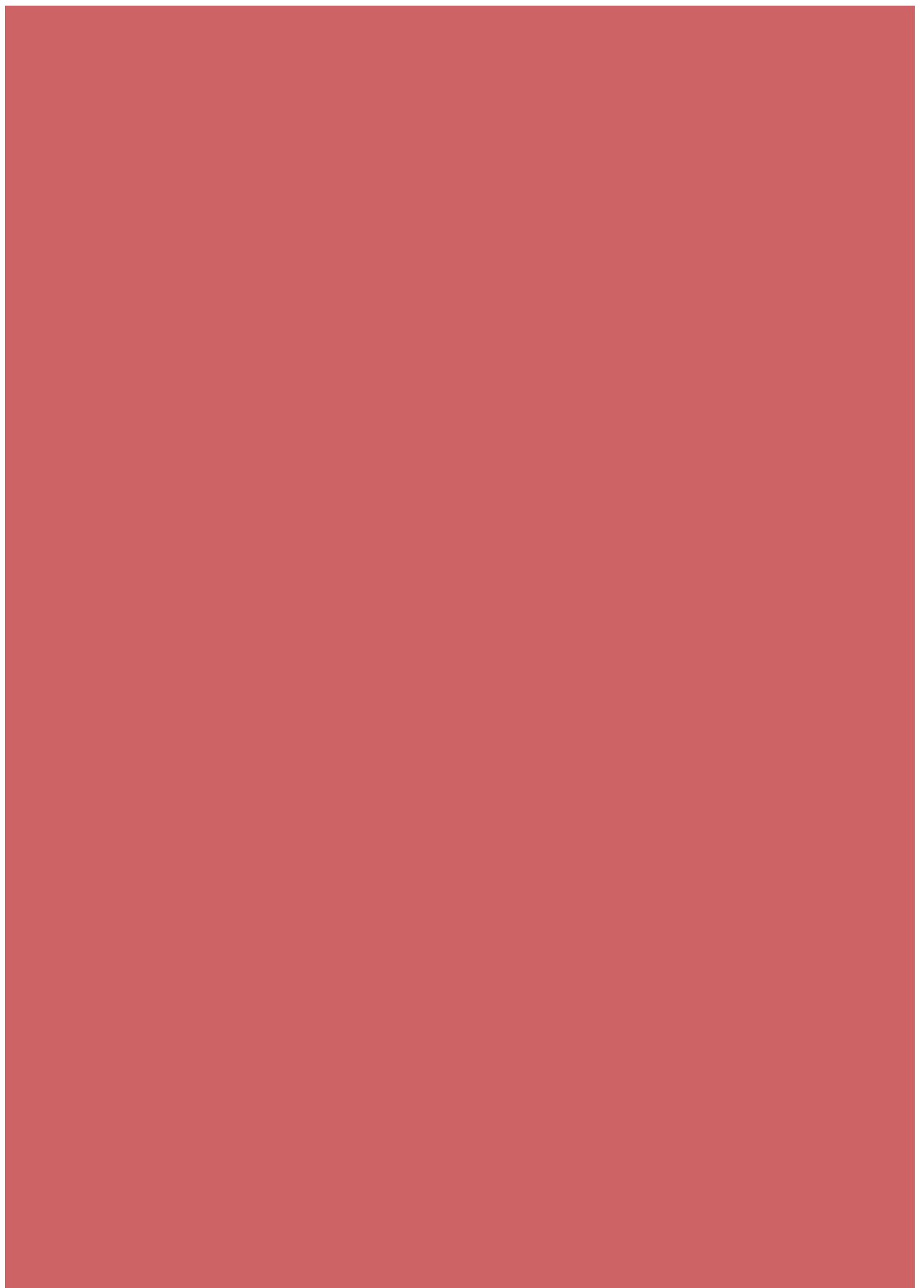

Fig. 7.2.3 A Drone's Eye View of Songdo | Jiakai Lou

Fig. 7.2.4 Songdo by night

example traffic lights, which react to traffic and street lighting, which only switches on when people are moving around. The digital networking in Songdo even goes one step further and extends into private homes. Using virtual rooms, people can communicate with their neighbours and connect directly with the administration through built-in cameras in the TV sets. These cameras and chips are in general only meant to serve the security of the residents. However, this also gives the residents the impression that they get monitored constantly, with the objective of maintaining complete control over them. The collected data is processed and evaluated in real-time in municipal control centres. Despite justified criticism Songdo is called a demonstration of a smart city. (https://bit.ly/376f9Hf, 2017)

Fig. 7.2.5 Parc and artifical lake in Songdo

8

CONCLUSION

„Certain positive theoretical alternatives—existing fragments of thought which, when examined, might serve as a framework for the development of a larger theoretical structure."
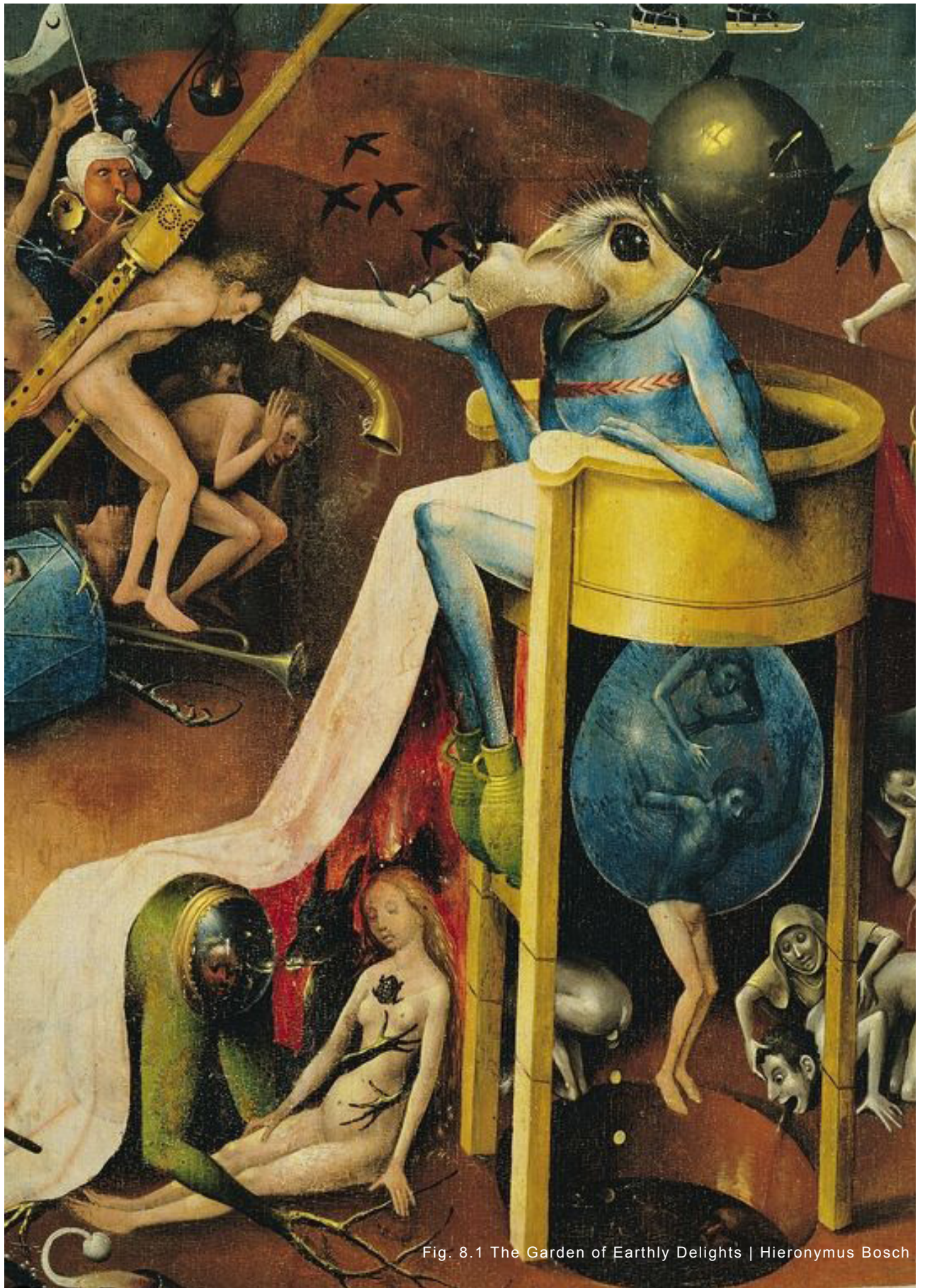
Peter Eisenman, 1976

Fig. 8.1 The Garden of Earthly Delights | Hieronymus Bosch

CONCLUSION

What is to be seen as upcoming challenges are the emergence of new technologies of machine, the disappearance of the boundary between human, animal and machine or even the erosion of human subjectivity and individuality itself.

However, the definition of man is neither static nor the reflection of an unchangeable substance. The existence of an foreign intelligence and technology means that we do not follow a deterministic development process. So far we have no evidence for one way or the other, we can only imagine them as extraterrestrial as well as terrestrial alternatives.

Transhumanism, whose aim is to improve the human body with technological ingredients (organism machine system) that intentionally incorporate exogenous components that enhance the self-regulating control function of the organism to adapt it to new environments, requires an architecture that reacts to these changes.

The cyborg embodied important themes for transhuman life. The exchange between humans and animals, networks, physical improvement and designed environments.

The Transhuman Territory extends the cyborg metaphor beyond the body into the built environment by imagining the designed space itself as a prosthesis and producing new notions of a „nature" that can no longer be understood as an original or neutral ground.

9

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