Dimensions of Architectural Knowledge, 2023-06
https://doi.org/10.14361/dak-2023-0611

# Could This Happen in Nature?

*Anne Romme and Jacob Sebastian Bang*

**Abstract:** This article presents a physical artefact, a wooden relief of the condition between wet and dry. Following a description of the methodological aspects of the artefact, the essay uses the notion of a »material practice« (Allen 1999) to discuss the making of the relief, and to qualify our observations about the finished work. Finally, the essay suggests that material practices have the potential to addressing the accelerating ecological crisis.

**Keywords:** Material Practice; Relief; Digital Fabrication; Artistic Research; Theory and Practice.

## Introduction

This visual contribution presents and discusses a physical artifact, a wooden relief titled »Could This Happen in Nature«. The relief consists of four squares, which altogether measures 2 x 2 meters. It is made of CNC-routed plywood, 40 millimeters thick at its thickest point.

The relief is the culmination of a series of reliefs, which were all made using the same technique but have varyied subject matters and scales. The entire series has been used to experiment with the topology and subject matter »island« and zoom in from a relief of an entire archipelago to details of parts of an island (fig. 1).

»Could This Happen in Nature« zooms all the way into the shoreline, the line along which a large body of water meets the land. It is a stretch of land that is interchangeably wet and dry and is in constant flux as the waves roll in and objects shift around. The precise position of the shoreline can change depending on the tides, floods, and shifting water levels and although the capacity of the physical components (sand, seaweed, larger drifting objects, rocks, the quality of the water, temperature, degree of pollution, etc.) vary, the amphibious condition can be found on any shore. The site is entirely universal (fig. 2).Following a description of the methodological aspects of the

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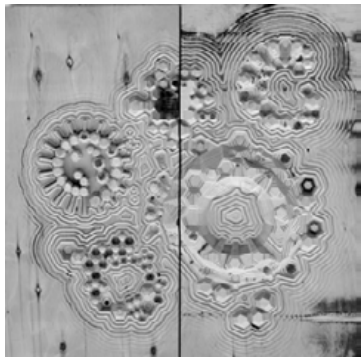
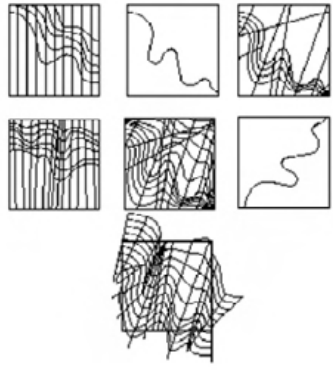


*1.*
*Earlier reliefs, zooming in from an entire archipelago (top), to an island (top-left), to part of an island (right) CNC-milled plywood, all 90 x 90 cm. Photo: The authors.*



*2.*
*The site where land meets the ocean is universal. These drawings are our first attempts at drawing that site using only curves. Illustration: The authors.*

relief, this article reflects upon possible readings of it and our observations about the finished work.

## Method

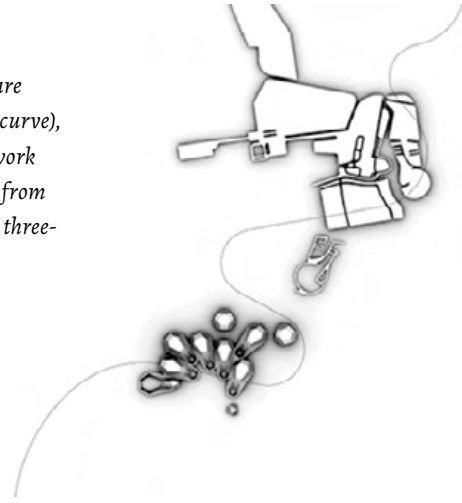
The relief is the result of a collaboration between two architects. As such, it is a collage of two design positions and two bodies of existing work. Making a new relief begins with a conversation (fig. 3). Having decided on the subject matter, the interaction between the wet ocean and the dry land, we search existing work for drawings which contain, for example, geometries which mimic natural growth, marine phenomena, piers, and jetties. Some of the existing drawings might have had relationships to the theme, whereas others are chosen based on their formal or organizational similarity to the amphibious condition. In short: Anything which inspires the process of form-making and contributes to the entanglement of previous work goes (fig. 4).

With deliberate disregard to the scale of the original two-dimensional drawings, a digital three-dimensional file is made. Structures are overlapped, merged, and entangled as the previously flat drawings are made three-dimensional. To achieve a level of complexity, yet still establish forms which are technically suited to CNC-routing, the process requires many stages of sampling, overlaying, and weaving together. Not only the drawings from previous work, but elements like seaweed, waves, a spiral and clusters of bacteria-like forms are also sampled.

With the specific parameters of the production method in mind, the three-dimensional-file is calibrated in tune with both material and technique. For example, the smallest details are sized to match the smallest tool bit in our toolbox, and the thickness of the material never goes below what is needed to maintain the plywood's structural integrity. Knowledge of the thickness of a single ply within the composite plywood determines the changes in depth needed for a change in nuance in the finished relief. The scope of the machine bed determines that the relief needs to be cut into four parts.

At last, the three-dimensional file is cut into plywood using CNC technology and the transformation from existing analog drawings, via digital tools, to a tactile plywood relief is complete.

*3.*
*Following our first conversation about the relief, the ingredients are determined: A shoreline (the red curve), elements from Jacob's previous work (the top drawings) and elements from Anne's previous work (the lower, three-dimensional objects).*
*Illustration by the authors.*



*4.*
*Parts from Jacob's drawing (left) are sampled, cleaned up (middle) and collaged into the 3D-file, in this case mirrored (right).*
*Illustration by the authors.*

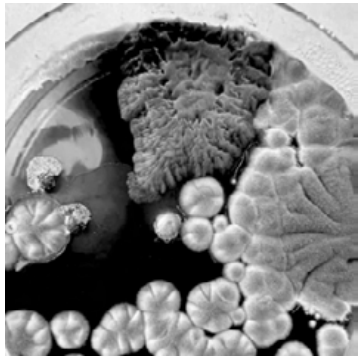
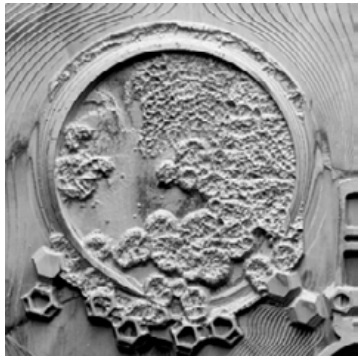
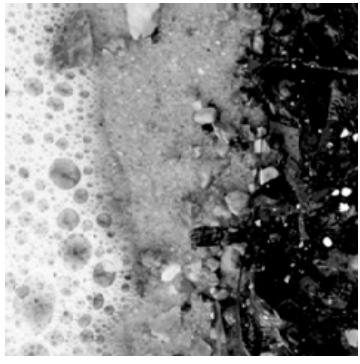
## The Result

Predicting the physical result based on the three-dimensionalfile is tricky, not to say impossible. The drawing program offers an abstract, homogeneous view, which have not yet been confronted with the materiality of the plywood. Only when the code for the CNCrouter has been generated and the machine begins to draw in the plywood will the multi-toned, tangible relief appear. The complex amalgamation of a digital, three-dimensional form (in itself a conglomeration of other drawings), the CNC-routing method, and the material condition of plywood appears as a new, composite landscape (fig. 5).

It is an inevitable condition of reliefs in general that they contain more dimensions than a flat drawing, thus allowing lighting conditions and side views to inform and alter the perception of its motifs. In this specific case, the material presence offers several further readings. As plywood is a common material, well known to architects and non-architects alike, the surprises, anomalies, and additions to the intended design gives the viewer the opportunity to reflect upon the relationship between fabrication, material, form, and intent. In other words, it comes as no surprise that knots of the organic material, as well as shifts in nuances of the thin ply appear, but the way they intermingle with the design offers a reading in several scales: the one-to-one plywood scale as well as the designed scale. Reflections upon how the relief is made, degrees of intentionality, and the relationship between material and design effects seem unavoidable.

A closer look at the relief will reveal many instances in which readings in several scales are possible. Fig. 6–9 account for how – when translated into the striated plywood condition – sampled objects and ideas can be read in different capacities and scales. Figure 10 gives a sense of how the entire relief also fluctuates between different readings, none of them naturalistic. Depending on focus, the viewer might see human-made structures on an urban scale, or a close-up of some natural phenomena, or anything in between.




*5.*
*A close study of dried seaweed (left), compared to the abstracted seaweed-like figures in the relief.*
*Photo by the authors.*

*6.*
*A circular form in the relief can be read as a petri dish in 1:1 scale, or as a large landscape feature – perhaps a tank for future energy harvesting.*
*Photo by the authors.*

*7.*
*A typical shoreline with pebbles, seaweed, shells, organic foam, sand, etc. As we all know from our intimate interaction with this site (making sand castles in our childhood, searching for gems and treasures), the complexity exists in many sizes. Sea shells can be found almost infinitely small, the bubbles of the foam is part of a much larger body, etc. The relief has a similar capacity. It can be read in the scale of a microscopic view, or as an urban plan.*
*Photo by the authors.*

## Reflection

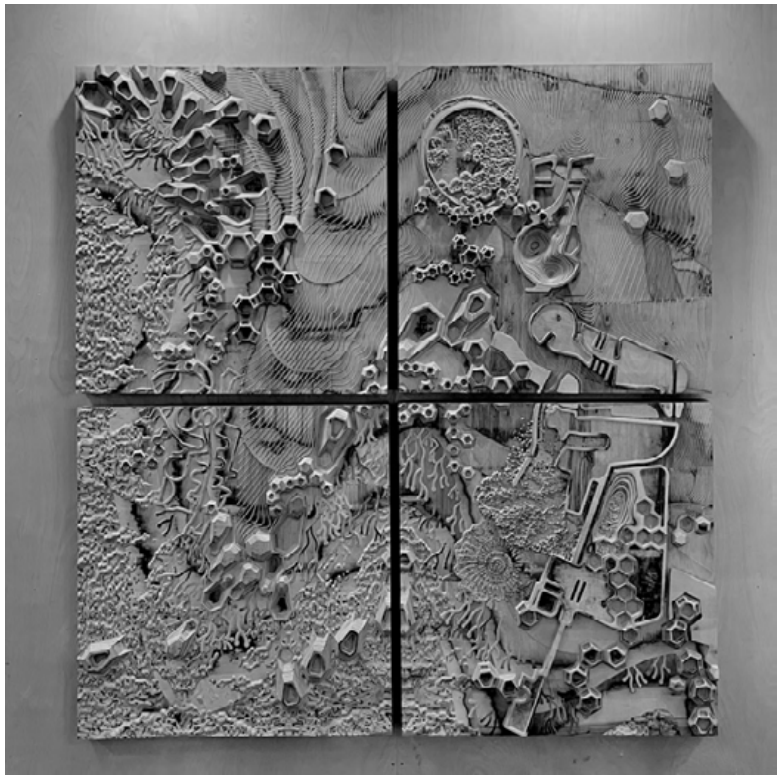
We both teach young architects.[1] We teach our students to collaborate and not to rely on the idea of the individual genius. To qualify these didactic principles, we practice them ourselves. That is our main motivation for merging our two existing design practices. The results are more complex than those we could have achieved separately. The degree to which one design practice and approach alters, erases, or contrasts with the other is an ongoing conversation. In the case of »Could This Happen in Nature«, our individual elements are accumulated and juxtaposed with each other more than merged.

We were inspired by Stan Allen's argument for a reciprocal relationship between theory and practice, defined by action and agency, in which the architect lets tactical improvisation accumulate over time.[2] Our assessment of that is to let the relief emerge as a series of iterations, in which the entanglement of thought, form and scale are increased at each step. Rather than using analytical deduction, the relief appears as a result of juxtapositions and coincidences, a »promiscuous mixture of the real and the abstract« – of thought, references, conversations, forms and operations within a three-dimensional drawing program, and of material effects and machine parameters. As such, the relief does not offer one coherent reading, neither in scale nor in subject matter. It demands of its viewer that they speculate and decide for themselves which scale to read it in. There is not one given reading of the forms.

On the other hand, because our forms are generated entirely by us without any automation in a traditional form-giving manner, every singular form is detectable. Two forms might collide and overlap, but they never disrupt each other or mutate. No algorithms or scripts take control of our forms and intentions. The striated character of CNC-milled plywood, acting as contour lines in a landscape, is predictable. Even the scattered knots and other irregularities of the previously hidden layers can be expected, although not planned.

1 Jacob is the head of program of the B.Arch. teaching program Helhed og Del, and Anne is the head of program of the B.Arch teaching program Finder Sted, both at The Royal Danish Academy.

2 »PRACTICE vs PROJECT«, in: PRAXIS: Journal of Writing + Building 1, 112–25. http://www.jstor.org/stable/24328803 (accessed: June 18, 2024)



*9.*
*The relief as a whole, exhibited at the Royal Danish Academy.*

The decision to not let algorithms create a landscape beyond the direct influence of our hands and mindshas to do with our understanding of purpose. The relief shares some characteristics with typical CNC- milled work – textures and the smooth transition between forms, for example – but its distinctive forms suggest a more traditional approach to collaboration and design. As custodians of an exhibition of the relief (among other works),[3] it is our experience that the combination of recognizable figures within a surprising field sparks the imagination of viewers. Provoked by the title of the relief, they question nature and our role within it. They see and discuss a future, a nature-culture in which humans have interfered with every aspect of our planet, and in which the distinction between the natural and the human-made has been blurred.[4] The relief becomes an object of speculation and imagination – not just ours, but more importantly, everyone else's.

## Conclusion

Acknowledging that our result is a decadent use of a high-tech machine to create a non-functional relief, we do not claim to provide answers to our accelerating ecological crisis. Instead, we propose to view our work as a catalyst for conversations. By making an open-ended prototype, we invite viewers to speculate and discuss. Microscopic, architectural, geological, territorial: The relief can be read in various scales simultaneously. It does not generalize but takes advantage of using known forms – such as an architectural maritime structure, seaweed, and a petri dish – to link the viewer's observations with reality. We like to think of the relief as an entanglement of technology, thinking, and making, an attempt to develop a pre-form for the complex and unpredictable future that awaits us.

The ecological crisis extends beyond singular problems and is as intricately connected to our cultural, aesthetical realm as it is to the economic and political. While the future needs verifiable results, it also needs methods for handling the arbitrary and inconsistent. We need to operate in the world, not at a safe distance from it. The relief may be a prototype for something that will happen in nature, but that is not the point. The point is, that it provokes us to think about a radically redefined nature, in which architects need to reinvent our patterns of inhabitation and use the entanglement between scales, growth principles, structures, and species as a necessary and desirable tool.

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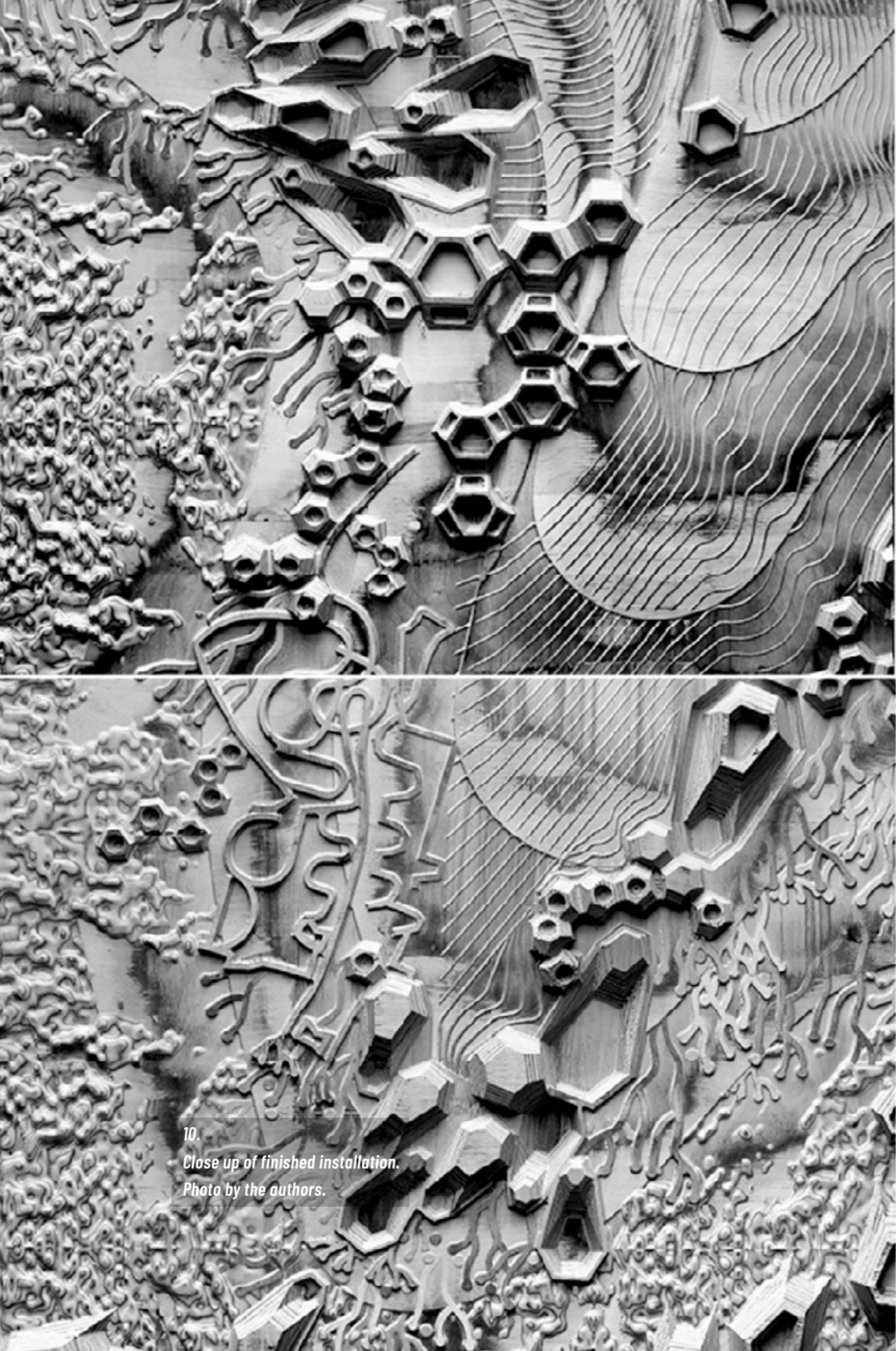
3 At Block Architecture Gallery in Stockholm, Block32.se, September–October 2023.

4 As described by Cecilie Rubow in: Rubow, Cecilie, Indendørsmenneskets Natur, Aarhus Universitetsforlag, 2022.



*10.*
*Close up of finished installation.*
*Photo by the authors.*

References

Allen, Stan (1999): »PRACTICE vs PROJECT«, in: *PRAXIS: Journal of Writing + Building* 1, 112–25.

At Block Architecture Gallery in Stockholm, Block32.se, September–October 2023, https://www.block32.se/blank, accessed June 6, 2024.

Rubow, Cecilie (2022): *Indendørsmenneskets Natur,* Aarhus: Aarhus University Press.