Makers' Hub Almere Flevoland

a creative centre in Almere city, consisting of a fixed main building and demountable pavilions

Bilici, T.

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Keywords

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SUMMARY

The popularity of arts and crafts is drawn upon, in searching a solution to the increased demand of cultural supply of the city of Almere. This resulted in the design of creative centre consisting of a fixed main building and demountable pavilions.

A bigger group of citizens is being involved in the creative scene by the diversification of the cultural supply. Professionals and amateurs are brought together and enhance each other. Moreover the hub works as a third place, where people can drop by or stay to study or work, because of the lively environment and different facilities.

The hub is embedded well in its surroundings. It is located on a developing area that is envisioned as a traffic node with commercial functions. Therefore there will be a large enough audience and it thus also will be interesting for professionals to work here. Furthermore, the pedestrian and cycle route along the lake Weerwater, is being led through the inner street, between volumes of the hub.

The pavilions have an open structure and are accessible through the inner street, which means that there is a transition in interior functions towards exterior. They also evoke the interest of citizens trough the city, as they can be demounted and put up somewhere else. This can be done using a van, simple tools and a provided manual.

Preface

I started my graduation project knowing that I wanted to design a public building and use computational techniques in some part of the design process, where it was convenient. By coming across the plans of the city of Almere to increase and diversify its cultural supply, I got enthused because I personally always have liked being occupied with some kind of crafts. Therefore I decided to design a creative programme for the city that would attract a larger audience.

Man only plays when he is in the fullest sense of the word a human being, and he is only fully a human being when he plays.

Friedrich Schiller, 1794

In my opinion is crafting offers a great opportunity for involving more people in the 'arts en crafts' in general, as it can involve people in the process of making and even exhibiting without them needing a lot of knowledge in advance. I also think that a lot of people actually enjoy, and will continue, to make their own artworks once they get in touch with their creative side. Therefore I think it is important to offer an opportunity for the inhabitants of Almere to get in touch with not only professionals in the creative industry but also amateurs' visual arts. The threshold of participating can be lowered, by not only offering complete courses, but also separate workshops.

In the aforementioned quote of philosopher and poet Friedrich Schiller (1769-1805), is talked about 'play' in the sense of not doing something for a certain practical aim. Schiller emphasised that beauty and art have to become a central component in people's lives to restore the balance, harmony and character of a population. According to him, the proper way to achieve this is with play in the fields of art and beauty.

This notion of play can also have relevant benefits today. Arts and crafts are getting popular due to the physiological effect that being spontaneously creative, by feeling free of purpose, has on people. Therefore designing a creative hub will be valuable for the city of Almere. Additionally, it is in line with the municipality's "Ik creeër cultuur in Almere" concept, which includes involving the city's inhabitants in giving meaning to their living-environment by embellishing it with cultural expressions.

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Figure 1.0
Winter visualisation of creative hub MAF

Introduction

This thesis is part of the graduation studio of the chair Design Systems & Architecture with the objective to develop, use or integrate design and decision-support systems for architects and planners. The studio is part of the master Architecture, Building, and Planning (ABP) at the University of Technology in Eindhoven and is supervised by prof. dr. ir. B. (Bauke) de Vries, ir. M.H.P.M. (Maarten) Willems and ir. Ing. A. (Aant) van der Zee. The subject are individually chosen by the students. In this thesis, a visual programming tool is used to create 'design algorithms' that automate tasks in a computer-aided design (CAD) application. In particular, the application called 'Grasshopper' that is integrated in Rhinoceros 3D's modelling tools is used.

The theme of this graduation project is the design of a creative hub in the city of Almere including demountable pavilions, that are designed with the aid of the above mentioned programmes. The following research question is formed in order to give direction to the design process.

'How can a creative hub be formed, that has an explicit public character and increases the involvement of the inhabitants of Almere?'

This research question has a practical relevance for Almere, as it aims to increase and diversify the cultural supply of the city. The design of a creative hub in particular also suits the vision of the municipality for the cultural scene, to have a particular profile to distinguish itself from other cities.

This thesis is structured into four main chapters, namely 'Context', 'Concept', 'Design' and 'Conclusion'. The first chapter provides 'Theoretical context' as an introduction to the subjects related to the graduation project, followed by the 'Urban context' paragraph about plans of the city in which the hub will be located. This paragraph also highlights the southern area of the city and substantiates the decision for the selected location. Next, the 'Concept' chapter translates the information collected from the context into a specific design concept. Subsequently, an elaborate explanation on the final design of the hub is given in the 'Design' chapter. This chapter is divided in a paragraph, that addresses the composition of the hub as a whole, another paragraph, regarding the main building, and lastly a paragraph on the demountable pavilions. The final chapter draws conclusions from the result of the entire design process.

Reseach Questions

Main question:

How can a creative hub be designed, which has an explicit public character and increases the involvement of the inhabitants of Almere?

Sub questions:

How can the hub engage more people in the creative scene?

How can pavilions be designed using computational techniques, which are demountable in order to evoke the interest of the city's inhabitants in becoming users of the hub?

Context

Theoretical context

The DIY-culture has gained popularity over the years. This term stands for "Do-It-Yourself" and was synonymous with the punk rock subculture, used in relation to going against the grain of social norms and customs. Nowadays it is a notion that "(...) reflects a widespread cultural movement that upholds the politics and aesthetics of the original DIY notion and includes community building as one of its ideals."(Miller, 2007)

In Portland a community of thriving crafters has been formed. They are an example in that a self-built community can offer a city a national reputation as a hot spot for everything that has to do with arts and crafts. The popularity of the crafts community is increased due to the growing interest in custom products. More people want to move away from mass-production and prefer objects with a story instead. 'Art Design Portland' (ADX) responds to this development by offering a so-called "maker space". It is a facility where people can get a membership to make use of work areas with expensive industrial equipment and helpful instructors.

Not only home DIYers, who get a handy repair shop, benefit from such "maker spaces" but also entrepreneurs who become able to experiment with creating innovative products and produce them independently on a small scale. Matt Preston, communications director of ADX, therefore sees "maker spaces" as an evolution to libraries in the sense that everyone gets affordable access to shared information, space and tools.

In 1989, Ray Oldenburg started to use the term "Third Places" for places outside work or home, where people voluntarily gather frequently and informally. What might seem contradicting is that such places had to feel homelike, but this is in order for people to feel psychologically comfortable so that they are able to unwind, regenerate and even find companionship.

Even though work and home are merging because of the internet, there still is a need for third places. Not necessarily to have a conversation, as people nowadays communicate often through devices on the internet, but a place to be around people.

A study in the 'Journal of Place Management and Development' has researched how art museums and venues serve as third places, to understand why they are meaningful to people and how they consume these

places. Understanding how third places occur and which characteristics they share, is important for designing the hub to be able to behave like a third place.

Third places are often within walking distance of public transport and their location in relation to work and home. Next to it being visible from a distance and easy to get to, it has to be also easy to get through. Accessibility in another meaning is also an important factor, third places occur often in non-descript buildings that have a low-profile within the community. An atmosphere of sociability welcomes everybody regardless of creed, age and economic status. This leads in users considering the place as "their own" and therefore the mood is informal and everybody is treated as an equal. The size of a space is also important, as a large open space allows people to have their own personal space within, and a choice in quiet of busier places. The democratic principles are enabling for people to use space as they want while feeling nobody is going to bother them, but places can lose their character if they are getting dominated by a particular group using the space for a single purpose, as free meeting spaces for example. (Slater, 2010)

Art museums and venues have the benefit of people visiting out of social and escapist motives, just to walk in for example to see if there is something new. They also often have spaces for resting, eating and drinking, and shopping, which means a larger audience for informal association to occur and be developed. People also use these areas sometimes to meet friends and to hang out and free Wi-Fi supports this. Activities like free lunchtime programmes attract people who want to come to relax and at the same time create a greater awareness of the broader programme that the facility offers.

Incorporating pavilions to the hub, in addition to the main programme, will continue the production of social effects, initiated by the hub in a different manner. Pavilions generally do not have a precise programme, but consist of an open structure, which can be infused with all sorts of activities. When they are noticeable enough they promote a more spontaneous way of interaction between people. Dan Hill, executive director at "Future Cities Catapult" a government supported centre for the advancement of smart cities, argues that pop-ups should anticipate an architecture of positive change in cities, by using them to implement public social initiatives. He states that pop-

ups are not treated as architecture, as they generally are "small parasitical entities that either cling on the hulk of the existing city, or left alone to grow in the cracks between buildings, like weeds" (Hill, 2015). Instead pop-ups and pavilions should be viewed as "fast architecture", enabling a means of experimentation on the existing urban fabric, physically prototyping the possible capacity of the environment.

This is because, in terms of architecture they evoke the least friction because they do not seem to leave a trace, and they go unnoticed as easily popped up and down. This is beneficial for serving as the engines of social purposes, which can facilitate people's initiatives inherent to their knowledge. Which is often much more sophisticated than the thinking of those who intent on aiding communities by delivering solutions in a patronising manner. The creative energy of people is released and distilled by this novel relation between them and fast architecture. It cultivates an awareness of social forms embedded in making, which is as well a way to involve communities in the making of facilities.

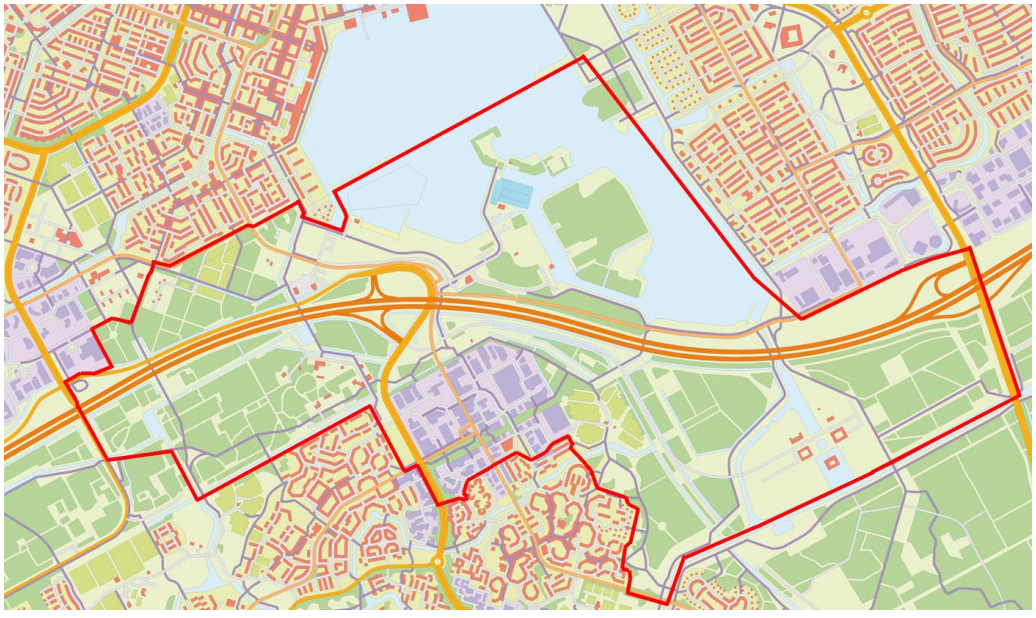
Dynamic pop-up activities along with fast architecture, offer a powerful role for architecture to absorb those values in the habits of everyday life, by embedding them carefully into the city's slower layers of social production, in order that they may continue to manifest over time. 'Ravintolapäivä' or Pop-up Restaurant Day" is a successful example of an activity that has unlocked the potential of pop-ups. It was a city-wide pop-up in Helsinki started in 2011 by a group of motivated citizens that had agreed a day to simultaneously make and sell street food from their apartments, in the parks or on street corners, to react to the city's food business licensing regulations. This initiative has become a well document festival of street food. Later a funded initiative started that offered a practical training programme for participants to learn about how to run a small restaurant. Eventually the city's former abattoir was formed into a food culture hub, in order to hold the fast social effects into systematic changes, by physically embodying it in the slower format of a building.

Urban context

Almere is a so-called 'new town', a comprehensively planned city built from scratch in relatively short time, on reclaimed land in the Netherlands. In 2006, Almere was assigned by the government to grow twice its size. The reason for this was to strengthen the international economic competitiveness of the Randstad, which is the most densely populated region in the Netherlands.

In 2009 a conceptual vision ('Concept Structuurvisie') is formed in which 'Almere Centrum Weerwater' is envisioned to be an area where facilities above regional level can be established. In 2011 the parliament decided to increase the infrastructure of the Randstad by widening the main highway that connects Almere to the rest of the Randstad. This motorway is built raised from ground level and goes straight through the urban tissue, but will be lowered to ground level. This change forms an advantage for economic activities, to take place within the city, instead of having to move out to the periphery to have good traffic connections.

Therefore the area around Lake 'Weerwater', displayed in the following figures has a high potential to transform and develop into a coherent, meaningful area for Almere and the region. In particular, the southern part of the 'Weerwater', will be transformed into a more regional area.



Figures

Left page, 1.1
Current situation 'Almere Centrum Weerwater'

Top 1.2
Map Connections of Almere to the rest of the Randstad

In order for Almere to undertake another 'growth jump', the municipality established a vision for 2030 that focusses on creating an (inter-)nationally attractive living environment. A cultural infrastructure that distinguished itself from other cities is an essential factor in this. Therefore explicit attention is spent to contemporary cultural infrastructure. There is already a demand from the inhabitants of the city, for an increase of the cultural supply, as this is lagging behind on the population growth.

Furthermore is envisioned to make the small-scale creative sector stronger and more visible. As well as stimulating cultural entrepreneurs in adding new forms of cultural supply in order to reach other audiences. As diversity is a key point for the healthy growth of a city.

Therefore the development a creative hub is fitting here. Since its programme will suit the ambition of Almere to not appropriate the cultural profile of big cities, but instead to form a fresh cultural infrastructure with a particular profile. Therefore, it will add something new for the region as well.
The strategic vision attaches the southern area to the economic

Figure 1.3
Connection Strategy Southern area.

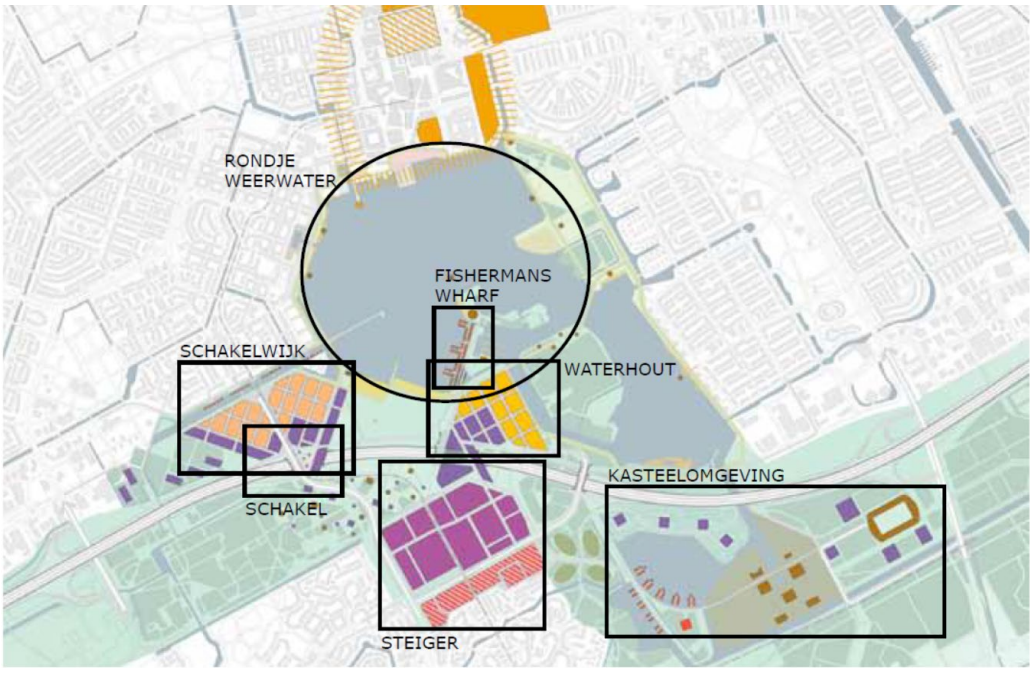


Figure 1.4

Development areas around, the 'Weerwater' Lake, seen as the heart of the new Almere

Figure 1.5

A conceptual plan for the 'Schakel'

centre of the city. Next to the major urban axis, a new bus station and a parking garage is planned in the greatly accessible 'Schakel' area that is displayed in figure s 1.3 and 1.6. This area becomes a traffic node with a direct motorway connection. A residential area is planned, with public functions surrounding its edge. Moreover the beach is extended which will increase the settlement of new recreational and catering facilities. The ground level of the area will be lightly increased towards the overpass of the motorway.

Furthermore, an important element, in connecting all the different development areas, is joining together the paths around the lake into a uniform recreational route for cyclists and pedestrians. In this way, the loop around the 'Weerwater' is completed ('Rondje Weerwater') and the lake becomes a substantial part of the urban tissue.

All of the above mentioned features make 'De Schakel' a perfect area to locate the creative hub. In figure 1.7 the defined plot of this hub is indicated with a red dashed line. This plot outline is drawn in this way, in order for the pavilion to be along the route 'Rondje Weerwater. It is located in the area envisioned for public functions, indicated with purple in figure 1.4, and follows the 'direction' of those plots. To the east it is adjacent to the lawn, and there are view lines from the location towards the sand and the lake 'Weerwater'. The detailed situation will be elaborated upon in the 'Architectonic Concept' chapter.

Figure 1.6
Design of the Weerwaterzone by Posad

Figure 1.7
Situation, scale 1:5000

Concept

Programmatic concept

The programme of the creative hub is composed from the inquired visions discussed in the Context chapter. It adds to the diversification of the cultural supply, by offering a new kind of creative centre that also is social venue and serves as a third place. It will house facilities that not only will have the ability to boost the creative industry, but also the means to bring more citizens in touch with (their) creativity.

There are already good initiatives aimed at young creative entrepreneurs within the city. For example, the project in the main theatre 'Kunstlinie Almere Flevoland' (KAF) in the city centre, where young entrepreneurs are able to develop their talents, supervised by professionals. Moreover it provides a stage for them, just like breeding place 'Young Artlab' and cultural centre 'Corrosia' in Almere Haven are doing. The hub responds to this situation, by providing studio spaces for entrepreneurs, who have evolved, through such institutions for example, and want to establish their company. Next to studio spaces, there is a shared workshop. This shared facility means that a collaborative community of renters can develop here.

By opening up the workshop area for public, and thus turn it into a maker space, those young professionals can do something back for society, by mentoring workshops or community art projects, which can be held in here. Agreements could be made where they get a discount on the rent price if they do so. The maker space also stimulates the rise of the creative scene as people can experiment or make a prototype for example, without having to buy expensive equipment first. A publicly accessible workshop is also advantageous for the encouragement of amateurs to join in the creative practice, because it brings them together with the professionals that also use this space. Thus the intention for the hub is to do more than offering cultural activity. It intends to evoke the interest of a bigger audience in the creative scene, in order to enhance society as a whole. Therefore it should also serve as a third place, where people are surrounded by artist and their art.

This is also the main reason in using pavilions in combination with the main building. By means of demountable pavilions, the reach of the creative hub can be extended by 'travelling' through the city. This literally lowers

Figure 2.0
Conceptual diagram zones

the threshold for people, as the hub extends towards them, and encounters with its creative programme happen.

Not only is the organization that manages the makers' hub able to move the pavilions, also individuals with an initiative, are supported by making the pavilions available for rent. This follows one of the aims of the hub to support undetermined and un-programmed interactions between people, as individuals become able to organise activities in public space. The do-it-yourself vibe, that is discussed earlier, is being continued in this manner. When a pavilion is rented it has to be taken down, moved and built up, by those who have rent it. This leads to a sense of being part of a larger community that makes use of the same facilities and tools, and expand the range the creative scene around.

The entrepreneurs with a studio space within the main building also benefit from the entity of pavilions as they can also rent the pavilions when the pavilions are 'at home'. Because, not only will the pavilions travel and represent the hub for example along different festivals in Almere, they will also have to return as they also serve a function at home.

Architectonic concept

This paragraph elaborates upon the architectural expression of the hub in relation to its surroundings and on how the relation of the pavilions with the main building is expressed architecturally.

The form of the hub is created based on the context of its location. The choice for the location and the placement of the hub are illustrated in the previous chapter 'Urban Context. The search to an explicit public character initiated with the research questions, has led into slicing the rectangular plot to continue the current walkways through it. This also includes the route 'Rondje Weerwater' going through the three volumes that occur. This is beneficial for the hub, as the people wandering on this route, will have to walk in between the volumes of the hub, whereby they can get interested in what is going on inside.

In contrast to the movable pavilions, the three building volumes, that form the main building, are rigid. This is emphasized architecturally, by designing the main building, as if it is sculpted by making incisions in a box. A heavy material will be used to

Figure 2.1
Schematic Situation

convey the idea of monumentality and permanence. This also has to be taken into account in the way windows and doors are placed. In order for them not to diminish the monolithic appearance of the volumes, they can be detailed in a visually separated way from the concrete surface of the facade.

Moreover, the choice for a material with rough appearance emphasises the informal culture of the hub, to convey an ease of access in order to be more approachable, in opposition to the more formal facilities like the city's main theatre KAF. Recent initiatives to manifest the KAF as the city's 'living room' for culture have not been successful. It even led to internal criticism that the focus on young people causes the diminishment of the grandeur of a theatre1. With the emergence of the MAF and the relocation of these initiatives, there is a clear distinction between the theatre with its sleek formal facade, where people mostly plan their visit to, and the casual hub where people can also drop by when walking the route or just passing by on their way.

The pavilions, in contrast to the main building, have to be lightweight because of their requirement to be deployable and movable. In their architectural language, the pavilions have to match the main building. Therefore they are constructed in wood with a similar colour that is used in the facade components of the main building. Besides, the foldable scissor structure occurs also in the main building. The pavilions are in symbiosis with the main building, when they are 'home' they extend the programme of the hub. This is expressed architecturally and therefore the missing of pavilions, that they are 'on travel', is emphasized.

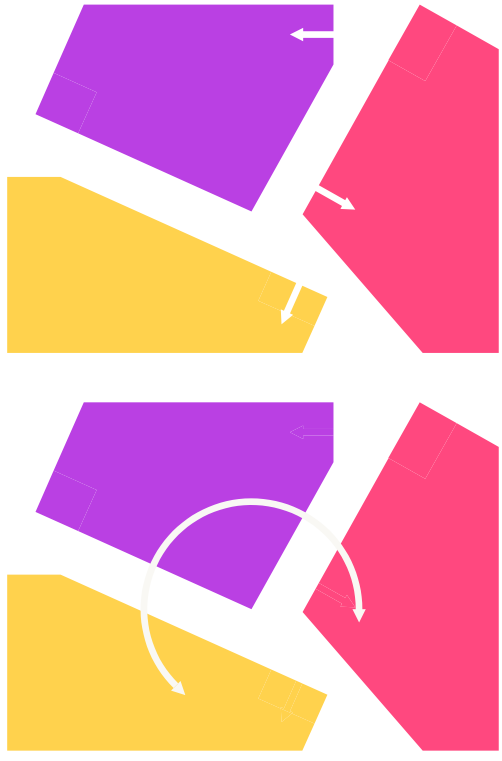


Figure 2.2
Final footprint and routing

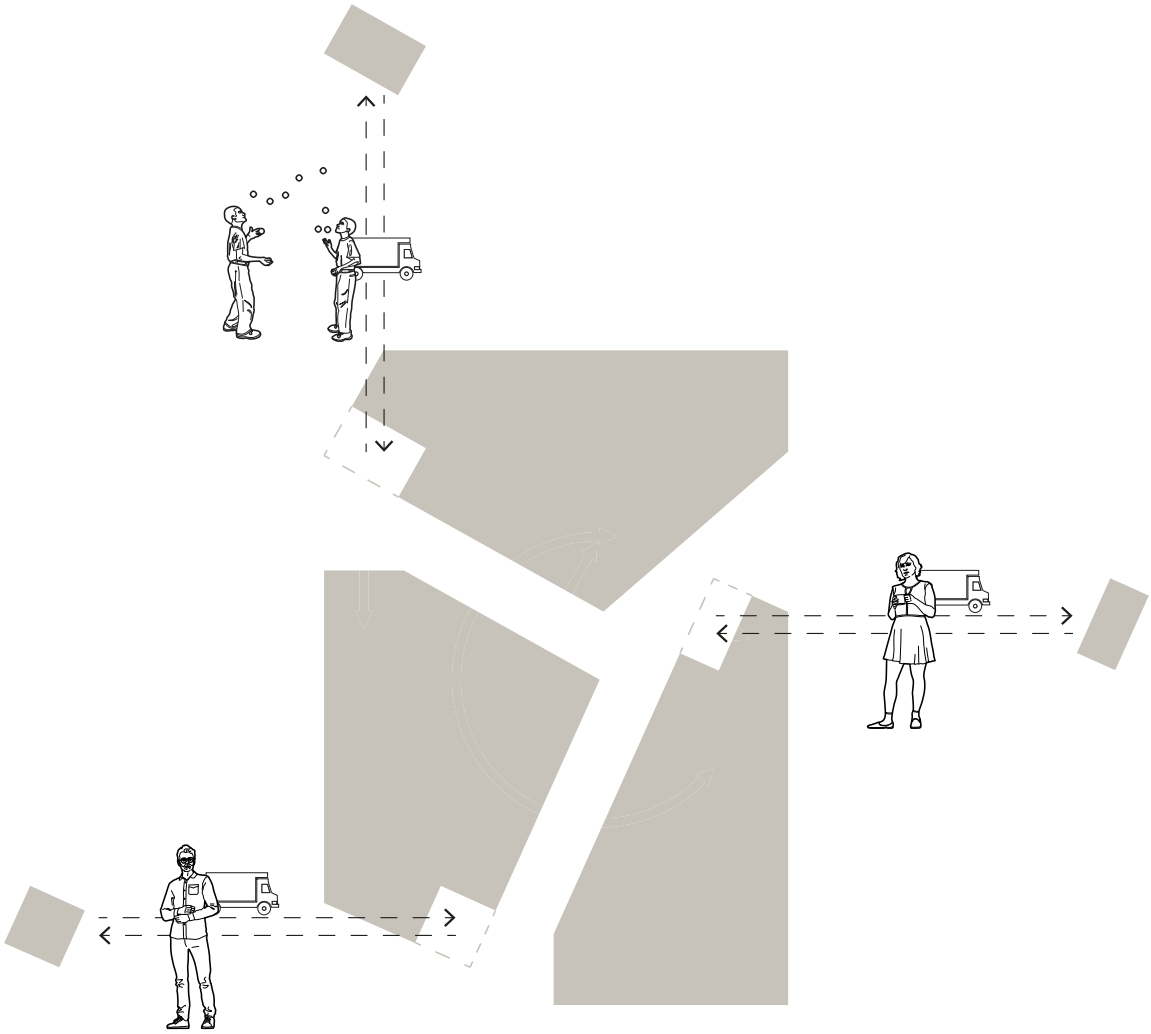


Figure 2.3
Diagram demountable pavilions

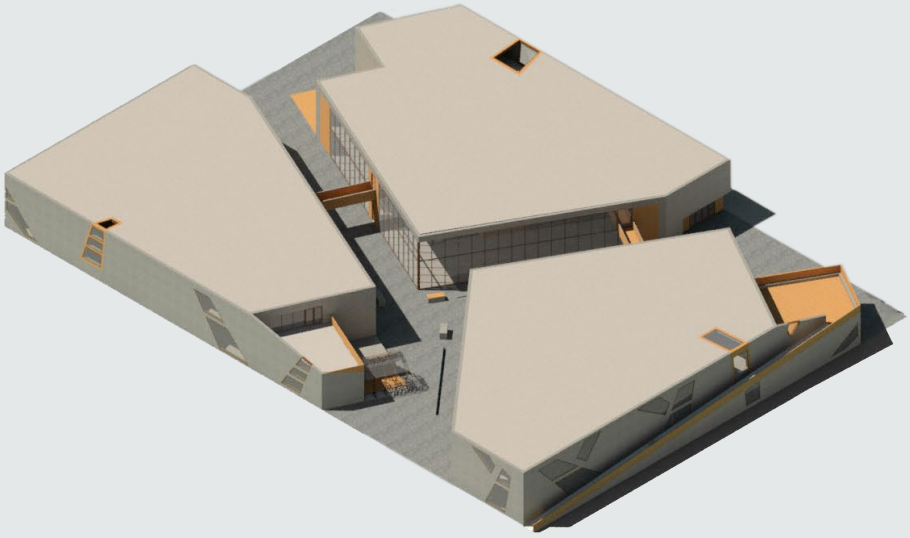


Figure 3.0

3d-View Creative hub: main building with one pavilion present, on building plot

Design

Translating the concepts into a design, led to the 'Makers' hub Almere Flevoland' (MAF), a place for creative leisure, that brings together amateurs and professionals, and connects public with artists and creative people.

The creative hub consists of a fixed main building and movable pavilions. The main building is composed out of three volumes, corresponding to the programmatic concept in which there are three different zones. These are the Gastronomy-, Crafting- and Exhibition-zone. Thus, a zone designed for gourmet cooking and eating, another zone for making arts and crafts, and a zone for exhibiting. The zones are connected by a pedestrian bridge that is accessible from the outside. It enables people passing by to go through the building without having to interfere or join the activities that are going on inside. This route, leads through each zone and lets visitors experience the making aspect as well as the results being exhibited. The pedestrian bridge is clad with beach wood panels that match the material used for the structure of the pavilions. The same beach wood is used for the interior balustrades and on the vertical transportations to indicate an on-going route.

Each zone has a pavilion associated that is demountable. The pavilions extend part of the main building's

Figure 3.1

Visualisation 1, view towards the entrance of the Crafting zone, from the street

activity outwards. This way they evoke interest of people passing by, as the existing bike and pedestrian paths are integrated in the layout. Moreover, the pavilions allow for spontaneous activity to happen, because they can be demounted and mounted again somewhere else in the city. This way the public gets in touch with the programmatic elements of the hub.

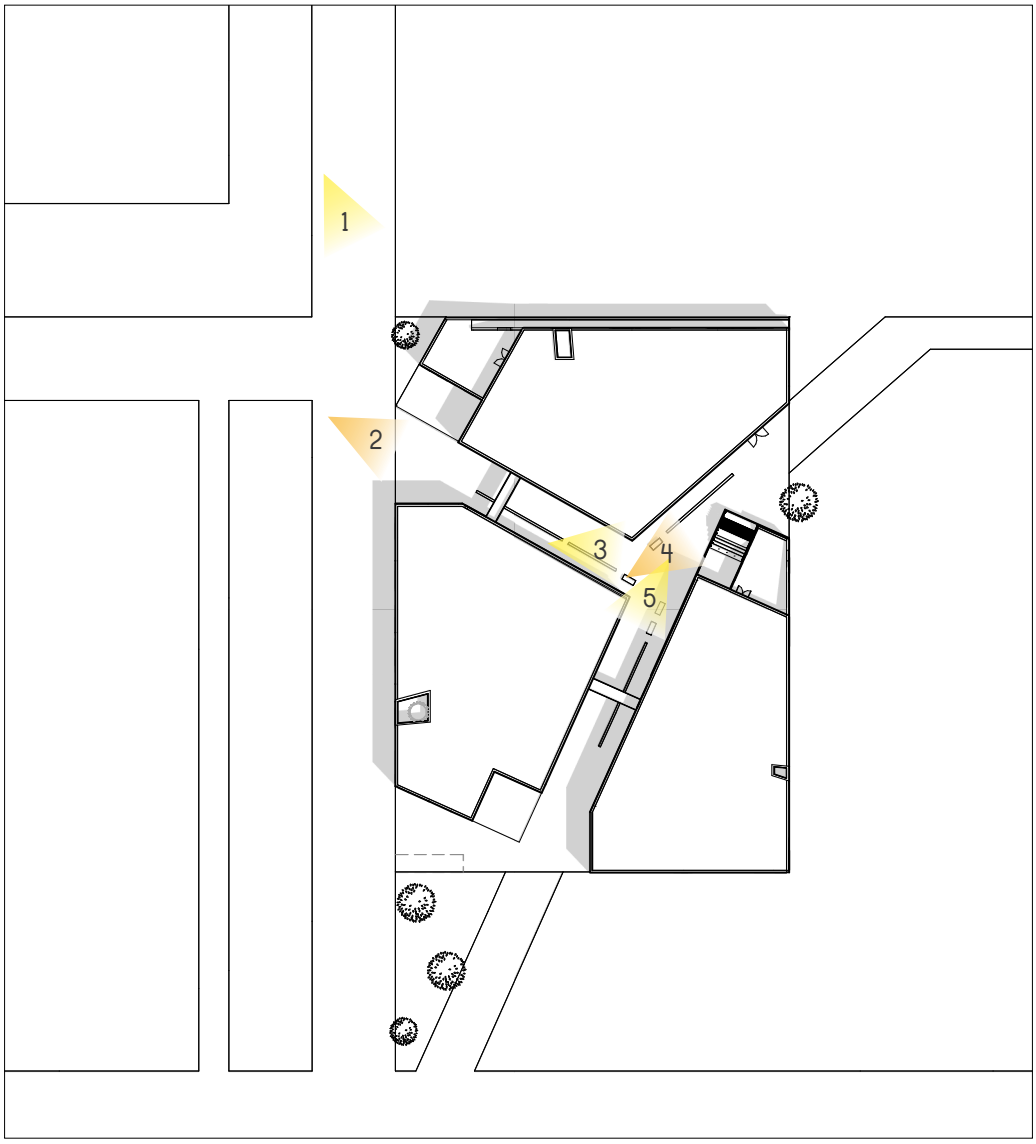


Figure 3.2
Topview with camera positions of visualisations

The inner street:

The areas for the pavilions are clad with the same material used for the floors inside, so that it is visible that a part of the hub is missing. The street is clad with one kind of stone, in order to create a shared space for pedestrians and cyclists. This is beneficial as cyclists are forced to slow down, which besides enhances their interaction with the main building.

There is only an unwritten division of the street caused by a rill in the pavement. This marks the continuation of the Weerwater route, that is otherwise along the waterside. The other strips area planted with hedges. In the middle, where the strips end, bigger elements area placed. Two water elements such as the one displayed in figure 3.3 and two benches. These street-furniture makes the area around the two main entrances a more interesting place, which is visualised in figure 3.8.

Figure 3.3
The Rill in London.

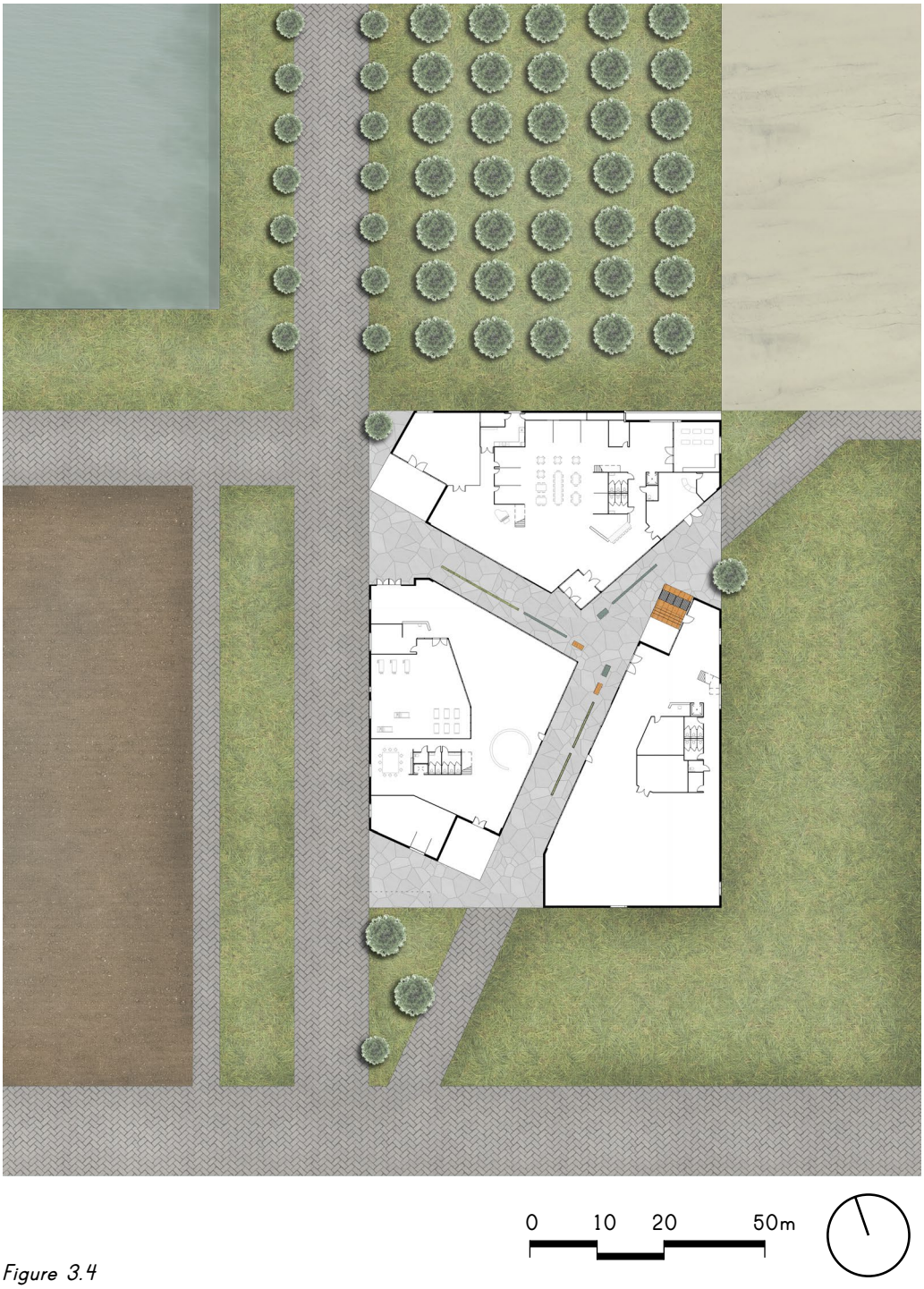


Figure 3.4
Masterplan (Main building + one pavilion)
Scale 1:1000

Main building

The three volumes that the main building is composed from are accessible from the inner streets. The width here is kept seven meters in order for the volumes not to feel disconnected. In contrast to the heavy appearance of the outer facades from board formed concrete, the inner facades are clad with transparent and warm materials. This change conveys the conceptual idea of a heavy block that is cut through. Moreover the wide sightlines allow for a greater connection with the street and between the volumes.

The windows in the concrete facades are put back from the face of the facade, in order to not break the heavy appearance of the concrete. The window pattern changes in each volume as the required light and views are different for each of the programmatically different zone.

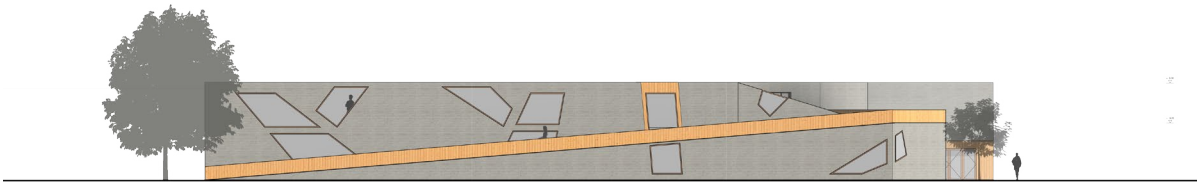
Using concrete was important to conform to the architectural concept. The environmental implications on the use of classic concrete material, is being reduced by on-going innovations. By substituting aggregates with recycled material, more ecological alternatives are being created. Another aspect that has to be taken into account is the opportunity to make use of thermal mass for heating and cooling.

The (structural) mullions of the curtain walls are made from the same material used for the pavilions. Namely 'Lignostone', which consist of stacked beech veneer layers that are compressed under high pressure to obtain steely mechanical properties while maintaining a wood-like appearance. The boards that break the transparency of the facade are clad with vertical larch panels of lighter color. This same material is used for cladding the interior walls.

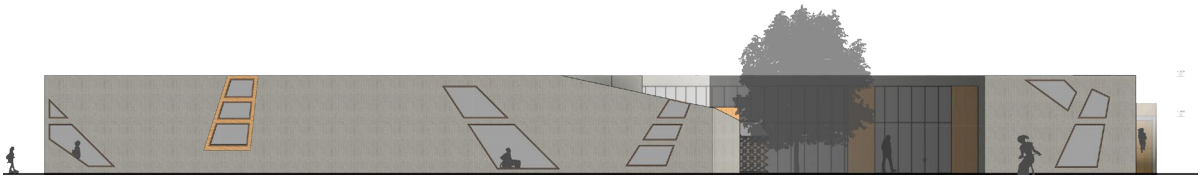
In areas where the walls are not sufficient to carry the load of the building, round concrete columns will be placed in consultation with the structural engineer. The natural material combined with the engineered concrete complement each other as the textured surfaces both highlight the process of their making. The board formed facade accentuates its concretes plasticity, formed by being poured in a mould made with the same size of boards used for the larch facade panels.

Figures

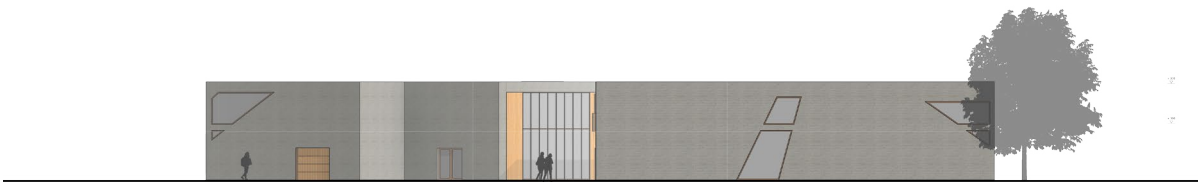
Right page, top 3.5: Elevations, scale 1:500
Right page, bottom 3.6: 3d-view main building



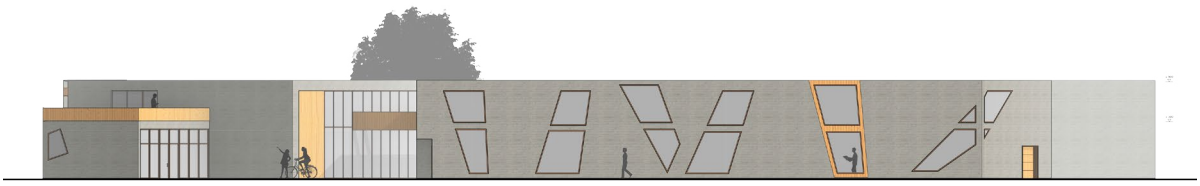
north elevation 1:200



east elevation 1:200



south elevation 1:200



west elevation 1:200

Figure 3.7
Visualisation 2

Figure 3.8
Visualisation 3

Figure 3.9
Visualisation 4

Figure 4.0
Visualisation 5

Figure 4.1
Ground Floor, scale 1:500

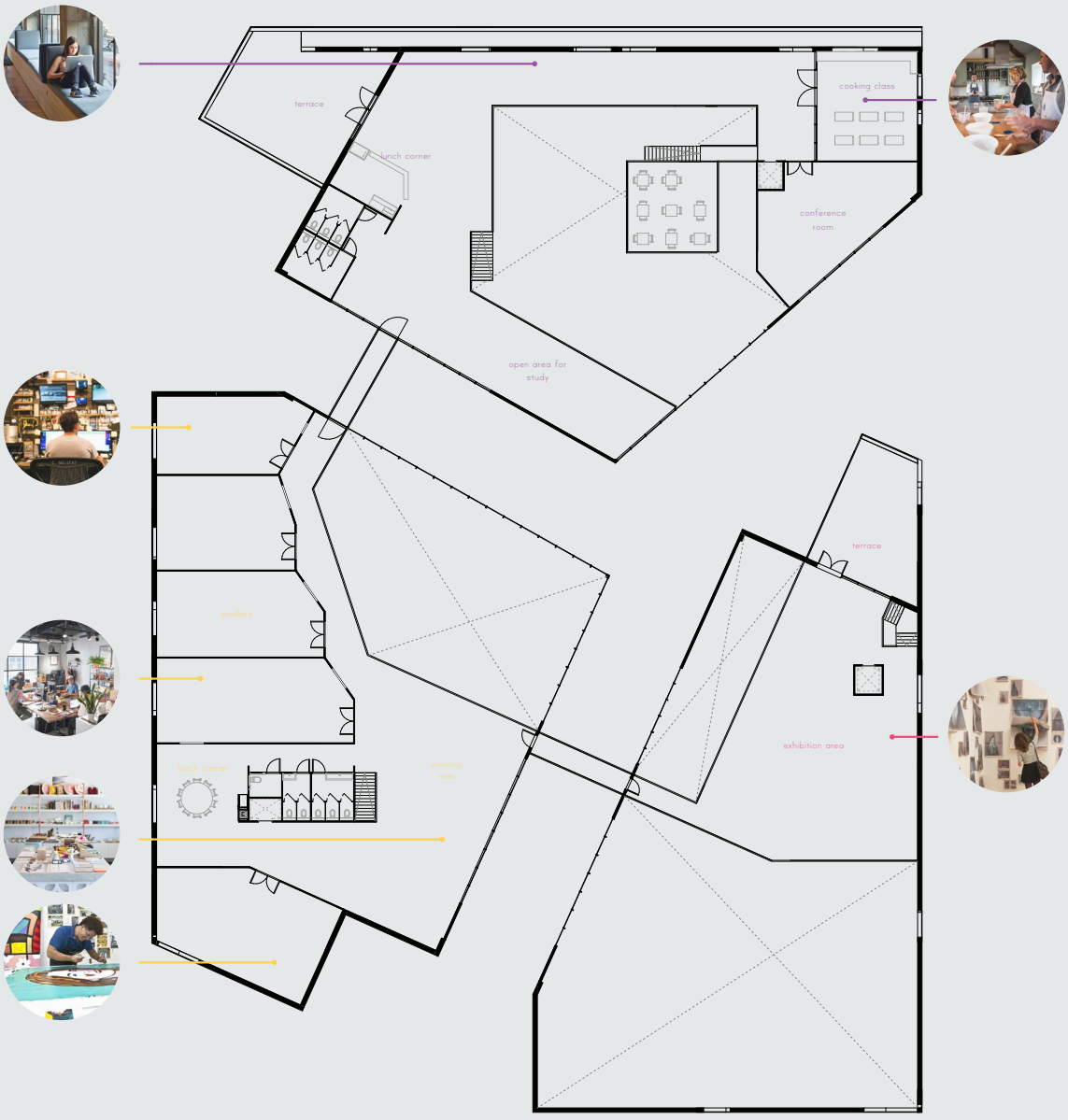


Figure 4.2
Floor 1, scale 1:500

Gastronomy zone:

Centrally located in the Gastronomy zone, are eight outlets where different (specialist) food products are sold in. This food court suits this zone that also wants to function as a third place. There is an informal and vivid environment caused by the shared place to eat and drink, and by customers being able to take the food away. For this place not to become dull, there is no uniform lay-out drawn beforehand. The different enterprises have the opportunity to use their own counter design, within the borders of the assigned area that encapsulated the area under the ceiling caused by the upper floor.

There are four kitchens for providing workshops related to food. One of which is stacked with equipment for experimental cooking, like molecular gastronomy. Two of the workshop rooms have a set up where each participant works on another kitchen block. This gives them the opportunity to work in a professional setting. Moreover two informally set-up workshop rooms, where participants share kitchen appliances, are also available. Here, a chef oversees everything because they work around one large worktable. Participants can talk with each other, which makes this setting suited for groups of friends or colleagues. Their creations can be presented for tasting in a special outlet, to friends and other visitors of the food court.

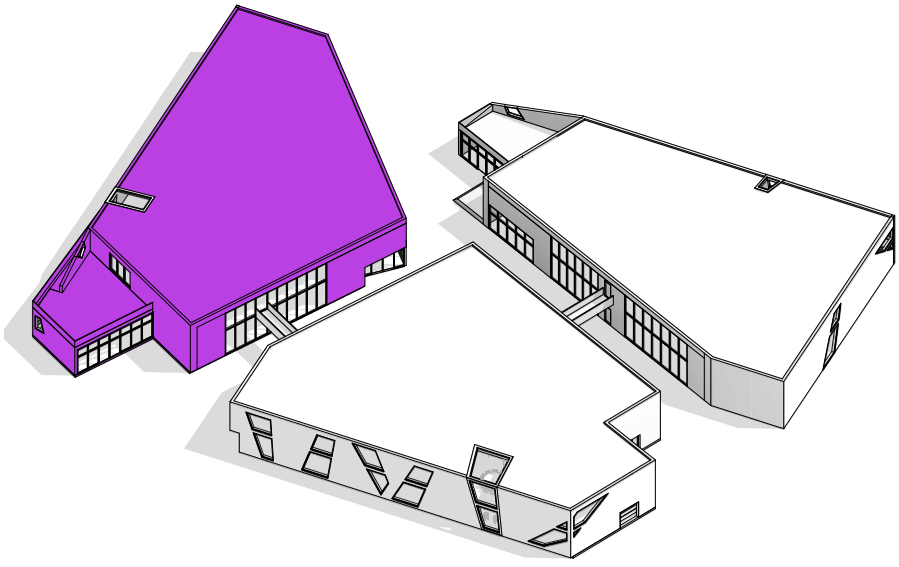


Figure 4.3
Gastronomy zone highlighted

Figure 4.4

'De kookfabriek' a place that offers culinary activity for groups

Figure 4.5

Molecular Gastronomy appliances.

The space required for people to eat comfortably is met by arranging the tables in such a way that spaces for thoroughfares are kept above the minimum. There is chosen for long rectangular tables instead of only round, so that people not only sit in groups with their friends but are invited to share a long table with other people. As an additional result they require less floor area.

In contrast, the seats and tables in the non-food areas are placed so that people can concentrate on themselves. This is done without shutting them off from the rest of the activities going on. So, a place is created for people that want to work by themselves, but where there is spontaneous social interaction possible. Thus, social encounters and therefore possible collaborations increase. In the morning hours there will also be something going on and there is a coffee-corner.

On the exterior of the north facade there is a sloped (1:12) access to the terrace on the first floor. There is a lunch corner adjacent to this terrace, which is not only for guest but also serves as a place for the creative entrepreneurs of the hub, to go to in their lunch break, when the food court is not opened yet.

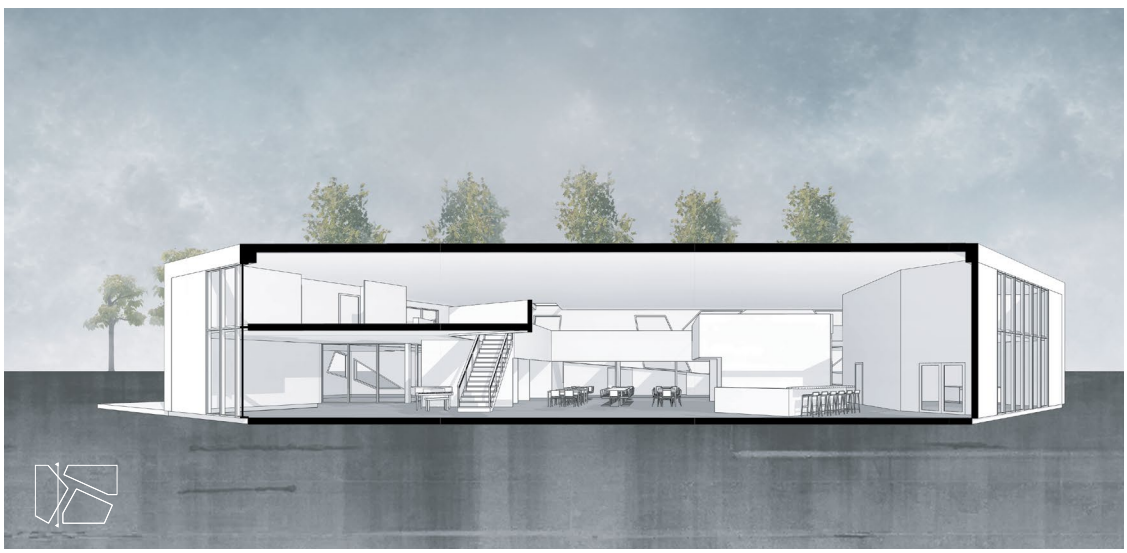
Figures

Right page, top 4.7: 3D-view towards Gastronomy zone

Right page, bottom 4.8: Sectional perspective Gastronomy zone

Figure 4.6

Impression interior, food court on the left and pavilion seen through the large opening.



The Crafting zone:

The Crafting zone arranges around a workshop that houses machines needed for different kinds of crafts. This workshop is open for everyone after becoming a member and taking part of the provided instruction class. The workshop is connected to an open area with sightlines towards the inner street, where different furniture is grouped to use for numerous arts& crafts classes. This way, non-enclosed spaces are created that have borders, in the form of half-height walls or increased podia, but still allow views to other activities going on (in parallel) throughout the area. As there probably will not be a constant influx of visitors, in contrast to the gastronomy zone, a direct main entrance is enough.

This zone is also interesting for professional artists. Having a studio here means a lively work environment, leading in more publicity and public. It also means being part of a community, not only because of shared facilities, such as the workshop area, but also because the interactions that happen in a public building. On the second floor there are studios for visual artist. They share a small kitchenette in a lunch corner located against the west facade.

The volume is cut before the crossing pathway, which creates space for a waste-bin area. The storage room is also located against this facade, so that the supply of materials can easily take place, because there is enough

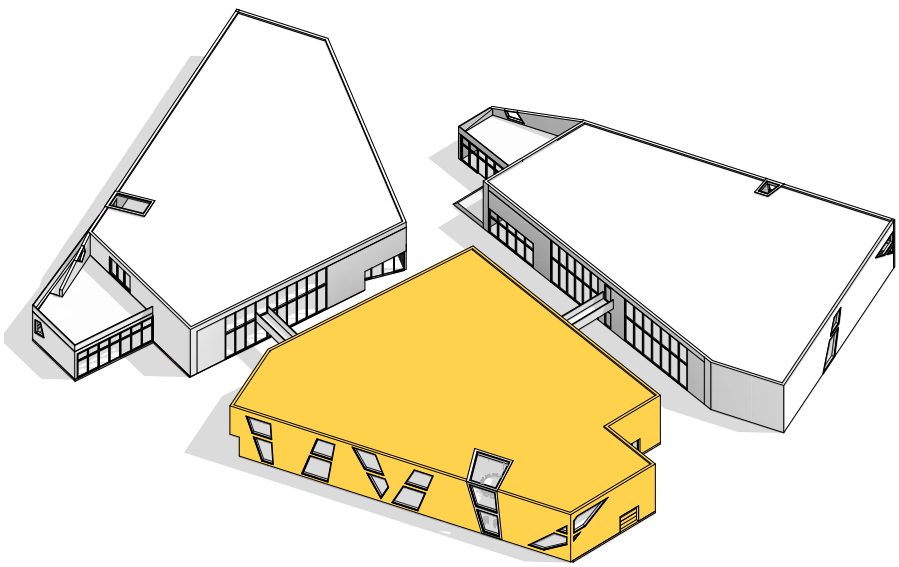


Figure 4.9
Crafting zone highlighted

area outside for a truck parking lot. This layout brings along that people can have a peek at the material supply which possibly can create curiosity.

Figure 5.0
Ceramics workshop area enclosed with half height walls - Sesc Pompeai, redeveloped by Lina Bo Bardi

Figure 5.1
Interior view ground floor open area

Exhibition zone:

The Exhibition zone is established, mainly to support the crafting zone. Everything that is made there can be exhibited within the hub. Professionals have the opportunity to expose their work to the public in an exhibition space and being at close distance in order to speak to visitors. The results of the workshops can also be showcased in a temporary exhibition. This will encourage other people to express their creativity whether or not they are participating in a workshop. By exhibitions being free of charge, it will be more likely for people to drop by and get in touch with art. Financially interesting for professionals is that they get more publicity to sell their art.

To organise these and other external exhibitions, this zone houses an office. This organisation is also responsible for all the organised activities of the hub. In the municipality's session with creative entrepreneurs was pointed out that a museum for 'outsider art' was missing, taking this job suits the identity of the hub and distinguishes itself among cultural avenues. The existence of the exhibition zone enhances the hub all together moreover by events where artistic visions can be shared and networks broadened. An example of such event is 'Bring your own beamer' which started as a yearly happening in Amsterdam to develop an innovate view on audio-visual art, together with the visitors.

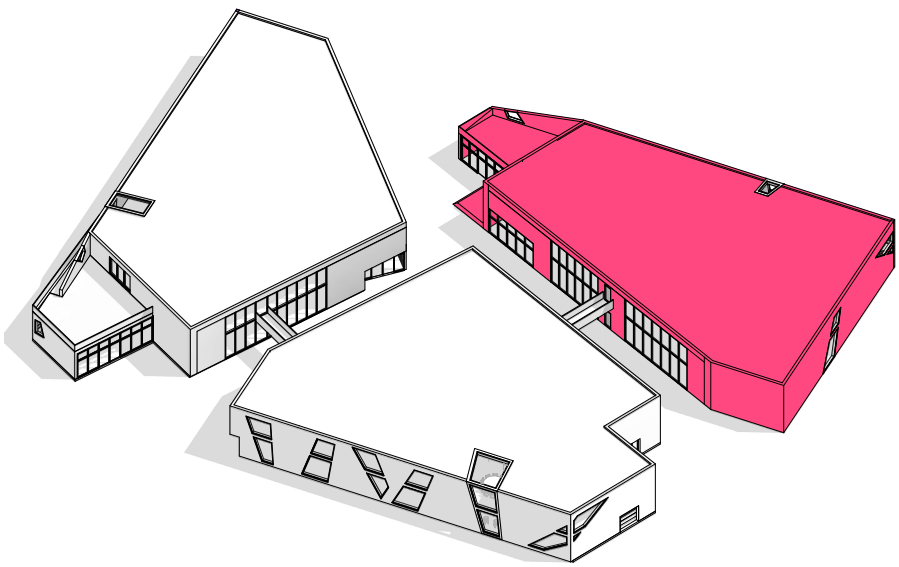


Figure 5.2
Exhibition zone highlighted

Figure 5.3
Photograph from the event 'Bring your own beamer'

Pavilions

The pavilions carry programmatic elements towards the public space and therefore stimulate interaction and evoke interest.

On the visualisations shown earlier (figure 3.9) , the smallest pavilion of the Exhibition zone can be seen. This pavilion has not very large dimensions and therefore is very suitable for rent, therefore it is elaborated further on. It can be used as a covered space on festivals. In the figure below, it is being used for a clay workshop.

At home, the pavilion turns into a tribune to view videos projected on the facade of the main building. It is therefore deployed in a different way and stabilised by fixing it to the raised podium on the site.

In order to be able to optimize transport and construction, different aspects are taken into account. Small enough dimensions are important for the pavilion to be workable and fit into a rentable car. This way, transportation can be done by the renters of the pavilion themselves. Moreover, the structure is divided conveniently in portable parts, in order for to be carried by a few people. There should be no expertise required for the assembly of the pavilion. Connections have to be the same and occur in

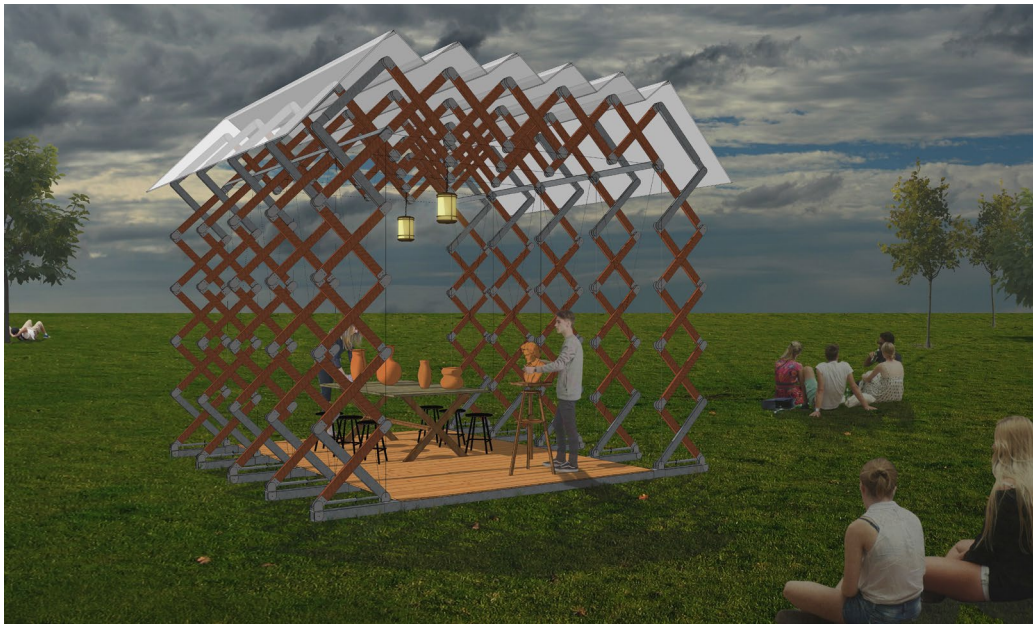


Figure 6.0
Evening visualisation pavilion on travel

logical order, to make it quickly and easily assembled and disassembled, using only a provided assembly manual and simple tools.

The structure is developed within Rhinoceros, using the Grashopper visual programming tool. A portal frame structure is developed as a linkage bars system, a scissor mechanism to be exact. The deployment happens by mechanical pressure, using a jack between the lowest supports. On the following figures, the folding of one frame in Rhino is seen.

However, this is not the end result. As the structure is not manageable for assembly. It also has to be stabilised and this is a lot easier to do by building it up in parts. Moreover, splitting the frame in tree parts makes it more lighter for transport and assembly.

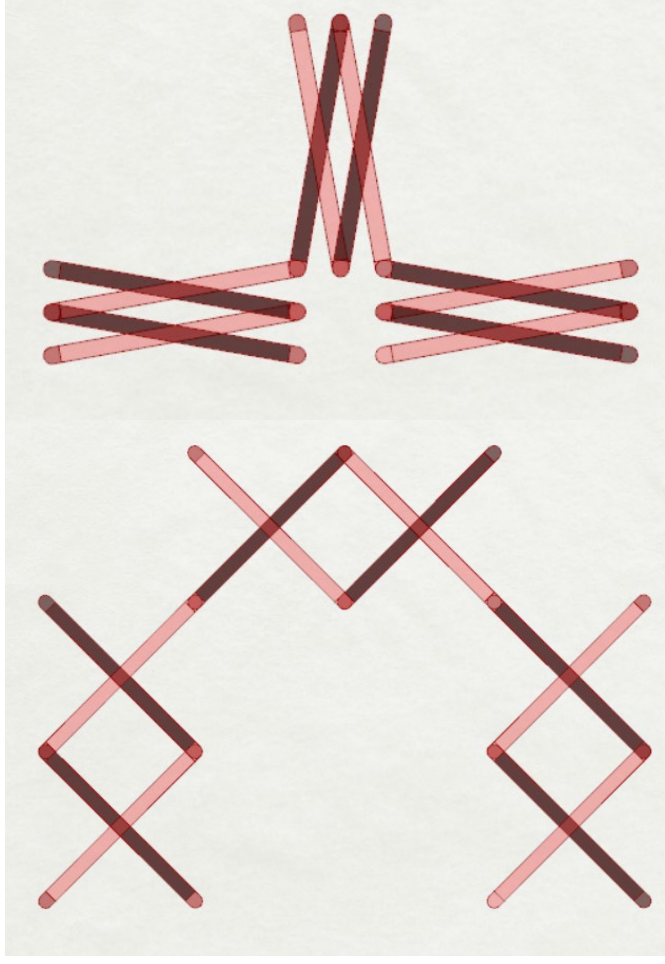
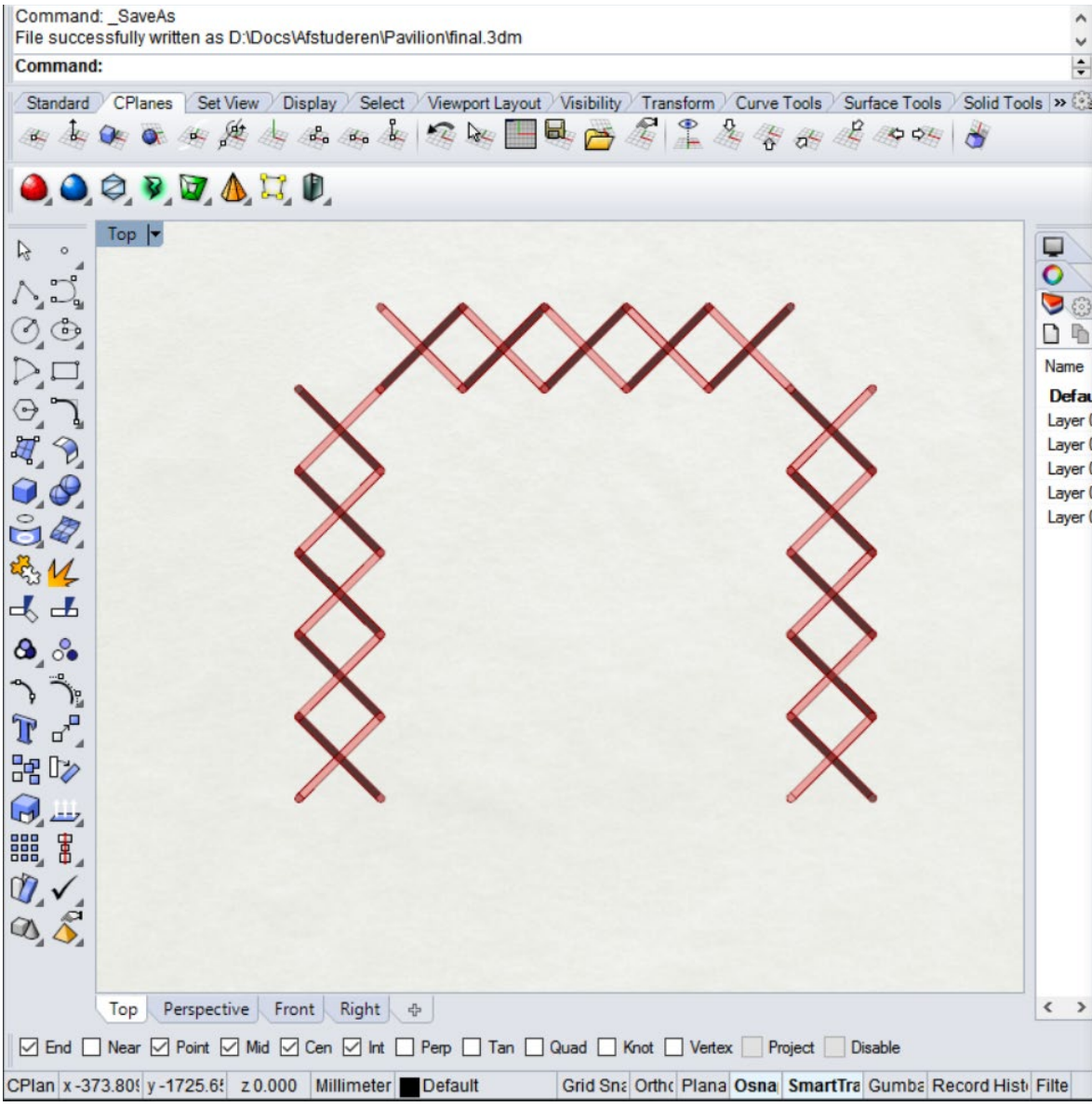


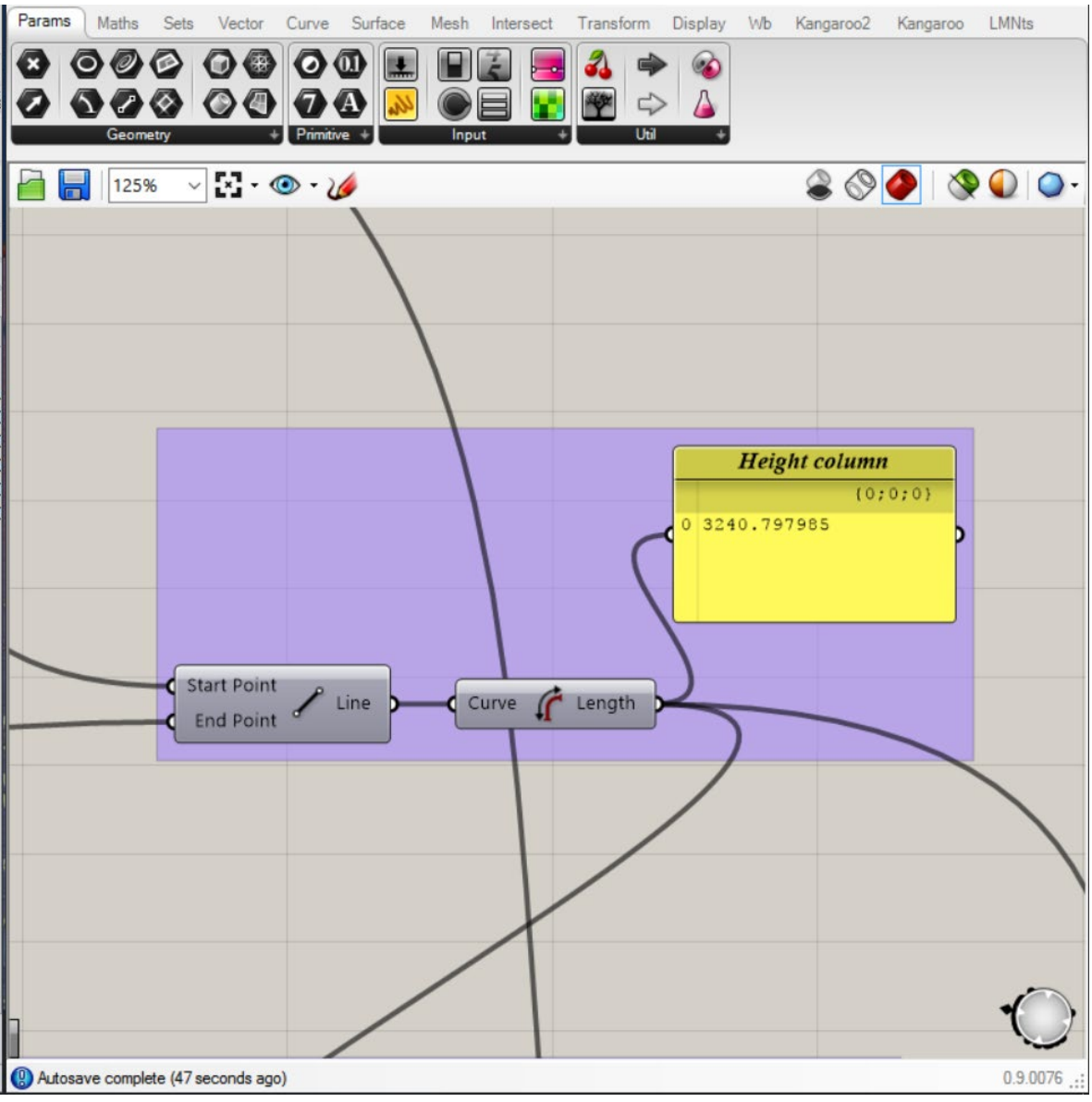
Figure 6.1
Folding of scissor construction in Rhinoceros



Using Grasshopper also enables to make certain measurements. On the figure above is shown that the height of a column can be find out. This can be used to quickly see what the effect of an X extra is, as this is also adjustable. Figure 6.3 shows an overview of the grasshopper code, the red colour shows the input parameters.

Figures

Top 6.2: Screenshot from Rhino and Grasshopper
Right page, bottom 6.4: Grasshopper code


Params
Maths
Sets
Vector
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Surface
Mesh
Intersect
Transform
Display
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Geometry
Primitive
Input
Util
125%
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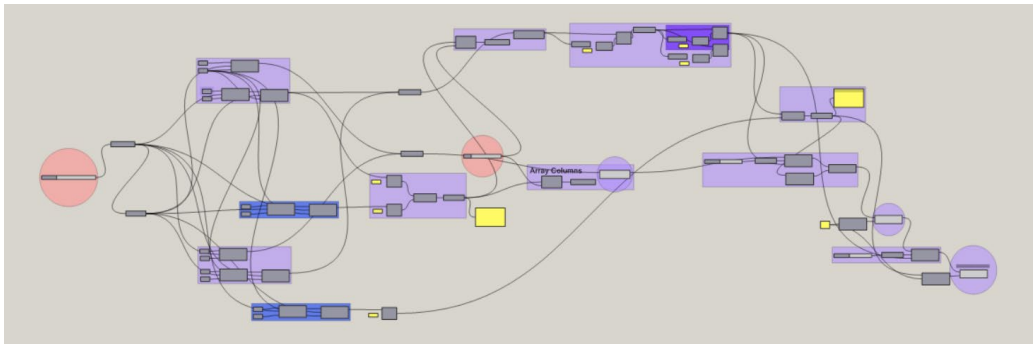
End Point
Line
Curve
Length
Autosave complete (47 seconds ago)
0.9.0076



Hereafter a physical model is made to test the stability of the structure and get an understanding for the appropriate assembly. Stability elements were needed between the folding supports, except at the lowest X's.

Figure 6.4
A column part

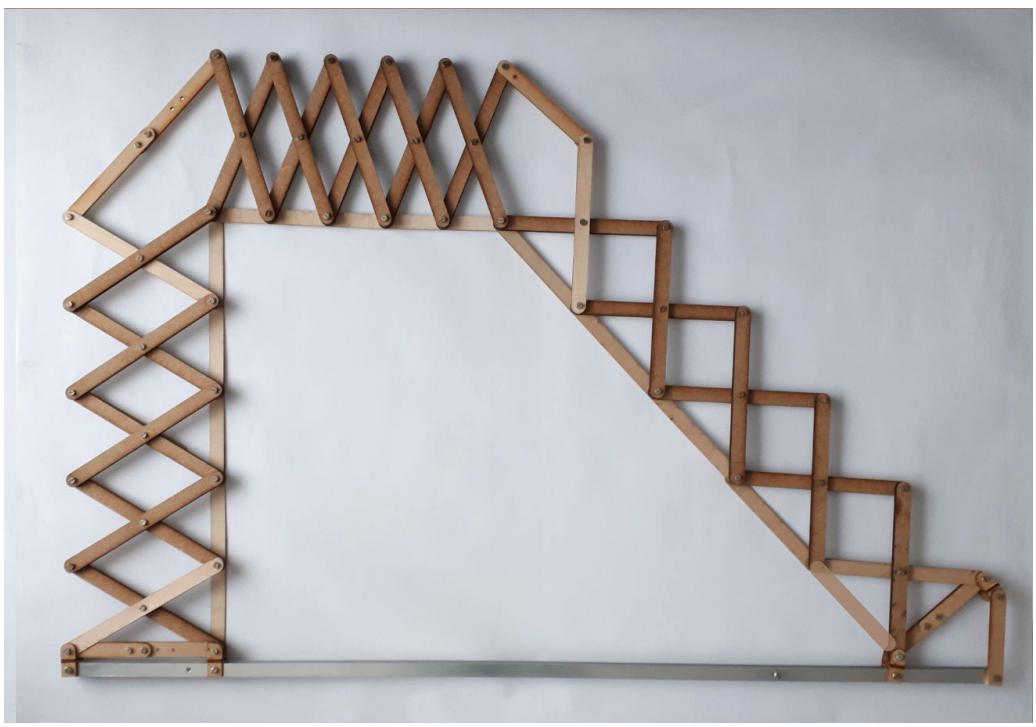


Figure 6.5
Final result 'Pavilion as tribune'

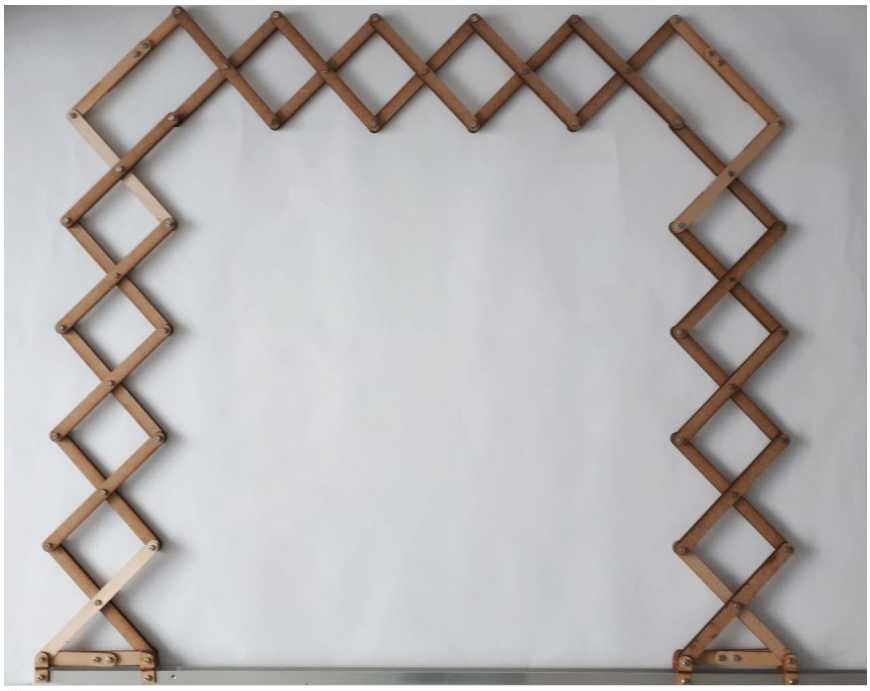


Figure 6.6

Construction Pavilion on travel, without stability elements.

Figure 6.7

Final result 'Pavilion on travel'

The parts that form the X's are made from Lignostone with aluminium connectors. Lignostone is laminated densified wood that consist of beech veneers joined together with a synthetic resin under pressure and heat and therefore has low specific weight. It is not only appropriate for its mechanical properties and its appearance, also because of its creation process using moulds to be pressed into shaped parts. This material is also resistance to wear and abrasion.

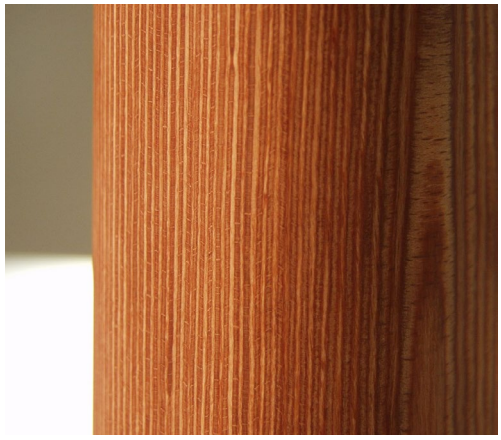


Figure 6.8

Lignostone, with a density up to 1,38 gr/cm3

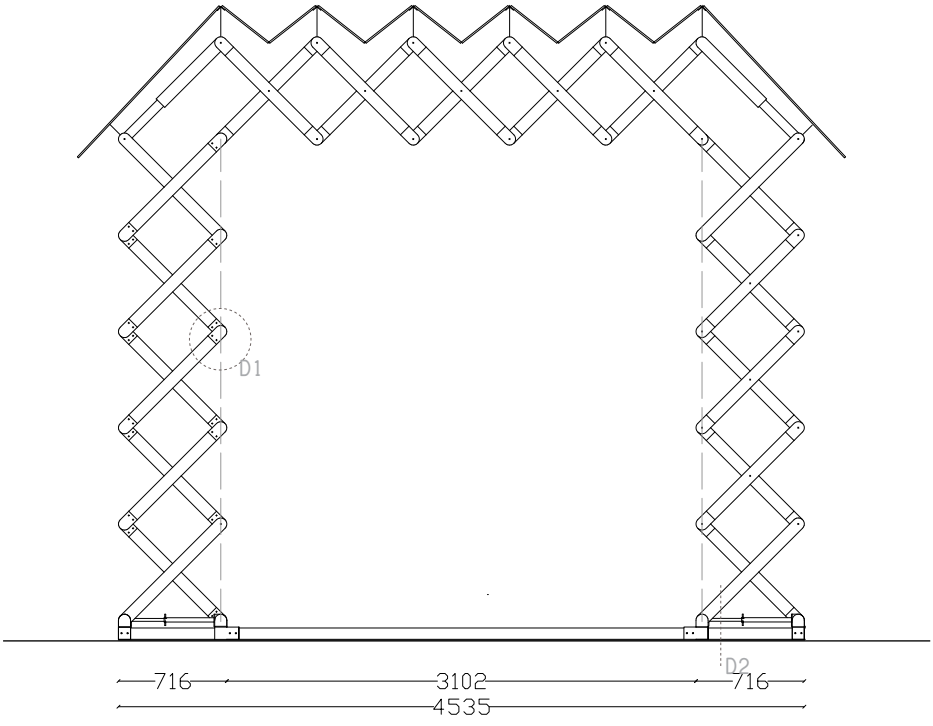


Figure 6.9

Final result 'Pavilion on travel', scale 1:50

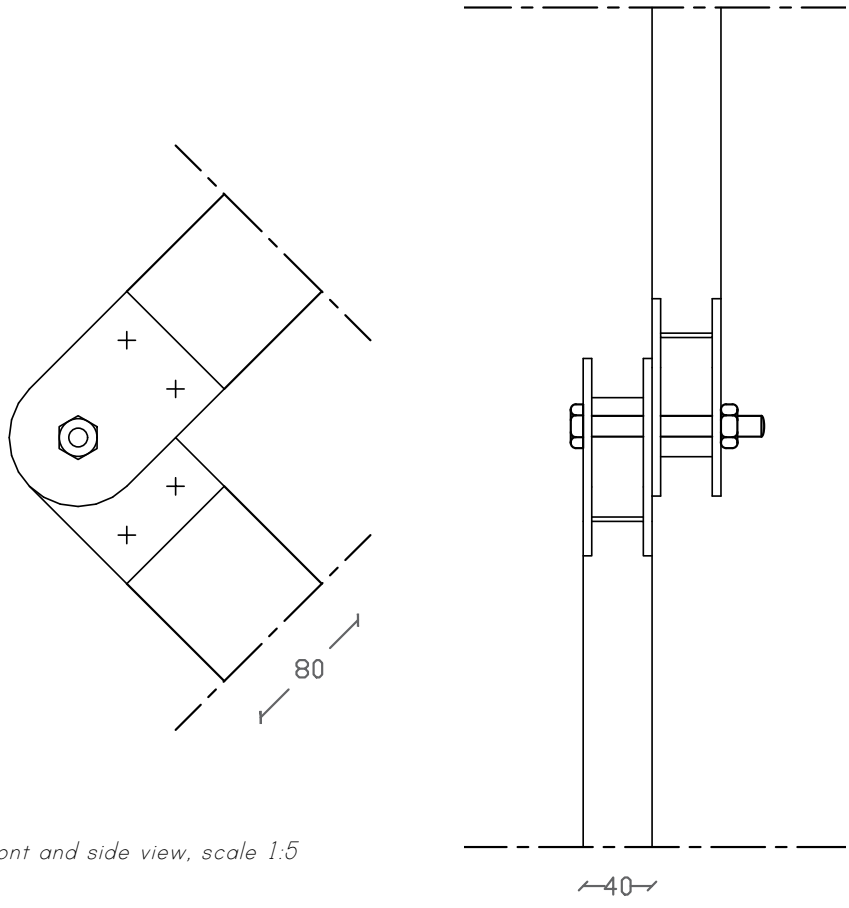


Figure 7.0
Detail 1, Front and side view, scale 1:5

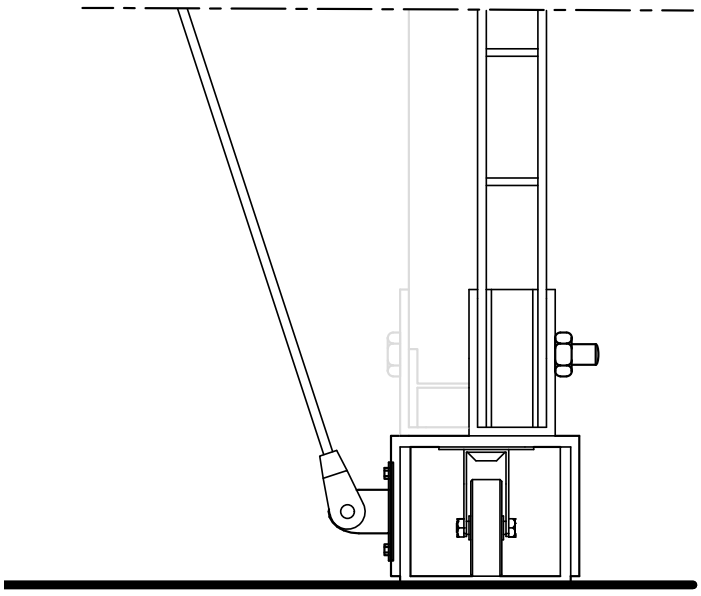


Figure 7.1
Detail 2, scale 1:5

On each side tension bars are placed after assembly, as seen on the figure below.

In detail 3 can be seen that there is a caster placed under the 'columns'. This creates a smoother folding process, as the moving parts of the lowest X's are supported by these wheels.

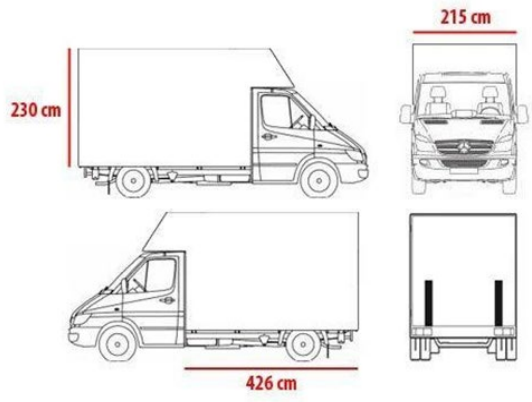


Figure 7.2
Transport car that is taken as reference for the elements

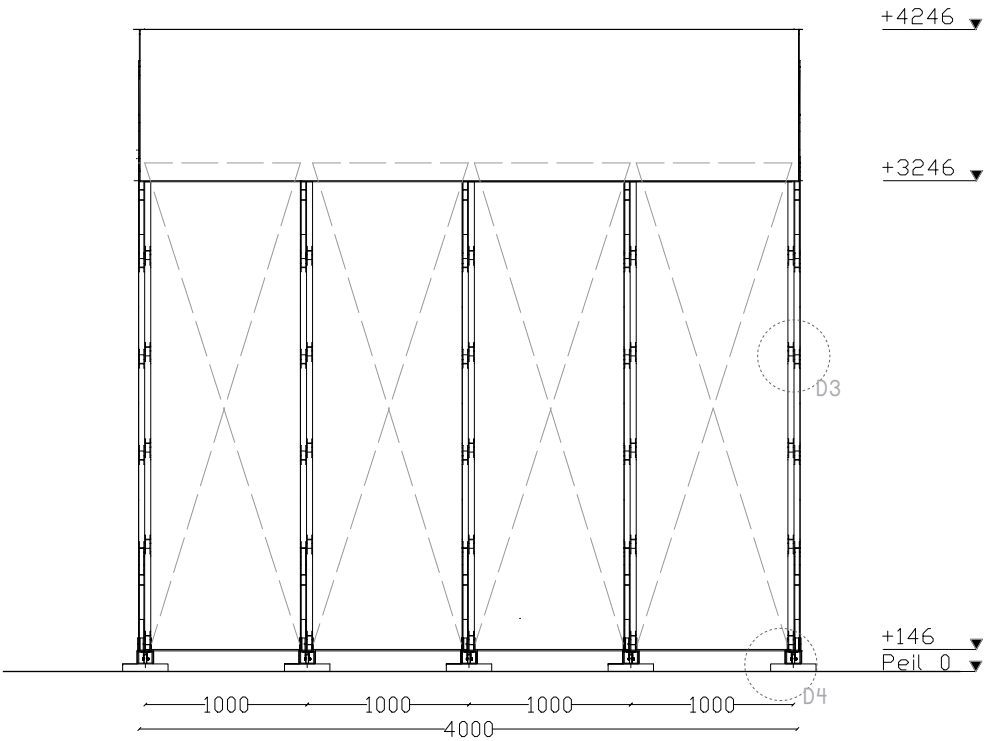


Figure 7.3
Final result 'Pavilion on travel', scale 1:50

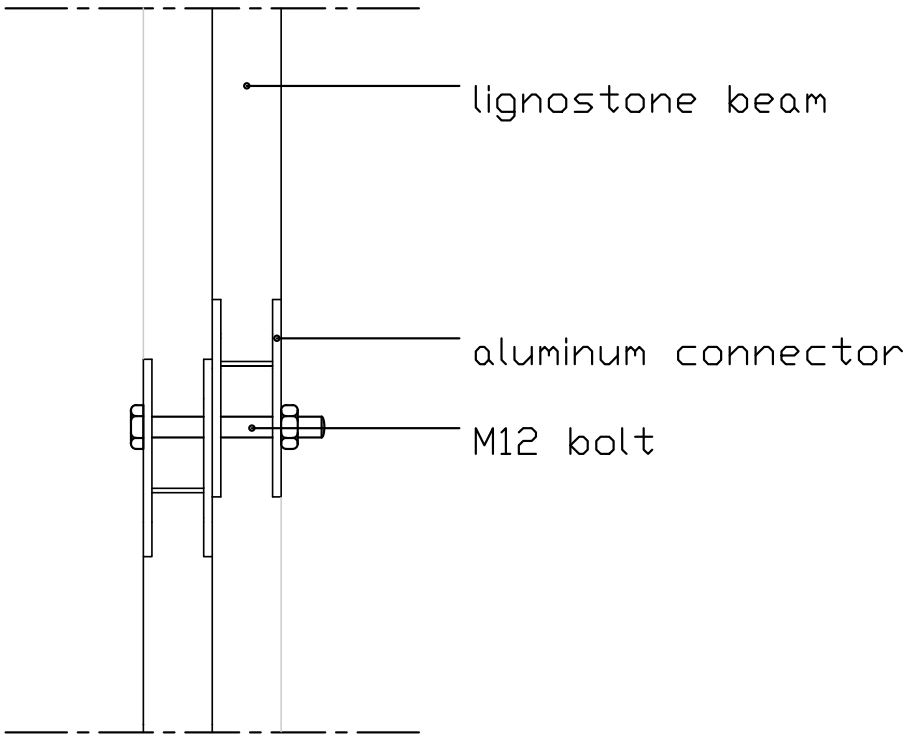


Figure 7.4
Detail 3, scale 1:5

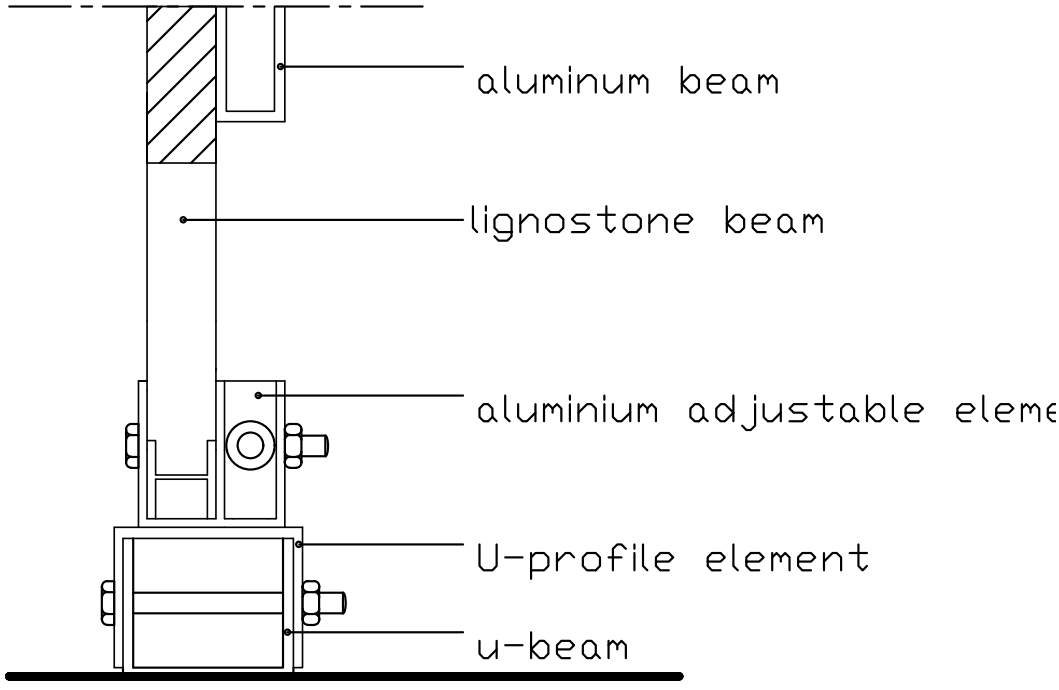
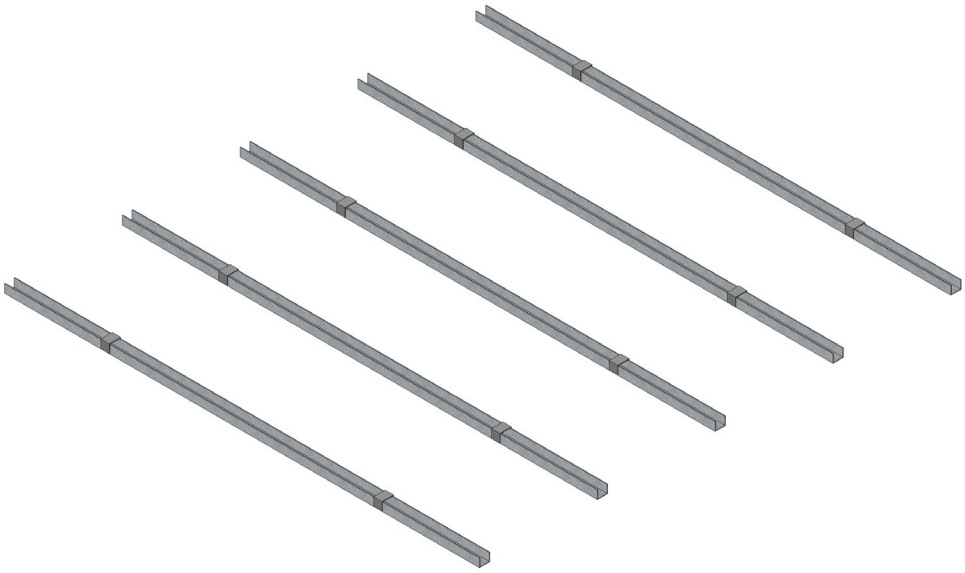


Figure 7.5
Detail 4, scale 1:5

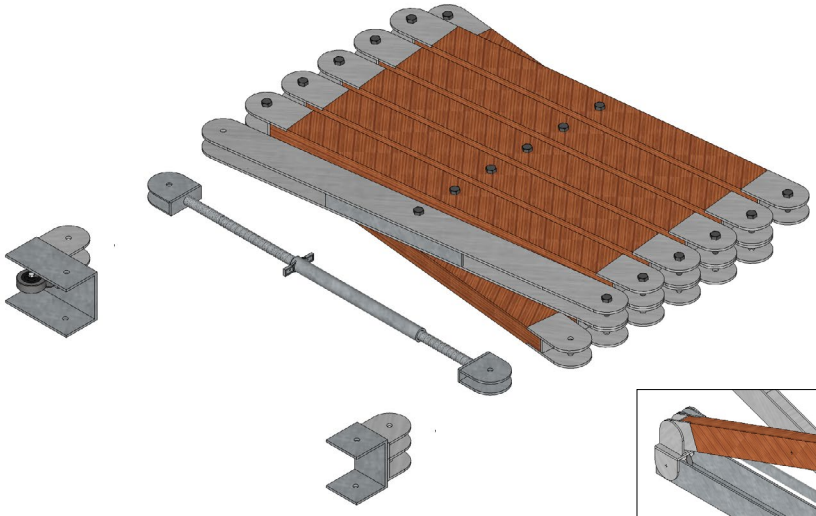
Assembly manual

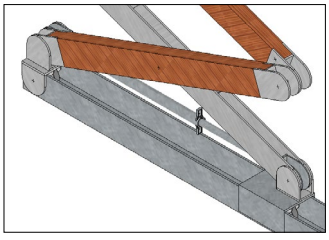
1.



Decide the placement of the pavilions and place the beams with a distance of 1.0m.

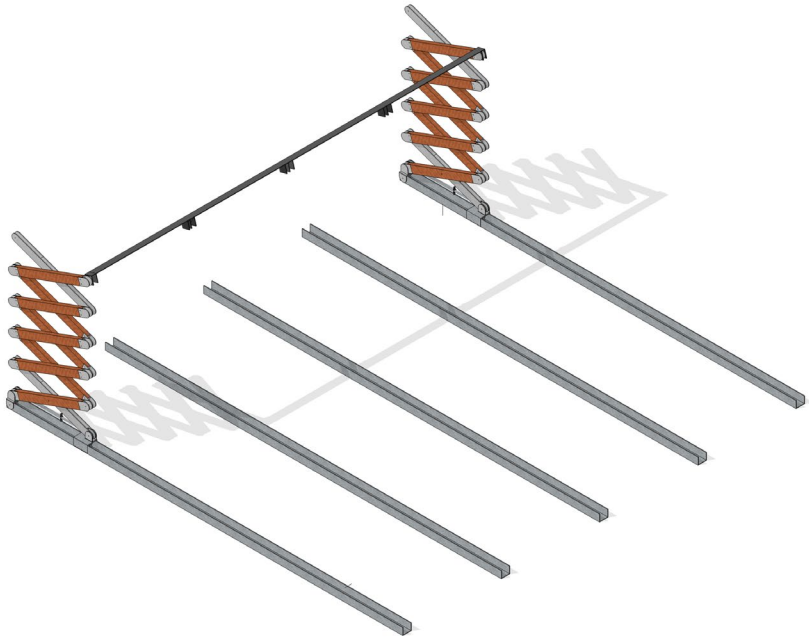
2.





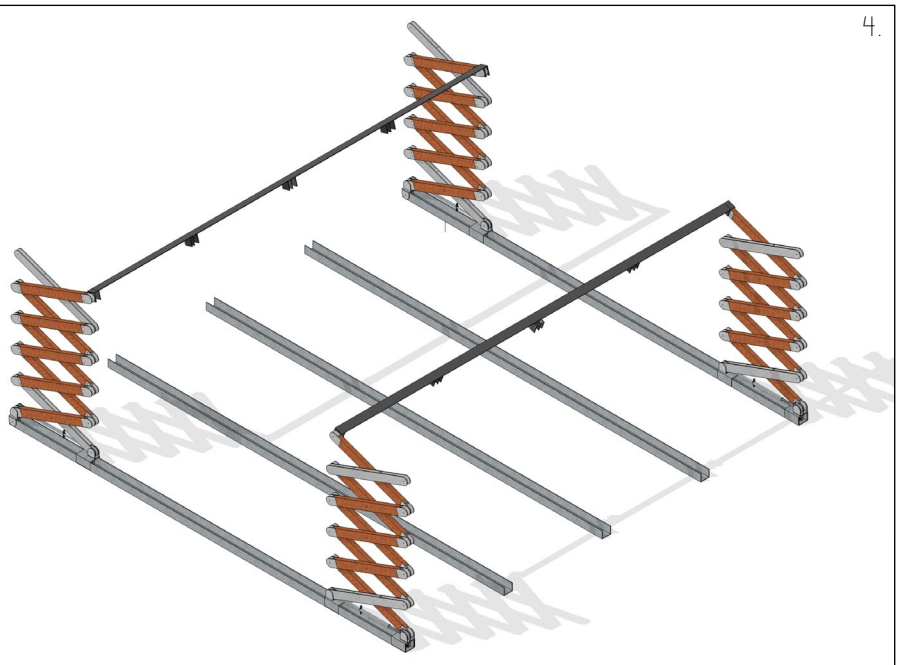
Put the columns together.

3.



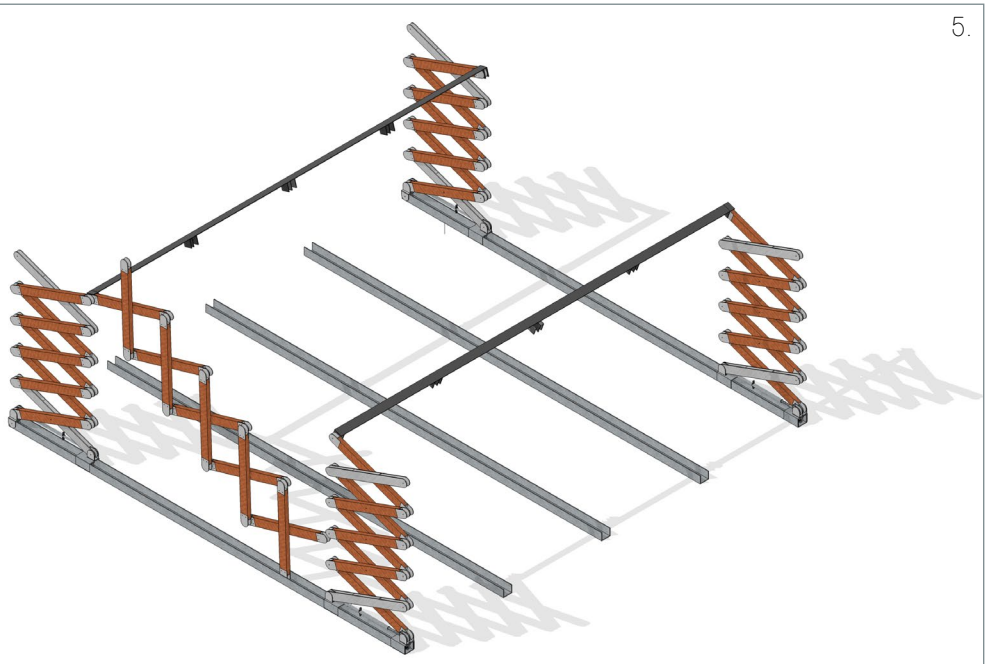
Placement of the first columns and then the connector beam for stability.

4.



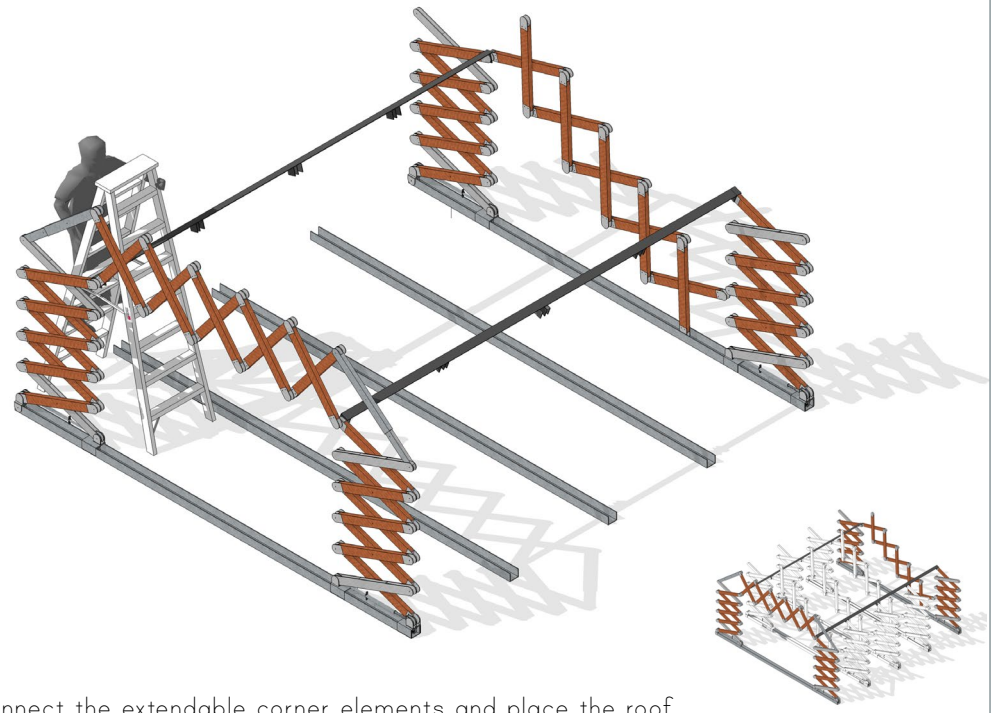
Place the second columns and beam, so that the inner beams can be placed easier.

5.



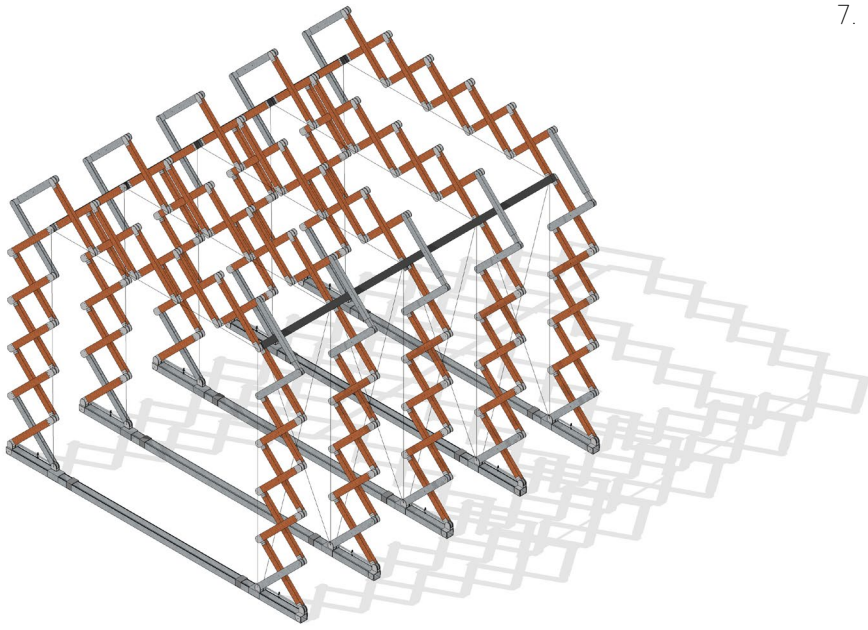
Place the roof beams, by first connecting one side to the first column.

6.



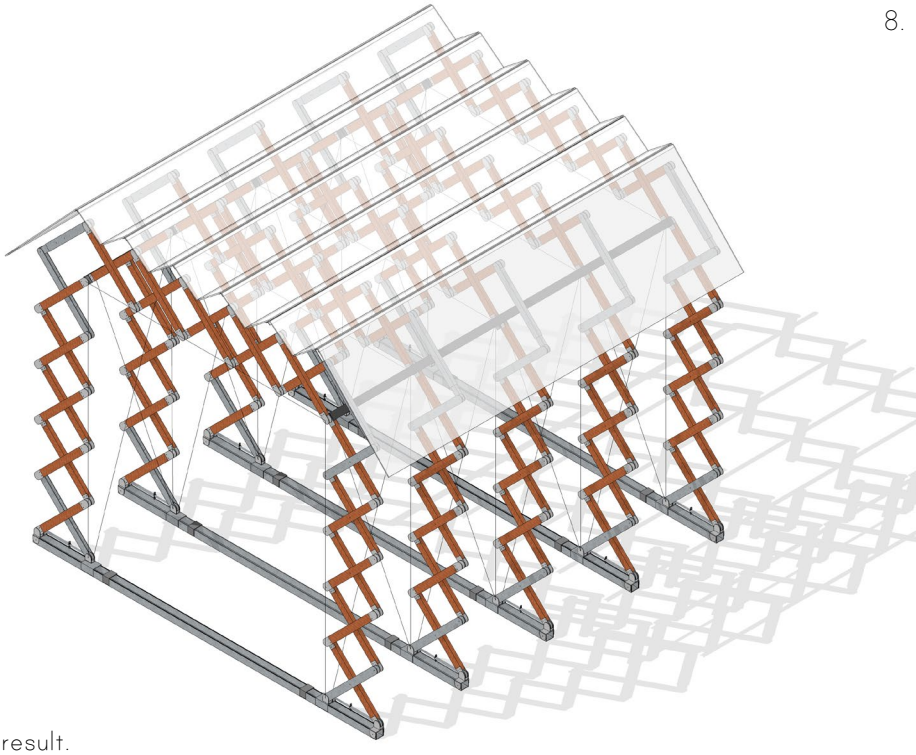
Connect the extendable corner elements and place the roof.

7.



Let the X's fold open by turning the handle of the jacks, so that the structure gets higher. And finally fix the stability elements and the tension bars.

8.



The final result.

Conclusion

Main question:

How can a creative hub be designed, that has an explicit public character and increases the involvement of the inhabitants of Almere?

Sub questions:

How can the hub engage more people in the creative scene?

How can pavilions be designed using computational techniques, which are demountable in order to evoke the interest of the city's inhabitants in becoming users of the hub?

The objective of both sub questions is to get more of Almere's citizens in contact with cultural activities. The involvement of a broader public has been taken into account from the start. Therefore, after doing research to the programmatic possibilities, a public workshop thus a maker space has been chosen to design. This is reasoned by the popularity of the DIY-culture, as well as it having the potential of becoming a gathering space. That is because different functions can be situated around it. With the placement of studios in the same zone, visitors share the workshop and get in touch with artists, this way. Everyone can actively take part in the creative scene and when people discover that they are talented, they already have access to a professional environment.

Likewise the comments of creative entrepreneurs to the municipality have been taken into account. Namely, the provided exhibition area decreases the lack of public mentioned. This will also increase the contact with the creative scene and evoke the interest op people, as they can drop in without a fee when they are walking by for example.

The inclusion of the gastronomy zone speaks to people interested in good cooking and eating and gets them interested in bringing their skills to an artistic level. This zone also adds to bringing more people in touch with the scene by acting as a third place. The seats and tables placed in this zone provide an accessible work-, study- and meeting place, in a lively environment as there is always something going on. The food court brings different users of the hub in touch with each other and with the different activities going on.

This programme is effectively supported on an architectural level. The division in

three zones make it possible to lead a path along the transparent facades of the hub and allowing people on the 'Weerwater' route to have a look at the different activities of the three zones. The findings from the theoretical context are expressed in the materials used. Accessibility is ensured by using board-formed concrete on the outer facades to create an unconstrained feel.

The final result of the research including using Grasshopper programming in Rhino is a pavilion structure that supports the objective to evoke interest. They meet the requirements needed for a structure to be demountable as well as suit their 'home'. Their design is appropriate to the main building. The open structures are placed in front of doors, therefore the activities going on can extend to these covered spaces adjacent to the path. Not only on location but also around the city the pavilions evoke the interest of the inhabitants. By making the pavilions available for rent people are stimulated to organise events by themselves. A recognisable series of events can occur, which will again promote the use of these pavilions as everyone can be part of it. This concept of renting out and setting up the pavilions back at home works because of their function of being an extension of the main building's programme.

While the programme of the hub is suited in the city of Almere, the concept is also suitable for other cities. In Almere the location of the creative hub is relevant because it is in the area that is currently being developed to a greatly accessible area with a new bus station, parking garage and direct motorway connection. Because of the city's proximity to the capital Amsterdam the scale of the hub is suited to boost Almere's distinguishing cultural identity among different cities. And therefore Almere also can have a role in the strategic vision of making the Randstad stronger. However this concept is of value in cities that wants to stimulate individuals to organise creative pop-up events. The recognisable architecture of the pavilions will bring familiarity to public cultural events and furthermore get the city's actives more known in other towns. Thus it being a generic solution, it could be produced on a larger scale and therefore have a lower price.

To conclude, this project is an answer to the main question. The design decisions have led to a concept with an explicit public character that uses the context to do this. It increases the involvement of the cities inhabitants by bringing more attention and variety to the cultural supply and with the pavilions supporting individuals to contribute to the creative scene with their art.

Figure 8.0:
Metropol parasol - Jürgen Mayer H. Architects

Reflection

At the start of this graduation project I was inspired by the open wooden structures, interacting with the public space, that were designed and fabricated using computational modelling tools. I tried to find a way to incorporate an open structure modeled using such tools, as part of a conventional non-freeform building. First I thought of a fixed canopy, but soon the idea of designing some parts as autonomous structures came to mind. This way the opportunity of making demountable pavilions arose, which was a useful part of the envisioned cultural building, because it could extend its programme literally throughout the city, this way.

But this meant that there were two separate designs to be solved and I had difficulties in architectonically anticipating these two parts into an entity. In my concept both parts were evenly important and had to come together, but it might have been more interesting architecturally to focus on pavilions and apply more programming that is reflected in the resulting design. Nevertheless I am content to have been able to explore different design solutions using programming tools as this process did lead to a satisfactory solution to a demountable pavilion fitting my concept.

It relates to my theoretical position to acknowledge the importance of the on-going DIY-culture discussed at the beginning of this thesis. Because, not only the organisation of the hub itself offers cultural activities, also individuals are stimulated to organise small events throughout the city and thus contribute in diversifying the supply. My opinion is that the result of this graduation project contributes to the enlargement of the cultural supply and in forming a particular creative scene, because the use of those pavilions creates a series of recognisable events, where everyone can be part of.

To conclude, I am satisfied with the final result of with the pavilions that can stand autonomous as well as fit their home, the main building, in use and form. Even though I should have worked out some ideas that would enforce this relation, such as using the same scissor hinges to cover an adjacent glass facade as shown in the sketch. Finally, a follow-up research on additional possible deployments and the combination of pavilions could be of added value.

Acknowledgments

Firstly, I would like to thank the chair of Design Systems & Architecture for providing this graduation studio that enables students to acquire knowledge on implementing on-going techniques of design and decision-support systems in the architectural design process. I think this is important as these techniques bring the opportunity to facilitate and evolve the design process.

I would like to thank my supervisors for their guidance and encouragement throughout my project, especially Aant en Maarten for their inspiring contributions and feedback. They always made sure we addressed all topics that I wanted to discuss during the meetings. Besides, I liked the collaborative tutoring that made the tutoring sessions more dynamic and allowed for more insightful discussion. I would like to thank Bauke, for his valuable commentary and critique/evaluation on the project.

Furthermore, I would like to thank ir. R. (Rijk) Blok and dr.ir. S.P.G. (Faas) Moonen for answering my questions regarding the structure and construction of the pavilions which has helped me to solve design issues.

Moreover I would like to thank my group members and friends especially, Lucijana Boskovic, Kevser Çuldur, Thijs van Gestel, Roos Anne Kniest, Nienke Oudshoorn and Lara Quaas for their time and support during different phases of my graduation project, whenever I wanted to discuss design decisions or to let my report be reviewed.

Finally, I would like to thank my brother for his motivational words during the whole of my studies. I am also grateful for my parents who have always supported me.

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Figures

All of the figures are own creations, except for the ones indicated in the list below.

Figure 1.2: Gemeente Almere. (2012). *Chw bestemmingsplan Almere Centrum Weerwater - Floriade*. Retrieved December 2017, from <https://plannen.almere.nl/plannen/NL.IMRO.0034.OP1HS2NW01-/NL.IMRO.0034.OP1HS2NW01-cc01/t_NL.IMRO.0034.OP1HS2NW01-cc01.html>

Figure 1.3 - 1.5: RRAAM, Rijk-regioprogramma Amsterdam-Almere-Markermeer. (2012). *Concept Gebiedsontwikkelingsplan Almere Centrum Weerwater ingebed in het ontwikkelperspectief Centraal Almere.*

Figure 1.6: Posad. (n.d.) *Development plans Weerwater lake*. Downloaded on 1 November 2017, from <http://posad.nl/en/projects/weerwaterzone>

Figure 3.3: The Fountain Workshop Ltd. (). The Water Benches. Downloaded on 28 November 2017, http://www.fountains.co.uk/project/more-london>

Figure 4.4: *De Kookfabriek (n.d.). De Kookfabriek*. Downloaded on 2 October 2017, from <https://www.kookfabriek.nl/locaties/eindhoven>

Figure 4.5: Nathan Myhrvold. *(2011) High tech kitchen*. Downloaded on 2 October 2017, from <https://www.wired.com/2011/02/ff_myhrvoldteam/>

Figure 5.0: Nelson Kon. (2013). *Sesc Pompéia, Talleres, São Paulo SP. Lina Bo Bardi*. Downloaded on 10 February 2017, from <http://www.vitruvius.com.br/revistas/read/arquitextos/10.119/3354>

Figure 5.3: BYOB. (2011). *Bring Your Own Beamer*. Downloaded on 12 May 2017, from <http://www.syntheastwood.com/event/bring-your-own-beamer-at-the-roundhouse/>

Figure 6.8: Materia. (n.d). Lignostone. Downloaded 20 September 2017, from <https://materia.nl/material/lignostone/>

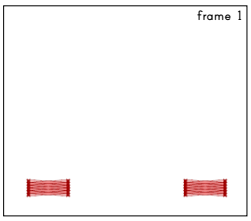
Figure 7.8: Bo-rent. (n.d). Sprinter. Downloaded 27 August 2017, from <https://www.borent.nl/auto-huren/product/mb_sprinter_met_laadklep>

Figure 8.0: J.Mayer.H. (2011). *Metropol Parasol*. Downloaded on 12 May 2017, from <http://urbanpeek.com/2011/08/04/metropol-parasol/>

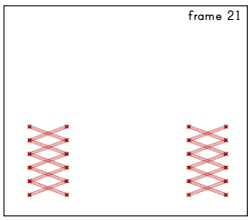
Appendix

Animation

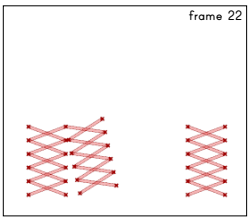
An animation of the simplified structure of the pavilion has been made as a visual support to the assembly manual.
The generative modelling tool for Rhinoceros, Grasshopper has been used to do this.
This is done in tree steps, the corresponding grasshopper script is displayed on the following figures.



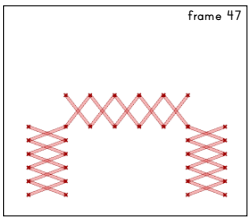
Start of step 1



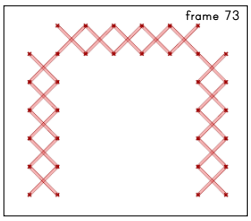
Result of step 1



Start of step 2

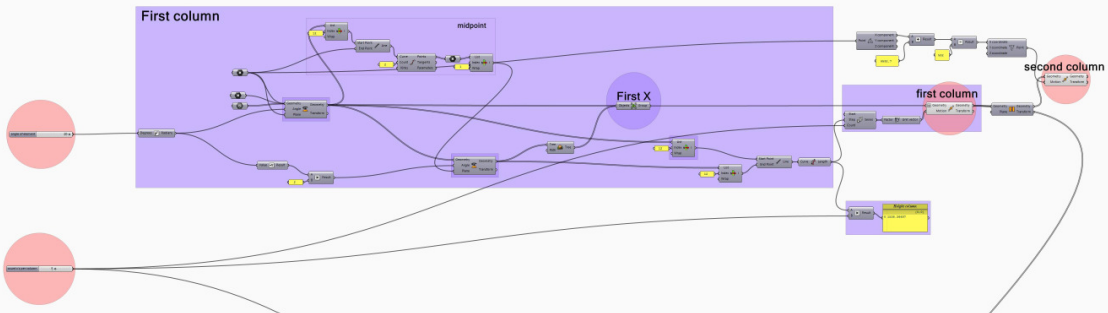


Result of step 2

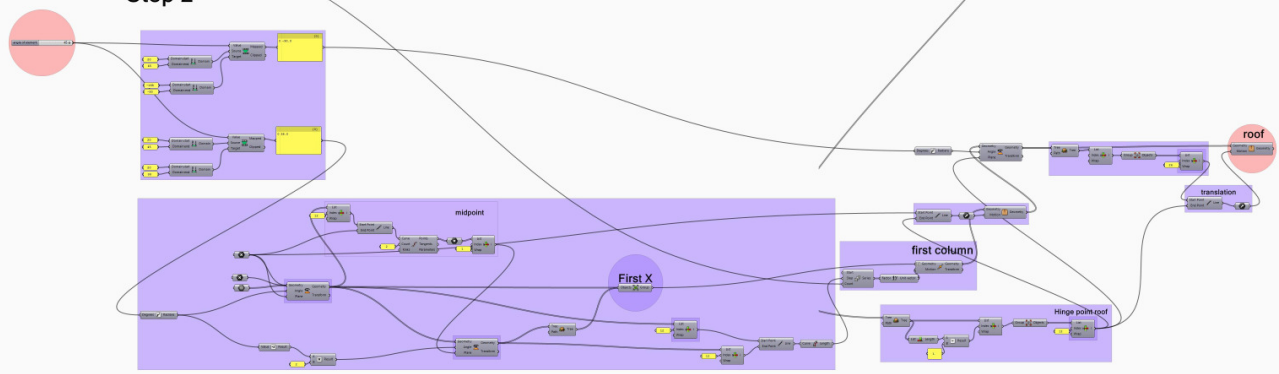


Result of step 3

Step 1



Step 2



Step 3