

Making and Re-Making an Architectural Model

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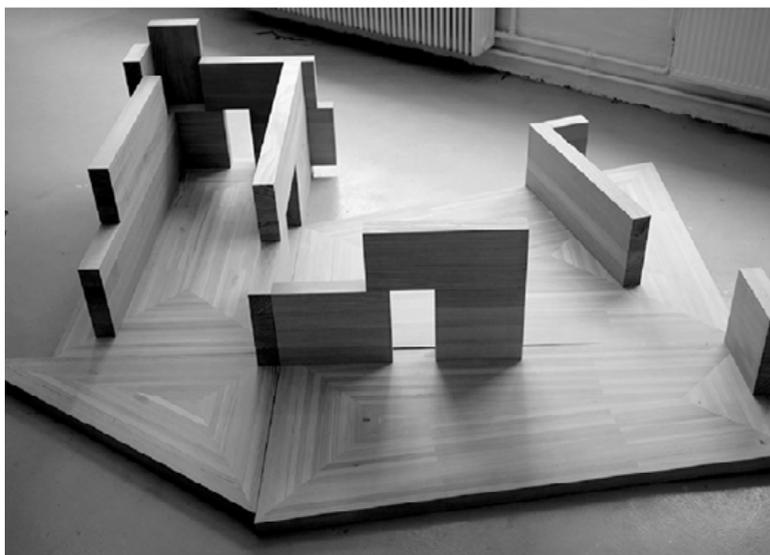
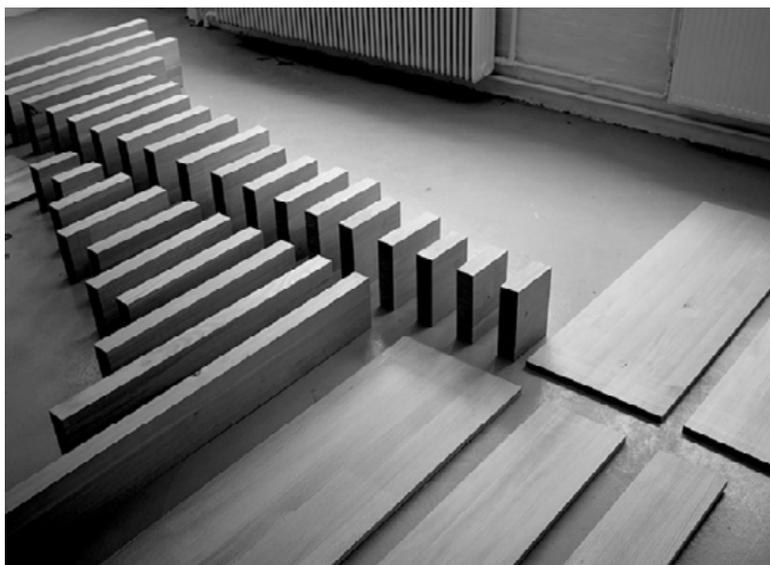
Abstract: This visual contribution presents artistic research as intersecting projects: a.) *Miniatura*, a 1:10 scale model museum and b.) the exhibitions within it – one by the author (»Garden of Broken Asphalt«) and one by *Spacegirls* (»The Ideal Museum«). *Miniatura* combines model making, photography, and digital exhibitions to catalyze architectural discourse. The modelled exhibitions within the museum explore the potential of material conditions intertwined with text and image-based narratives.

Keywords: Museum; Model Making; Reclaimed Building Materials; Architectural Representation; Aesthetics.

Introduction

This visual contribution explores the 1:10 scale model through the making and remaking of a miniature museum and the exhibits within it. Thus, it centers around two architectural modeling modes conceived within the framework for artistic research at the Danish Royal Academy (Kgl. Akademi 2022). The first, an analog/digital museum named *Miniatura*, which becomes the framing of the other – the modelled exhibitions. Through text, images, and drawings the intersection of model-museum and exhibitions are examined in relation to the themes: »Material« and »World« outlined in the call: *Making Sense through Making Architecture*.

First, *Miniatura* is introduced, its foundational ideas, its making and the results as they are during writing. *Miniatura* is an ongoing project that bridges artistic research and practice by exploring perspectives and possibilities of model making and co-authorship in a hybridization of 1:1 experimentation, photography, and digital exhibition formats and their combined potential to catalyze architectural discourse through a flexible building system and a hybrid analog/digital gallery space (fig. 1–3, see also



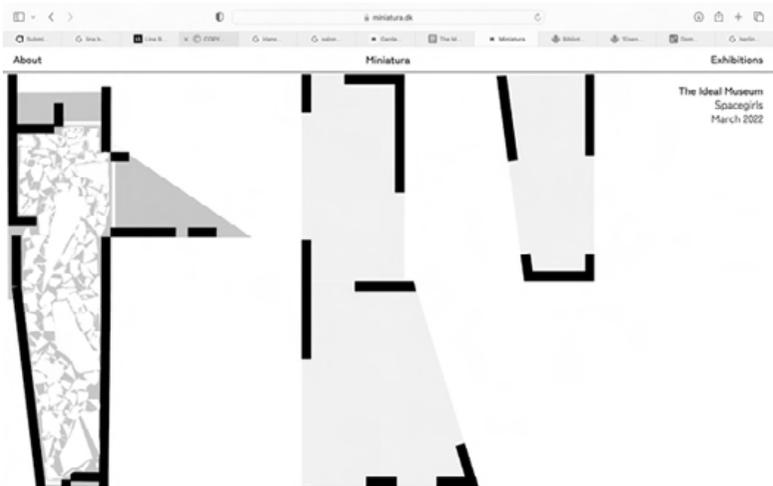
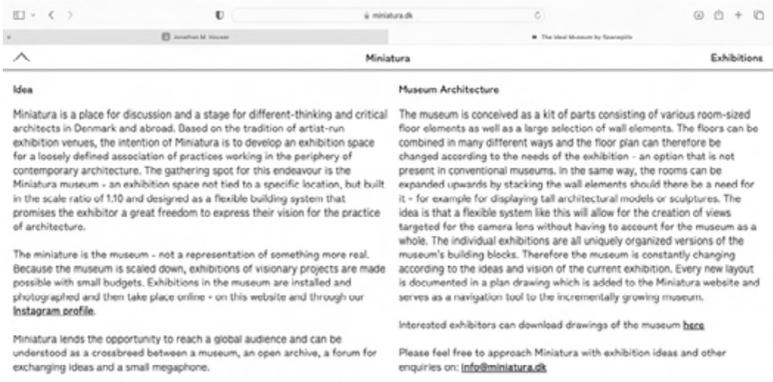
1.
*Miniatura, building elements made from douglas wood, developed as a collaboration between Jonathan Houser and Christian Vennerstrøm.
Photo: Christian Vennerstrøm and Jonathan Houser.*

www.miniatura.dk). Furthermore, this visual contribution presents and reflects upon the project's intermediary results by focusing on two realised exhibitions: First, the »Garden of Broken Asphalt« (fig. 4–7) by the author and second, »The Ideal Museum« by Spacegirls (fig. 8–10). »Garden of Broken Asphalt« will serve to elaborate upon and discuss the potential of creating an architectural exhibition for Miniatura by making a landscape project engaged with reclaimed building materials that aimed for an aesthetic rather than a technical approach to materials and their interaction with the world. The Ideal Museum exhibition will serve as a tool to unfold the concrete potential of using the model as a meeting space of cocreation made possible by the 1:10 scale museum and its flexible building system.

Making Miniatura: The Model as Reality

The initial 1:10 museum model has been realized as a collaboration between architect Christian Vennerstrøm and the author as a flexible building system of various components which can be taken apart and reassembled (fig. 1). As described in the catalog *Practices of Risk Control and Productive Failure* (Houser 2022), which accompanied a group exhibition that included Miniatura, it consists of several irregular- shaped tables alongside an array of wooden blocks which can be utilized for walls and ceilings. The table tops act as floors in the museum and can be combined with the wooden blocks to form a variety of spaces (fig. 2–3), thus allowing the museum space to take on many different shapes to suit the specific needs of future exhibitions.

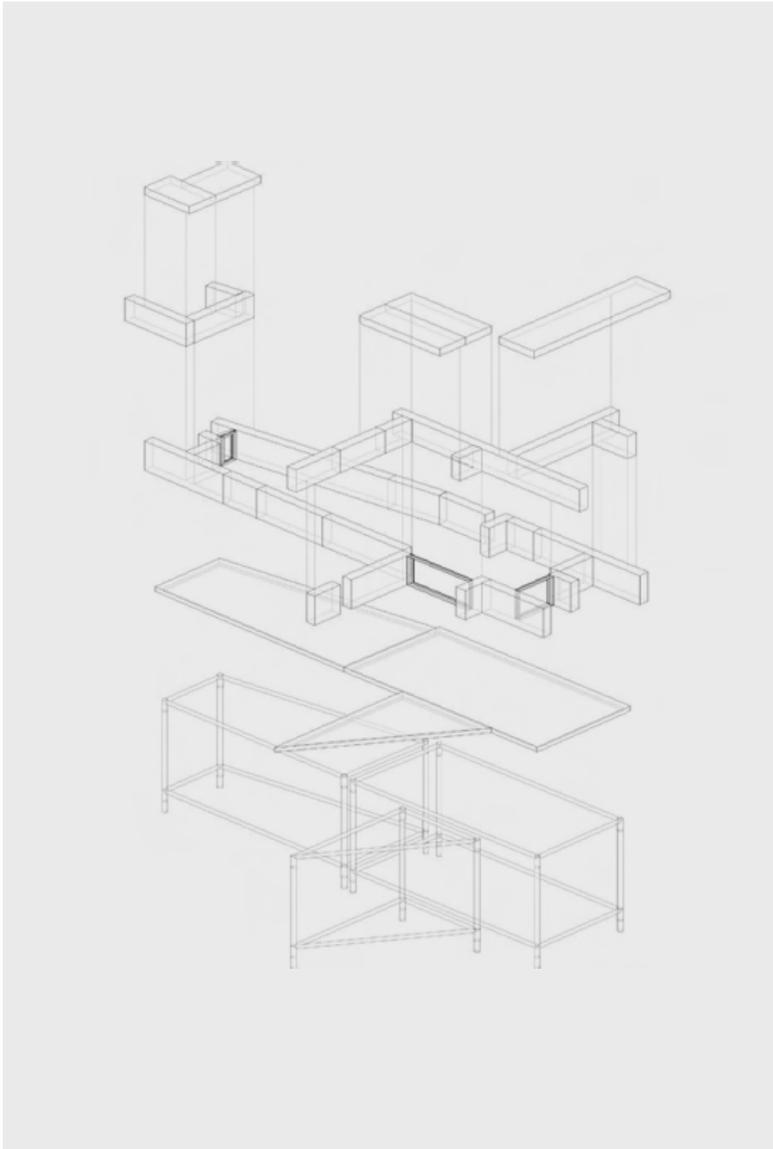
As an experiment to test the idea proposed and argued by Eliasson that a model may be considered real (Eliasson 2007) the project explores the notion that the miniature may be considered an actual place in contrast to the general idea that models are only representations of architecture yet to be built. This consideration has played an important part in the conception and realization of the museum and have so far, resulted in two exhibitions that have appeared online on the museum's website. As a result, the spatial compositions and images have taken on different qualities from the cinematic narrative presented in »Garden of Broken Asphalt« (Author) (fig. 5–7) to the almost scaleless 1:1 experiments in the exhibition »The Ideal Museum« (Spacegirls) (fig. 9–10). Due to the museum not having a fixed form the model must accommodate this foundational condition. Thus, the act of making and remaking in a collaborative effort between curators/initiators, exhibitors, and physical reality and digital presence becomes the fundamental



2. *Miniatura: Screenshots of the digital side of the museum showing the »About« page and the floorplan navigational tool, which changes and grows for each exhibition.*

characteristic of its architecture. As mentioned earlier, this aspect will be treated at the end of this text in relation to the exhibition »The Ideal Museum«.

The entire museum is constructed from wood cut-offs donated by the Dinesen floor company. Initially, the act of making the museum and the final character of its parts is the result of a negotiation between the inherent material properties of the Douglas wood in conjunction with the vision for the aesthetic outcome. The wood cut-offs, unlike the luxury floor product from which they have been discarded, are characterized by inconsistent vein patterns, knots and holes where knots have fallen out, a roughness, and a 1:1 character which doesn't align with Miniatura's ambition of being a 1:10 scale museum capable of creating a photographic illusion. The random placement of knots and cracks in the wood and a selection of wooden pieces of various lengths necessitated a refining process. In the Danish language the word for refining a material is »forædling«. This is a word that more directly translates into cultivation rather than the more neutral English word »refining« or »processing« suggested by the Cambridge Dictionary. The Danish term is also used in biology to describe the cultivation and selective breeding of plants in order to strengthen certain properties, including the aesthetic, such as more flowers on a rose bush) and/or functional, such as a higher yield of grain. In the case of Miniatura the cultivation process serves both purposes. Thus, one aim of the initial process of making the museum was to homogenize the wood's aesthetic properties to create building blocks with a similar grain structure on all sides. In this respect, the goal was to achieve a surface character, which could lend the tactile and experiential properties of the wood to future images while at the same time supplying the spaces portrayed with an almost abstract character. Another equally aesthetic and functional aim was to transform a very heterogenous material into precisely proportioned blocks of different sizes which would facilitate the largest possible compositional flexibility for arranging them in the form of a museum model. On a more functional level, the refining process also ensures a more stable product that gave the wooden blocks a formal stability so that they can be stacked and joined precisely. Therefore, to avoid the wood from bending and losing shape over time, along with achieving the intended aesthetic properties, all the cut-offs must be chopped up in a longitudinal direction and leveled into sticks with identical measurements in the cross section. Each stick was examined and combined one by two or one by three while the knots and irregularities in the faces were always hidden by gluing them together and making them disappear into the wooden blocks. After this the process of



3.
Extruded Axonometry of »the Garden of Broken Asphalt«.
Drawing: Jonathan Houser.

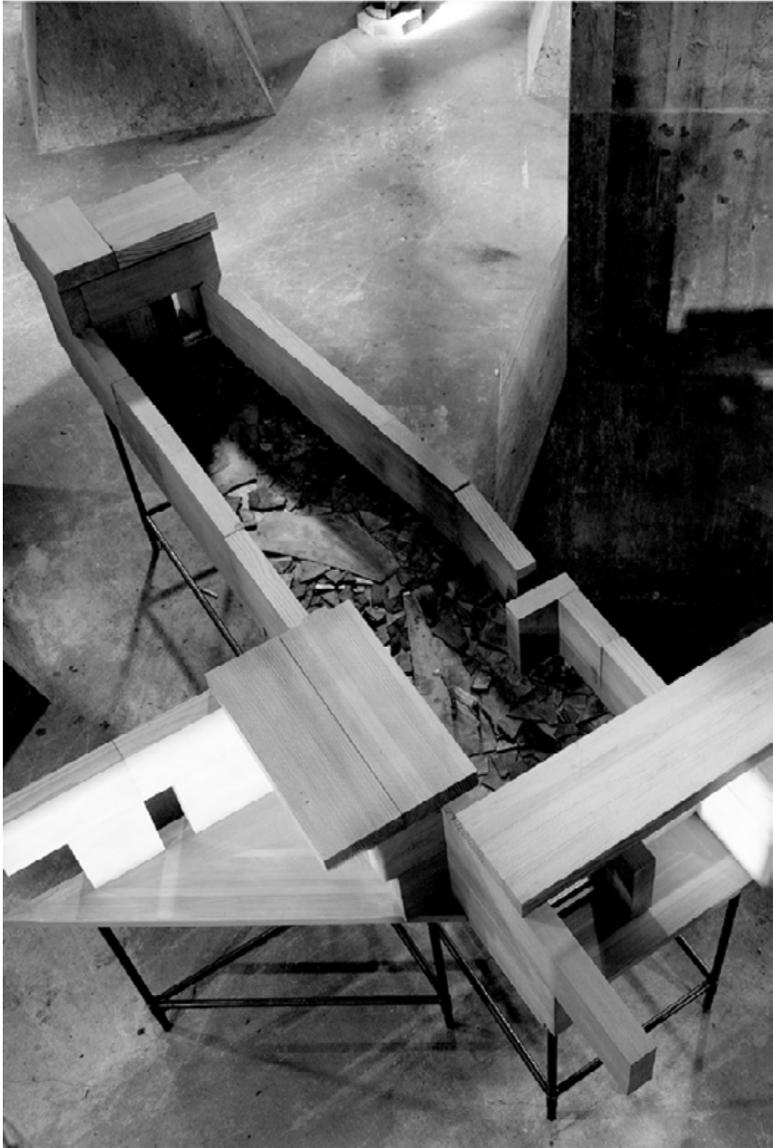
levelling was repeated and the blocks were cut to pre-decided lengths while material waste was minimized. Following the same procedure of cultivation, the floorplates were made from sticks of Douglas wood with square cross-sections that were glued together in sheets, leveled, and afterwards cut and glued together in their specific shapes.

When deciding on a surface treatment, emphasis was placed on finding a solution which allowed the wood grain to be visible but could simultaneously desaturate the inherent contrast between light and dark lines. The treatment conclusively chosen was a handmade mixture of shredded soap diluted in warm water and pigmented with a combination of hydrated lime and coal powder. Due to this treatment, the wooden surfaces become slightly bleached and the process which makes it turn a warm color is partially stopped (hydrated lime) alongside coating the surface (soap) and giving it a grayish hue (hydrated lime and coal). This surface treatment is an important aspect of the final photographic character as shown in the photographic images.

Remaking Miniatura: Garden of Broken Asphalt – Setting the Stage

»Garden of Broken Asphalt« serves a dual purpose of being both a preliminary exploration of the possibilities central to the museum model, its building blocks, photography, and internet presence while also turning it into an exhibition. By letting the museum partner with an experimental exhibition, the museum's potential and limitations are examined in relation to the composition of blocks, the creation of indoor and outdoor spaces, artificial light, image cropping and other factors.

In this experiment the museum is inverted to form an outdoor garden space of which photographs can be taken through windows built for this specific purpose, thus creating the illusion of a context through the making of an image. The museum model is thus arranged to act as a stage set for the camera, which aims to produce photographs that won't show the unfinished character of the museum in the online gallery space. The aim was to discover how the museum could become a framing device, both in concrete physical terms with the museum walls acting as the limiting container, but also in a digital online reality in which the garden exhibition is reframed as part of the museum and its incrementally growing floor plan acts as the website's navigation tool (fig. 2 and 7).



4.
*»Garden of Broken Asphalt«, Shown as part of the Exhibition: Practices of Risk Control and Productive Failure, Bronshoj (DK).
Photo: Jonathan Houser.*

The 1:10 scale is particularly noticeable in the window frames and through the three-dimensional (3D) printed wild foal which simultaneously appears as both realistic and clearly representational. These elements and the broken asphalt landscape give a sense of scale to the wooden blocks that deliberately oscillate between 1:1 material and scenography backdrop.

»Only this is I know for sure: a given number of objects is shifted within a given space, at times submerged by a quantity of new objects, at times worn out and not replaced; the rule is to shuffle them each time, then try to assemble them.« (Calvino 1978: 108).

Inspired by the story of the city named Clarice from which the quote above comes, the exhibition investigates a radical vision for the built environment based on the idea of a city defined by one singular rule: No new materials can be added when constructing buildings and landscapes. The founding principle for the modeled garden is hereby the infinite repurposing of building materials, which by extension is the basis of all construction activities in the imaginary context created by the exhibition. Hence, architectural form is explored as an act of transformation in the enclosed garden constructed from repurposed materials and may be considered a kind of dystopian memorial commemorating the 20th century.

Architectural visions based on material processes can be hard to investigate and test in representation. Therefore, the garden was also an attempt to test the potential of the museum's 1:10 scale by experimenting with modeling techniques that resembled how the garden should be constructed, with methods that run parallel to how it was envisioned in 1:1, hereby attempting to mirror the actual process of creation. Therefore, the chosen material is a plaster colored with pigment that has been broken and arranged in the same way as asphalt, which is what the model represents. As a method of investigating the potential of this type of design, the physical model is an important tool, as the computer can only partly be used to imitate principles and character derived from processing and properties of self-organization.

Remaking Miniatura

As the first exhibitors and cocreators of the Miniatura Museum, Spacegirls (Cisse Bomholt (DK) and (Elisabeth Gellein (NO))), were invited to the studio to translate the brief and the building blocks into an exhibition aligned with



5.
*»Garden of Broken Asphalt«, View of the museum seen from the garden with a
3Dprinted wild foal.
Photograph and Miniatura Exhibition: Jonathan Houser.*



6.

»Garden of Broken Asphalt«, View of the museum seen through a window and into the garden.

Photograph and Miniatura Exhibition: Jonathan Houser.



"As if a recent storm had broken up the hard black surface, a closer look revealed that it was a sea of broken asphalt. Once a parking lot, the materials of the previous century had been broken and left to serve as the basis of a biotope which was slowly emerging in the harsh environment."

Jonathan Houser, Infinity City



"Somewhere in the dim light what appeared to be a wild foal stood still for a moment, listening to its own echo. As the sound faded, so did the promise of a friend."

Jonathan Houser, Infinity City

7.
Miniatura, Screenshots of the digital side of the museum showing the »About« Page and the floorplan navigational tool, which changes and grows for each exhibition.

their own practice. Departing from a low-resolution diagram of the ideal museum as envisioned by Gottfried Semper, their version/exhibition of *Miniatura* is named after this: »The Ideal Museum«. The brief was very open. They had to make a representation of their practice within the confines of the setup presented to them. As there was no preliminary relationship between us, the invitation was an attempt to begin a dialogue by using the *Miniatura* model as a space for conversation about architecture; the discipline and the peripheral practice we seemed to have in common but had never discussed.

Having initially imagined a more traditional museum, with smaller scale and curated exhibitions within well-defined spaces, the images from the *Spacegirls'* exhibition were a welcome surprise. In contrast to »The Garden of Broken Asphalt«, which has an arrangement of the museum examining how it appears from the outside as an object, *Spacegirls'* strategy of arrangement is completely oblivious to this and uses materials such as tape and plastic on the outside to achieve the desired images on the inside (fig. 8). By inviting someone else to reorder the museum, set the lights and tell the story then, something entirely new was created – regarding both content and compositional strategy. *Spacegirls* brought a very tactile 1:1 material approach into the museum's orbit. When starting to manipulate and reorganize parts of the museum for the building system to align and accommodate their idea and vision, the separation between museum, architecture, and exhibition became blurred and looking at the final photographic results, the exhibition almost became one with the architecture of the model museum (fig. 9–10). Thus, in a very concrete way, by inviting colleagues to exhibit, the museum can potentially transform itself from exhibition to exhibition. The possibilities intrinsic to this type of museum can, due to its tactile qualities create a starting point for conversation and an unusual meeting space for new ideas and conversations that occur in both words, models, and images that enter a dialogue with an audience through website and social media. As the museum has the potential to grow and take its digital floorplan in many directions though online images and words, it also has the potential to become a concrete meeting place for like-minded practitioners in an evolving professional network, which in this case was centered in Copenhagen but has the potential to broaden the scope to global collaborations.



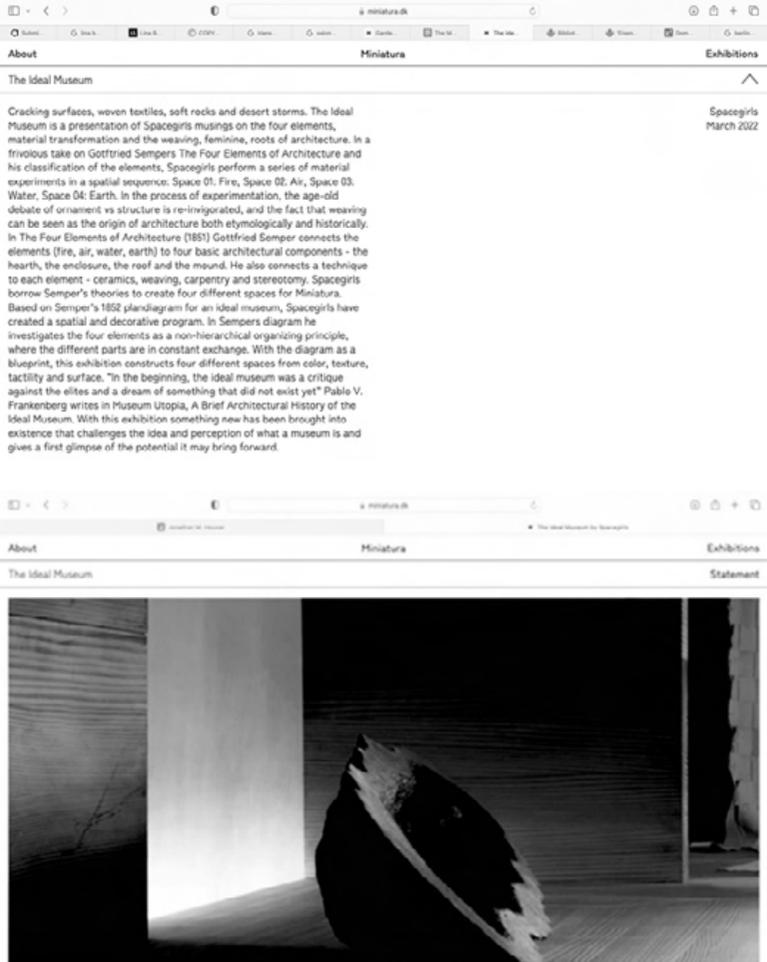
8.
*»The Ideal Museum«, Outside view an arrangement of blocks made to house the exhibition by Spacegirls in the authors studio. Torn Sheets of plastic taped to the model act as projection screens for colored animations.
Photo: Jonathan Houser.*

Discussion and Conclusion

Some of the perspectives on the collaborative act of making sense through making architecture, which are put forward by Miniatura, can be elaborated upon by a comparison to »The Open Work« as conceptualized by Umberto Eco. According to Eco (1989) the open work, as famously exemplified through the works of the composer Karlheinz Stockhausen among others, is characterized by the kind of compositions that provide a large degree of freedom for the performer to interpret and execute the musical piece. The compositional framework has such a form so that no two performances of the same piece are identical. In this regard, the museum/model and its other half, the regularly increasing www.miniatura.dk, can be considered an open work in which the physical reality of the wooden building elements, their inherent sizes, proportions, and tectonic logic may be understood as the equivalent to Stockhausen's sheet of music paper. The photographic documentation and presentation online are equivalent to that of a sound recording of a specific performance of a Stockhausen composition. In the Miniatura Museum the exhibitors assume the role of performers and interpreters of the material properties and the given scale of 1:10. Miniatura can then be interpreted as an experiment that has the definition of a work of architecture and the possibilities that arise when considering the model as reality in combination with the characteristics of »The Open Work«.

So, what possibilities do Miniatura and the comparison to properties of »The Open Work« give rise to when considered in relation to the themes of »Material« and »World« as outlined in the call for contributions to this issue of *Dimensions. Journal of Architectural Knowledge*?

Miniatura puts forward a concrete and tangible concept for the engagement, gathering around and discussion of the fundamentals of architecture. The concrete engagement between architectural peers is projected into the world through the museum's online presence and sharing it on social media. In this way the physicality of the wooden model and its flexible building system puts forward a concept for bridging the gap between the physical process of making analog models of concrete materials and the possibility of engaging with the world through digital media (fig. 2, 7, 9–10). As Miniatura is still in an intermediary phase, the results are not yet conclusive. However, when judging the two exhibitions and the photographs of the spatial experiments with different compositional arrangements of the museum elements, it quite clearly appears that the translation of Eco's concept of »The Open



9.

»The Ideal Museum«, Screenshots of the digital presentation.

Dropdown text showing Spacegirls and the curators statement.

Photo: Christian Vennerstrøm.

Work« to an architectural model and building system makes sense. Despite being quite different from each other regarding the relationship to the given 1:10 scale and the atmospheric and sensual qualities they embody, the realized exhibitions have a sense of communality that arises from the underlying presence of the material, its character, and its structural logic.

The idea of a system of building blocks is obviously not new and runs parallel to principles, such as in the proportioning systems developed by Dom Hans van der Laan (Laan 1983) in his teaching at the Bossche School of Architecture. The most important diversion from this parallel is perhaps our contemporary context of digital reality created by diverse architectural modeling and communication tools, which emphasizes the importance of direct engagement with the material world when studying architecture. Given its easy application, transformative setup, and element of photographic documentation, spatial compositions can be tested hands-on without the use of digital modeling which has become the norm. The experimentation with physical reality, made possible by *Miniatura*, is very valuable as an exercise in understanding both spatial and structural logic. Also, the large scale of the model compared to Van der Laan's building blocks, »The Abacus«, and the freedom from the strict rules of proportioning determined by the plastic number sets *Miniatura* apart, thus leaving more space for the interpretation by the individual performer seen in relation to the characteristics of the poetics of the open work as Eco defines it.

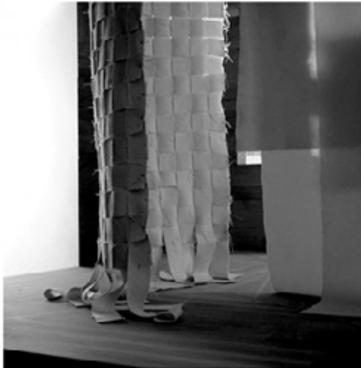
Considering *Miniatura* in this context, the prospect of further investigation in the context of architectural practice and education arises. Twice a year, at the end of the semester at most architecture schools, vast amounts of modeling material is discarded. This is also the case in many architectural offices. A position often advocated in response is that we should stop analog modeling entirely and switch to digital techniques of representation. However, *Miniatura* has a built-in possibility of reuse and may be considered a valuable investigative tool in both teaching and architectural practice. Thus, beside its fundamental properties of investigating spatial compositions, *Miniatura* can perhaps enter the discussion about design for dis-assembly in architectural practice and education by pointing toward a more sustainable design practice, both in terms of using industrial cut-offs in the fabrication of models but also through its inherent reusability. A further field of inquiry could be to extend the project and its discussion beyond the museum exhibitions and investigate the *Miniatura* kit-of-parts both as a teaching tool in the form of a discursive platform and an ideal model for the ecology of materials.



Space 02: Air

"Air is: Pliable, resistant to tearing, great strength, Made from textile, Basic architectural element is the enclosure, The technique is weaving (Semper) // Yellow and white, blunt, subtle, mobile, warm, wet (Aristotle) // Shape: Octahedron (Plato)"

Notes on air
Seaceprls



10.

»The Ideal Museum«, Screenshots of the digital presentatio, Text Spacegirls.

Photo: Christian Vennerstrøm.

Following this line of thought, the perspectives of Miniatura as not simply a museum, but as an experimental and re-usable system for testing spatial possibilities, may be further extended in correspondence with the ideas underpinning »The Garden of Broken Asphalt«. As outlined above in the Calvino quote, that exhibition deals with the idea of architecture being in a constant state of transformation. To use another phrase borrowed from the field of biology, Miniatura and its components may be interpreted as parts of a metabolism of materials – where the act of modeling becomes a parallel process to a reality based on a radical vision of reuse in architecture. Thus, remaking Miniatura mirrors a hopeful future where buildings and their materials are not torn down and discarded but gently taken apart, shifted, shuffled and assembled again.

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