Container Paradigm

Designing structures for the future lifestyle

Author: Andrei Zberea
Masters in Design
Linnaeus University
Supervisor: Fredrik Sandberg, Petra Lilja and Johan Vaide
Examiner: Lars Dafnäs
Date: 17th of May 2016
Level: Degree Project (Master)
Course code: 5DI54E
CONTAINER PARADIGM

by Zberea Andrei

Design, Master’s Degree

Design, Master’s programme
Institute of Design
Linnaeus University 2016

Supervisors:
Petra Lilja, Fredrik Sandberg, Johan Vaide

Opponent:
Sara Hyltén-Cavallius, Ola Ståhl

Examiner:
Lars Dafnäs

Date of examination: 5/17/2016
In a world that is becoming more and more complex with each passing year, a world where we encounter problems with home availability. This is a world where we need better temporary alternatives that are affordable. A world in which we need better usage of ‘space’.

This master’s thesis subject is about the possibilities of a more simpler and more space efficient lifestyle. A ‘home’ with which we can travel anywhere, similar to a snail or hermit crab. This lifestyle has no boundaries and would be available to everyone as a choice. Similar to the “Plug-in” city by Archigram, we would be capable to move our homes and connect them.

With this thesis I investigate how we can both have an opportunity to lower our ecological footprint and at the same time create a ‘home’ that can support even the financially troubled. In a way, it is an investigation how a house can become more opensource to everybody as a concept.
CONTENTs

PART I
- Space as a Concept
- Research
- Conclusions
- Japanese Architecture
- Space in Architecture
- Space and Volume
- Criticism and Problem with Current Space Utilization
- Swedish Housing

PART II
- Archigram and the Avant-Garde
- Theory

PART III
- Context
- Other Works
- Research Conclusion

Introduction
PART I

INTRODUCTION
In the introduction I’ll discuss about the concept of space and the importance of it in different situations.

Space is an interesting topic that can devolve into many other smaller topics. But what is space when it is not useful? Space as a concept holds different meanings; both abstract and realistic. For a person, there is the concept of personal space – an invisible space surrounding the individual claimed psychologically. Realistic space can be disambiguated as follows: Exterior space, Interior space and space in a vacuum.

Space, both practical and abstract are important for an individual. Without personal space and privacy, an individual would basically lose psyche. A lose in practical space results in less comfortable living. Personal space is tied in many ways to practical space, mostly because the concept of personal space would not exist without a realistic space.

The project I’m working with has a lot to do with “space” – though to be more specific, living space. Living space as a concept signifies a house, an apartment – a home.

A home, or living space is very important for an individual. An individual without a home would experience an incredible amount of hardship. A home in the end, is a necessity for a normal lifestyle. There is an exception to the rule of course, like nomadic tribes that usually have a different understanding of home.

In this particular case, we will analyse the way of living for a typical individual in Europe:

An individual usually lives in a space, usually a box shaped with multiple entries. This box has a kitchen, bathroom and bedroom – and sometimes a living room. Everything is compounded into the box which measures between 25 square meter to 50 square meters. 01

This standard of living is seen everywhere around Europe and even outside. It varies in situations depending on culture, population and economy. These standards are upheld strictly and sometimes too strict.

01HOUSES IN MULTIPLE OCCUPATION Space Standards, brentwood.gov.uk.
SPACE AS CONCEPT

SPACE CAN BE THE AMOUNT OF AN AREA, ROOM OR SURFACE THAT IS EMPTY OR AVAILABLE FOR USE. IT CAN ALSO BE DEFINED AS AN EMPTY AREA BETWEEN THINGS.

BUT SPACE CAN ALSO BE DEFINED AS SOMETHING COMPLETELY ABSTRACT TO US. THE NUMBER OF MEANINGS ARE QUITE LARGE.
Although “space” is a very common used word in daily life, the concept itself is quite complicated. The term “Space” is quite abstract, as in “can hold different meanings unless specified”. As mentioned above, you can have different conceptions of “space”, such as personal or physical space.

In the case of Heidegger, he did not consider space as something which stands in front of us, in his view space was neither an external nor internal experience. Space is categorized as something that cannot be determined or appropriated beforehand.

Space can be perceived in the presence of objects and their relation among themselves. Relativity is key in relation to space, and this key can shape the concept appropriately. It is also the prime basis of architecture.01

“Space has always been the spiritual dimension of architecture. It is not the physical statement of the structure so much as what it contains that moves us.”

- Arthur Erickson

01 Space: The undefinable space of architecture, Erdem Ungur (p.1-10)
SPACE IN ARCHITECTURE, SPACE AND VOLUME
ARCHITECTURE

The concept of space is pretty much quintessential in the current dynamic of Architecture. One of the first lessons taught in Architecture and Interior Design are the importance of space and how space can be modified to better suit the environment surrounding it. In many cases though, architectural schools the concept of space in an anachronistic mode, while also homogenizing elements.01

The concept of space is an amalgam of the physical and metaphysical. Before this concept, according to Forty (2000) ‘space’ – did not exist in the architectural vocabulary until the 1890s. It was developed as an architectural category in Germany by writers, which later become the foundation of the concept of space. ‘Space’ as method was separated into two schools of thinking, one focusing on tradition and the other on aesthetics.02

01 Space and place concepts analysis based on semiology approach in residential architecture, Mojtaba Parsae (p.368-383)
02 Space: The undefinable space of architecture, Erdem Ungur (p.2-4)

SPACE AND VOLUME

By itself space has more than 40 adjectives, and is also associated with volume. The concept of ‘space’ did not enter into English so fast though. In many cases in the early 20’s, ‘volume’ was used more prolifically and only later got interchanged with space due to how ‘volume felt as immaterial and weightless, geometrically bounded space’. As emigration of German architects to Britain and USA became more widespread, the term was slowly adopted.

Volume and space are both interchangeable, though the former is more used overall. The reason is because ‘space’ is a more abstract term while volume is more empirical. In this particular case, ‘space’ takes the meaning of ‘capacity’, though in many cases ‘capacity’ would replace the term ‘space’ due to being more specific.

In a lot of instances, the meanings can be very conflicted while being correct at the same time. Take for example how Ted Cruz misrepresented a basketball ‘hoop’ as a ‘ring’, both terms are interchangeable but the former is widely adopted term while the latter is a generalization.03

03 Peter Andrew Hart (2016), Ted Cruz Calls Basketball Hoop A ‘Ring’ And Forever Tarnishes ‘Hoosiers’, Huffingtonpost, 26 april
CRITICISM AND PROBLEM WITH CURRENT SPACE UTILIZATION
After the concept was taken into the epistemology of architecture, criticism became to arise in order to lessen the importance of it. This was part of a movement in 1970s and 1980s, where postmodern architecture focused typologies, historical styles and popular culture. In some ways, Space had been contrived by architects and at the same time deified by critics. 01

Space CRITIQUE

There is a problem with the current standards of living, and that could be observed through media. Space is not unlimited on Earth, and is further limited by borders and geography. Population is growing at an alarming rate; 83,686,153 people were born in just 2015 for example. In just 20 years the population of the earth changed from 5,815,392,305 to 7,432,663,275 people. 01

Some places are more affected than others. In the case of Asian countries, it is a really big problem, where you see structures build daily. This problem is affecting European countries too, but there are key differences compared to Asian countries. For one, Asian countries typically build more and usually do not pay attention to normal living standards at times.

European building codes typically limit the amount of structures built. In the case of Scandinavian countries this problem is multiplied even more due to the bureaucratic nature of the system. In the end space is underused or wasted because of the standards.02

01 Space: The undefinable space of architecture, Erdem Ungur (p.5)

01 Data from World Bank, public data.

02
In this project, the main focus is on Swedish system that manages these living spaces and what could be done to improve it. I also will enumerate the issues of the current system and analyse them in-depth.

First of all, the system is managed by National board of housing, building and planning – Boverket. Behind that, we have the EU building regulations, i.e. Eurocode. The rules are first stated by the EU board of construction then forwarded to the Swedish administration. These rules are modified further down the system when the local communities receive them, and usually made stricter.

In a lot of cases the construction rules are overcomplicated when they reach region administrations. These Municipalities have a lot of power in the end, resulting in slow building schedules and lack of housing overall.

The positive from the system is that people usually have really good living conditions whether they’re disabled or not. This positive aspect does not exactly translate well everywhere however.

In the case of student housing, we have very big lack of quantity. Quality is great, but there is not enough housing to meet the increasing demands. In a lot of cases, perfect quality is not deemed as a necessity for student housing, especially considering that student usually cannot afford the living expenses.

Overall, in recent decades, residential housing construction has been low from a historical aspect, as well as compared to other countries. The shortages increase, while the interest why too little housing has been built in Sweden intensified.

Historically these issues are connected to disruptions in the financial sector and economy as a whole. In Sweden, not only that housing is very rarely built – the price on said housing is also rising sharply with each year. Comparative to other countries after 2008-2009 financial crisis, Sweden has not seen a drop in housing prices.

This problem is partly due to the low level of housing construction since the early 1990s.
The Riksbank and other international institutions such as the IMF (International monetary fund), European commission have on different occasions emphasised the importance of remediing the problems.

The housing crisis in Sweden affects a lot of facets, such as job markets and education which makes it difficult for geographical mobility. Also not to mention how the crisis is affecting regular households. Many homes have high debt which is negatively affecting the overall economy.

Since the issue became more prominent in news and articles, there were attempts to solve the issue by tackling the municipality rules. The rules are a prime target for change because it would solve some of the issues related to education.

These rules make land and planning processes take too long, because usually there are long planning phases that are mandatory. This long period of time also results in more financial risk for a company, so there is no incentive for companies overall.

Another factor in the housing market is the rent sector and its regulations. One of the key rules hampers the construction of rental properties. There is a statement by Eriksson and Lind (2005) that says how these rules can in several ways lead to less housing overall. Moreover, a lot of the regulations are poorly worded can lead to drastic differences between housing. If demand then falls, it will affect the new stock first, since most of them have higher rents.

In a lot of cases these issues cause companies to not build any new renting housing. This is a particularly large issue where housing queues are much shorter. This however does not explain all the issues and factors according to Eriksson and Lind (2005). They instead draw the conclusion that the companies have chosen to build tenant-owned housing instead of renting housing as it is overall more beneficial in terms of tax and people willing to pay for the property.

There are many explanations as to why more housing is not built in Sweden since the early 1990’s. It also means that measures that were done to alleviate the problem were not as many or not as effective.
Currently the government is trying to revise by proposing fewer detailed plans, that the planning processes should be simplified, that higher demands should be made for the municipalities to revise guidelines for development agreements and land allocation, that the municipalities should not be allowed to make specific requirements regarding what housing is built, that the regulations regarding the protection of right to use beaches should be amended and that construction companies should not need to follow the same rules when building homes for students and young people.

Whether or not these changes will be forwarded or not is still under question. But with the increasing media exposure, changes to the system are bound to happen sometime in the future.

Space is quite a big issue in Sweden based on media representation. It is also a problem in many other countries, though the scope varies. In a country like Sweden or the UK, property value is incredibly high and at times too high. This especially bad in Sweden when you consider how large the country is (450,295 km2).

Taking Vaxjo as an example, we have a lot of problems from the mentioned above. Specifically, Vaxjo has deficiency of student housing. It being a small urban and suburban environment means that housing is not a major focus.

The only solution that can be done in the time nearby is to reuse or utilize prefabricated homes made in other countries. Of course connection fee is quite high, but with the building phase being cheaper it would make the apartments cost less than $500 and more into $350 range. There are quite a few unknown situations though, and they’re mostly related to Boverket and Kommun. It is funny that the Kommun who is willing to build, is actually the one that will hold the land the most because of interest. 01

“The Kommun says that they are interested in building houses, but they do not actually have a plan that is realizable - they just say that because it would be nice but reality is quite the opposite.”

Linnestudenterna, bostadsformedling

01Interview (2016), Linnestudenterna
According to Linnestudenterna, there is a serious shortage of housing on campus. The average waiting time is about 1 year for a campus apartment. Because of this Linnestudenterna offers a private apartment search engine which makes it easier for students that are waiting for an apartment.

The university has about 2000 academic staff and 15,000 full-time students according to the Swedish Nationalencyklopedin. The amount of students living on campus is considerably smaller. The problem is that Vaxjo in general does not have the capacity to accommodate all 15,000+ students. Vaxjo itself has a population of 60,000 people, and about 25% of the population is students. 01

The queue for apartments is quite long for most of the year for students, though still relatively small compared to regular apartments. The queue system being not as bad as in other places, makes Vaxjo less housing project focused.

Research was done in how the queue operated and whether or not it could be changed, but unfortunately it is something intrinsic to Swedish current bureaucratic system where everybody has a chance. It is a system that has not seen much change and is quite unfriendly towards internationals and newer generations. The fact that Gothenburg and Lund have a housing queue that is about 8 years long is quite a showcase as to why the system is flawed with the current housing plans.

The queue system has many issues overall, and of course falls under discussion quite often. In Vaxjo it is not amazing but there are worse places like Lund and Gothenburg.

The future is unknown for these structures from the 70’s on Tuvfan street, but hopefully it will not turn into a situation similar to the M2 Gruppen case – in which the houses turned from student-centric to private property.

This is not the first time this happened either. Before this, there were student apartments in the city centre. However due to being bought by M2 Gruppen, those apartments were privatised and no longer were student focused.

01 “Tätorternas landareal, folkmängd och invånare per km² 2005 och 2010”
‘Space’ is very important in today’s age, and even more important when there are problems with procuring said ‘Space’. Today there are many problems that are quite common, concerning space utilization. ‘Space’ is part of architecture and our inner being, and the importance of it cannot be understated.

Developed countries have problems with space utilization, that in which impact housing, potential new structures and people. Sweden is a good example of how space utilization improvement is more of a necessity. The question is how to improve? There are many ways to improve, but to get the best result - there must be an improvement in the rules to alleviate construction issues.

In many cases, “Space” is very strictly tied to Architecture. This in turn creates the issue with the rules mentioned above. In Vaxjo there are rules set to have specific housing complexes, which are more standardized. In comparison with other countries, Sweden has on the most strict sets of rules in place concerning construction. Architecture being tied down, consecutively affects ‘Space’ on where the buildings are placed, and interior planning restrictions.

The best solution is to have more density in cities, like Stockholm or Gothenburg. Another solution to the issue for smaller cities, is to have less rules concerning building standards. For example, have a green policy that does not restrict other types of materials; or have a policy that allows for more compact housing as a standard in areas which cannot be expanded easily.

There are many solutions to the problems and slowly these solutions are becoming more and more realistic with each critique towards the system. With time the government will adopt more lenient rules that will facilitate new building standards.

“All architecture is shelter, all great architecture is the design of space that contains, cuddles, exalts, or stimulates the persons in that space.”

- Philip Johnson
IN THIS PART I WILL DISCUSS ABOUT THE RESEARCH, THEORY AT WORK IN MY PROJECT, AND RESEARCH ATTEMPTS.

“Being involved with science and technology and working with many technology companies, we regularly encounter thinking about futures, especially about the ‘future’ “

Anthony Dunne and Fiona Raby
CRITICAL AND SPECULATIVE DESIGN

The term ‘Critical Design’ was first popularized by Anthony Dunne and Fiona Raby. It was first used in the book Hertzian Tales (1999) and developed in the book Design Noir: The Secret Life of Electronic Objects (2001). Critical design is the opposite of affirmative design, which reinforces the status quo.

There was design critique before the term was first coined. There are plenty of people to this day that do not use the term ‘Critical Design’, rather opting towards their own personal definitions. Design critique is not a new idea and could be found in Italian Radical design of the late 20th century.

Speculative design is a part of critical design, and used to speculate potential situations. In Dunne’s Critical design definition, they used speculative designs to debate potential ethical, cultural, social and political implications. 01

The focus is on how to solve the issue of renting accommodation. To solve the issue, I used speculative methods and critical aspects of design. Critical Design by definition is design critique and it existed since 70’s. I’m using speculative elements which are then used to challenge a problem or another already founded design. Speculative design is basically based upon “speculation” and what could be done to achieve the result in hypothetical terms.02

During the 90’s critical design became bigger in the world of design, mostly because there was general move towards conceptual design and this in turn made critical design have a large role.

A lot of today’s conceptual works use critical design as a basis. Although this movement affected mostly the furniture design aspect and not product design which to this day is still dictated by the mass market.

Critical design is mainly used to make us think and raise awareness to certain problems. It proves, sparks debate and is also a way to entertain the same way as books or television. It has its similarities art, because it borrows elements – but in the end it is something completely different. Art is meant to shock and entertain while Critical Design is more about achieving something for everyday life through critique. 03

“Theory

01 A.Dunne, F. Raby (2013), Speculative Everything: Design, Fiction, and Social dreaming(p.47)
Critical design and speculative design are two sides of the same coin. They both compliment each other and offer ways to criticize real world problems, shedding light on situations. Critical and Speculative design also allows for new ideas to be developed that challenge those problems.

Before Speculative and Critical design, there were many movements akin to the former. Architectural studios such as Archigram, Superstudio and also radical design of the 60’s were the elements that made Speculative and Critical Design real.

Being critical about situations is a very valid way to create new solutions. Using critical design, we go above traditions and design something that is more contemporary.

As a designer, we sometimes unknowingly design based on critical design. The method itself is not something new, and is actually quite simple in practice. What we define as contemporary becomes in turn the basis of speculative design.

By nature, speculative design and critical design are no more than tools to design something provocative and in instances satiric.

Critical and speculative design are essentially similar to ‘dreaming’. Dreams by themselves are powerful, repositories of desire. They animate entertainment industries and drive consumption. Dreams can blind people to reality, providing a sanctuary from political horrors. But they can also inspire, by helping us imagine that things could be radically different than they are today.

These dreams allow us to believe in something that might be unreal now but possible later. Dreams help us progress towards that imaginary realm of possibilities.\textsuperscript{01}

\textsuperscript{01}Stephen Duncombe, Dream: Re-imaging Progressive Politics in an Age of Fantasy (New York: The New Press, 2007), (p.182.)
As designers, we create and sell these ‘dreams’ to people. We create something that circumvents topical problems while also going above typical conventions. A concept is a powerful tool, that could be even considered a weapon or propaganda - depending on the utilization.

This visualization can be a possible, plausible, probable and even preferable future. In most cases it is a solution that will be depicted with positive aspect pertaining it, and very rarely negatively. This is a reason why it is immensely powerful, and at the same time - a truly frightening visage.

We can draw some parallels to medical drugs commercialization in the USA, where these products sometimes are depicted too positively without showing negative effects. Concepts can have similar effects when used incorrectly. Though it becomes a problem if there is a big mainstream backing, since a concept in the end is nothing but an immaterial object of imagination.

There are some examples of concepts becoming a problem. Take for example the automotive revolution, in which the combustion engine became the de-facto method of generating energy. Combustion concept becoming a mainstream choice turned out to be a big problem that contributed to the increase of CO2 in the atmosphere.

There are many other examples that contributed negatively, like tobacco concepts, luxury design ideas etc. A concept is the extension of a designer’s ‘dream’ and is a strong mechanism that can affect the a plethora of systems around us. A versatile tool that we require to propel us towards a better future.

We need these dreams to survive. In a way, ‘dreams’ are turning into ‘hopes’ Hopes that we will not end up extinct specifically. Hopes that we will be able to fit on this tiny planet. Concepts of the past were mostly fun projects in comparison to today.
ARCHIGRAM AND THE AVANT-GARDE
Archigram itself is something in-between critical and speculative design. I’m not keen to go into the Avant-garde, mostly because it requires more finesse, but I am using Archigram as a research platform.

It is a really versatile platform that incorporates a lot of innovative ideas that even influence people today. It is more the way they propagated their ideas and made it mainstream – it is what I’m most interested in. I want to achieve something that will attract people’s eye. The visualization of Archigram is quite unique, in that they created cities with large amount of details. They also combined techniques and where using Critical Design, trying to critique the current system. In a way they helped lay the foundation for future Concepts.

The Avant-Garde aspect is related to the Archigram movement which tried to challenge the at the time monotony of architecture by bringing some food for thought about a more interesting future.

In a day of stagnation, you need people to bring awareness to the problems. Archigram ideology was based around challenging aspects of society. Their name specifically is meant to signify Architecture + Telegram, and they were doing all manners of public pieces in their home-made magazine to show people what could be done in the future.

In my thinking process I tried to use Archigram as a method tool. It is about using Archigram’s unique style of approach to problems – a way to visualize something out of the ordinary while at the same time commenting on the current atmosphere of the situation.

Archigram was, beyond everything, immensely creative. I do not think we have to be shy about that. When the group was first formed in 1964 it consisted of six men who ranged in temperament from the laconic to the bright-eyed, and in age and experience from the hardened builders of local authority schools and public buildings, to young architects who were in their first jobs after school.”

- Peter Cook, London 2012

A big player in the conceptual sphere was archigram and they allowed the creation of Critical and Speculative design through their actions. They, like other radical design architectural groups were bringing ideas to solve big issues of the traditional world that held back progress. They made dreams in which people had more freedom.

THEORY

A big player in the conceptual sphere was archigram and they allowed the creation of Critical and Speculative design through their actions. They, like other radical design architectural groups were bringing ideas to solve big issues of the traditional world that held back progress. They made dreams in which people had more freedom.

“Archigram was, beyond everything, immensely creative. I do not think we have to be shy about that. When the group was first formed in 1964 it consisted of six men who ranged in temperament from the laconic to the bright-eyed, and in age and experience from the hardened builders of local authority schools and public buildings, to young architects who were in their first jobs after school.”

- Peter Cook, London 2012
USING THE MENTIONED METHODS IN MY PROJECT

Using critique as method to achieve a result is quite flexible. Also critique by itself is not necessary a negative; it can soft refusal. Critical Design is sometimes misunderstood as something always negative, anti-everything, interested in pointing out only shortcomings and limitations but it offers more than just solutions and criticism.

Critical design, speculative design and conceptual designs offer ways to expand the topics for discussion. The commentary that usually is a part of Critical design, is typically just one layer of the method. It is an intellectual journey based on changing values, ideas and beliefs.

In cases, I use these methods a lot as comparison tools, taking elements that are negative and replacing them. The conceptual element is not used to the same extent as Archigram where exploration goes beyond regular boundries. As methods, these tools are quite abstract and more like idealistic approaches.

Designing the unrealistic is a common theme used in critical and speculative design. As designers aiming to engage people, one could argue that similar to film, a designer needs to be clear with their communication. But in reality, skillful ambiguity and surprises offer a lot more feedback. At their most abstract peak, speculative in conjunction with critical design are forms of philosophy that question the meaning of technology itself.

“Our designs depend on dissemination and engagement with a public or expert audience; they are designed to circulate.” - Speculative Everything, Anthony Dunne, Fion Raby

Our behavior does require change, but that is up to the individuals to make the choice of change. At extremes the rationale for change is quite explicit. Design itself can play a role to highlight what might happen if behavior does not change, and what can be achieved if it does. It is an idealistic way to approach, in which we try not to assume that people have little or no control over the choices they make.01

As methods, I provide a solution that can be a future, which people can pick. It is also a commentary on how some aspects of life can be taken for granted.

Critical, speculative design and the avant-garde – these are quite important parts of my project that I wish to be represented in the end. From an architect point of view, these elements are typical aspects that are present in all projects. A model, visualization that depicts the nature of the structure and what the ordinary person receives from it.

01 A.Dunne, F. Raby (2013), Speculative Everything: Design, Fiction, and Social dreaming (p. 101-110)
OTHER METHODS USED

Apart from Critical design, I used observation methods, in order to understand the situations from third person perspective. By observing it is possible to gather a lot of passive information that contributes to other aspects of the design. For one, how people act when they move through space and whether or not they feel comfortable.

I, and another student worked with the idea of limited space environments. We had mock-up space that people could experience. From this experiment we would gather impressions from regular individuals.

Observation by itself can divided into a few parts. Passive observation and active observation. Passive observation is ideal to gather information that usually is hidden, like patterns and routines etc. Active observation is when the observer takes an active role, which is ideal for more specific elements that might prove difficult to find during passive observation.

Observation is a typical element of design, and very effective overall. It is a tool with quasi properties, which allow it to compliment existing methods. Strength wise, it is very strong and allows easy replication by others. By nature it is an easy and quick method.

Another method that I used was SWOT analysis, in which I found the strengths and Weaknesses of the design. Originated by A. S. Humphrey in 60’s, the tool is still as useful as it was back then. The SWOT analysis is a strong tool for business ventures and highlights the positives and negatives about a project. As a method it can be used in Design without much change to the fundamentals.

In a Design we can have the same elements as in a business venture. It is incredibly simple, and that is the reason why it is so versatile overall. It can be easily used to kick-off an idea off the ground without much effort and at the same time expand on the premise in a much more predictable manner.

These methods make up most of the brunt of the project. In my project, these methods helped design, determine and brainstorm the end product.

“1963 Living City – “In the Living City man is the ultimate subject and principal conditioner. The theme is interpreted by presenting evocations, accentuations and simulations of city life, not a display of suggested forms. The image is a total image of it all like a film. “-

- ARCHIGRAM
During the project research I had speculated about different facets that could be explored. At first there was a problem – that being “housing crisis” – and then there were possible solutions to said problem.

Myself being a student, I analysed the educational aspect of the housing problem. My target groups were students first and others second, since the idea was how to solve one facet of the housing crisis. The project had to be flexible to fit any lifestyle, and even though the students were the main target group; it did not mean that it was going to focus around only students.

Sustainability which is something that has to be present in all projects, is also a very big asset that needs to be integrated. The idea had to be economically, socially and ecologically sustainable to be truly effective.

For one, material is very important from an ecological point of view. One of the key point of sustainable design is recycling and reusing, which would also mesh well with from an economic standpoint. Social sustainability is more complicated, in that whether or not society can keep with these changes.

A lot of this research pointed towards modular ethic. The reasoning behind that is basically – we can utilize material and already made objects to our advantage by repurposing. Using computer data as an example, there is a lot of data that serves a purpose but before it attaining said purpose, the data was neutral or even something else entirely.

Unnecessary data, i.e. deleted date changes its role after being deleted though overtime. It is basically rewriting itself – a concept that could be utilized in the real world.

The question was what we could utilize for the housing problem, what can we reuse? A lot actually. SIP panels, material made from particle board is one of them. We could also utilize unused metal structures and repurpose them for usage. There more examples on the matter of material, like plastics, glass etc.

SIP Panel - structural insulated panels joined together with high performance rigid insulation foam. They usually use OSB or plywood on the outside, while the foam provides insulation. It is very effective and quite eco-friendly.
Of course not all of these materials or methods can be utilized in an environment such as Sweden. There are a lot of problems concerning costs and building regulations which limit the choice quite a bit.

I tried contacting construction companies regarding building challenges and whether or not they’re interested in using other materials or methods. The answer was quite interesting; they would utilize other methods if it were not for the way rules are implemented. These rules do not really allow cheaper construction methods, and companies technically are not building as much in general to justify a change in work methods.

Buildings are built using wood techniques like decades ago. The reasoning for that is the natural resource pool around us. There is also the case that most research was done on wood technology, and in the end turned to become the leading material of choice in Sweden. But is it the best and sustainable?

Wood as a material, is very sustainable. It is biodegradable, it does not emit harmful particles and it is really easy to process. Wood was used for thousands of years, and of course is far more beneficial compared to other types of material.

There is a negative about wood though, that is not as visible in Sweden due to lack media of attention. In South America and other developing countries, we have deforestation issues, but could you imagine that Sweden has a deforestation problem also? Sweden, Finland and Portugal appear in the top 10 list of countries that lost the most trees between 2000 and 2012. Some of the issues were attributed to fire, logging and other environmental factors. Another interesting thing about wood focus in Sweden is how it basically makes it less sustainable in terms of building speed. The demand would always outweigh availability. Increasing output would increase deforestation also, so it would unsustainable ecologically and socially.⁰¹

The fixation on wood is explained partly due to investment in technology. Sweden and other Scandinavian countries invested millions of dollars in these technologies, while not a lot in terms of metal technology. Still metal is by no means underutilized, it has a place in large building complexes in which wood would be extremely expensive.

WOOD ALTERNATIVES

There are many alternatives to wood since the rise of global warming and deforestations. These alternatives are slowly becoming more and more popular due to the above problems.

Wood-composites are a popular alternative, a combination of materials, typically composed out of 50% plastic and 50% organic wood, such as sawdust or other recycled wood-filler.

PVC is another alternative to wood that is frequently used around the world, however it is one of the most toxic and hazardous building materials for the environment.

I did some research on whether or not light steel in combination with SIP/wood panels would be a better solution to the current system. What I found is that, indeed it would be better economically and indeed it would manage to match the demand.

Discussing this topic with the relevant stakeholder was quite insightful. It gave me more ideas on how the system currently is. Of course, a combined material would be better – but the rules in place make it hard for local companies to invest in this technology.

It is also interesting how these rules/standards do not stop at just construction but also expand towards architecture and interior design. The strict rules do not really allow for efficient space utilization. It is an effective rule set on paper, but it falls apart when you take into consideration the conditions.

SWEDISH RULES

These rules are about having universal design choices. Basically the space is made for not one type of person but for all. It sounds positive on paper but sadly it has a lot of issues.

One of the issue is that disabled bathroom styles are typically common place, so every renting accommodation has a bathroom that allows a wheelchair to fit inside. It is good on paper, but in practice it over utilizes space.

The other problem is that most of the interior designed is made using a template that you are not allowed to change. Basically your room has to look identical to the other room and if you drill holes you have to get permission and pay money. This extends to a lot of parts, so in a way you’re limited to the design.

The standardization is a big problem concerning different alternatives for materials. Wood being the main focus means composite materials like SIP panels are less welcomed. Discussing about this with the relevant stakeholder made it clear that there are problems when it comes to adapting different formats.
CONTAINER LIVING

Using the information, I explored the notion of container living. A container is by no means a new idea, containers are used a lot everywhere and already being implemented for students etc. It is also not a problem in Sweden.

There are container apartments being built during last year and this year in Stockholm. In Stockholm the problem is quite a bit worse than Vaxjo where people in hundreds of thousands have no long term rental contract.

The company XLNT Living is currently working on these container accommodations, around 65 were being built in 2015. The above image is a representation of the space utilization.

The container idea technically - is not perfect and has flaws, mostly related to community responses and flexibility. It is something that requires a lot of planning to be perfect.

Students themselves felt that containers are a good way to deal with future buildings. They were okay with the aesthetics and would not mind living in such a place, if there is no better alternative. The containers are technically better than temporary shelters.

There are quite a lot of negative feedback regarding the shelters at Linnaeus actually. It is not a place where you would like to be. The common problems with those type of housing is the sheer number of people in one place.

Shelters in general are very poorly designed, and have no place in a situation
where a student cannot find a place to stay. The lack of personal space makes it incredibly frustrating for people. During my arrival, it was the first time I heard about student having no place to live and forced to stay in a shelter. A friend had to spend an entire week before she could finally settle at a place.

Websites had to create a website in order to help students to find private renters because the situation with apartments is usually quite dire. From my personal experience, I could not find an apartment on their site until a few days before class started.

Containers are very useful in these cases. They are cheap compared to regular housing and it is possible to utilize them in different ways. The question is how we can improve the container?

There are quite a number of ways to improve a container actually. In a lot of cases containers are limited to typical utilitarian logistics. A container is either extravagant or basic, rarely in between. Customization would make this a non-issue if applied.

In the auto industry you have the customization aspect, and it is also present in the product industry to an extent. Customization of housing was never put into the equation and is extremely rare compared to the above. A customizable container is an adequate solution to current downsides of containers. Basically, a container could become a module by modification. This would make it possible to change the container both visually and internally.
Containers are flexible and easy to modify. Even the form factor is quite strong in terms of space utilization. A container is universal and unironically perfectly fit for human living when modified accordingly. The form factor on its own is incredibly versatile in comparison to regular housing units.

There are many pros and cons regarding container housing units. One of the biggest pros is the affordable nature of the said unit. A 55m² container home can cost up to $35,000 USD - figure includes cost of containers and furnishing. A 25m² container in Keetwonen cost around $25,000 USD, so the prices are quite reasonable and scale accordingly.

Regular housing can cost double the price of a container unit home, mostly due to material costs and other elements. However it is possible to utilize the form factor of a ‘container’ unit and get close in building price to an extent. The reasoning behind that is quite simple; the structure of a container is a basic rectangular shape which is usually 20m².

The low profile of the container is a big advantage in a lot of factors. Material cost, heat distribution and energy usage are affected by interior space.

Technically, it is a possibility to build these containers using prefabricated wood techniques, or composite materials. Ecologically, a refurbished container is a more eco-friendly solution according to some specialists because less wood is cut in order to create this type of living space. Shipping containers also are not a rarity and most of the time become unused after a few voyages around the world.

Another factor that we need to consider is how much water is used for the creation of these homes. Wood architecture even though quite environmentally friendly - has quite some water costs tied to processing the materials. Also wooden architecture is not solely composed of wood material, but has also supporting structures, usually metal, that provide more structural integrity. In the end, we have a decent amount of water used in order to establish these structures.

Shipping containers also would utilize water or other resources in order to become a house. Depending on the location it is procured, a container may end up being less eco-friendly due to transportation networking. To be truly efficient, we would need a local source of ‘container’ units.
There are about 17,000,000 containers around the world, with only 6,000,000 in use. Approximately 11,000,000 containers are unused and could be converted into a home.

Each time we re-use a container we are saving up to 3,500kg worth of steel around the world. Likewise we save up in terms of other material, such as wood etc.

**NEGATIVE ASPECT OF SHIPPING CONTAINERS**

There are cons to a container home, specifically old shipping containers. An old ocean container will require a lot of work put into refurbishing because of the chemicals used to prevent ocean spray stress. Depending on the container, we could see the opposite of ‘eco-friendly’. Other things such as dents also become problems that would require additional work.

Refurbishing very old containers is generally a very time and resource consuming endeavour. Depending on the region it might lose to traditionally built architecture easily.

Another negative is how the structure might not work with everybody when it comes to space. A typical container is quite small and would require multiple containers for a standard living space that some people are used to.

**SWEDEN AS CASE STUDY FOR CONTAINER LIVING**

In the case of Sweden, containers like units would definitely be more efficient due to how little effort is required to modify them. Also Sweden already has a chain of Architectural companies that already utilize container units as temporary living spaces, though for construction workers specifically.

Shipping or transport containers are quite common in Sweden due to the nation trade network, so there is no shortage in containers. On the contrary, there quite many unused containers due to the amounts of trade, and because melting the containers is more harmful and less effective than just simply storing them.

**CONTAINER LIKE HOMES OR SHIPPING CONTAINER HOMES**

Container like homes are perfectly fine alternative to reusing old shipping containers, and ideally there would be a choice between the two types of units. Smarthousing in Smaland has done research regarding such housing, or more specifically their research resulted in a container shaped house made out of traditional material. It is more expensive than a container, but still more affordable than a typical home.
STRENGTHS

AFFORDABLE
EASY TO BUILD
SMALL FOOTPRINT
ECO-FRIENDLY AFTER REFURBISHING
STACKABLE
TEMPORARY
MOVABLE
SPACE FLEXIBLE

POSITIVE

OPPORTUNITIES

CHANGE THE CURRENT HOUSING META
CREATE A NEW NICHE
EXPAND THE TEMPORARY MARKET

SWOT ANALYSIS OF CONTAINER HOUSING IN SWEDEN
SWOT ANALYSIS OF CONTAINER HOUSING IN SWEDEN

THEORY

WEAKNESSES

OLD CONTAINERS POTENTIALLY HARMFUL UNORTHODOX

NEGATIVE

THREATS

POTENTIALLY HARD LIMITED BY KOMMUNS
LESS POPULARITY IN SMALL CITIES
CONSTRUCTION COMPANIES VETOING THE PRACTICE IF IT IMPACTS THEM
I have been doing research on architectural design in Japan, to see how higher density cities deal with small spaces. It is a well known fact that Japan has a population problem. However, ironically Japan has less issues concerning house availability overall, even compared to its neighbouring countries. Some of the reasons behind this are related to how they deal with housing density, large quantities of structures concentrated in small locations.

Typically, Japanese architecture utilizes a lot of vertical ‘space’ to deal with their limited building environment. In Sweden for comparison, there is no lack of space, hence more liberal usage of said ‘space’. Taking some of the key points from Japanese architecture philosophy, we could have more efficient constructs, which in turn could alleviate some of the issues with current ‘space’ utility.

Also small homes tend to be more efficient in terms of space utility. Students typically utilize less space overall, though that’s partly how Swedish apartments are made. In interviews with students, I understood that they usually did not use all of the space and would be fine with less.

Of course Japanese architecture is efficient, but there are negatives to it. It is mostly related to how Japanese student apartments are managed. Those apartments are typically underequipped compared to regular Japanese apartments. According to a Japanese Interior Designer, the student apartments are made too cheap and they usually tend to rent regular apartments.

A Japanese approach to designing a container would make the container interior space manageable without a problem. A 20m² interior with space design ingenuity are a necessity for the project to be truly good.

“To “modernize” a house in America after the Second World War meant banishing the banisters and moldings and erasing any traces of the traditional. But in postwar Japan, after the tsunami of Modernism swamped the country, the Japanese accepted the new without rejecting the old.”

Anthony Dunne and Fiona Raby
RESEARCH CONCLUSIONS
Going by the research, there are plenty of ways to handle the housing situation in Sweden. But modularity and temporary living would be the most efficient method to deal with the issue. Container housing have proven to be very effective in Universities around the world.

One of the big users of container housing, the Netherlands solved a lot of housing issue through containers. Historically, Netherlands had housing issues similar to Sweden and Britain, especially for students. It is not a stretch to think that applying their solution would help other countries.

Fundamentally, containers are more affordable overall - even if made from ground up. A combination of space utilization and container like modular elements would work well together overall. The modular aspect is ideal for reusing which allows for more flexible building techniques.

Modularity also makes it possible to design a complex which can be expanded.

Space is a big issue when pricing is very high, so more density in small areas is an ideal solution. Container living has no problems if done correctly, and there is a lot of flexibility with containers as mentioned above.

Swedish rules are becoming more lenient compared to a few years ago. The problem with immigration is causing a lot of problems with the already fragile system. This in turn makes it possible for containers to be introduced in the Swedish system like in Netherlands. The question is how we could handle the containers for Sweden?

The diagram on the left shows how the four elements interact and share a common point. We could have a unit that encompasses all four qualities without any conflicting elements.
PART III

CONTEXT

IN THIS PART I WILL DISCUSS ABOUT THE STATE OF THE ARCHITECTURAL WORD RELATIVE TO CONTAINERS AND HOW A CONTAINER CAN BE IMPROVED ON.
The idea that I am exploring with houses is related to container living. Containers technically are already used in countries such as Germany and even in Sweden. The problem with some of the containers is that they can be incompatible with the Swedish lifestyle. I want to change that, and that is one of the points of sustainability – “reuse & recycle”. It is possible to make containers appealing to the Swedish population with enough effort.

My aim is to find a way to accomplish something similar here in Sweden, since the regulations are quite different – this is quite a challenge. However, it is far more realistic than other ideas, such as small custom apartments.

According to Linnestudenterna, there were attempts to make small apartments in Vaxjo on Campus but were unfortunately too expensive and would be impossible to realize. Even if they did realize the project, it would be too expensive for a regular student to pay rent. The estimate price for such a small house (15m²) would be close to $500 per month.

The reason for such high price points is mostly how the housing is in Sweden. The wages are high and usually projects such as houses are never made with profit in mind, at least according to Linnestudenterna.

Smarthousing was successful with their attempt to build a small container house on campus in Vaxjo, but only one. Currently they are exploring and trying to find stakeholders for new projects. The container house is quite expensive however, which brings back the issue with costs.
“- CURIOUS, CREATIVE, AND SKILLED STUDENTS AND MEMBERS OF STAFF

- CHALLENGING EDUCATIONS WITH HIGH SOCIETAL RELEVANCE

- PROMINENT SCIENTIFIC AND ARTISTIC RESEARCH WHICH WILL BENEFIT SOCIETAL DEVELOPMENT

- COMMITMENT TO SOCIETAL CHALLENGES, INNOVATIONS, AND SUSTAINABLE GROWTH

- COMPANIONSHIP BETWEEN PEOPLE

- AN INTERNATIONAL AND MULTICULTURAL KNOWLEDGE ENVIRONMENT”

LINNAEUS UNIVERSITY
What I want to achieve from this project is quite simple – to simplify and increase the amount of housing while at the same time rework the campus structure. There are quite a lot of elements that I wish to change, ranging from the way people handle apartment hunting during admission periods to how structures are linked to the campus environment. Students need to have a temporary home guaranteed once accepted, so that they can integrate into the Swedish apartment queue more naturally. Secondly, students need more elements from other campuses that Linnaeus currently lacks.

The result of this project is a campus that is more accessible to people overall and not just PR from the university itself. What the University is striving to be is a modern university, or more exactly “Linnaeus University – a creative and international knowledge environment promoting curiosity, creativity, companionship and utility.”. This project goal is more about getting closer to what is stated by the University.

A lot of students are swayed by these statements. But they are never prepared by what awaits them in reality. Linnaeus university has the major issue of too many students and little to no homes. Essentially 60% of the students can get an apartment in Vaxjo normally, while others are forced either to quit or live outside of town. Neither the university or Vaxjobostader want to really comment on the situation of how many people have problems with the apartments.

Research wise there were many attempts to get information from the university and the construction companies. Contacting them proved quite difficult because how only a few bothered to even respond. It is very interesting how companies do not really want to listen to students regarding housing shortages and what solutions they might have.
“1963 Living City – “In the Living City man is the ultimate subject and principal conditioner. The theme is interpreted by presenting evocations, accentuations and simulations of city life, not a display of suggested forms. The image is a total image of it all like a film. “- 

- ARCHIGRAM
EBA51

There are many container housing projects that are more sustainable, one of the projects EBA51 which is a project that already is being implemented in Berlin.

The story behind this project is of course relative to housing shortages for students. Berlin is a very popular city and is prominently popular with the younger generations. It also is home to the largest amount of universities, and of course with this you have the problem of housing. In this particular case, there were too many high costing or outdated accommodations which made it quite difficult for ordinary students.

A Berlin investor came up with the solution of using recycled containers that would fit Berlin’s unique culture. Jorg Duske is the developer of this idea, and tried to create village made of shipping containers.

The shipping containers were created for just a fraction of the cost of a new construction. Containers underwent certain key transformation to comply with safety regulations. There were some challenges with this project of course, for one – insulation was a problem since containers lack these elements. A similar project was also constructed in Holland.

The EBA51 is a part of a growing trend of shipping container homes throughout the world. The trend is growing because container living can be more affordable for a student. EBA51 is said to feature 26 square meters of living area, kitchen, bedroom and bathroom for approximately $290 a month.

There were also double and triple units for students who were looking for more living space.

Overall, EBA51 is an interesting project. The project was successful in terms of utility for students and it does match the cultural aura of Berlin. There are some negatives that I consider quite important to mention about this housing project.

EBA51 is not the most attractive looking structure based on containers. A lot of the elements are too robust and do not compliment well to the overall image of the building.

In the end it is a very typical apartment complex that works in a more culturally diverse area. There is a lot of doubt that this project would work in smaller cities, or cities that have more conservative outlooks.

Another element that would be problematic in Vaxjo for this type of structure is heating. The complex in Germany has less insulation used, and the amount of windows do not allow for even heat conservation. It would be quite cold inside during the winter with these conditions.
“KEETWONEN IS THE NAME OF THE BIGGEST CONTAINER CITY IN THE WORLD “-

- TEMPOHOUSING
There’s also a very interesting student complex dubbed “Container City” which is located in Amsterdam, named Keetwonen. It is a more utilitarian take on container living, and was made by tempohousing. It is probably the biggest project of this type.

This project mirrors in many ways the situation in Sweden. Like Sweden, Dutch universities, do not have traditional campuses and the demand for housing is very high. About 6,000 students were on a waiting list in 2004. To combat this, the local university signed agreements with various social housing corporations.

The for-profit Dutch company, Tempohousing basically devised a scheme to convert shipping containers into student housing. But as in Sweden, creating affordable housing for students is a big challenge because point-based system of rent control do not allow raising rents to levels needed to support the development cost.

The company had to promote the container housing idea to Amsterdam, the universities and the housing corporations. All of them were required to be convinced that this idea would work, that containers could be turned into desirable living space.

Additionally, the project was required to be a temporary solution. The project was only permitted to occupy the site for five years and the redevelopment plans are revised again. Because shipping containers were inherently mobile, it was not a problem to move them to a different location after five years.

The 1,000 units at Keetwonen are stacked to five levels high and divided into 12 different building. The structure is covered, but not enclosed, with galleries and stairways connecting the units. In between the building there are courtyards which provide plenty of bike storage. Each unit is equipped with a balcony, or in the case of the ground floor – a small garden.

The units were designed to maintain an average temperature of 21 degrees Celsius, soundproof and fire resistant. The costs per unit for Tempohousing were approximately 20,000 Euros, according to the company founder. This sum did not include tax, but including stairways, balconies, galleries, and connection costs. At current prices, the units would most likely cost 6,000 euros more due to the economy.

This project is very flexible and works in situation where there is a drastic need of housing for students or workers. The positives of being temporary and large scale, make it quite appealing for larger city. It is questionable if the project would be ideal in a smaller city, like Vaxjo.
“Not only did the project contribute to a pleasant living environment, it also helped solve the student housing problem“

- SPACEBOXMODULARHOUSING.NL
SPACEBOX - UTRECHT

There’s an interesting take on shipping containers in Utrecht, made specifically for students of the Utrecht University.

The containers were modified and redone, and do not even resemble them anymore. The surface is completely smooth in comparison to typical containers. The way colour was used and how the styling blends with surrounding is truly fascinating. It is one of the few examples of vibrant container housing complexes.

The Spacebox has a lot of elements that are quite similar to favelas, in the way the colouring is. The Utrecht Spacebox is the only one with this type of characteristic however.

The interesting thing about these structures, is that they are made using composite panels with insulation sandwiching. It is quite simple in design overall.

It combines proven material technology with simple but innovative design. The material technology has been used for many years in aircrafts and boat industries. They adapted these technologies, along with fire-retardant and sound insulation materials into the container unit.

The motto of the company for these structures are: Fast, Affordable and Energy Efficient. They can be delivered as building kits and the material used are proven to be quite eco-friendly.

The original design is by Dutch designer, Mart de Jong. His philosophy behind the design, is to have a disassembly focused, mobile architecture that utilizes green materials.

The standard size of a studio is 21 m², 7500x3000x2800 mm, however the design is flexible to be adapted to different needs if necessary according to the distributor.

It is a very unique project, in that it does everything efficiently without compromising the outlook of the complex. Comparatively with other container units, Spacebox has an advantage in flexibility and aesthetical charm.
CONTEXT CONCLUSIONS
The mentioned projects are good examples of container units for students. There are a lot of positive elements that were used for my project as material. Some of the elements such as materials and structure.

There were some elements that I felt that could use improvements, so I modified or changed aspects for better flexibility in my project. Container units mentioned have issues with complete versatility. They are movable and are temporary, but they require a lot of work in order to move them. Keetwonen could take months to move for example.

Overall, the current container units around the world are very well made, but still lack mobility. For this reason, I opted for my project to go beyond that and be similar to the “Plug-in” and “Moving City” from Archigram. While Archigram is more of a commentary with dream-like visuals; my project is more realistic in terms of utility.
PART IV

PROJECT

IN THIS PART I WILL DISCUSS ABOUT MY PROJECT IN DETAIL AND EXPLAIN PROCESS BEHIND IT.
Analysis of previous works

Starting from the beginning, Sweden has a big problem with housing and it is becoming a big trend in news each year. The government is working for a long-term solution, while short-term solutions are left to the private market.

There are currently no plans from the Swedish government to tackle the issue with housing in small cities, and that creates a problem for a city like Vaxjo where 25% is made out of students.

Normal housing projects take too long to build and because it is non-profit due to government ruling it is not a very viable source of income for companies to invest in.

Another problem is that even the cheapest housing modules become extremely expensive. New housing has a mandatory charge rate which makes newer structures far more expensive than older structures. There’s also the case that structures had to up to standards which add a lot more costs.

I’ve been analyzing my past student housing project and figuring ways to change the traditional container design. I’m using it as a basis for my current design. The above project has a similar tone to the current idea, however it is completely focused on modular panels.

The main points that I want to have in my project are the following: Compact, Clean, Dynamic, Open, Fun and Unique. I’m basing a lot on Japanese architecture and using traditional Japanese homes for research. I’ve been collaborating with a friend in Japan who is working with traditional housing and have received information on how to make it more compact and open at the same time. A Japanese apartment as an example is quite simple and incredibly small by our standards, yet it provides everything you need.
Using the research and other works as reference, I started sketching and brainstorming ways how the structures could work. I planned to use terrain in combination with architecture to make an interesting composition.

I used the university exterior to create something that would compliment it. EBA51 had a lot of interesting elements in the renders, so I experimented with stacking at first. This resulted in the first project example.
At first I was using containers in a similar way as EBA51 where you have multiple units combined into a structure. I was focused on having shared area and the possibility of adding more containers overtime.

These brainstorming instances helped me understand a lot about the limitations of containers. The limitation like weight distribution and flexibility. So I had to rework a lot to get to the final idea.

Of course Swedish regulations have some problems with Japanese interiors because they’re not well designed for disabled people. It is quite a big problem that makes the bathroom way too spacious.

From the short collaboration, I received tips on how to design some spaces such as the kitchen space, entrance and main room. The main room in Japan is the largest, sometimes equipped with a loft area which can function as both storage space and sleeping space. The kitchen is quite small, mostly because people do not really cook as much as students and instead go out to eat or use the microwave. The bathroom is also quite small, though usually sporting a small bathtub and shower in one.

These elements can be used in the current interior design and in result would become more space saving, which then results in a cheaper overall unit.

Fig. Example sketches, showing arrangements.
I analyzed different types of containers on the market and found three types of commonly used containers. In my proposal I chose to 6m (10ft) long containers as the base for the scale model and visualization.

The choice was also made because me and a colleague were doing workshops regarding compact living and checking student reactions to the idea of living in a very compact home.

The results from the workshops were that students did not have a problem living in a small space (the test space was around 10 square meters) and would be happy with this amount of space for temporary amount of time.

I thoroughly explored the concept temporary living before moving to a different phase of the project.

I attempted to create an add on based housing complex composed of containers. The containers duplex based, so basically you would have two containers forming a 12m container and they would be mirrored.

The base would be flexible in the way of addition. The site would have multiple connecting points which would allow for easier assembly and disassembly.

The structure was rotated 25 degrees counter-clockwise to give a vortex shape. This shape would allow the containers to get more overall light. It also was inspired by a Danish student apartment complex in Copenhagen. In total there are 12 units in this complex base, but when expanded could be double at max.

Fig. Front Facade of first proposal.
There was a lot of question regarding movement that I tried to solve by implementing terrain and stairs. The middle part was made as a common area for students to interact and access their apartments.

The idea had a lot of potential and matched some parts of the vision of Linnaeus. The parts being, modern and high societal relevance.

However, there were issues with the idea that led it to becoming obsolete and inefficient. The first one was related to flexibility, but it was not flexible and universal enough that it would influence the housing situation.

It did not look affordable in the eyes of stakeholders, too premium overall. In the end it would be quite expensive to realize, so there was a need to go back to previous research and find better alternatives.

The other issue was that there would be no point to use containers in this design choice, so a lot of time was placed into finding the alternative and best solution to this issue.

Upon doing more research I came up with a modular structure that would house the containers. The modules could be stacked in different combinations and because containers could be added later, it means that there was no need to design based on container numbers. It is also more economical in that it offers the owner to add containers over time and not immediately.

The idea has a lot to do with Lego or even Meccano. It was more a playset design point of view, where the construction is incredibly streamlined.

The idea made also rethink about the possibilities of container housing. I imagined a world filled with container similar to how automobiles are.

Containers could take the elements from the automotive industry and it would work quite well. Automobiles, similar to houses, are quite expensive upfront. In some ways houses already have payment plans similar to the automotive industry – but not to the same extent.

Houses are mostly static and are bound property, so technically the value of the house is dictated by the property. If you take away the property, the house would magnitudes cheaper. If a house cost 20,000 euro, it would technically be a really affordable price point, but once you add property value; it skyrockets. A particularly good example is San Francisco where the property value is so high, that a closet sized house would cost nearly 200,000 euro.
I would like to implement a system where you could pay for the container both upfront and through monthly payments. In this system you would also be able to shift owners if you need to sell the apartment to another student. In the end, the container would be more like a car, where you can own a new one, preowned etc.

The advantage to owning the home is that you could then move around the world with it and never be in a predicament where you never have a home.

These containers would fully utilize the structures, similar to power sockets. You plug one in, and when you need to move to another city or country, you would then unplug it. It is a similar concept to the Archigram “Plug-in city” which has entire cities moved. In this case it is a bit more narrowed down to a certain niche.

Of course, the idea potential for this type project is not limited to just students. This idea can be implemented in nearly every facet of daily life. It can be used for workers, families, migrants and refugees. These structures and containers are possibilities of the future house. A way in which you take your personal space with you.

Going by research it also best not to focus on just re-using containers due to how much effort and energy goes into refurbishing. It is not a big problem, but the freedom of choice and offering more than type of container would be a better encompassing solution. There many people that enjoy shipping container housing and their simplicity, but there are also people that do not share the same joy towards them.

Spacebox container construction method is a good choice as an alternative, but also Smarthousing wood construction is a really good alternative. For this to work, I planned to use a dimension and weight standard for the containers. Similar to how USB drives are, as long as the container fits specification - it would work regardless of material usage.

Experimenting with this idea I made structures with containers in different shapes. Circular to block like setups; these helped me understand the problems of entrances and stair systems.
As such I worked a lot on trying to find ways to integrate stair systems in coherent manners. I also found that there are many problems concerning space constriction due to stair placements. I had to rework a lot in order to find the final result, checking and looking at current setups for stairs. I originally planned to have a pattern based system for the structure that would house the container, but doing so I had a lot of limitation throughout the planning process.

I explored the method EBA51 used where they placed a walkway before the entrance that would double as a terrace, however doing that design resulted in a very closed space. A circular approach proved to be the best method at first after multiple brainstorming sessions. But calculating the price to make such a structure and how much space it would take, made it infeasible.

I did more research until I found containers that connect into each other. One container would be a stairwell which connects the other containers. It was an interesting idea, but I could not really change from the “Archigram” Plug-in city aspect because realistically the newly found idea would not be a flexible structure that could be expanded upon.
Going through the project back and forth, I settled on the idea of structures that would hold in place the standardized container. These shells would be also modular making them very flexible. These structures would also house most of the infrastructure, such as electricity, water, sewage and connections. This in turn, makes the shell - completely autonomous from the containers which in turn makes the possibility of inserting the container units a really simple thing.

The materials that would make up the majority of the structure could be re-used steel beams or light-steel frames. Pricing would be quite low for such a structures and environmentally it would be green.

The structure would be placed at campuses or areas that need housing. Pricing wise it would be cheaper than regular housing by considerable margin, since there is no furnishing like insulation on the structure. The containers would be handled by a third-party or construction company, in a similar manner to a car. You would buy/lease a container then find a structure like this to insert it.

Typical housing are not movable and by extension more pricey, because it is handled like a complete package; add Swedish rules and it would grow even more. This solution would allow cheaper housing due to a more open market and the structures themselves are not so expensive that they would require large fees in order to get back the investment.
PART V

SUMMARY

IN THIS PART I WILL DISCUSS ABOUT MY PROJECT IN DETAIL AND EXPLAIN PROCESS BEHIND IT.
Sweden has a lot of problems concerning housing shortages, and other countries too. In the case of Sweden, the solutions to these situations are being worked at a slower pace. Since 1990, there was a big problem with housing.

The Swedish government is currently working to alleviate the issues, while news is becoming more and more negative towards the housing crisis. Everything stems from strict rules and long waiting queues which affect renting accommodation.

Many companies around the world are creating projects to combat housing deficiency, in a lot of cases using shipping containers as the option. The reasoning behind that is simple – shipping containers are far cheaper compared to other building methods and in terms of sustainability they are also quite green.

My project is about taking these shipping containers and changing them in a more meaningful way. I combined mobility and flexibility to an even more streamlined level, in which you can take your container and move with it to different cities.

The main points that I want to have in my project are the following: Compact, Clean, Dynamic, Open, Fun and Unique. I am basing a lot on Japanese architecture and using traditional Japanese homes for research. I have been collaborating with a friend in Japan who is working with traditional housing and have received information on how to make it more compact and open at the same time. A Japanese apartment as an example is quite simple and incredibly small by our standards, yet it provides everything you need.

At the same time, we have Archigram ideas that are needed today. What was unreal back then, is completely feasible today. Though not as robust, but realistically the fundamental points are so close to us right now. In this age, we can already strive for a different type of home.

This home is not something you would leave, but take along with you on a journey. Similar to the moving cities that Archigram depicted; a society not bound by place and particular traditions. This home is also like the plug-in city described by Archigram; a home that can become one with the infrastructure and not be separated from others.

My project focus is to allow people to have more freedom, to live a less restrictive lifestyle. This in turn would allow us to not be bound by high prices or near draconic rulesets.

This project is meant to solve the issue with housing in developed countries where the need of a home is at all time high. But also explore what exactly is a home? Does a home need to be bound to a place?
PART VI

DISCUSSION

BIBLIOGRAPHY
DISCUSSION

Sweden has a lot of issues with housing, and it is not a secret. The irony is that most people know the issue but do very little to change it. The funny thing is that students coming here, by experiencing the hardships of finding a home, try to solve this issue the most. In a way, it is logical, we human beings are very empathetic towards each other, and that is amplified by hardship.

I also experienced this hardship, and many of my friends also experienced hardships. Whether prices or the conditions of living in a private home, a lot of these issues are becoming stories that fuel the situation further. As a Designer, I feel the need to find ways to change or criticize. For this reason I chose this project to find what exactly is going on with the housing system in Sweden.

For what it was worth, it was a very difficult journey to find all the answers and solutions. I would have prefered to have more time to improve the ideas further, maybe I could have found more solutions or maybe even make a real change in the system. Right now, the idea that I am going with is a solid one, but still feels like there is more there that I could explore.

What is a ‘home’? Must it be bound to traditional meanings? I consider that a ‘home’ is not something traditional anymore. Today we have technology surrounding us, and connecting us to our loved ones. For this same reason I thought that maybe we could have a ‘home’ that is different from the typical; a home that we can shoulder ourselves and expand no matter where we are.
BIBLIOGRAPHY

A. Dunne, F. Raby CRITICAL DESIGN FAQ, Retrieved from http://www.dunne-andraby.co.uk/

Peter cook (1 Sept. 1999), Michael WEBB, Archigram, Princeton Architectural Press; New edition (p.44)

Simon Sadler (2005), Archigram: architecture without architecture, MIT Press


Caroline Uittenbroek, Graduate Student, & Professor Will Macht, Keetwonen, Sustainable Containers: Cost-Effective Student Housing, (p53-p60)

Reober Emanuelsson (2015:2), Supply of housing in Sweden, Sveriges Riksbank economic review (p47-p75)

Lenanders Grafiska (September 25, 2014), A journey into the future, Vision and strategy 2015-2020, Linnaeus University (p6-p17)

Mojtaba Parsae, Space and place concepts analysis based on semiology approach in residential architecture (p.368-383)

Madeleine Wedesweiler, Don’t believe the hype about shipping containers, say architects, Retrieved from http://www.domain.com.au/advice/the-pros-and-cons-

Erdem Üngür, Space: The undefinable space of architecture, Retrieved from https://www.academia.edu/2061334/Space_The_undefinable_space_of_architec-ture

Brentwood UK, Environmental Health Professional Practice Vol II, Chapter III, Houses in Multiple Occupation, Space Standards.


M. Parsae, M. Parva, B. Karimi (2015), Space and place concepts analysis based on semiology approach in residential architecture : The case study of traditional city of Bushehr, Iran, HBRC Journal

Danny King (2014), The internal combustion engine is killing us, literally, Retrieved from http://www.autoblog.com/2014/10/30/the-internal-combustion-engine-is-killing-us-literally/

Dennis Dimick (2014), As World’s Population Booms, Will Its Resources Be


Jackie Sadek (2013), The Importance of Quality Space to Place, Retrieved from http://malcolmallan-placebrander.blogspot.se/2013/03/the-importance-of-quality-space-to-place.html

Mind tools Editorial team, SWOT Analysis, Retrieved from https://www.mindtools.com/pages/article/newTMC_05.htm


D.F. Clapham, William A.V. Clark, Kenneth Gibb (2012), The SAGE Handbook of Housing Studies

Yvonne Rydin (2010), Governing for Sustainable Urban Development, Routledge

INTERVIEWS:

RIKARD SÖDERLUND, JENNY JOHANSSON (2016-03-31), Housing Situation on Campus, Linnestuderna, Housing office

Johan Thorsell (2015-12-14), New Construction methods and housing deficit, Vaxjo kommun

Linnaeus university students m-building (2016-04-01), The future of student living, future campus
BIBLIOGRAPHY

IMAGES:


Spacebox images, Retrieved from http://www.spaceboxmodularhousing.nl/#!/projects/c1x2s

