

Thing-ness

Making and Re-imagining Architectural Bricolages.



CHALMERS

Thing-ness

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Master's thesis

Material Turn

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“Is there not also a part of the world that is opposed to excess, and precisely desires less? Not to find less, but to use less to find something else. Something more. A different more. Imagination is the key here. An imagination that does not start from the excess, but embraces the less.”
(Grafe et al., 2016, p. 3)

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Thesis Questions

How can a design methodology based in the idea of the bricolage be developed in response to current lack of material resources, relating to discourses of New Materialisms and Environmentalism?

How can the use of this methodology bring architectural effects and tectonic richness in a design proposal?

Abstract

The thesis explores an alternate trajectory of aesthetics with background in the current climate crisis and lack of conventional material resources. Addressing the current shortage of raw materials as an issue relevant to investigate through design, the thesis view these material limitations as forming possibility for an architecture inclusive of materials as both *signs-and-things* as phrased by Susannah Hagan (Hagan, 2001).

The idea of the Architectural Bricolage is developed in the thesis as mode of thought to encompass research on several scales, focusing on effects created through reuse of salvaged material of different sorts. The use of digitization in this context becomes a tool to capture, create and recreate effects.

Using this mode of thought to design, the thesis results in the design proposal of a transformation of a parking garage in Gårda, Gothenburg into a horticultural centre. The design proposal consists of an interior exhibition and lecturing space in relation to an exterior courtyard garden and rooftop terrace. Through the use of the design methodology new ideas of material use,

Thing-ness
Bricolage
Material effects
Re-use
Resources

resources, tectonics, composition, form and material effects are manifested in the proposal. A spatially and materially rich environment is found as a result.

The thesis uses discourses regarding environmentalism, new materialities, the post-digital and architectural history while encircling a field where architectural projects can propose future alternative scenarios through them taking place in the world.

One objective of the thesis is therefore to inspire others to respond architecturally to complex issues such as the climate crisis, and to thereby to gain agency. A second objective is for the thesis to contribute to the previously mentioned discourses, for example through the specific ways in which the thesis deals with material hybridity and form-finding.

Delimitations

The thesis does not focus on ways of cataloging resources or on systems regarding the organization of available materials.

The thesis do not address issues of design and construction for disassembly.

The thesis does not focus primarily on the fabrication of specific parts.

The thesis does not focus in-depth on the use of a certain technique or tool, for example photogrammetry, additive manufacturing or CNC.

Background & Theory

Background



Image showing a contemporary Swedish building site.

This thesis addresses the current climate crisis in general and the lack of material resources in particular, in relation to the practice of architecture and building in a Swedish context. It further explores the link between the notion of environmental design and architecture as a cultural and aesthetic phenomena.

According to Boverket the building and real estate industry in Sweden are 2017 responsible for 19 % of the total yearly emissions of greenhouse gasses. Out of these 19 % the building process accounts for 50 % not counting renovation, the rest being heating and upkeep of real estate. From 1993 to 2017 there has been a decline in emissions stemming from heating whilst the building and renovation process has remained fairly similar in regards to number of emissions (Boverket 2020).

The concrete industry makes up 4-8 % of the world's global emissions, a number which is surpassed only by coal, oil and gas industries. Concrete also stands for 10% of the world's industrial water use and the amount of carbon dioxide released by the cement industry every two years are equal to the amount released by the plastic industry in the last 60 years (Watts 2019).

“With global warming increasing for the foreseeable future, an economy of means may become a matter of survival as well as aesthetics - but it is aesthetics, specifically the aesthetic preference for the new, that often stands in the way of this.”

(Hagan in Lloyd Thomas, 2007, p. 254)

In *Taking shape: A new contract between architecture and nature* (Hagan, 2001) Susannah Hagan explores the link between concepts of environmental design and the cultural practice of architecture. By using the term *signs-and-things* Hagan sees a need for architects to further recognize materials for their actual properties and environmental implications. She emphasises the importance of an environmental architecture to find meaning in these “real ethical dilemmas” and refutes nostalgia and a “lost meaning in materials” (Hagan, 2001, p. 93).

Referring to the architect Peter Salter's work she stresses the importance of “*the acceptance of architecture as a material as well as a conceptual practice, embedded in time (through weathering and use) as well as floating in a certain 'atemporality'*” (Hagan, 2001, p. 92). In this way she assumes a position where architecture is both a conceptual and a material practice. Differently phrased she states that architecture deals with materials as both *signs* and *things*. Hagan states that:

“The 'dematerialization' of architecture thus refers not only to an increased 'lightness of being', but to the restriction of the consideration of materials to materials-as-signs, not signs-and-things. The sign's referent may lie originally in the 'nature of the thing', but the fact of the thing and its material consequences

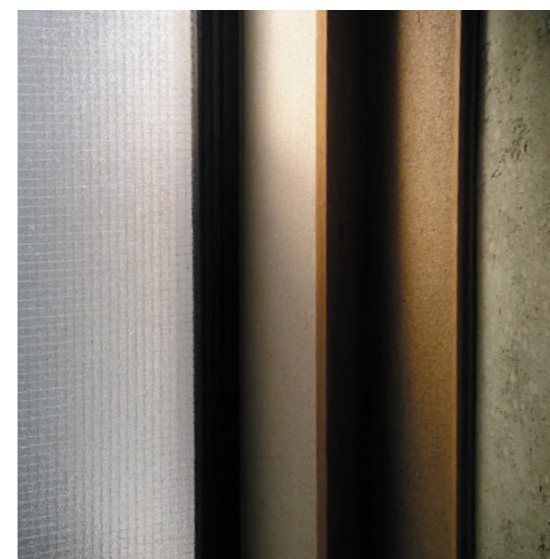


Figure 1. Window framing in Walmer Yard by Peter Salter.

are an irrelevance in this context.” (Hagan, 2001, p. 91)

In short, Hagan showcases a position of both-and where architecture is both a material and a conceptual practice and able to encompass both environmental and aesthetic pursuits.

This position of both-and can be contrasted by another position where the conceptual practice of architecture is seen as preceding the material and contextual practice. A search for cultural *atemporality* as well as a *lost meaning in materials* can here be traced.

A quote (my translation) from the architect Andreas Forsberg about his Villa Sanda exemplifies this view:

“I wished for few materials. One and the same material that could be walls, ceiling and floor, both interior and exterior. Then the choice fairly naturally became concrete.” (Strandh Holmqvist, E, 2019)

In Forsberg’s case the wishing of few materials for the Villa comes first and then the material is chosen based on this aesthetic idea. Other factors must of course be relevant but in the way he phrases the sentence the aesthetic choice leads “fairly naturally” to the material chosen to fulfil the aesthetic task. The concrete as *thing* and its material consequences are in this case seen as contextually irrelevant.

Likewise, the Swedish architectural office Tham & Videgård brings up a similar view in describing their design of the bakery chain Gateau’s shops:

“The use of carrara marble, a recognizable material used in bakeries, cafés and restaurants throughout history communicates this origin and has been transformed for its contemporary spatial context to create an almost monochrome environment.” (Gateau – Tham & Videgård, n.d.)

The origin the carrara marble is meant to communicate that according to Tham & Videgård “Gateau was founded by people who are real bakers” (Gateau – Tham & Videgård, n.d.). This can be seen as an example of a way of using material for its signification only which is described by Hagan as a contributor to the “dematerialization” of architecture.

The marble used in Gateau can, in an interpretation of Hagan, refer to a use of marble for its material properties that are convenient for baking purposes. For example that the cool stone is useful when handling dough and that marble is heat resistant so that hot oven plates can be placed on it. But the use of carrara marble in this case does not take into account the material consequences of the use of marble, the process of marble extraction and the life cycle of the marble used. Rather the use of marble functions as a way to signify a cultural authenticity in relation to a bakery. Since the material is used as cladding in the entire shop, the material properties of marble useful when baking is treated as an irrelevant *fact of the thing*.

One could therefore argue that the aesthetic preferences in these two cases act as hindrance for other material regards, such as environmental and lifecycle aspects, by being a dominating factor in the selection of material. Some material regards are of course taken into account in these cases, such as structural properties. But no attempt are in these cases found to find meaning in what Hagan calls “real ethical dilemmas” (Hagan, 2001, p. 93).

So to summarize, a background of material conditions has been presented where architecture is entangled through being in the world. A position of both-and has been found in regards to architecture as being both a material and a conceptual practice. Two descriptions of contemporary Swedish architectural projects have been discussed and criticized from the standpoint of this position.

Discursive fields

The thesis relates to several discourses and discursive fields that can be found and mapped. Here follows short introductions to some discourses or terms that the thesis can be linked to.

Environmentalism

Environmentalism is currently more commonly described by using the term sustainability. However this term can be seen as vague as pointed out by Hagan as it is unclear in stating what is to be “sustained”. She goes on to state that: *“The whole point of the environmental project is, surely, to transform mainstream society”* (Hagan, 2001, p. 14).

New Materialisms

New Materialisms are described by Coole & Frost as a movement of practitioners that “are rediscovering a materiality that materializes”, matter that *becomes* rather than *is* and that this view on matter poses new possibilities and locations of agency (Coole & Frost, 2013). They argue in this way that *“materiality is always something more than mere matter: an excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable”*. They also see a relation to previous materialist heritage and see the term *new materialisms* as a way to relate the discourse to current unprecedented events and things happening related to matter (Coole & Frost, 2013).

The Post-Digital

The Post-Digital is a term relating to a current condition which is described by Florian Cramer as *“the state of affairs after the initial upheaval caused by the computerisation and global digital networking of communication, technical infrastructures, markets*

and geopolitics” (Cramer, 2014, p. 13). By this he emphasizes that the Post-Digital is not to be understood as leaving the digital and entering a new state but instead as a slight shift where the digital is part of everyday life and does not longer hold the same novelty. He describes how “the notion of the computer as the universal machine” is questioned and brings up how hybrids of digital and analog instead are created by the ability to “choose media for their own particular material aesthetic qualities” (Cramer, 2014).

Representations

Representations as a part of architectural thinking is described by Borden & Meredith as “premises for the making and thinking of architecture” (Borden & Meredith, 2017). They go on to describe architecture as a field that have been and is conducted through multiple mediations. Representations are in this way viewed as creative, communicative and analytical tools that architecture is “investigated, understood and influenced through” (Borden & Meredith, 2017).

Group Form

Group Form is a term made known by Fumihiko Maki in the 1960s referring to form in the urban scale. He explains it as being “a form which evolves from a system of generative elements in space” and stresses the relationship between the elements and the group as a “feedback process”. He also propose that group form is deeply connected to the multitude of human activities present in the urban scale, seeing these activities as suggesting “the physical qualities which are used to express transformation in design rhythm, change, and contrast” (Maki et al., 2012).

Discourse

New Materialisms and Things

The thesis relates to the discourse framed by Diana Coole and Samantha Frost, editors of the book *New Materialisms: Ontology, Agency, and Politics* in which they describe and develop on concepts of New Materialisms. Matter and materials are here seen to hold agency, relationality and unpredictability, aspects of materiality that are becoming increasingly more important according to the authors (Coole & Frost, 2013).

They describe materiality in the view of these new materialisms as: “*an excess, force, vitality, relationality, or difference that renders matter active, self-creative, productive, unpredictable.*” and therefore being more than only matter (Coole & Frost, 2013, p. 9). Furthermore, they see how these materialities can be seen as productive and vivid, stating that these new materialisms avoid dualisms (for example culture/nature and subject/object) and instead focus on “creating new concepts and images of nature that affirm matter’s immanent vitality” (Coole & Frost, 2013, p. 8).

In this way Coole & Frost describe a matter that *becomes* rather than *is*, refuting the notion of material as a static entity and instead views matter as an active part in processes of making and design (Coole & Frost, 2013).

The authors contest a form of dualist thinking where humans are solitary agents in a world of dead matter, claiming that this kind of thinking leads to a view of humans as superior actors in relation to the world. They argue that to instead acknowledge matter as an active part of processes “*disturbs the conventional sense that agents are exclusively humans... and the corollary presumption that humans have the right or ability to master nature*” (Coole & Frost, 2013, p. 10).

Likewise, Gail Peter Borden and Michael Meredith

“Taking things and their relations seriously means that we can leap into the midst of their controversies to feel out what is possible, how things might be shifted so as to form assemblages that are less exhausting, and less destructive of environment-worlds.”

(Frichot, 2018, p. 118)

similarly describes architecture as *part of mutually interdependent material networks* (Borden & Meredith, 2012). The authors see a current need for architects to take matter into account as an agent in architectural processes. Through shifting perceptions and relations to materials through the history of building they argue that in post-industrial society materials are highly related and connected to tools. They as well challenge the idea of innate, “natural” qualities of materials and instead view the limits of materials as results of surrounding processes, such as forms of fabrication and material manipulation (Borden & Meredith, 2012).

Hélène Frichot discusses the difference between *objects* and *things* and argues for *things*, finding this a more inclusive term than *objects* (Frichot, 2018). The *things* in her view are relational and even though they cannot be identified as certain *objects* still produce effects and have consequences on a global/local scale as a focus on the *object* as a withdrawn entity does not take into account (Frichot, 2018). In this perspective the *thing* resembles Coole & Frost’s matter that *becomes*.

The term *Thing* is further developed on by sociologist Bruno Latour. Commenting on the etymology of the word *thing* as signifying both item and parliament, Latour writes: “*A thing is, in one sense, an object out*

there and, in another sense, an issue very much in there, at any rate, a gathering.” (Latour, 2004, p. 233). He goes on to propose for the usefulness of the definition of the word *Thing* in developing new modes of criticism, stating that critique should move “not away but toward the gathering, the Thing” (Latour, 2004, p. 246) and that “The critic is not the one who debunks, but the one who assembles.” (Latour, 2004, p. 246).

In summary, an inclusive view on matter, materiality and things as being active, relational and unpredictable is presented as a way to further work with material things as agents and co-creators of design. This perspective on materiality could possibly enable a shift or an alternative way for architecture to interact with *material networks* as a way to respond to raw material scarcity and other current ethical issues within the field of architecture-materials-resources.

Defining Thing-ness

Defining the term *Thing-ness* for the scope of this thesis, three aspects of the somewhat ambiguous term can be found. The first deals with *Thing-ness* as referring to the complex networks of things, as materials and resources. Secondly the word refers to the generative power of things as creative producers of unexpected aesthetic effects. The third aspect of the term refers to the critical potential an unexpected gathering of things can hold when forming assemblages.

Firstly, referring to the description of architecture as part of *interdependent material networks* (Borden & Meredith, 2012), nuances and differences in these material networks take active part in the thesis. Materials and things can encompass fabricated and modified items, different types of resources, found reused things as well as things found on site and repurposed. These things are all seen as equally material and can interact forming intertwined and jumbled

“The critic is not the one who debunks, but the one who assembles.”

(Latour, 2004, p. 246)

assemblages. *Thing-ness* can in this context be viewed as a recognition of how material richness and difference stemming from these diverse *material networks* can form new interesting images of architecture that “affirms matter’s immanent vitality” (Coole & Frost, 2013).

Secondly, the term *Thing-ness* can at the same time in the scope of the thesis refer to things as being agents of design. This by seeing to the generative power of things at different scales and proposing a celebration of the interesting architectural potential and effects that these things hold and create. Things are viewed as generators of form, space and materiality, their *becomings* act as catalysts for and co-creators of design which shifts perspective from humans as solitary agents to matter as productive (Coole & Frost, 2013).

Thus, the unexpected effects of things become a necessary part, rather than a hindrance standing in the way of an abstract immaterial design vision. Mediations through things are therefore seen as being a crucial part of the making/*becoming* of design.

In a third meaning of the term the critical aspects of things and *Thing-ness* is developed on. The *Thing-ness* present in this thesis becomes a way to interact with what Latour calls “matters of concern” (Latour, 2004), in this case concerning the current scarcity of raw materials in relation to architecture. In line with Latour’s *critique by assembly* (Latour, 2004, p. 246) the thesis uses the term *Thing-ness* as way to work constructively through design and re-assemble *things* to create a new architectural aesthetic and at the same time through assemblage criticize current use of material resources in architectural design.

To summarize, the term *Thing-ness* referred to in this thesis entail the complex existence of things in the world as both material resources and at the same time aesthetic actors, possible of forming critical assemblages.

The term *Bricolage*

The term Bricolage is defined in Merriam-Webster's dictionary as the "construction (as of a sculpture or a structure of ideas) achieved by using whatever comes to hand" (*Definition of BRICOLAGE*, n.d.). Providing a further definition of the process of Bricolage, French social anthropologist Claude Lévi-Strauss states about the *Bricoleur* that:

"His universe of instruments is closed and and the rules of his game are always to make do with 'whatever is at hand', that is to say with a set of tools and materials which is always finite and is also heterogeneous because what it contains bears no relation to the current project, or indeed any project, but is the contingent result of all the occasions there have been to renew or enrich the stock or to maintain it with the remains of previous constructions or destructions." (Rowe & Koetter, 1978)

Emphasised here is the limited resources that make up the bricolage and their lack of relation with the same bricolage. To use leftovers to construct something new can be seen as the trademark mode of making for the *Bricoleur*.

The project *Merzbau* by artist Kurt Schwitters is an example of a form of bricolage which was conducted from 1919-1937. Jaleh Mansoor describes the project as an architectural collage and sculpture in which the artist was constantly making and remaking the interior of his studio in Hanover (Mansoor, 2002). *Merzbau* is described as a hybrid where adding and subtracting were used to form the project that was never finished

"In its old sense the verb 'bricoler' applied to ball games and billiards, to hunting, shooting and riding. It was however always used with reference to some extraneous movement: a ball rebounding, a dog straying or a horse swerving from its direct course to avoid an obstacle."

(Lévi-Strauss in Rowe & Koetter, 1978, p. 102)

but instead persistently in a state of change (Mansoor, 2002). Thus the Bricolage can here be seen as a method of working which allows for this constant change, as a open-ended making process.

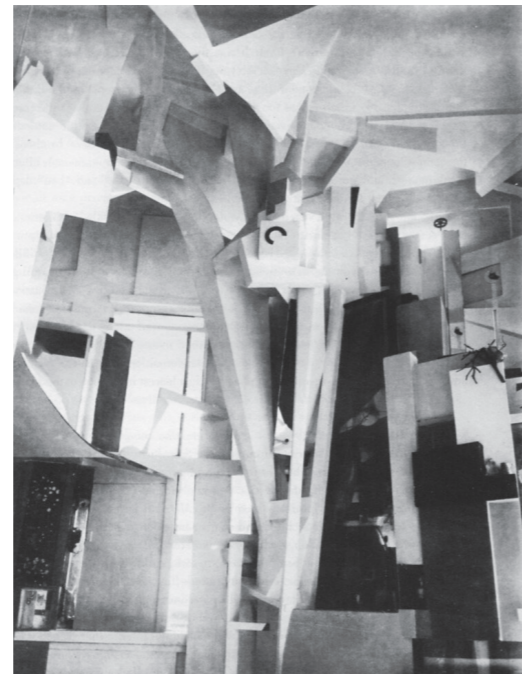


Figure 2. *Merzbau* by Kurt Schwitters. (Cromar) CC-BY-NC-SA 2.0



Figure 3. Smithdon School by the Smithsons. (Armstrong) CC-BY-NC-SA 2.0

Architects that have worked with Bricolage as a method can be found in Hal Foster's article *Savage Minds (A Note on Brutalist Bricolage)* where he describes how the Brutalist movement in the 1950s were occupied with the *as found* as well as a clear showing of structure. He describes how they worked with found objects as signifiers or operators that revealed relations between objects and through these constructed mythical images. (Foster, 2011) He describes how *"the Smithsons cast Brutalism as a realism against the simulacral aspect of an emergent culture of advertising and marketing, of the becoming-image of things"* (Foster, 2011, p. 183) At the same time they were fascinated by a way of image-making where the image was found "within the process of making the work". (Smithsons in Foster, 2011, p. 183) Here the potential of the Bricolage lies in its ability to both be perceived as *real* as well as constructing new, previously unknown, images.

To summarize, Bricolage has been presented as a mode of making with what is *at hand* in order to construct something new. Two examples of Bricolage in art and architecture has showcased different effects that the making process of Bricolage could have.

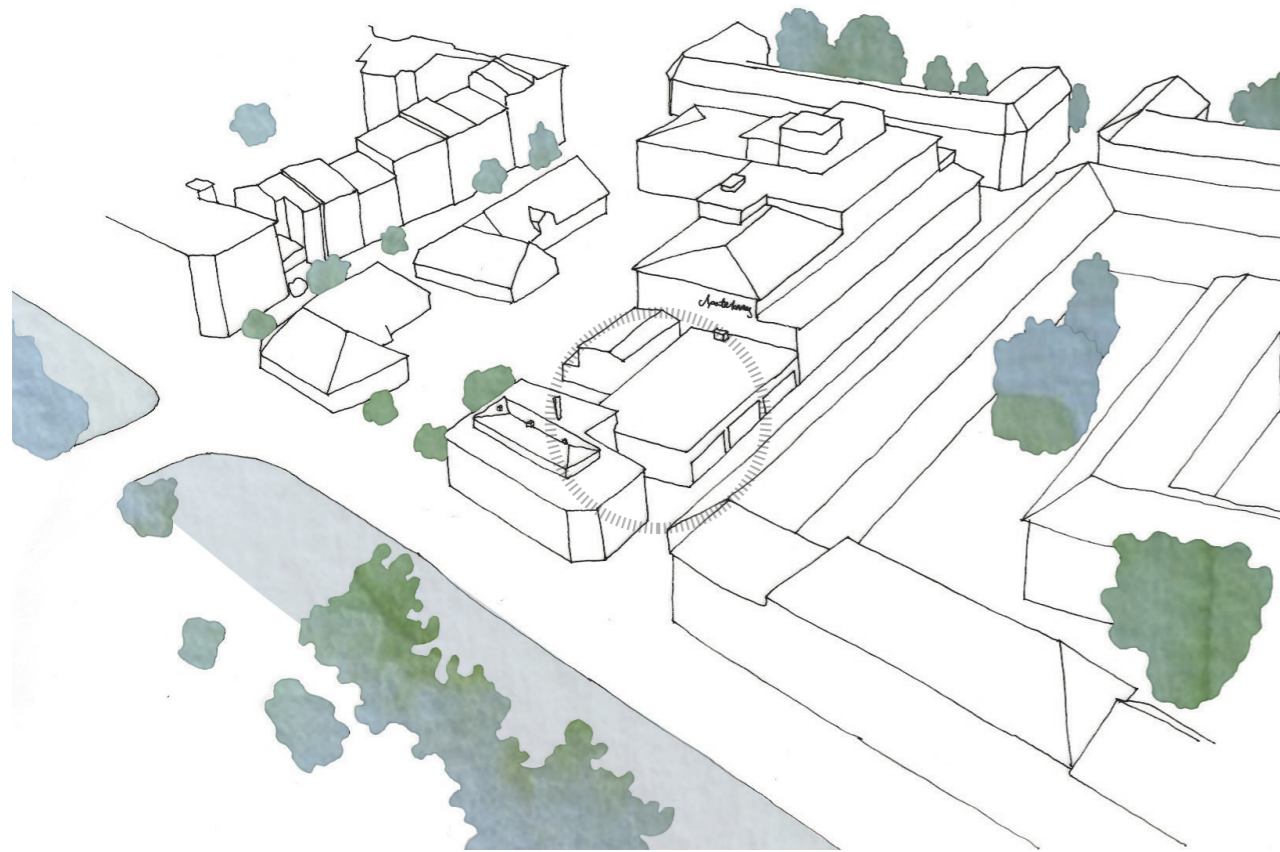
Firstly, that the method of Bricolage can lend itself to an open-ended process. Re-making can therefore be seen as a part of the language of Bricolage.

Secondly, Bricolage has a direct manner in dealing with what is *at-hand* and is therefore dependant on that which is *at-hand*. As with the Smithsons this can be used to interact with a form of *realism*.

Thirdly, the potential of Bricolage in order to find new images have been brought up. Here the *as found* images work as a way to transcend the limits of the imagination by inviting the Bricolage to take part in the image-making process.

Design

Design proposal - Horticultural centre



The site of the parking space and garage in its current condition.

Site

The site of the design proposal is a parking garage and a small parking space, in proximity to the former soda factory of *Apotekarnes*. Currently the former factory space holds a culture, music and events venue called

Brewhouse. The block has a varying roofscape, and holds buildings of different yet strong characters with yellow brick as a dominating material. The surrounding buildings of the site are varying in use, including housing, office space, lunch restaurants etc. The site lies in close proximity to Mölndalsån and central Gothenburg.

Due to the connection to the culture venue of *Brewhouse*, the central yet underused location and the varying use of the neighborhood the site is seen as a good location for a horticultural centre.

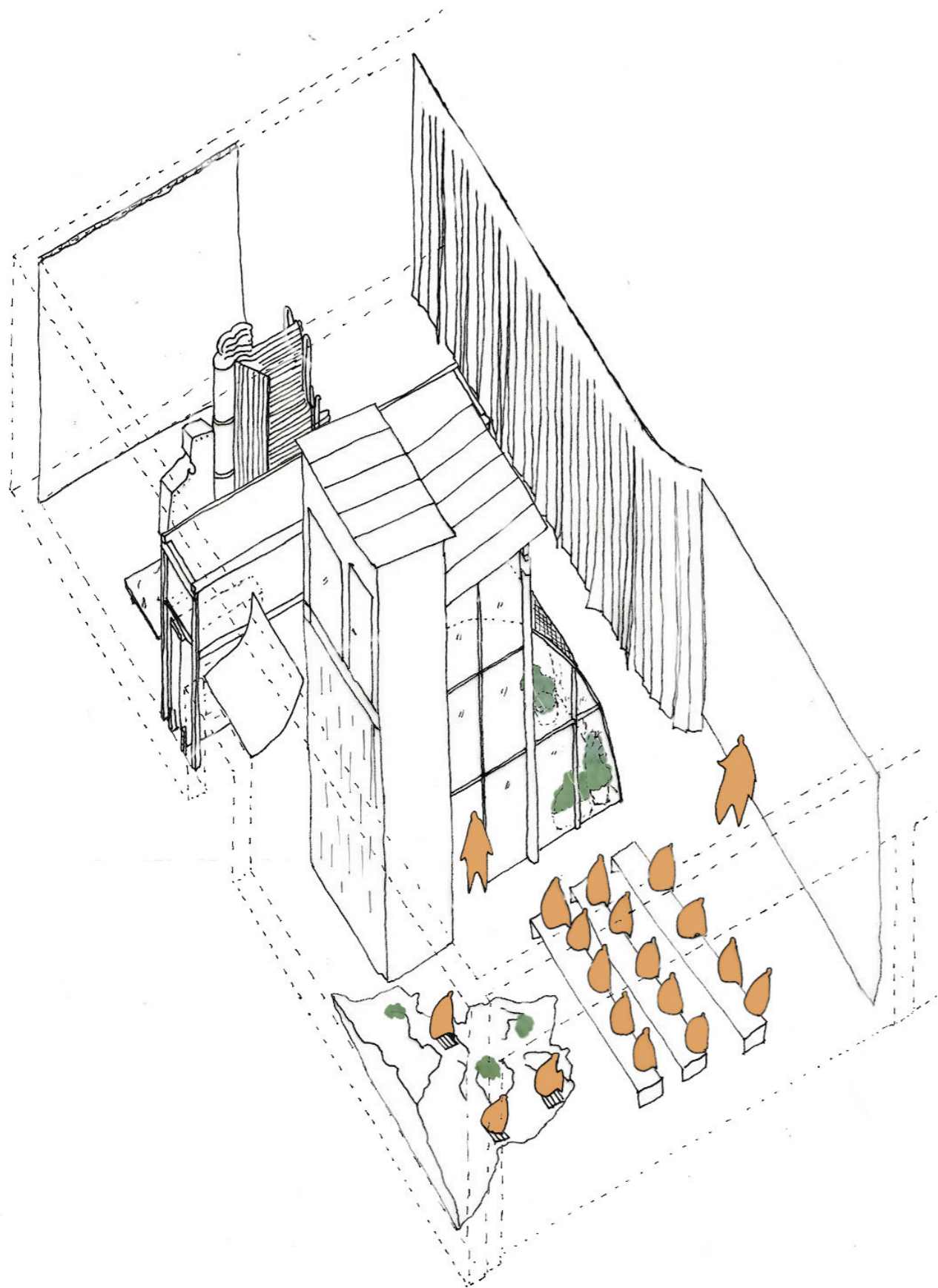
About

The typology of the cultural centre, *Kulturhus*, is in the proposal combined with the specialized area of horticulture in order to form a public environment for education in this field. An increasing public interest in local food production can here be explored and developed through lectures, workshops and exhibitions.

The program creates a space where cross-disciplinary events involving horticulture and other forms of culture can take place. Different actors can make use of this platform, for example schools in the Gothenburg area, public actors, universities, the industry, associations and other types of horticultural and cultural practitioners.

Program

Exhibition & Lecturing space	80 m ²
Winter garden	20 m ²
Cloak room	30 m ²
Entrance	15 m ²
Storage	5 m ²
Total interior	150 m²
Garden	100 m ²
Terrace	30 m ²
Total exterior	130 m²



The proposal

The design proposal results in the transformation of a parking garage in Gårda, Göteborg into a horticultural centre.

The proposal has a spatial richness created by both providing a sequence to move through the different spaces as well as opportunities to stray and pause. Moving from the exterior to interior, small to large spaces and on different heights causes the environment to be experienced as a small world, being both enclosed in itself and with a relation to the outside.

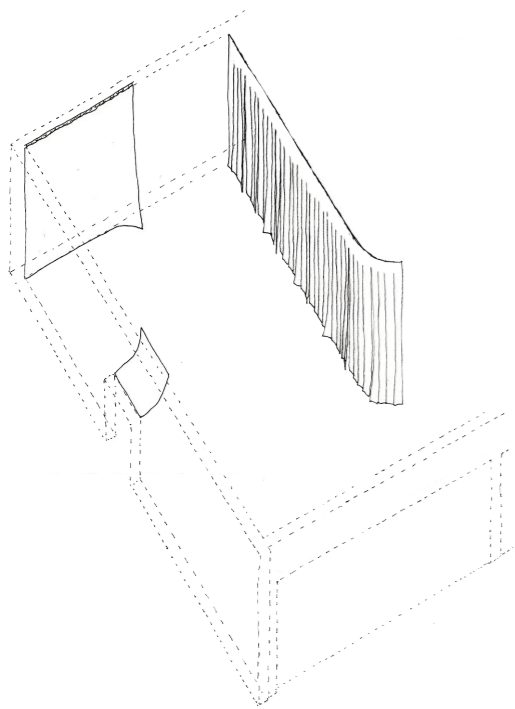
Another aspect of richness in the design proposal is the material richness found as a result of varying forms of material sourcing. This mix consists of reused materials from the site, other reused materials, standard building materials, fabricated materials and especially crafted material pieces. The hybridity created by this material use make for a materially interesting environment and work as a celebration of materiality.

In the proposal forms and materials are reoccurring, providing an echo within the spaces. For example the form of an outdoor seating has the same shape as the construction of the winter garden. An interesting environment of both change and coherence is the result.

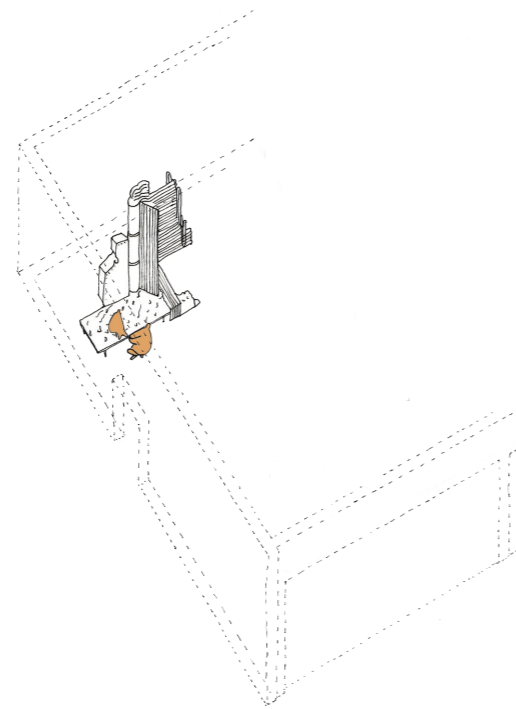
The design proposal consists of three parts: a garden courtyard, a rooftop terrace and an interior lecture and exhibition space.

The interior space

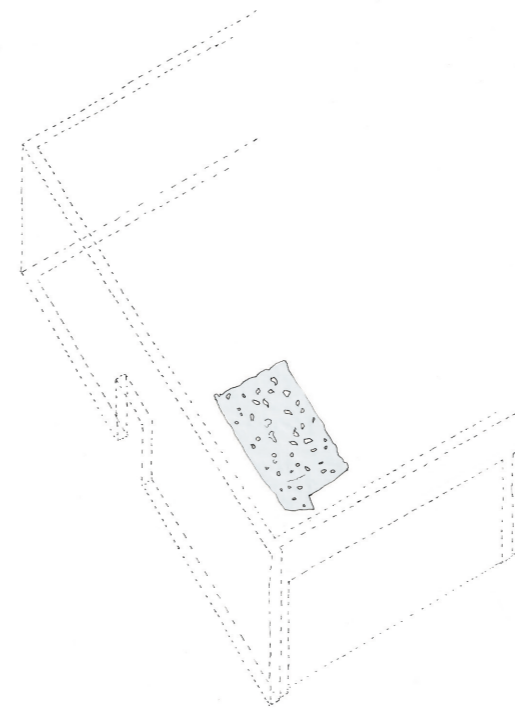
In summary, the interior space provides and creates spaces for many different functions through new forms and materials. These forms and materials make for open-ended spaces both available for a prescribed use as well as more imaginative use. The interior space consists of a cloak room, a storage space, a winter garden, and an lecturing/exhibition hall all of which will be further introduced on the next page.



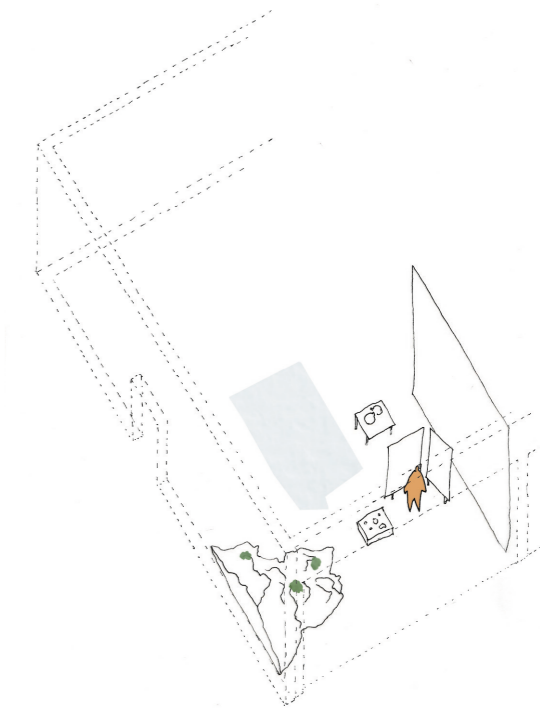
Fabric. Fabric working as a spatial element in the design.



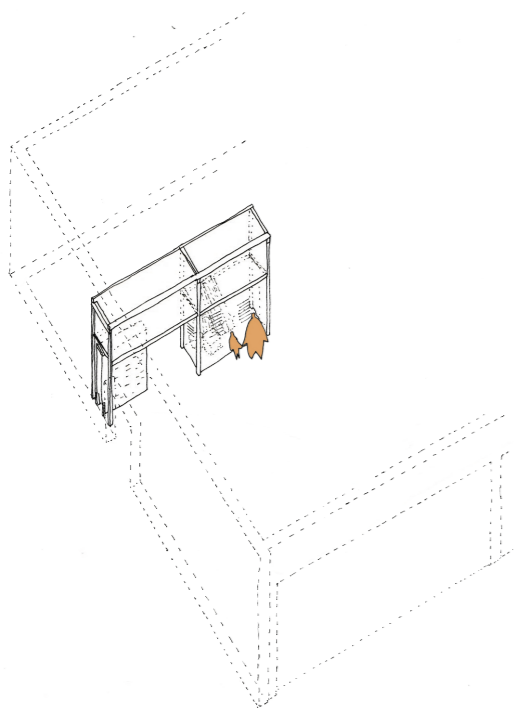
Cloak room. A multifunctional furniture piece including coat hangers, shelves and benches on different heights.



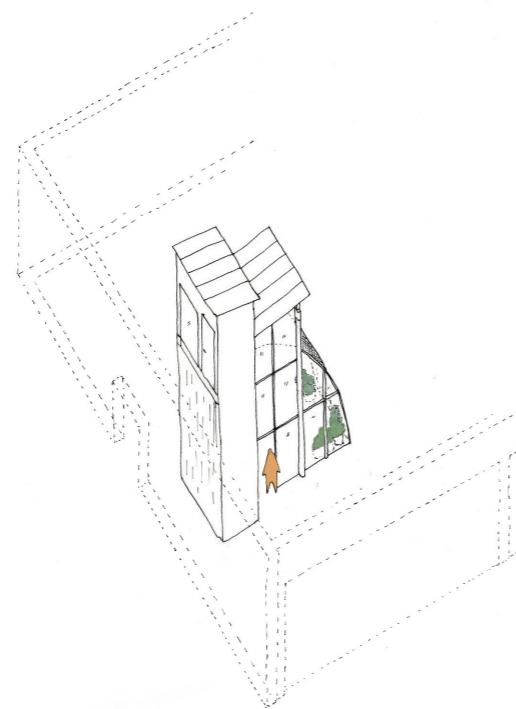
Ceiling window. A ceiling window is in a crafted manner made of melted reused glass and is a bespoke piece of the interior.



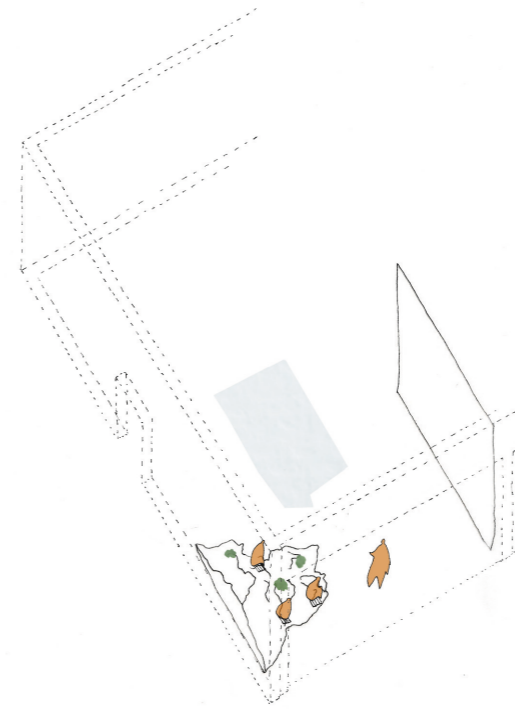
Landscape: Exhibition. For exhibitions temporary furniture can be put up in the open part of the space as well as using the screen wall and the seating landscape.



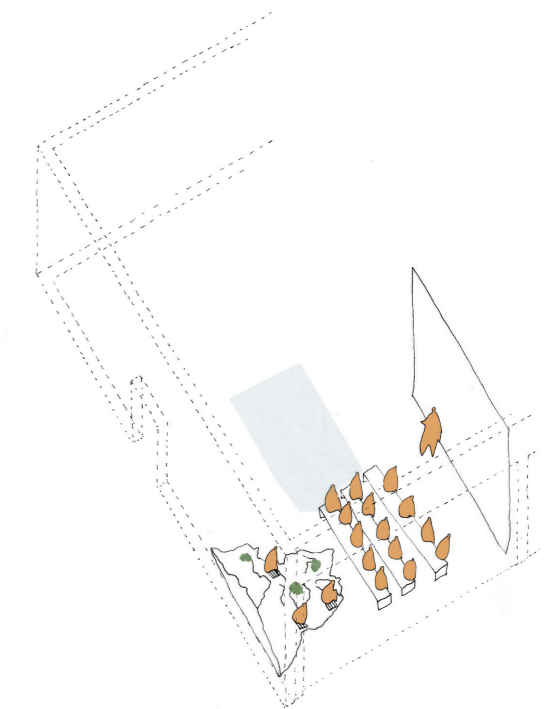
Information & Storage. A structure made from wooden posts and fabric hold both interior storage for loose items and furniture as well as information and signs.



Winter Garden. A winter garden is made from wooden posts and re-used glass and holds plants as well as a part with an elevator for access to the rooftop terrace.



Landscape: Small Class. For a smaller class the seating landscape is used and make up an intimate space within the larger space.

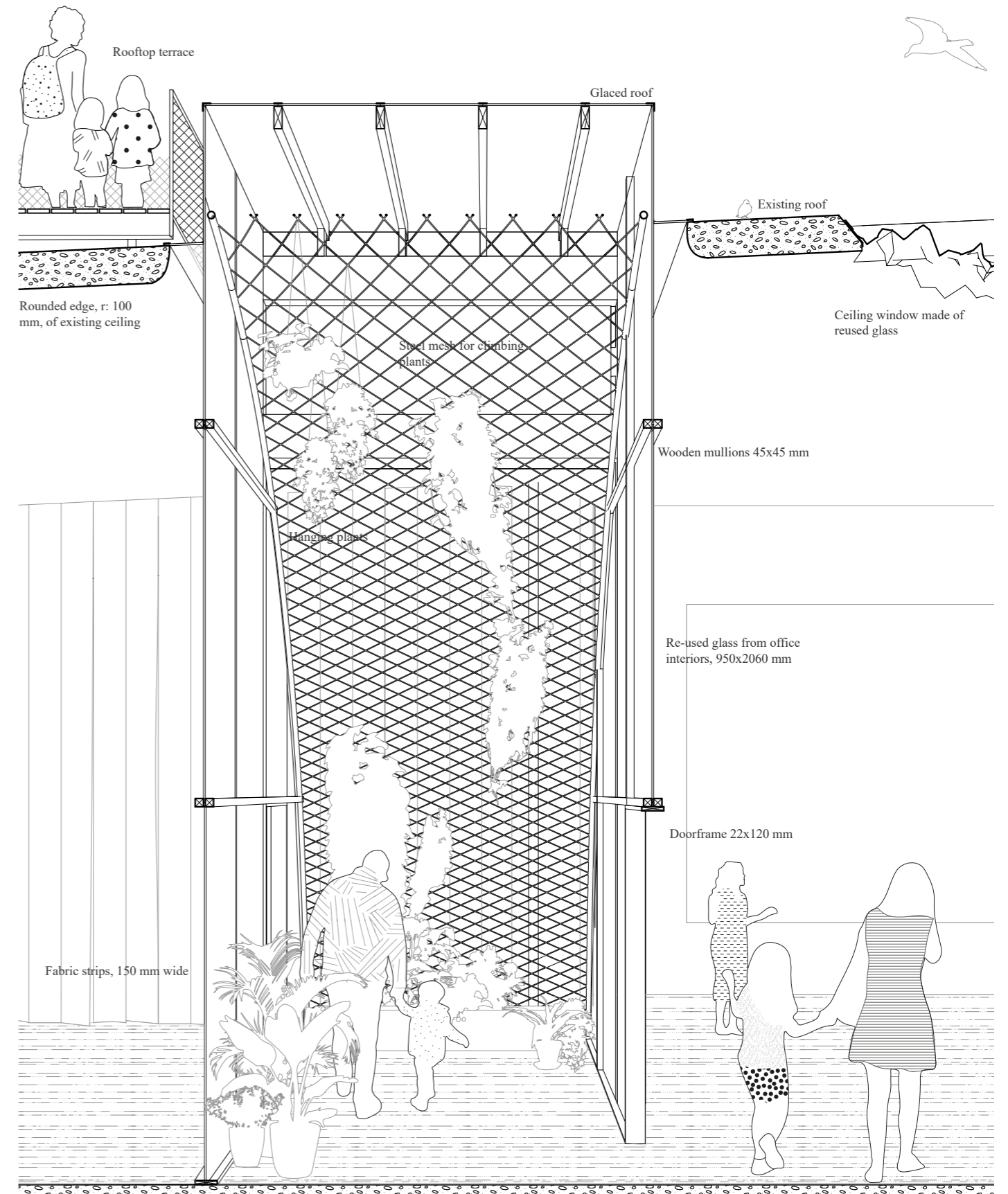


Landscape: Lecture. For lectures and movie screenings the seating landscape can be used as well as temporary benches to transform the versatile space.

Winter garden

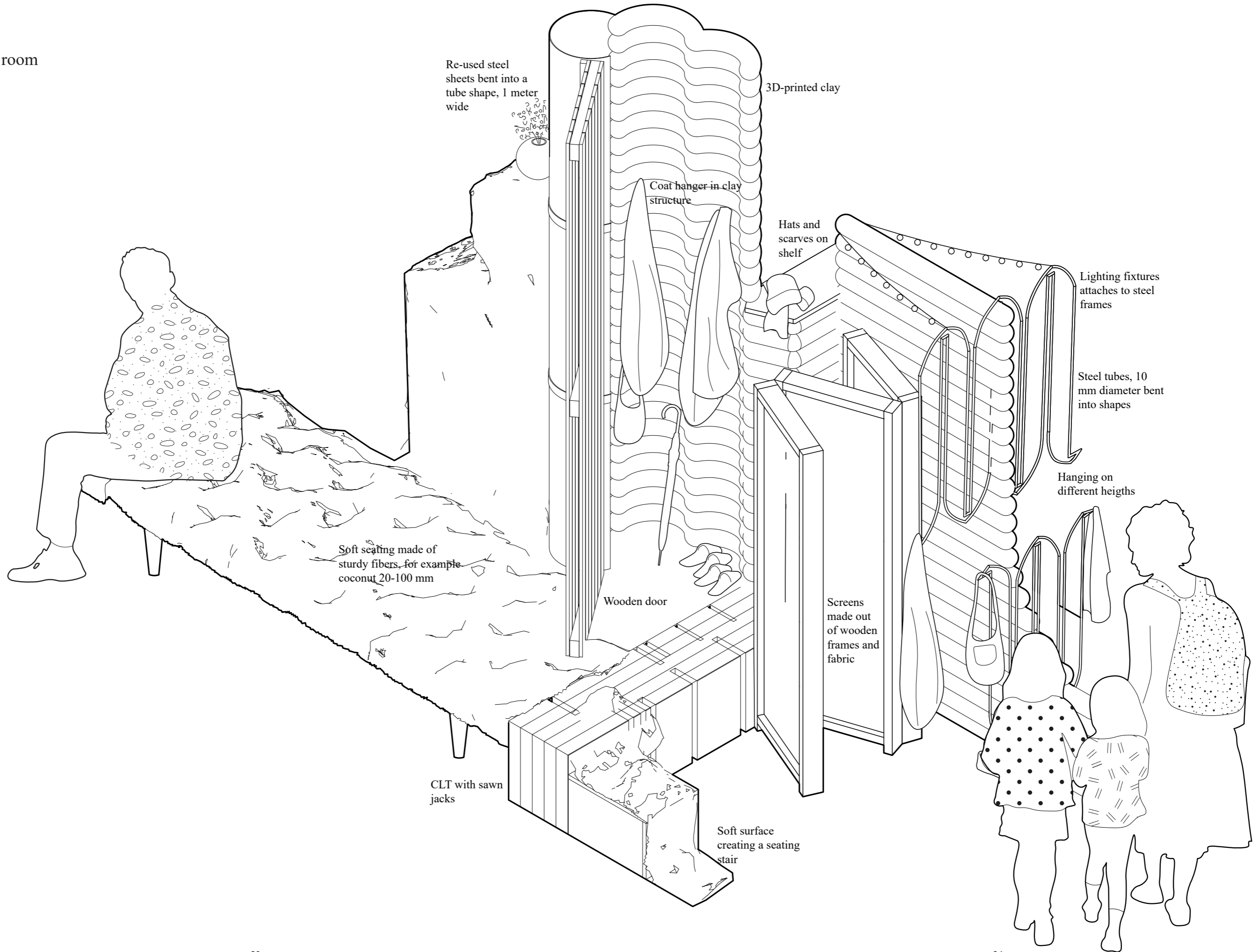


View from exhibition and lecturing space showing seating landscape, fabric room divider and winter garden.



Construction drawing of Winter garden showing the relation to the existing roof.

Cloak room





View towards entrance, information & storage structure and cloak room.

The rooftop terrace

The rooftop terrace is accessed through an interior lift. On the rooftop terrace calmer spaces for seating is found as well as a walk in a varying roofscape ending in a balcony lookout. The terrace provides a good place to eat a brought lunch on events such as a class excursion.



A use of the environment during midday can consist of sitting outside on different places, strolling around or going inside to see an exhibition.

The garden courtyard

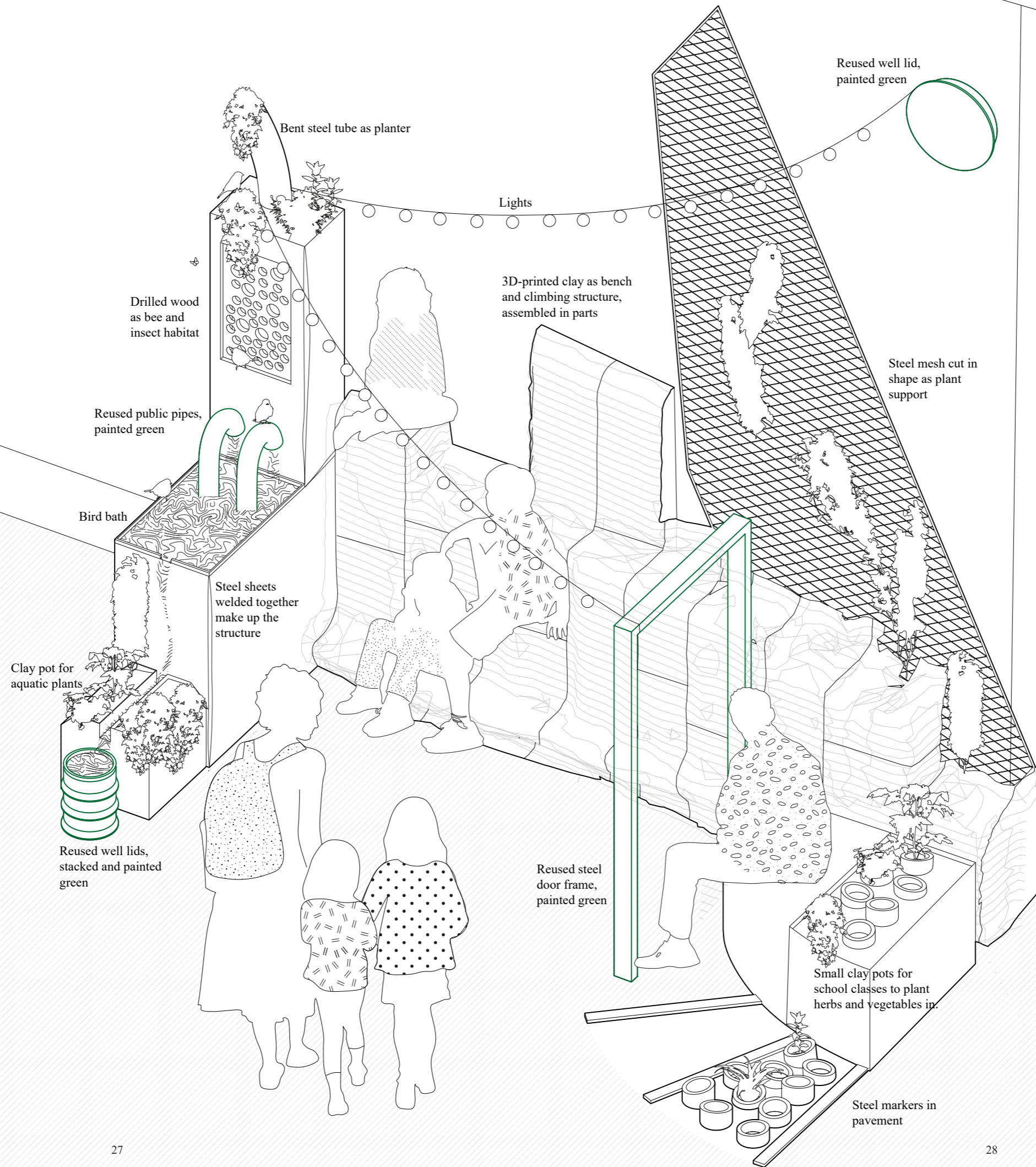
In the proposal for the garden courtyard the asphalt formerly covering the ground has been removed and plantings have been arranged. A paved path made of reused bricks guides the visitor towards the entrance of the learning environment. From this path the garden is experienced, and opportunities are created to stop and look/smell the plants.

In the courtyard garden an outdoor multifunctional furniture piece is placed, acting as a bird bath or small fountain while at the same holding seating and climbing possibilities as well as lighting fixtures.

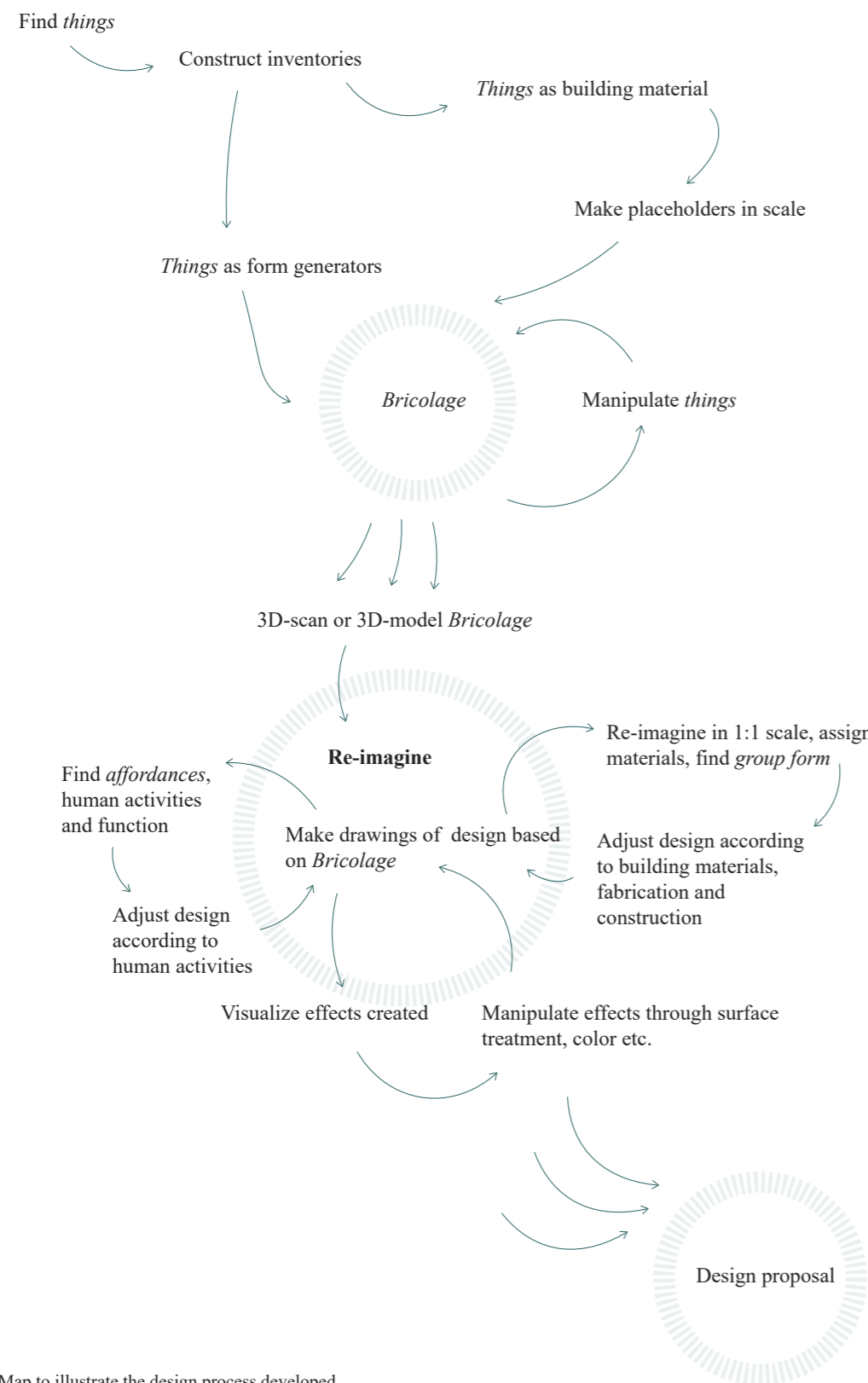


The gate of the parking garage can be opened to allow for other uses of the building such as summertime movie screenings, evening lectures or other public events.

Courtyard furniture



Design process



Map to illustrate the design process developed.

Process

The design process behind the proposal is here mapped. The process starts with found objects being used to make physical bricolage models. These are then in turn *re-imagined* in order to inform a design proposal through tools such as photogrammetry and architectural drawings. This process leads to unexpected *affordances* being found and new material situations which are then visualised and evaluated.



A model made of cut and melted plastic tubes create atmospheric diffused light and act as precedent to the large ceiling window.

Architectural Bricolages

A model of the site is made in 1:100 out of cardboard and printed photos of the site to investigate the potential of the method in this scale, to allow for large interventions and an overview of the design and work with design factors such as space, light, sequence and interiority.

The site makes up part of the inventory and the scale allows for the site to be manipulated as a part of the architectural Bricolage.

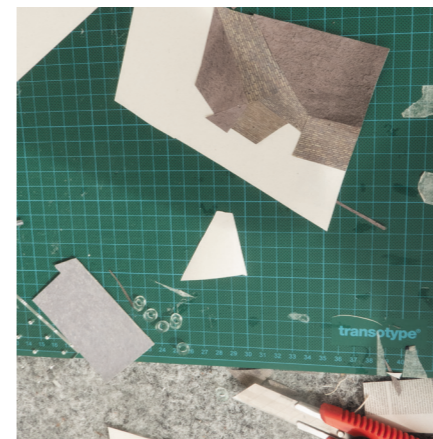
Models in the 1:50 and 1:20 scale are also made in order to make architectural interventions on different levels, providing differences in the detailing of the design.



An entrance courtyard is created by cutting out leftover pieces of brick textured paper, suggesting the use of reused yellow brick as paving. The directions of the bricks cut out of paper create the paving pattern.



The folded roof over the entrance with text on due to previous printing on the backside of the paper can be made use of in the actual scale as a sign, information and for its spatial effect, made of screenprinted fabric.



Cutting brick textured paper to make paving in model.



Ironing plastic pieces to melt to form a larger piece to make a ceiling window in model.



Entrance situation with ceiling light, room divider in the form of a wooden block and 3D-printed coat hanger stemming from previous studies.



A single ceiling light highlights the entrance and brings out the texture of the brick wall.



Pile of reused asphalt taken from the courtyard makes up a terrace in the interior space.



Sharp sunlight creates playful shadows on the brick wall.



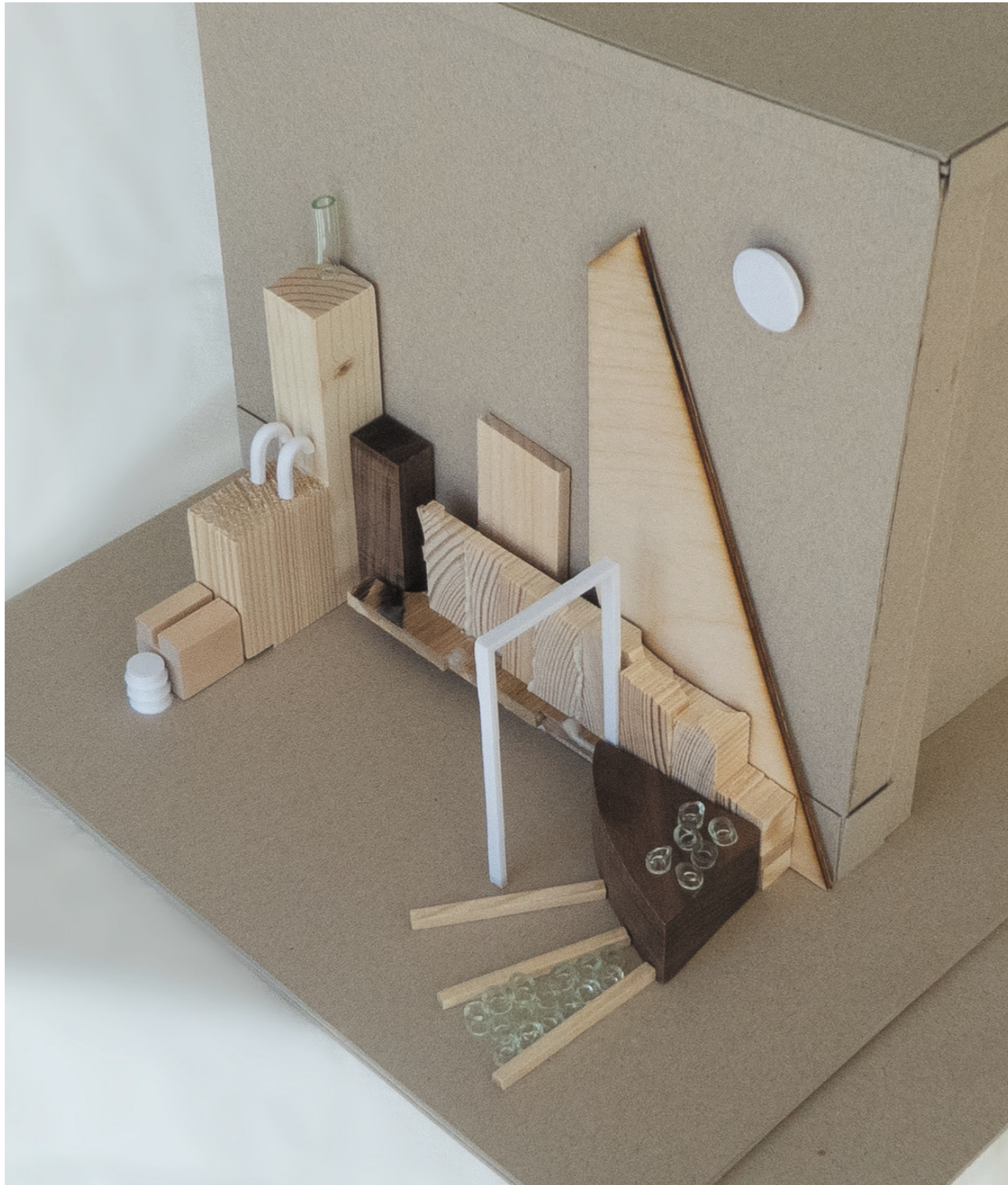
Interior volume study resulting in design of winter garden.



Wall made from cut paper strips, with light shining through.

Process models

Model making can lead to insights and new methods of approaching fabrication in the 1:1 scale. The melting of plastic pieces to form a larger piece can bring ideas of similar manufacturing in larger scale. For example the use of reused glass that is melted together in segments. The model can in some ways address fabrication and manufacturing as well as results.



Model showing design of garden seating by working with Architectural Bricolage in a scale of 1:20.



Things as form generators.



Things as building material.

Different *things*

The model of the courtyard furniture is constructed using inventories of different types of *things*. One type of use of these *things* are as form generators by providing form in the 1:20 scale which is then re-imagined. The other type of use is as building material for which a model in 1:20 is 3D-printed in order to construct the bricolage.

When these types are combined the design result in the end can become something with different materialities that produces unexpected effects.

Developing a methodology

Bricolages

Inventory no. 1



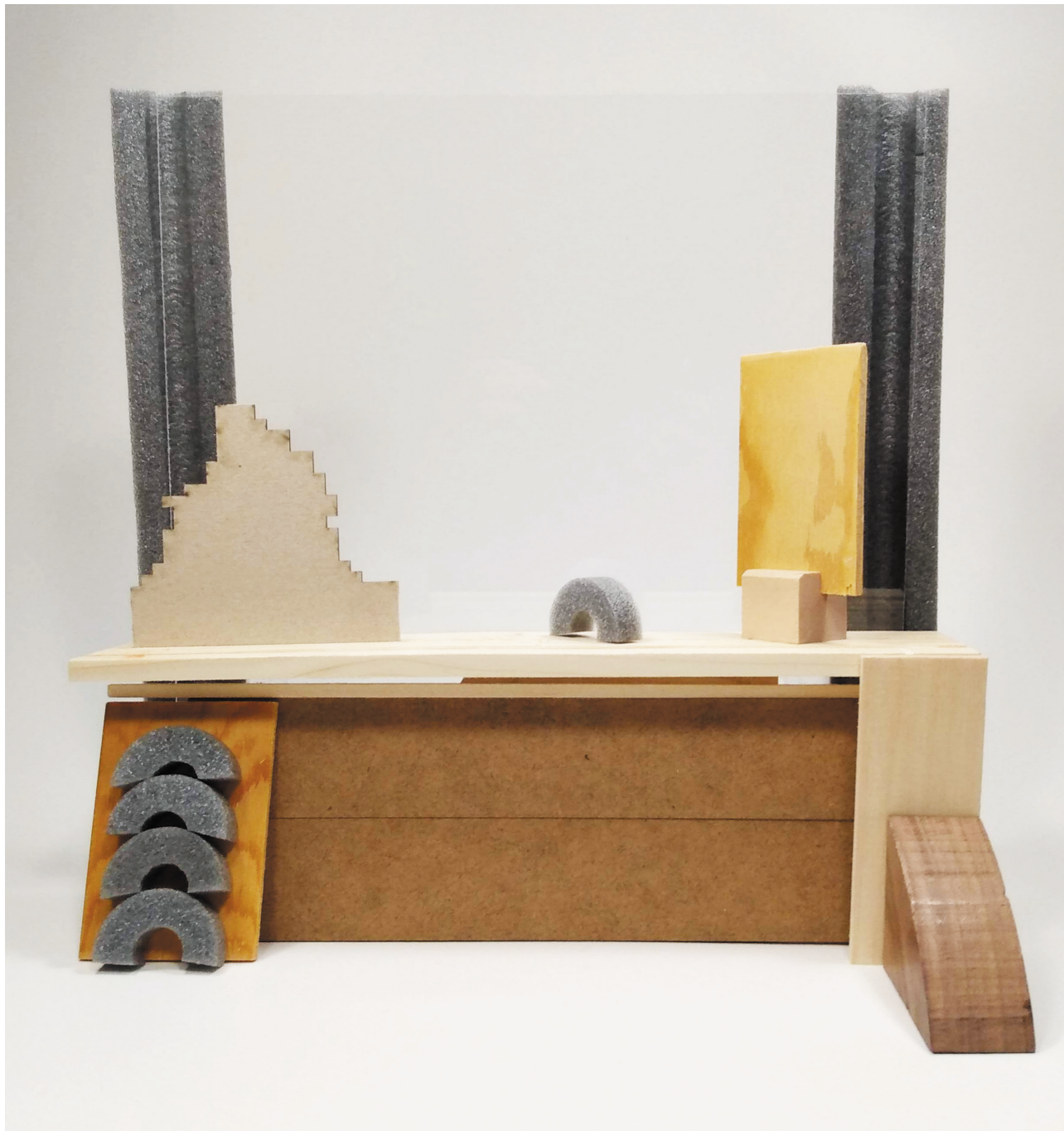
Materials include plastic foam tube, lasercut cardboard, different types of wood, plywood and MDF.

Bricolage 1A



A floor is made from cut pieces of the plastic tube. A wall is made from tubes and a wood piece.

Bricolage 1B



A window situation is made up of plastic foam tubes framing the window. On the window sill objects are placed, something resembling a picture frame. Stacked arches decorate the left side of the model.

Bricolage 1C



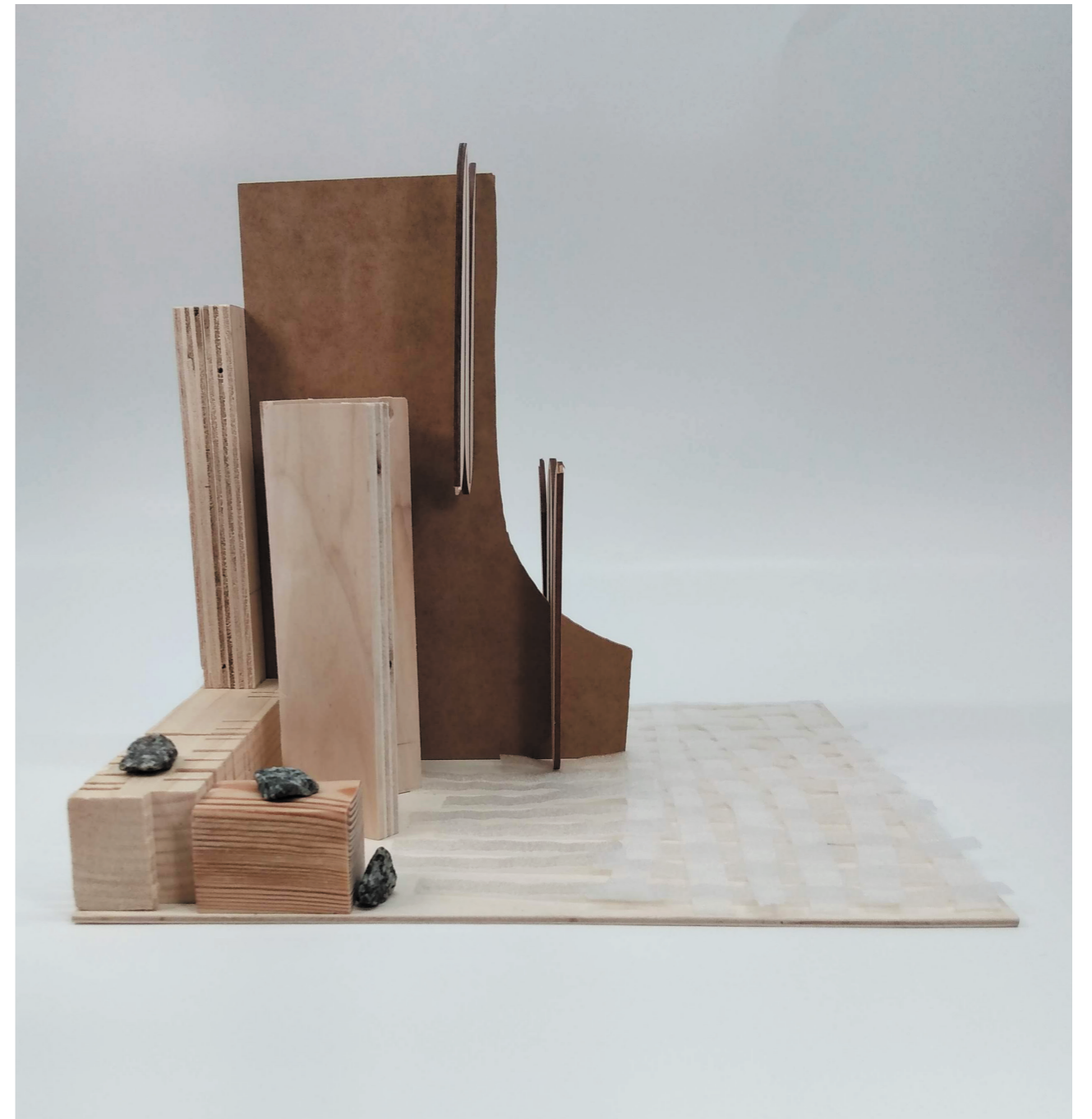
A ceiling made from a wooden piece with channels cut into it. Plastic pieces cut from a tube decorates the upper part of the wall. The ceiling rests on the thin piece of MDF placed on a wooden shelf.

Inventory no. 2



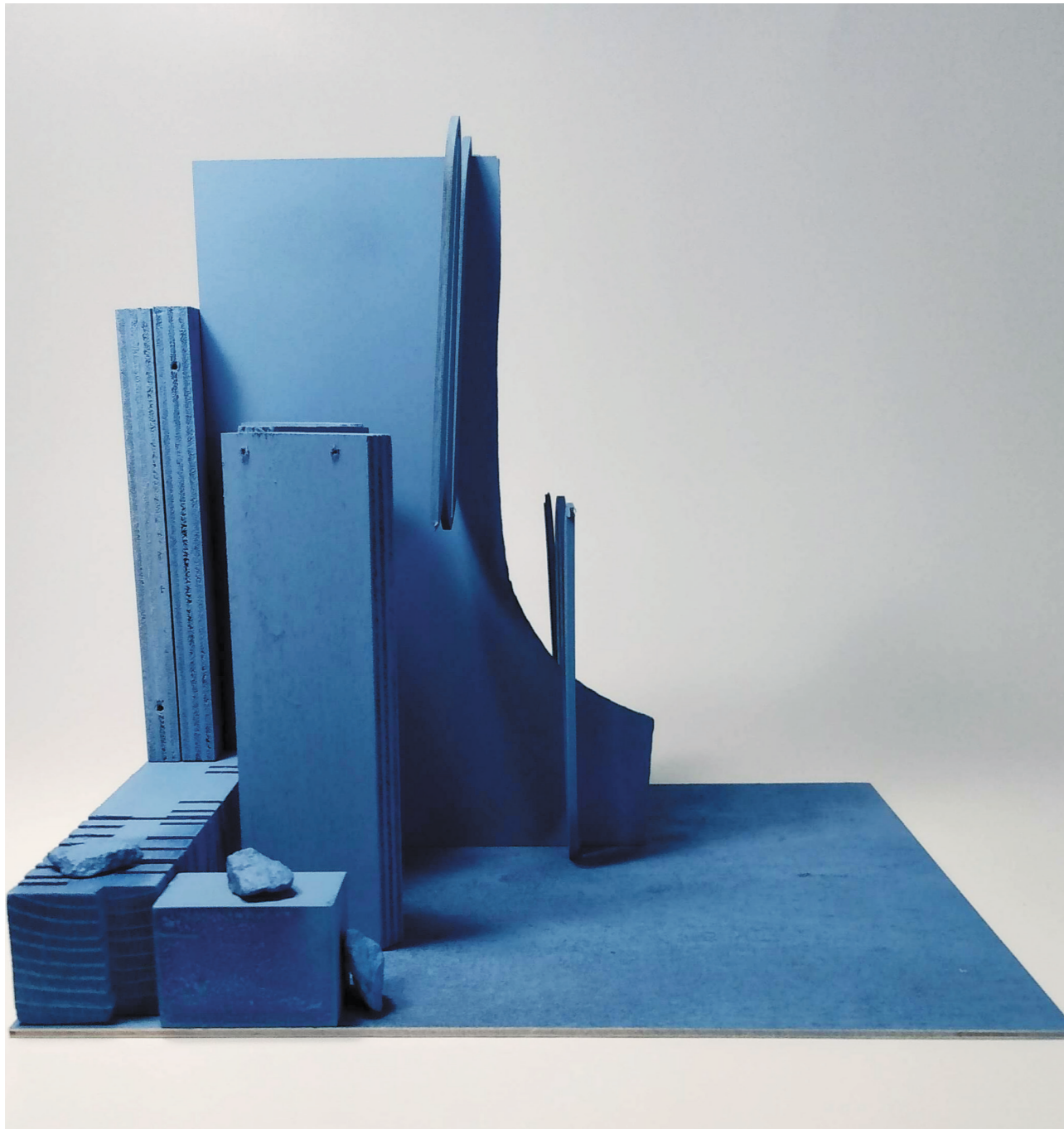
Materials include leftover plastic spool for 3D-printer, thin lasercut plywood pieces, MDF, Pepsi cup, three small rocks.

Bricolage 2A



A MDF-piece with a curved edge holds up two pieces of lasercut plywood. A wooden piece with cuts in it holds the MDF in place. Woven plastic covers the floor/ground. Three small rocks are placed in the left part of the model.

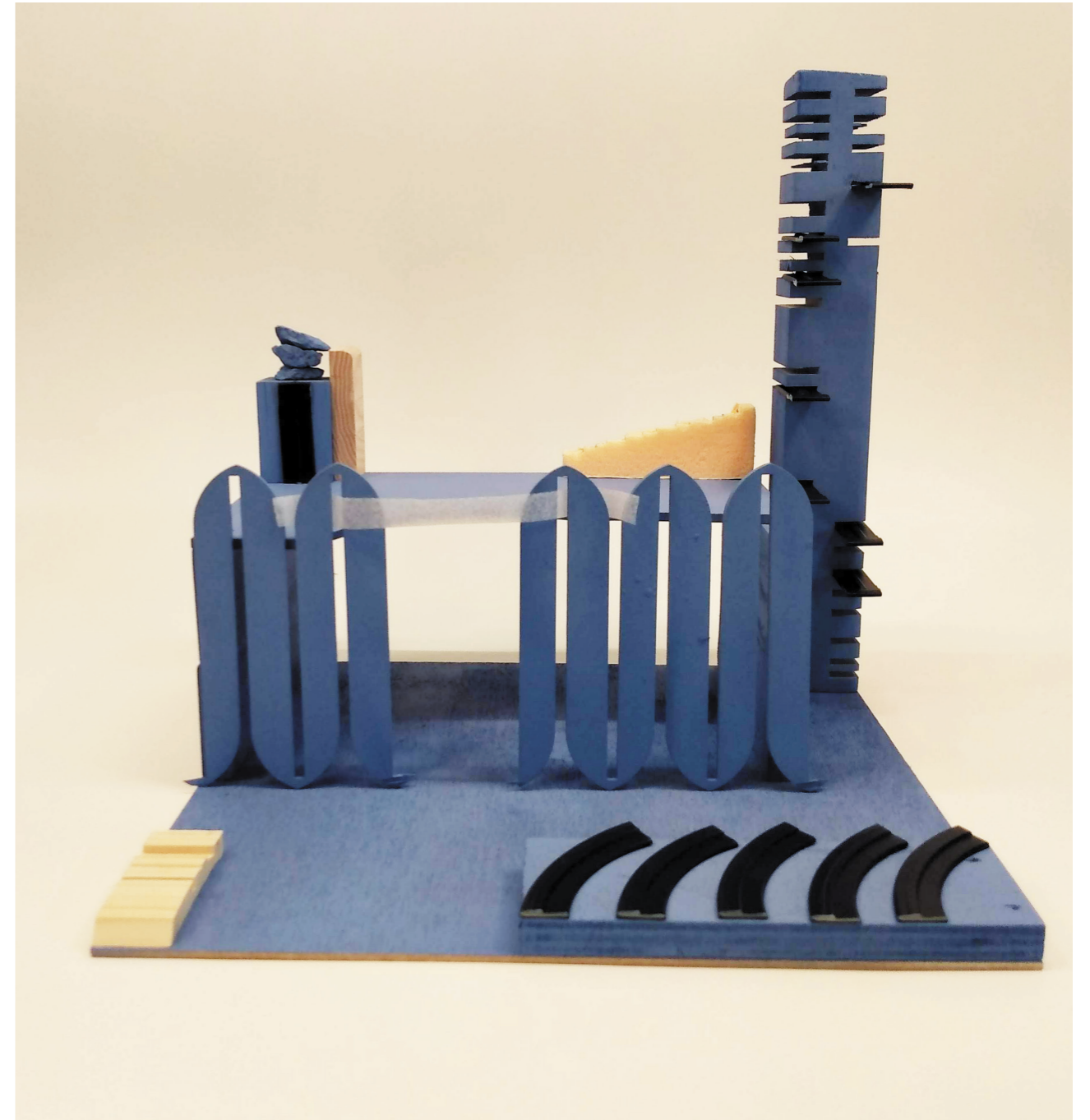
Bricolage 2A - color



The uniform color of the Bricolage makes light and shadow more noticeable. The color also makes the Bricolage appear as an object, instead of a composition of parts.

The uniform color can make the Bricolage seem almost surreal.

Bricolage 2B



Bricolage containing some colored parts together with unpainted ones. The unpainted parts stand out but not as clearly as when everything but one part is painted. The Bricolage is read more as a composition than an object.

Bricolage 2C



Bricolage made in the same fashion as the previous.
Appears more as a collection of objects than an entity.

Bricolage 2D



Bricolage using multiple colors. A thought scale of 1:10
makes the Bricolage appear as a room. The Bricolage
contain more scattered and smaller pieces than previous.

Inventory no. 3



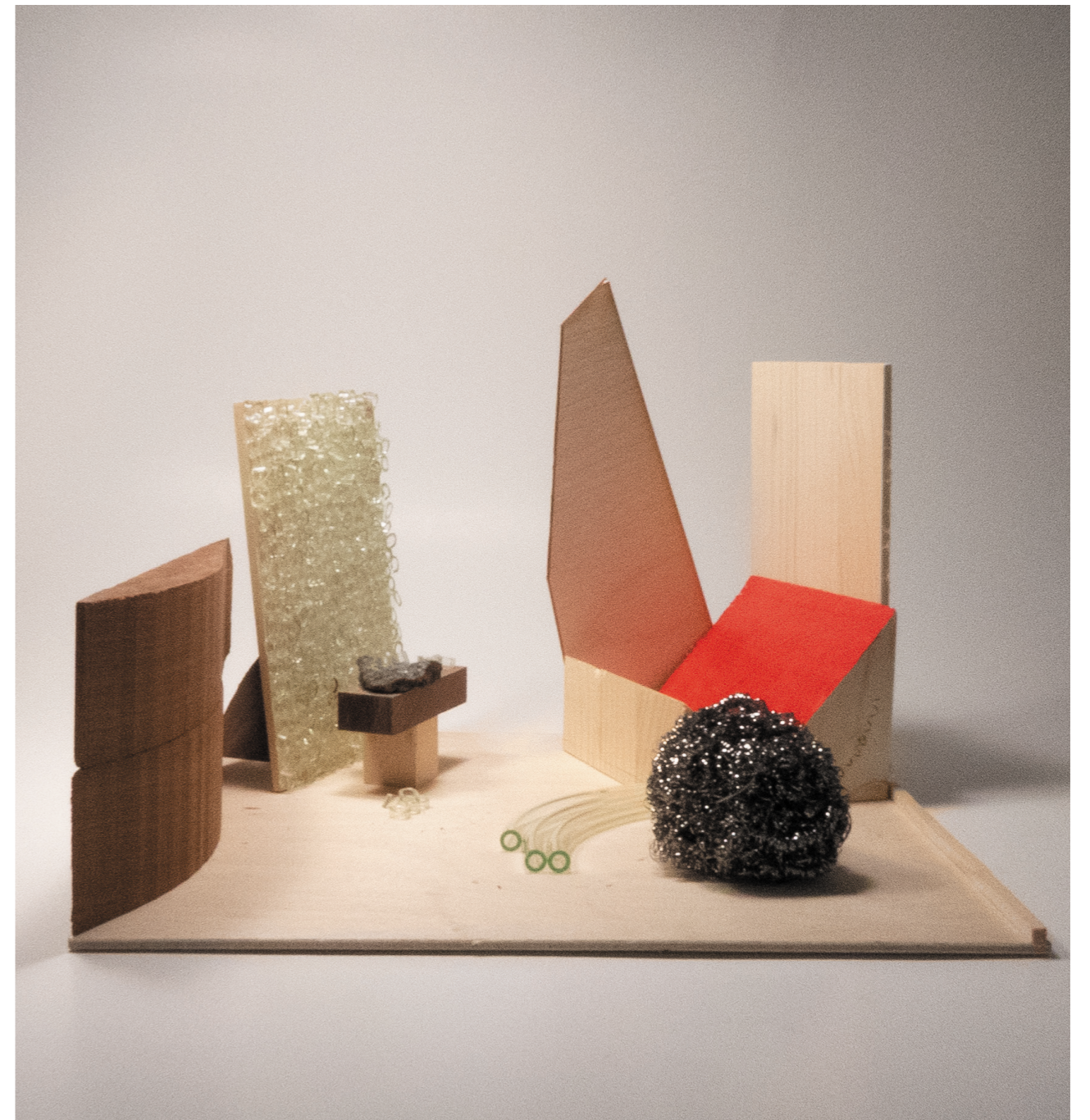
Materials include lasercut plastic, a plastic tube, different pieces of wood, a piece of OSB-board, a rock, cardboard.

Bricolage 3A



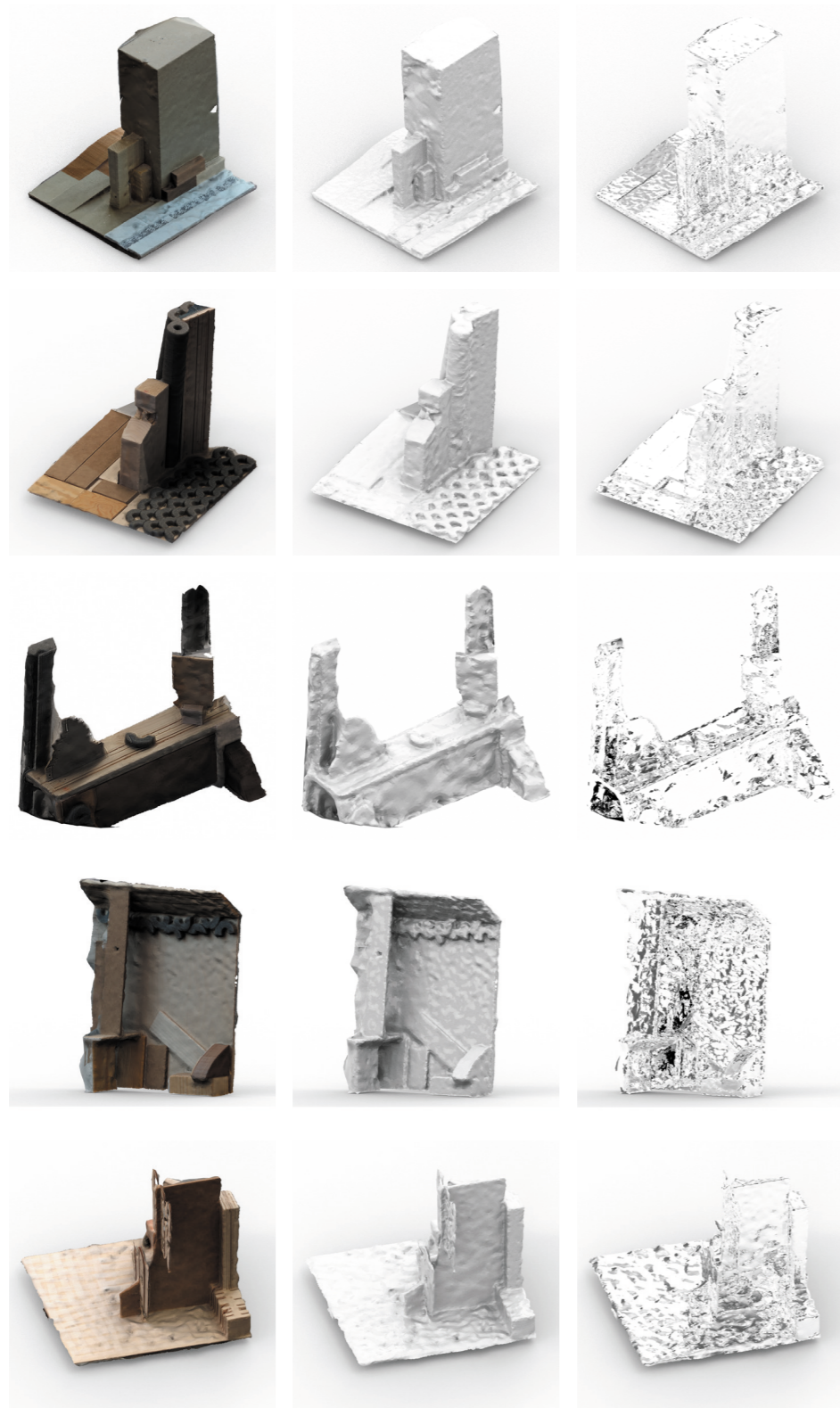
Cut up pieces of plastic tube create a floor. Wood with different properties are combined.

Bricolage 3B

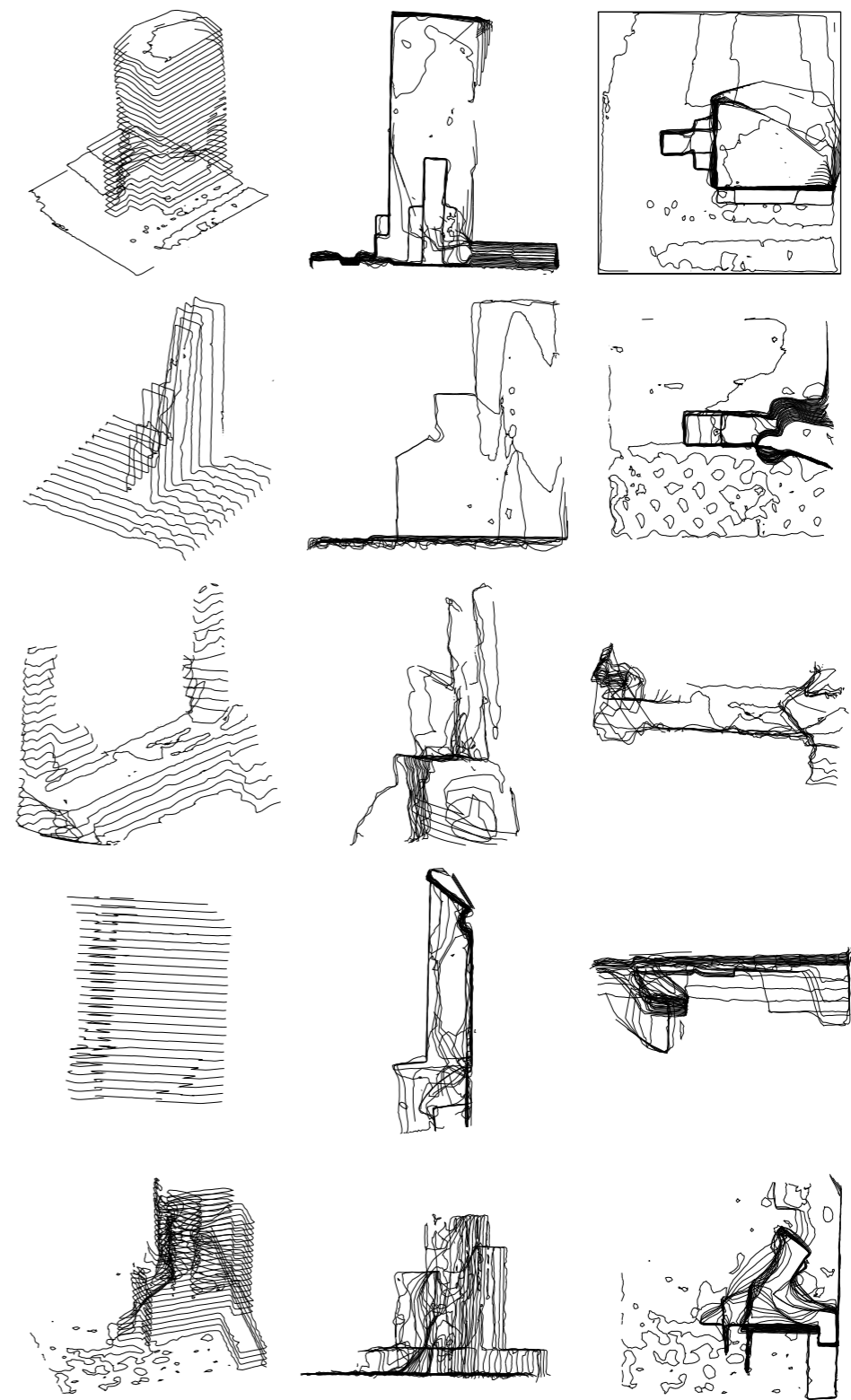


A wall is created by cut up plastic tube pieces. A red piece of wood resembles a piece of furniture.

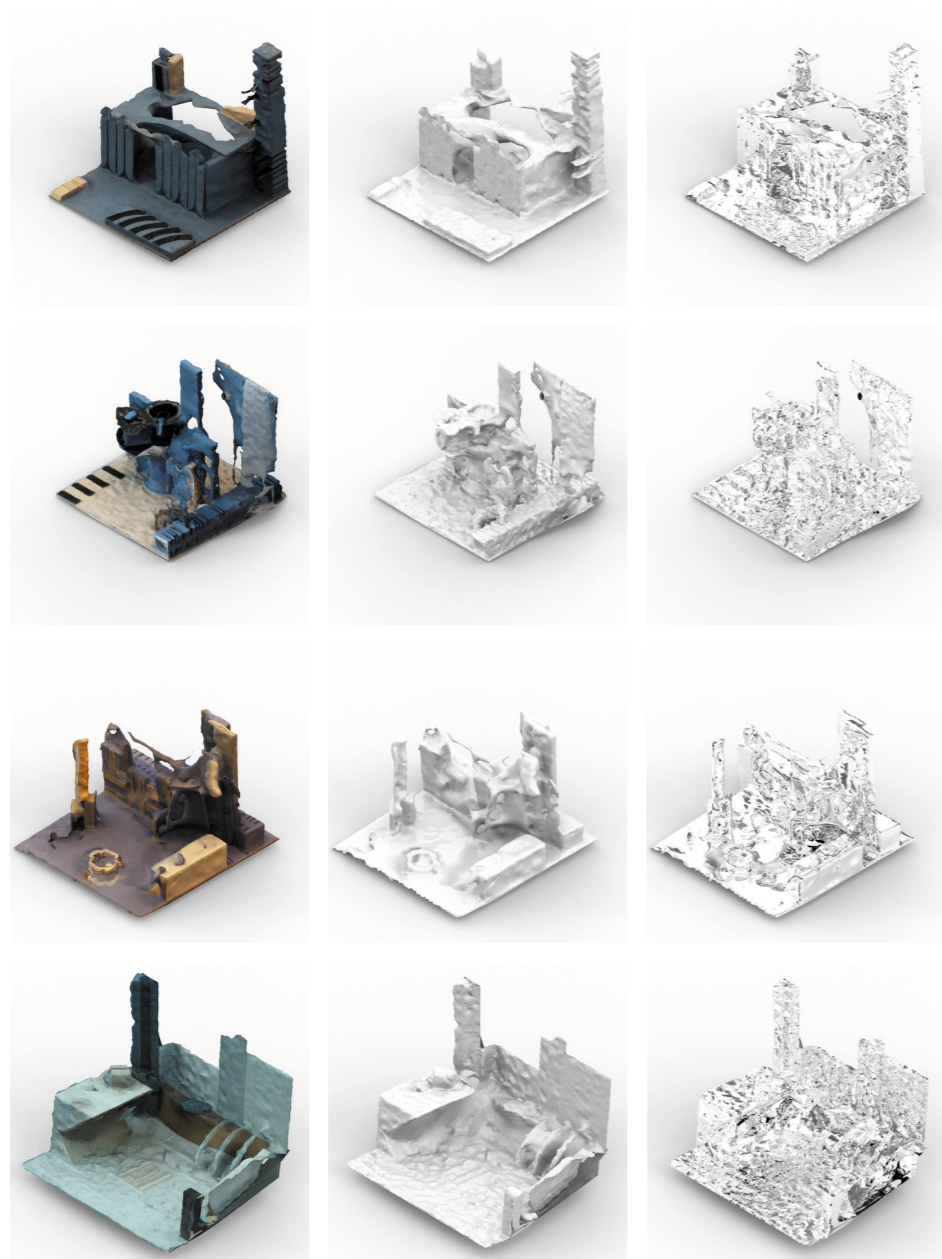
Analysis



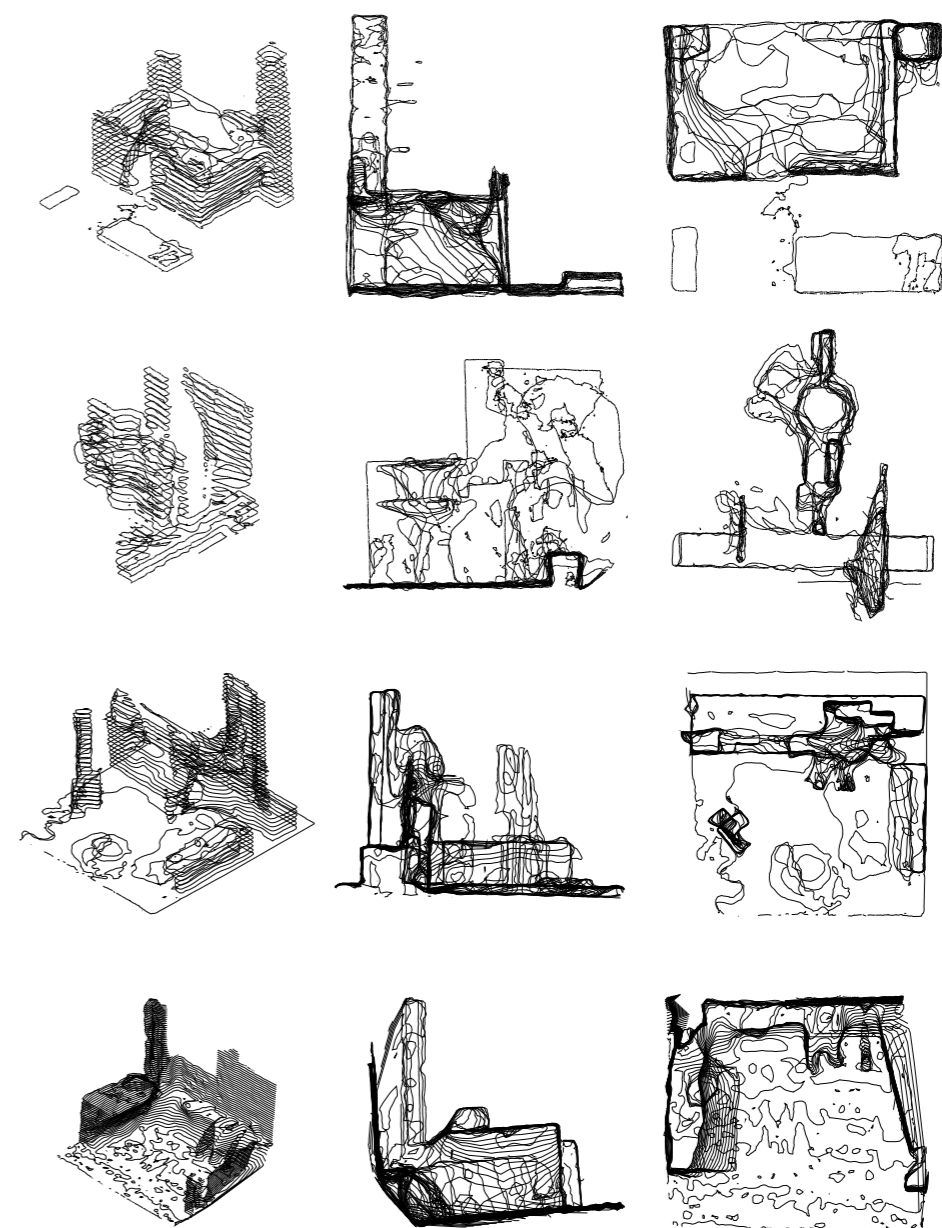
Photogrammetry was used as a tool to find/create effects when viewing group form.



Mapping the form of the bricolage as a total figure.

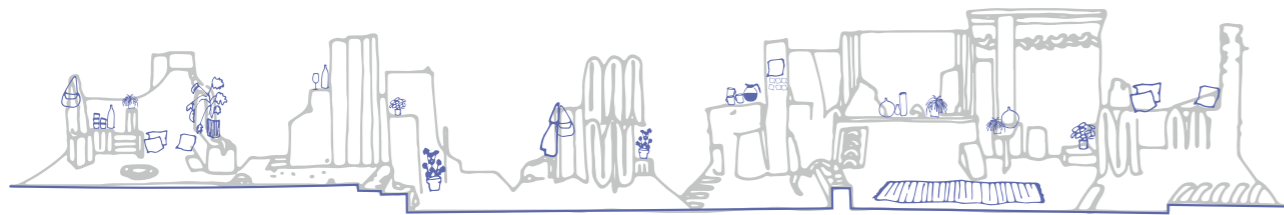


Cohesiveness. When the *Bricolages* are colored a uniform color they appear as a unit more than an assembly. The use of color to create unity is a relevant technique in making a gathering of material *things* appear cohesive.



Complexity. Contoured views show a richness and complexity that can be found in combining large and small elements of existing *things*. Previously unknown spaces can be found through this method of assembly and specific effects of the material *thing* can inform a design.

Re-imagining Bricolages



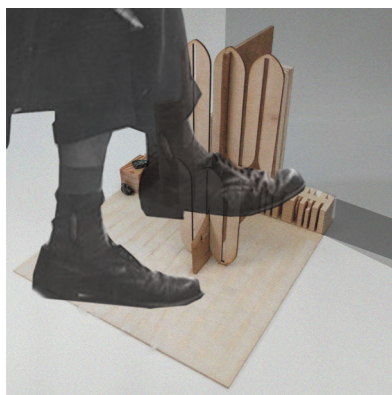
Combined Bricolages form a long elevation.

Bricolages as elevation

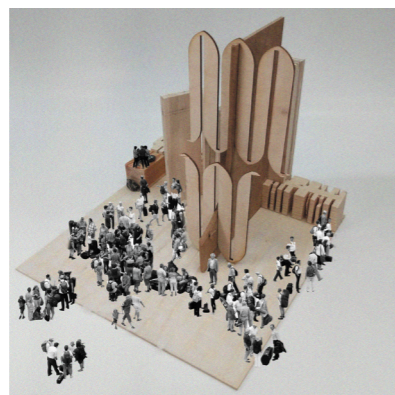
The Bricolages are here combined to form a long elevation. Things are added that make up remnants of human activity. In this way of visualising, the Bricolages are tested as spatial elements in scale 1:10. Jackets, potted plants and water glasses find space in the environment created and contribute to finding *affordances* of this environment.

An effect of the Bricolages shared inventory is that elements of this inventory are reoccurring throughout the elevation. This reoccurrence of architectural elements creates a sense of cohesion in the changing elevation. The same object from the Bricolages can in the architectural scale fulfil many different tasks. For example can the same form act as coat hanger in one place and back rest in another.

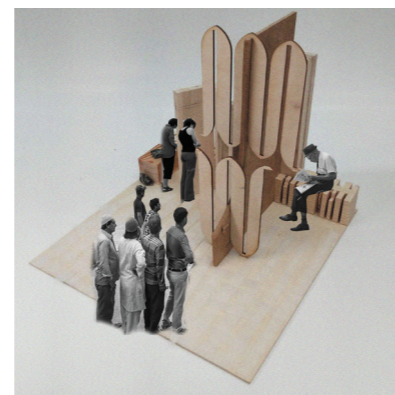
Bricolage 2A as...



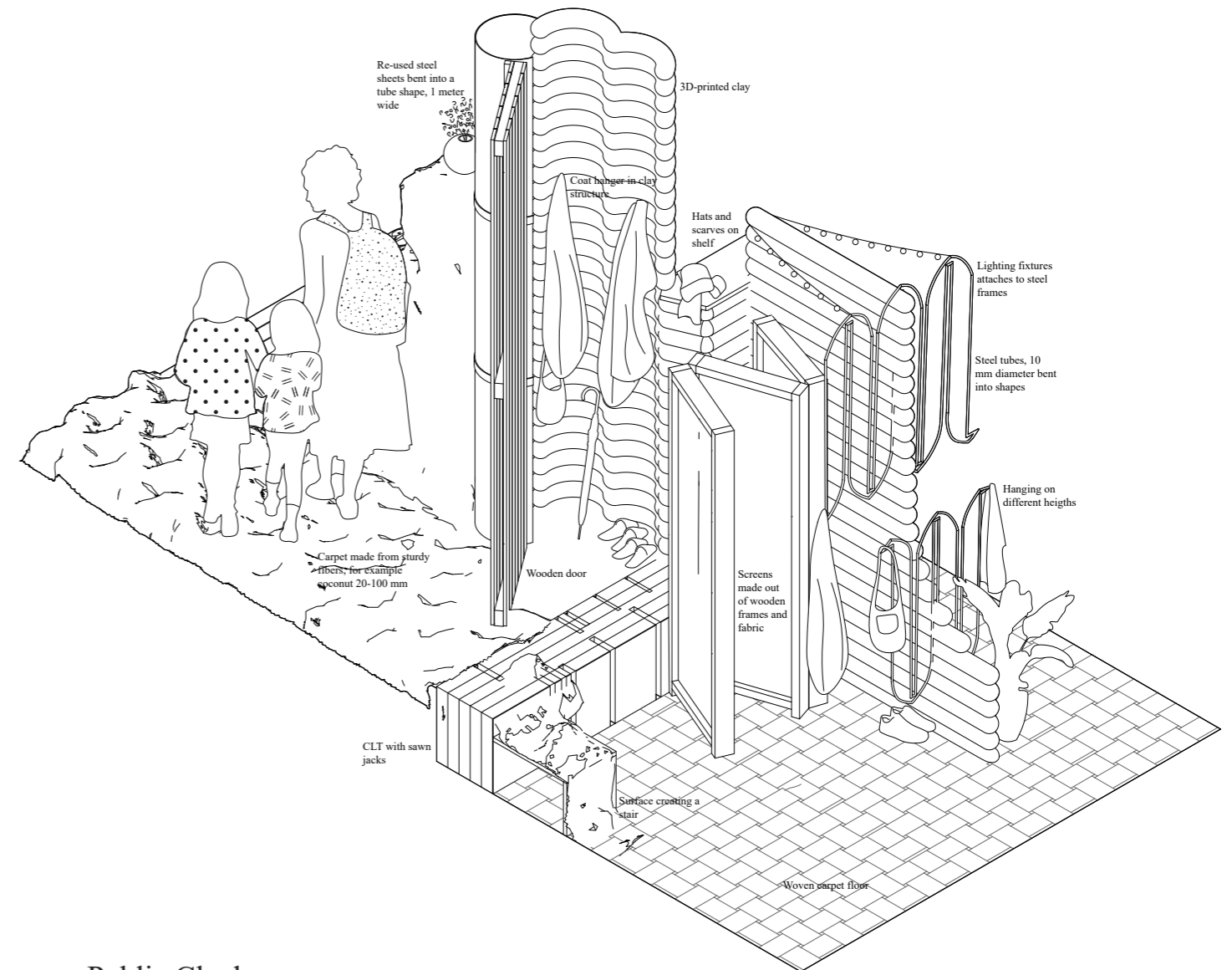
Shoe polisher.



Cityscape.



Polling booth.



Public Cloakroom

Two Bricolages combined from the elevation are interpreted in drawing and given the function of a public cloakroom. In this transition from physical model in 1:10 the forms are assigned new materials that together with the pre-defined form brings new architectural potential. When selecting materials in 1:1, free-form materials such as 3D-printed clay is identified to possibly work well with the method of Bricolage since it easily can encompass many forms.

Summary

Conclusions

A vast spectrum of material sourcing can lead to interesting tectonic situations and a materially rich environment.

Unexpected form re-imagined can through digitization and scaling lead to interesting spatial qualities and new functions being found.

Reflection

The thesis has dealt with issues of *things*, re-use, re-imagination, digital tools, *material networks*, spatial and tectonic effects, *affordances*, figuration and composition. A methodology has been developed through the making of physical models, digitization and architectural drawings.

During this process an important aspect has been the translations between scales. This relation has proven to be of great interest in many ways.

This translation is in the thesis seen as holding generative and creative potential for aspects such as form and spatiality. But a challenge in the thesis process has been to address what could be perceived as a problem that come with scaling, how materiality and texture in great deal can be viewed as a non-scalable aspect of architecture. On the other hand, the bricolage figuration together with the 1:1 material is what creates an interesting effect. This relation would be interesting to go further into and to analyze the results in the design proposal this method leads to as a way to address these effects more deliberately.

The bricolage models work as a design tool that holds an integrity and thereby co-creates the proposal. By bringing in an inventory of both small scale form-generators and large scale building materials which are modeled in scale these are treated on the same level in order to make a composition. In this way pre-notions about the previous function of the things can be put aside and they are instead treated as parts which can be manipulated in order to relate to other parts. In this way, the interaction between the re-used elements and the forms which are re-imagined become important.

The result of the design thereby stems from limitations on different levels, of form and figuration as well as material limitations. But through these limitations a spatial variety and a varied material palette can be accessed. How material intersections would be constructed in the 1:1 scale in this hybrid landscape of re-used and fabricated parts would be something to go further into. The proposal consists of a variety of different materialities from very rough to very polished and how they intricately relate to one another is seen as a further development possible.

By combining knowledge from different discursive fields the thesis has contributed to discourse. Addressing different aspects of architecture such as form, tectonics, materiality, use, resource use the thesis assumes a position where different architectural issues can inform each other. The thesis deals with areas of interest currently relevant to architectural production such as raw material scarcity, digitization, new modes of production and researches these issues through design in order to find new design implications and possibilities in terms of form, space, tectonics and materiality.

The thesis has added to different current architectural discussions. Unique traits of the thesis can be seen in the way the thesis uses photogrammetry to find form as well as the material hybridity found by different types of material sourcing.

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Thing-ness

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Master's thesis

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