MACHINE ARCHITECTURE
Research Plan
Daniel Behro

INTRODUCTION

Fascination

I have always been so amazed by technology. Either technology we have today, like microchips, computers and smartphones or the first machines which were invented in the name of progress – the industrial revolution. Massive steel structures canter-leaving above the whole city, rusted by the rain, huge gear wheels rotating none-stop all over or complex piping system filled with fire and fresh steam to make power. What I admire is the beauty of a pure function. How can something so complex and engineered without the intention of beauty spark a moment of fascination? The objects were made for a certain function and that makes them so beautiful. Even more than the objects, the area where everything happens, creates an atmosphere that brings up feelings that I cannot explain. The whole atmosphere of an industrial area that expanses inevitably across the sky, the atmosphere of being so little compared to the steel monsters, the atmosphere of future and progress of humans.

What is Machine Architecture?

While "Machine Architecture" can have a broad meaning and everyone can understand it differently, this would be the time that I explain my description. Machines can be understood as a product that is sold on a market, from a small computing machine to a steel excavator, but the machine architecture as I understand are the structures that accommodate the process behind the product. Although the process of machine architecture is highly dynamic, the structures sit still, allowing the goods to flow between their beams and pipes. They accommodate the whole change from rough material into a final object or liquid. With the process the structures become alive.

Research question

The idea of machines or industrial structures is widely used by many. From pragmatic use of technology in modern architecture to utopian sci-fi worlds. Architects from the 20th century developed many interesting radical concepts of the use of prefabricated industrial complex structures to highlight the progress of societies and set their path in the right direction. Despite the same background, these ideologies, sometimes almost sci-fi visions, often differ from each other but give us an idea how it could look like in a better or worse future.

But not only architects deal with the question of technology and progress. Machine architecture is pictured in artworks across the world and without the architectural technical background, they also show an example of future vision.

But this discourse of what will happen in the future does touch upon also the close reality. Of course, nothing can last forever. With the ever-changing progress of the world, some technology becomes obsolete, and that happens also to the sites of industry. Many industrial complexes have become obsolete due to an inactive mine-shaft, outdated technology or change of used resources for energy or goods.

Which brings me to the question: What is the future of machine architecture? How do people, in general, imagine the future of "machine architecture" and how do we deal with derelicts and obsolete structures and their heritage? Moreover, what role does "machine architecture" and derelicts plays in the far future, or visions of our society?

METHODOLOGY

The main approach to understanding the topic and finding out the answer to the question will be through the examination of the work of case studies. By retracing their steps I am expecting to find specific areas or objects of initial inspiration to their visions and work. Based on that, the research will continue to the sites. The sites will be analyzed and processed by sketches and writings. the outcome of the research is to come up with a vision or ideology which will arise from the same site-analysis and inspiration as of others. Eventually, this will be all connected to the first designs and hopefully, I will answer my question: What is the future of machine architecture?
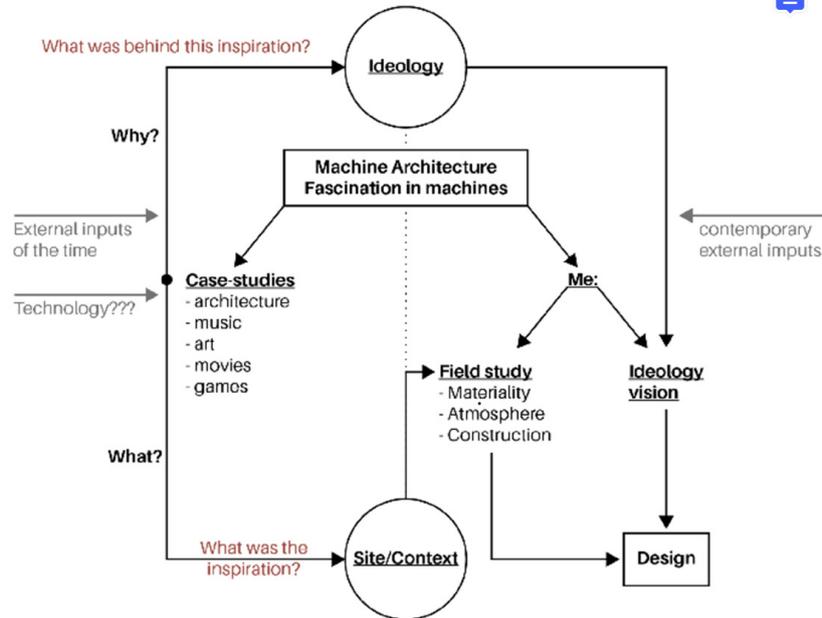
Case-Studies:

As I stressed before there are plenty of people whose work was influenced by the same topic I research and it goes across many different fields besides architecture, such as paintings, sculpture, comics, music or movies. The case studies are either technical or more artistic, real or utopian. For me and my research, it is important to examine a wider spectrum of works and find links back to the inspiration of "machine architecture". The wider the better, to see how different people in different periods of time tackled this topic. Either criticized the current age by exaggerating or transformed it into their idea of the future and the future people need.

ARCHITECTS　　　　　ARTISTS　　　　　MUSIC　　　　　MOVIE DIRECTORS　　　　　WRITERS

I came across many case studies which would be interesting, but decided to study some of them more thoroughly, such as graphic paintings of Yakov Chernikov, the collective ideology of Babylon project of Constant, mobile architecture of Yona Friendman, or technical building solutions of Piano and Rogers or contemporary architects Bruther+Baukunst

Yakov Chernikov
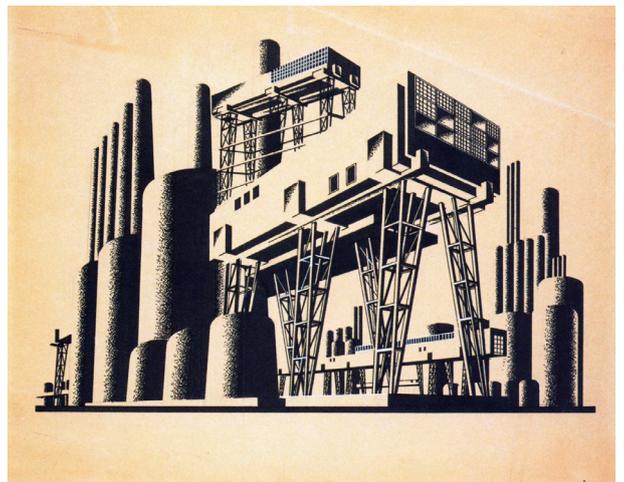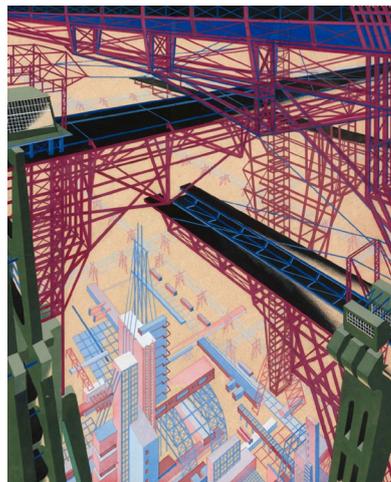
Constant
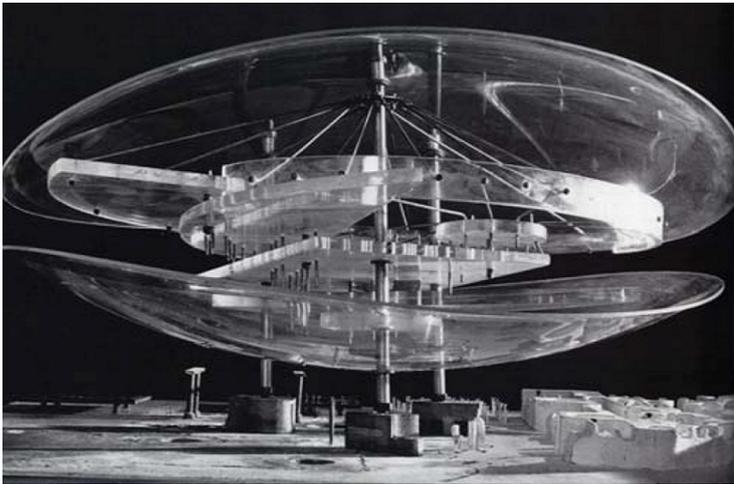
Mas Yendo
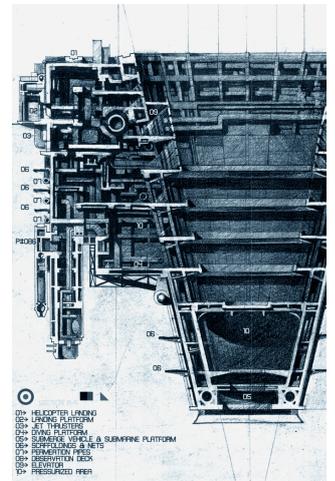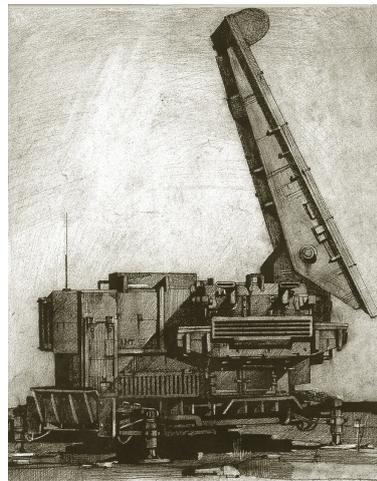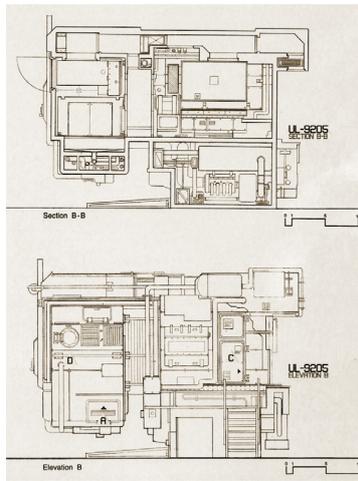
Piano and Rogers

Bruther + Baukunst

5 stages of process:

After examination of the work of architects, artists or musicians I distinguished the 5 stages of the process. Starting from Inspiration and ending with the final creation.

INSPIRATION

RE-CREATION

ADAPTATION

VISION

CREATION
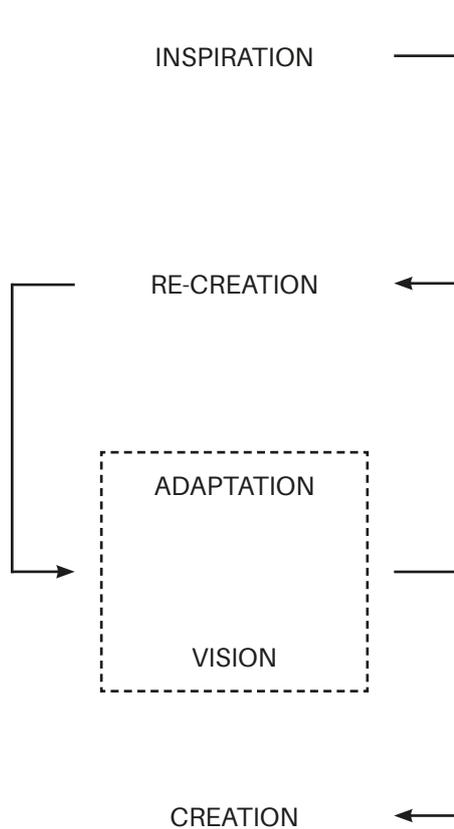
Looking into how the age of the industrial revolution and machinery influenced the work of architects or artists. Finding good case-study examples which were inspired by "machine architecture" helps to find out how exactly machine architecture affected the work, how and why was this used as a template for iconic visions.

Simple recreation of the seen objects and structure helps to understand the system and the atmosphere. Helps to find the language it is used and brings research closer to the same question: why machine architecture? Recreating the structures of the industrial sites shows the hidden advantages and merits. These aspects of machine architecture might be useful in the further process to establish a vision.

Taking the possibilities of the industrial sites and their structures and adapting them in a certain vision is a way how a lot of architects worked. Seeing the opportunity and future in progress and steel frames, using them to create a better world or utopian projects.

Based on the influence of the time period, what people need and what is here to criticize, sets a vision, what world might look like in the future to solve or show what is needed to be done in the current age. Vision is a composition of a technology that is available, social stance, problem statement and idea.

At the end of the process is a product. Abstract or real. Taking all of the previous steps and putting them into a manifesto or a design.

Site-analysis:

Throughout the years, beginning with the industrial revolution until today, industrial sites have recorded immense changes. Constant re-modelling of the buildings or the whole areas, to keep updated with the never stopping world, had developed persistently newer typologies. All based on the industrial "machine architecture". While some of them became archaic because of outdated technology or thanks to the diversion of logistics out of the city to the outskirts or sea-side, some of them remained unchanged and became derelicts. Some areas, like the one in London, had been massively refurbished on the urban scale so much that there are only slight traces visible.

The same as in case studies it is significant to inspect different areas that had registered diverse approaches to keep the remains of derelicts. After closing their gates and stopping the fire in the chimneys, the areas wait for the new purpose to fill the gaps between the structures, while other areas remain functional awaiting their remote future.

Rotterdam Europoort
As for the first site analysis I chose a great example of Rotterdam Europoort, due to its distance to the faculty and opportunity to go there more often than to the others. The Rotterdam harbour area was moved from the central Rotterdam to the seaside and now takes over a massive area of the Mass riverside. In the previous decades Rotterdam rebuilt ex-harbour areas and experts from different fields already talk about the future of other moved out areas such as M4H, but I focus on the area of the current industrial complex and what the future will be there.
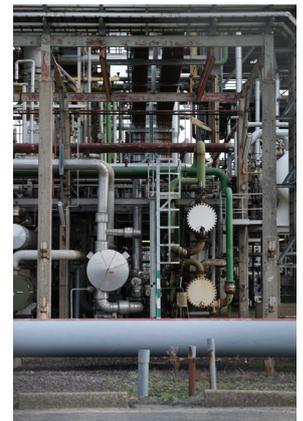
Duisburg
The area of Duisburg is well known for its great steel industry. It still produces more steel than any other city in Europe. Although the industry still keeps running, Duisburg had emptied complexes that were not used anymore and pronounced them to their heritage. Areas such as Zollverein had become UNESCO heritage sites which had made it into a very clean attraction for tourists. On the other hand, Landschaftpark, just half an hour from the UNESCO site, had been preserved with the use of plants for decontamination into a cultural park.
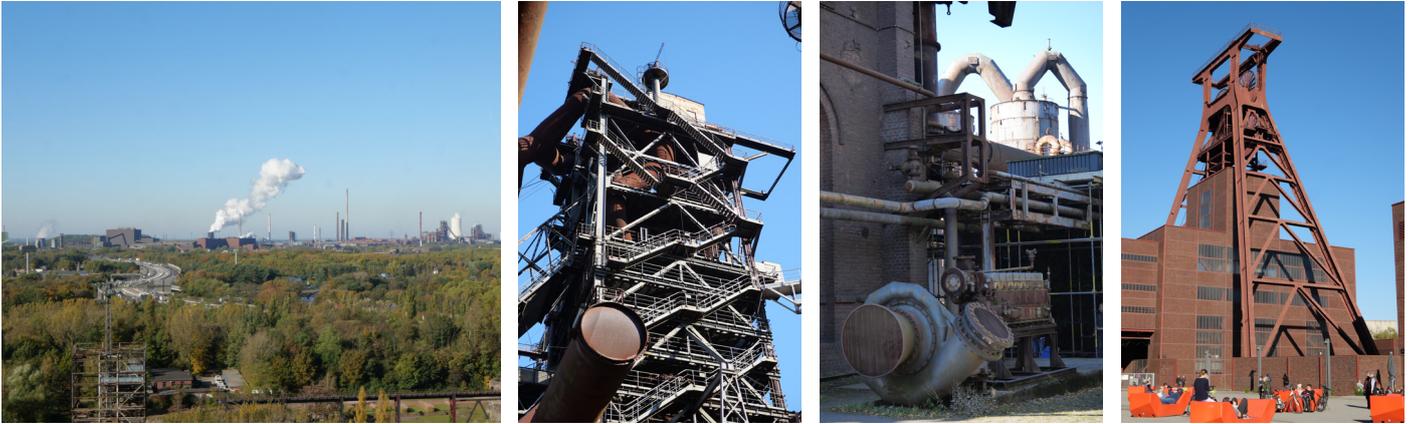
London /University of Luxembourg
In the further steps, the research will take place in post-industrial London where the leftover buildings were made into a very well-known modern art gallery or Battersea power station into apartment development. A slightly different but unique approach was made in Luxembourg where the education was placed within the old industrial complex. All of these approaches are not right or wrong, they are different and while some of the purposes remain hidden for me, it shows the countless options for the future of "machine architecture".

General opinion:

Although I am very fascinated and attracted to the industrial sites and their atmosphere and look and I would love to live in an area like that, others opinions on this topic might differ. I have created a questionnaire that is asking people from different fields of expertise for their general opinion. Questions such as: "How does this appear to you?, What do you like or dislike about the images?, Would you consider living in the area around the industrial structures?" or "What do you think will happen to the industrial derelicts?". With this questionnaire, I would like to get to know peoples preferences and ideas about the future of "machine architecture."

Bibliography:

Although my research is not based on the theory but mainly on the on-site research and case studies, some titles are significant to my research to underline the ideas of what will happen in the future. While some of the titles help me to research the architect works, sketches and paintings, some of them help to understand the theory behind futuristic ideas and the importance of technology in our lives. Therefore understanding the visions and developing new ones are supported by theorists such as Reyner Banham that talks about this very topic, high-tech and other problematics.
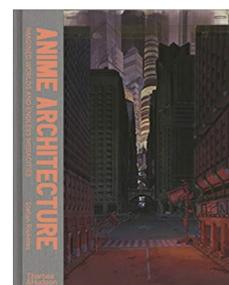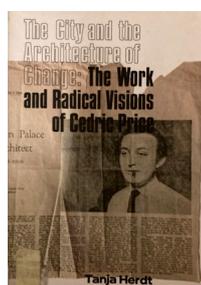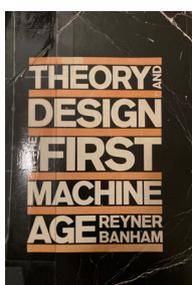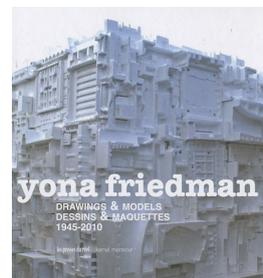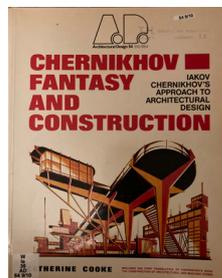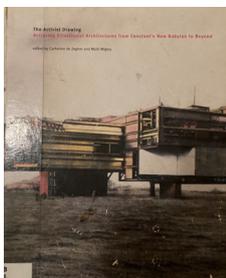
OUTCOME

After visiting the sites when I saw what was done with the derelicts and old complexes, I questioned the purposes they were given to. Is that all we can do? To turn them into a park - derelicts with plants, make an art gallery in their skeleton or reconstruct them into apartments until they are not recognizable from the previous stage? It all seems fake and kind of distant from the person who walks through the empty corpse and its remains. I would like to finish my research with my work, with my ideology according to the researched data from sites and case studies. With my sketches and alterations of "What is the future of machine architecture?"

Personal Work:

To end this research I will finish with my work which will be inspired by the work of case studies. First of all, I would like to retrace and recreate the steps and methods of the architects. Following their work of recreating the industrial world so I can learn their reasons, approaches and visions. Second of all, I will be following the 5 stages of the process which I distinguished before, from the inspiration to the last stage of design. With this methodology, I will create my sketches and alterations of machine architecture

PEOPLE COME HERE BECAUSE OF THE BUILDINGS. TAKING PICTURES ETC.

ABANDONED, NO FUNCTION. WALKING THROUGH.

PERSPECTIVE OF IAKOV CHERNIKHOV.

VERTICALITY.

- HIS METHOD IS LOWER

HIGH

WHAT ABOUT 3 POINT PERSPECTIVE?

TOO MUCH?
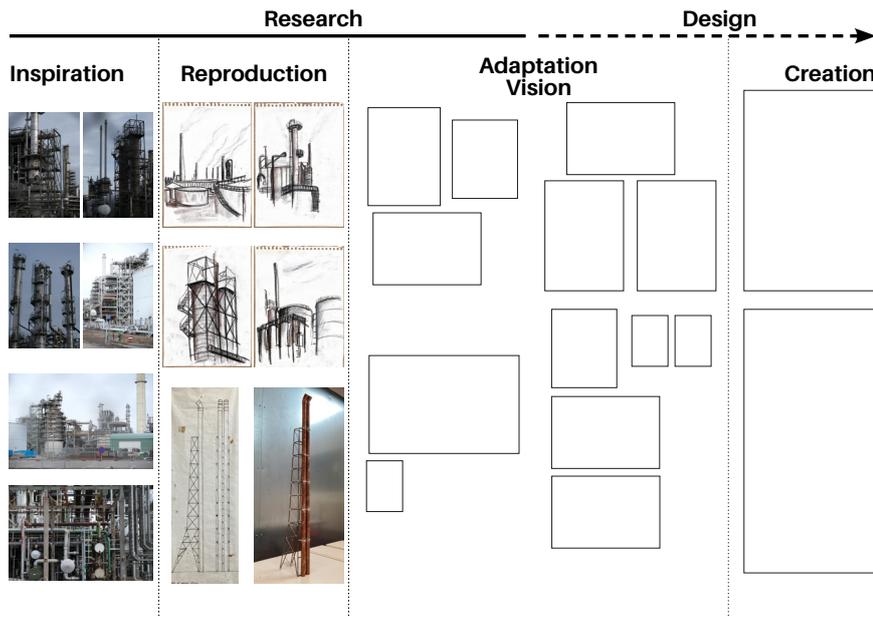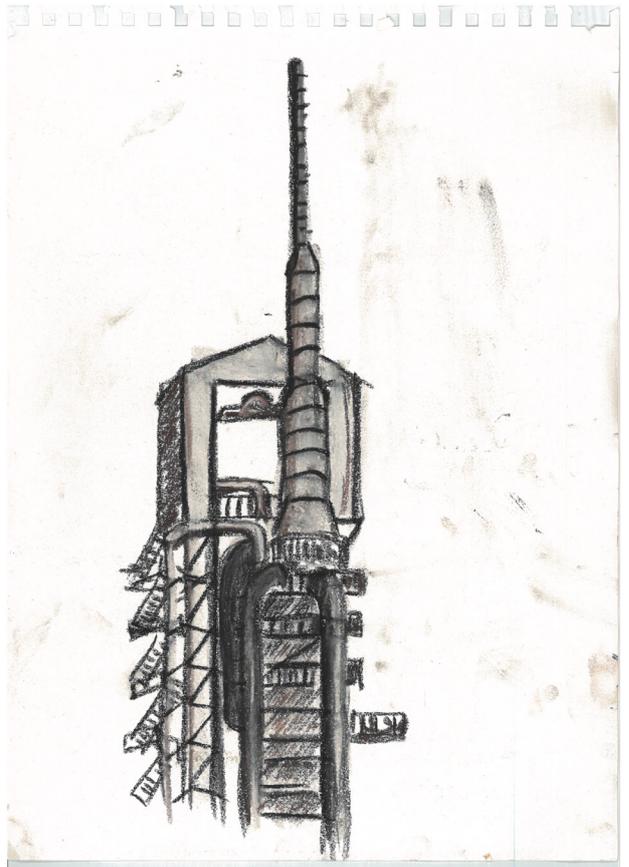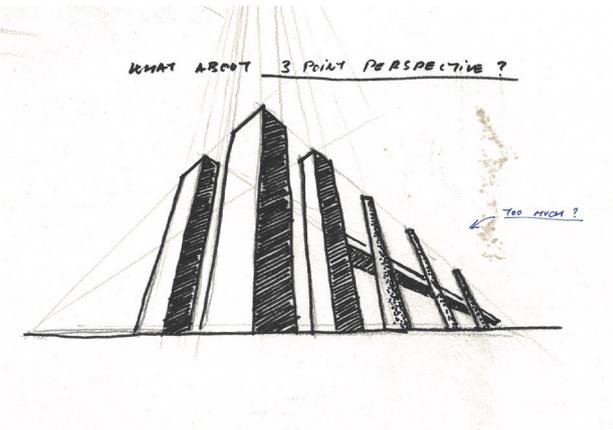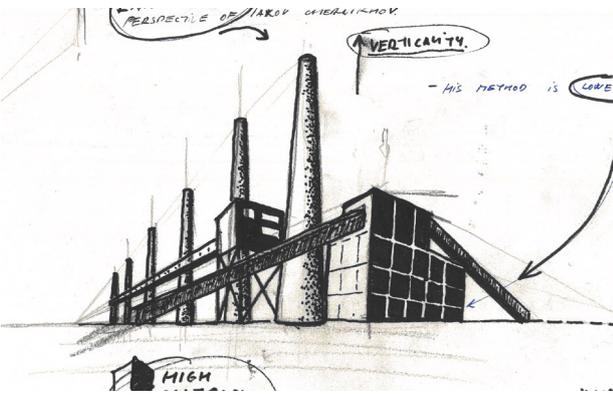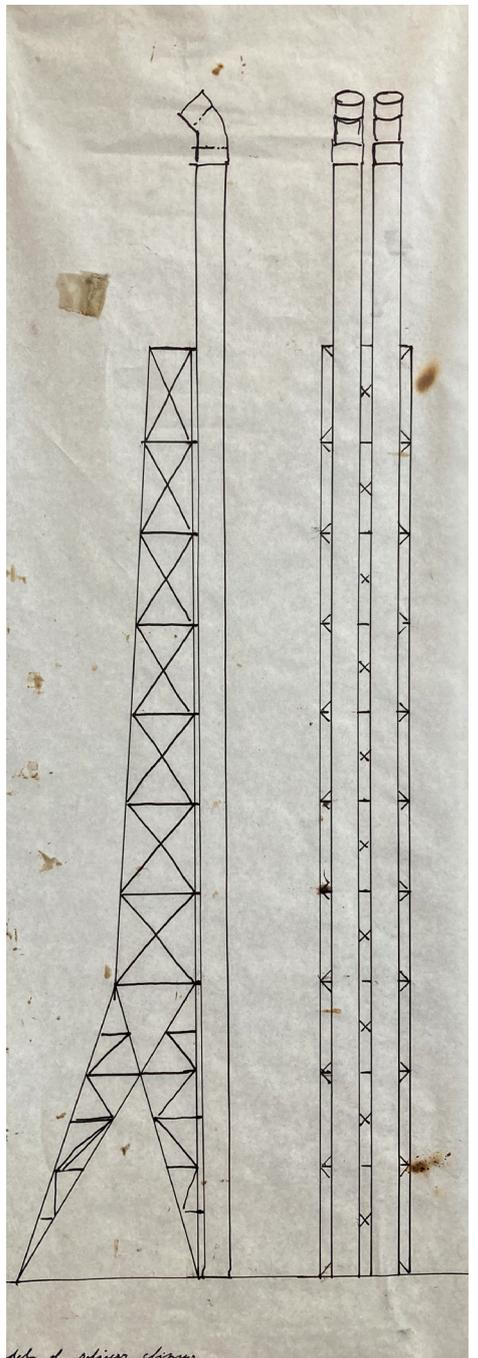
Comic artwork:

very special case studies are anime and comic artworks. Because it is the current medium of representation of the period and the current utopian sci-fi visions. Especially in comics, it is very usual for the setting to be placed in the megacities of the future where the influence of industry and machine architecture is clearly visible. Technology, therefore, plays a very important role in the comic stories of anime. There is a reason I talk mostly about anime. There is a clear link to the architecture which the visons are made of and because of the drawings of purely imaginative architecture, the machine comic architecture is without limits and can be presented as a pure vision. Moreover, the comic artwork captures the atmosphere of the machine architecture by the storytelling witch brings up more feelings and therefore explains the idea more intuitively.

Simon Stalenghal

Hideaki Anno
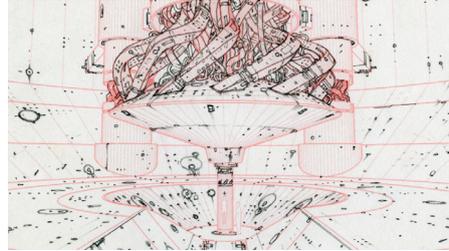
Incal - Jodorowsky

Masamune Široó

Comics as a research method:

Because of the reasons listed above, the outcome of the research will be presented with comics as a perfect medium for this research. Where I will put together all learned data from the whole research, from the inspiration of case studies, sketches, site-analysis to vision of machine architecture in the future. All broad together with the story, to fully and clearly explain the vision not only by words but also by feelings and atmosphere.

As an example, I made one sketch comic about the Landschaftpark I have visited as a case study, with the context and sketches based on the method of Yakov Chernikhov. This comic tells a dystopian story of one man scavenging for metal pipes in a post-industrial world where the structures lost their initial purpose. While he explains a bit of the uncertainty, he creates his own machine that plays tones thanks to the wind coming through the pipes. The meaning is about changing the purpose of industrial brownfields such as the Landschaftpark into different purpose but beautiful.