

Cars in Technopolis



Reflection paper P4

Student:

Hamon Hawezy
4336895

Design Tutor:

Roel van de Pas

Research Tutor:

Marcel Bilow

Building Technology tutor:

Marcel Bilow

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Introduction

The graduation project in the Architectural engineering studio starts with a fascination. Starting with a fascination was a laboured and slow beginning, but I tried to do something with flexibility in buildings that can be built for multiple purposes. During one of the first tutoring sessions I changed my fascination with a push into the right direction by my research mentor Marcel Bilow. My interest in cars, gadgets, luxury and technology were becoming the focus in my graduation project. And just like I changed my theme of my graduation project in the beginning of the first semester, I also changed my project location in the beginning of the second semester. When I finished my P2 my tutors and the delegate of the board of examiners advised me to change my location in order to give my project a better suiting place. My project started in the city centre of Amsterdam (one of the studio's 4 main locations) and now is placed along the highway A13 in Delft where we have a large space to accommodate multiple functions in order to make the showcase of the future cars in future architecture.

The relationship between research and design.

The graduation studio is divided in to two semesters, during the first semester you do research in your main theme and in the second semester you translate your research into a design.

Starting the research, I found out that cars changed architecture a lot from the beginning of time that cars started existing. What I also found out was that cars are about to change because of new technologies. Cars are becoming more and more autonomous and electric cars are starting to replace fuel cars.

I asked the following research question:

Assuming that cars are changing in the near future, how will architecture integrate and adapt to it?

And the overall design question:

How can the future electric car be integrated in a new luxury apartment building for car enthusiasts which is placed in a new complex where the future car use is showcased?

In my research I came to the conclusion that cars in the near future will be fully electrical and capable of driving autonomously with or without any human on board. This resulted in two main topics in my research, architectural changes and ability to add to sustainability of buildings with these future cars. The conclusion was basically that we can reduce uses space of a parking space because they can get smaller, we need to design a place where your car can drop you off and pick you up in a convenient and safe way and that the big battery that the future cars contain can help your building in a more efficient way of energy use.

The results and conclusions of my research gave me some tools that I had to use in the design of the building. In the end I designed a luxury apartment tower where I incorporate the capabilities of the future cars. The building has a pick up/ drop off space in front of the

entrance and a car elevator with which you can drive your cars into your living room and the car can be charged and discharged in its parking space. Also there is a parking garage in the basement that has much smaller parking spaces in comparison with parking spaces we have today because we have to get out of the car when we park it, but in the future cars you already have left your car before it goes off to park itself. Charging and discharging the cars will no longer be done by cables but inductive charging units that are built-in the floor of a parking space.

The relationship between my graduation project and the studio Architectural engineering in the MSc Architecture

Architecture and engineering are hard for me to see separately when I make a design. Because I have done the bachelor of applied science in building engineering and an internship with a contractor company, where I learned about practical issues and how a building gets actually built. This makes me think a lot about how my design could be built, this can limit my creativity sometimes.

The AE studio is focussed on innovation. My project came together because I combine a number of innovations into one building (and in the rest of the complex on the location). And by these innovations combined together we can make a more sustainable building then the buildings we have today. In the general calculations I made until now the building I designed can generate 4 times the energy that it needs to use for itself which means we can use the rest of the energy to power our cars and basically drive around on solar and wind energy without polluting the environment, like we do in our fuel cars today.

I think that in the end you have to sell your innovation very well in order to convince the public, which I think is the right combination with architecture, because you can show the new innovation in a tangible way. Getting people to desire the use of the future innovations in a building that not only is engineered in a sustainable way but also is convenient to use and satisfies the eye. I have kept in mind during the total process to design a building as much as possible like a car, combining a number of innovations to make an efficient machine. Just like cars can be demounted for the most part, I attempted to design the building so that it's able to be dismounted.

Research method and approach in relation to the graduation studio methodical line.

In the first semester of this studio I wrote a research paper. Based on literature study, interviews and case studies. Which lead to facts and predictions. But during the design I had to do much more research about how certain systems can be applied in architecture.

I got some design tools out of the research combined with my fascination to showcase the future cars. The design process started on an urban scale, looking at which functions I needed to make the total showcase of the way we can use the future cars. I started on an urban scale model of 1:500 where I tested building masses and the race track, by testing different setups and forming my opinion about it. So basically it became research by design, especially further on in the process of designing the tower. I started with the backbone of the building, the car elevator and parking spaces connected to it (See figure 1). After trying a lot of variants I figured out which one could be applied in the most convenient way.



Figure 1 Car elevator variants

The tower became a gathering of smart technologies in order to make the building as energy efficient, luxurious and smart as possible. But my program requirements were not totally fixed in the beginning which lead to a lot of variants in the setup of the tower as well (see figure 2). Besides designing with variants I also try to make use of a lot of reference projects that were enriching my design.

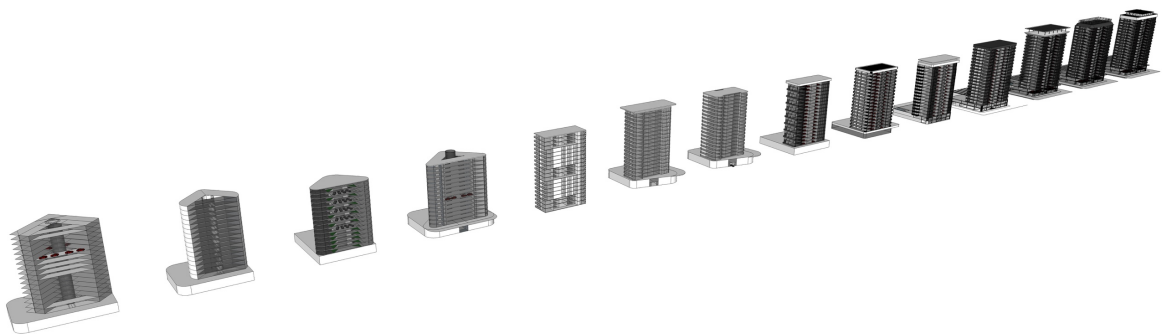


Figure 2 Tower variants chronologically from left to right.

The relationship between my graduation project and the wider social, professional and scientific framework.

The change of cars will have an effect on the way people use them and the way people live. Just like we have seen in the history, the cars changed architecture. The cars are changing so architecture has to change with it. It is up to us how we deal with it in the science, architecture and social field.

The cars that are on the market today already have a lot of technology to be able to do what car companies are predicting for the future and showing in their concept cars. The way cars can be driving autonomously is a matter of maturing process of technology and the time it takes for society to accept and trust it. In my opinion it's important for us in the professional world to research and show what are the possibilities and being able to anticipate towards future changes. Also making a design of a building like this can start a dialogue about the way we will use the future cars and how can implement it in our life in a positive way.

There is much more to discover in the scientific field of the topic of this project. It's a hot topic now because a lot of industries are concerning the future cars and buildings.

Relation between my project and the social context.

In comparison with a lot of other project that I see being done around me in the studio, I am not working on humanitarian solutions for the poor people or the people that are in need help. This project is about the future and luxury. The design of the luxurious future building with cars in the living room resulted in quite a decadent building. This is not a weakness in

my opinion because even though it's a very expensive building for rich people, the building does a great job in not polluting the environment. The building becomes a power plant where it generates its own energy and manages the energy use by using the car batteries as storage, but also use the rest energy to drive around on the self-generated energy. The building should make the statement that luxury and decadence can be environmentally friendly.

I look at this project like the company Tesla has done with their electric cars:

"The strategy of Tesla is to enter at the high end of the market, where customers are prepared to pay a premium, and then drive down market as fast as possible to higher unit volume and lower prices with each successive model"(Elon Musk, 2006,

<https://www.tesla.com/blog/secret-tesla-motors-master-plan-just-between-you-and-me?redirect=no>).

So the application of the new technologies starts in an expensive luxury building where the customers are prepared to pay high prices, then use the information and profits in order to apply the technologies to a market for everyone. Also I think a project is useless if it would not be possible to actually apply in practice, so that's what I am striving for in doing this project, to make logical and sophisticated solutions.

Conclusion

During the first P4 moment I was not satisfied with the direction of my design at all. That is why I withdrew of the P4. The biggest issue in my process was that I have a large project with the total complex and did think about a lot the aspects, but then had to translate my project in designing one large building, with which I have no experience. This took me a lot of time to really get a grip on the size and everything that comes with designing a high rise tower.

Up to this point the project did not develop in a flawless process but it's getting in the right direction in my opinion. The systems for the cars and the degree of luxury are satisfyingly present in the design. When I did my P4 for the first time unfortunately I was not able to present my design properly, because I did not produce the right images to show the information that was essential for my presentation, also the presentation was poorly prepared which resulted in a "no-go". This gave me extra time to reflect on what I was designing and to improve a lot of things in the design which I am really satisfied with up to this moment. Now it's up to me to prepare better and really show what I have in mind to showcase my design.

I really appreciate the tutorial sessions I have with my tutors, I learn a lot from them and I try to pay attention to the feedback I receive, which I always consider thoroughly before I apply them in my project. The sessions were very productive but also appreciate the conversations we have about other things.