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Published in:
Design for Rethinking Resources

Publication date:
2023

Document Version:
Early version, also known as pre-print

SPRINGER NATURE
Sustainable Development Goals Series

Connecting the Goals

Mette Ramsgaard Thomsen
Carlo Ratti
Martin Tamke *Editors*

Design for Rethinking Resources

Proceedings of the UIA World Congress of Architects Copenhagen 2023

(Re)Making The Haubarg ï¿½ Towards Sustainable Dwelling On A Bounded Earth

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(Re)making the Haubarg—Towards Sustainable Dwelling on a Bounded Earth

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Keywords

Materials · Tectonics · Architecture · Aesthetics · Sustainability

1 1 Introduction

1.1 Background

Architecture may be understood as a material practice where resources extracted from nature are deployed in a building system and cultivated to make a dwelling. However, on a bounded planet, material resources are limited (Daly, 2007) and the safe operating space of numerous planetary boundaries are long exceeded (Rockström et al., 2009; Steffen et al., 2015; Raworth, 2012; 2018). Accounting for 36% of European CO2 emissions and 40% of the total European energy consumption (European Commission, 2021), the construction industry constitutes a mayor part of the problem and in consequence – if any hope of meeting the Paris Agreement (UN FCCC, 2015) should be kept alive – architectural design processes must be fundamentally revised. Wood has been used as building material in vernacular architecture around the world for thousands of years. The material may be considered a renewable resource and potentially abundant, carbon neutral and recyclable and as such the only widely used building material that is sustainable when com- ing from truly sustainable forestry. As such, enhancing carbon uptake and storage through bio-based building materials in construction may be one effective mitiga- tion strategy (IPCC, 2022). However, the environmental benefits of using timber are not straightforward (Ramage et al., 2017; Dooley et al., 2018) just as tradi- tional knowledge of how to design with wood seems inadequate in contemporary architectural design. It seems as if contemporary sustainable design strategies are less concerned with the qualitative potential of wood, just as it seems as if the work of architecture is regarded a conceptual exercise, detached from tectonic, cultural-historic or contextual considerations. As such, it seems necessary to re- think the qualitative potential of wood in contemporary architectural design prac- tice aiming at (more) sustainable building culture(s). AQ1

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M. R. Thomsen et al. (eds.), *Design for Rethinking Resources*, Sustainable Development Goals Series,
https://doi.org/10.1007/978-3-031-36554-6_17

Layout: T4 Grey | Book ID: 527148_1_En | Book ISBN: 978-3-031-36553-9
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1.2 Research Question

This paper understands sustainable building culture as the meaningful synthesis of technical properties, cultural-historical qualities, and experiential effects – in careful consideration of the planetary boundaries. Through the (re)making of the Haubarg at the Danish Open Air Museum, this paper aims at investigating the topic of Rethinking Resources, supplementing and qualifying the qualitative po- tential of wood as a sustainable building material as informed by traditional build- ing culture – seen in a holistic perspective. It is asked how knowledge embodied in crafts tradition and local vernacular (with specific focus on timber construction) may inform a contemporary design practice and inspire the development of (more) sustainable building culture(s). The (re)making of the Haubarg – understood in and of itself as a production of authentic architectural knowledge – is considered an empirical finding that is described and analysed seen through a phenomenolog- ical-hermeneutic lens. The significance of the results is discussed in relation to the overall question of sustainable building culture. It is argued that technical proper- ties, cultural-historical qualities as well as experiential effects must be taken into consideration when building with wood. Conveying architectural meaning as *dwelling*, the (re)making of the Haubarg may thus inspire a renewed sustainable building culture in careful consideration of the biophysically bounded Earth.

2 2 Materials and Methods

The research method in this paper is a combined strategy (Groat and Wang, 2013), involving a qualitative, in-depth analysis of an existing building and the de- sign and construction of an experimental timber structure. The analysis of the ex- isting building is seen from the perspectives of technical properties, cultural-historical qualities and, experiential effects, all following a phenomenological-her- meneutic approach aiming to identify architectural motifs that may point towards new architectural interventions.

The phenomenological method (Andersen, 2018) comprises five stages: 1) expe- riencing an architectural phenomenon; 2) investigating the architectural phenome- non; 3) hermeneutical reflection; 4) describing the architectural phenomenon and 5) architectural phenomenological re-presentation. The phenomenological descriptions developed in the article, build on the framework detailed by the phenomeno- logical method. The method is used as a way of thinking the world through experi- ence, aiming at articulating, structuring, operationalizing, and presenting experienced architectural phenomena in text and drawing. The method is based on the phenomenological-hermeneutic philosophy as developed by Edmund Husserl, Martin Heidegger, and Maurice Merleau-Ponty and the phenomenology of prac- tice as described by Max van Manen in combination with the concept of embodied communication as developed in the new phenomenology by Hermann Schmitz (2014; 2016; 2019).

It is important to underline, that a purely qualitative approach does not in itself lead to a tangible and measurable sustainable building culture. As pointed out by ICOMOS (2019), however, climate science can tell us that adaptation and mitiga- tion are necessary, but it cannot tell us what adaptation options are most workable within any given human system. Balancing economic, social, and environmental concerns, the UN Rio Conference on Environment and Development highlights the need for qualitative perspectives in a future sustainable development as does the UN Sustainable Development Goals (SDGs). In this perspective, cultural herit- age may, according to ICOMOS, be considered "[…] a source of creativity and inspiration for adaptation and mitigation actions that are responses to the findings of climate science." (ICOMOS, 2019, p. 14). In continuation, this paper aims at in- spiring future sustainable building culture(s) based on the findings of climate sci- ence, in this case through pointing at the need to rethink the use of wood in an architectural design practice – all seen in a holistic perspective. As such, the aim is not to exclude, but rather to supplement and qualify contemporary discussions on the climate crises, including the question of carbon footprint.

The design of the experimental timber structure is considered a "reflective prac- tice" (Schön, 1986; 2001) involving the continuous analysis and action performed in working with a complex and/or unique problem – in this case the design of an experimental timber structure as informed by an existing building. It concerns the architect's experience, the understanding of the specific situation and a reflection on the presumed outcome. A "reflective practice" comprises "knowing-in-action", the general, practical knowledge we exhibit in our intelligent, physical perfor- mance; "reflection-in-action" in which experience, knowledge, and intuition works in exchange with the action itself and "reflection on reflection-in-action", which is the retrospective analysis, which again indirectly may influence a future action (Schön, 1986; 2001).

First, characteristic motives from the historic Ejdersted Farmhouse, originally called *Rothelau* and today located at the Danish Open Air Museum, have been identified, described, and organised (fig. 1, 2). Aiming to get a better understand- ing of a given architectural phenomenon, the motives relate to technical properties, cultural-historical qualities, and experiential effects. Second, selected motives have informed an architectural design (fig. 3, 4, 5), constituting a contem- porary re-interpretation of the traditional marsh Farmhouse. Through a "reflective dialogue with the situation" in a larger "network of choice", this "reflective prac- tice" investigates the different so called "Normative/Descriptive Design Domains" (Schön, 2001), in this case related to technical properties, cultural-historical quali- ties, and experiential effects. The aim of the architectural design has been to make a new architectural entity, clearly relating to the motifs identified in the historic building, yet unmistakably autonomous.

Third, the experimental timber structure has been built by students at The Royal Danish Academy – Cultural Heritage, Transformation, and Conservation as part of the master program curriculum (fig. 6). The Haubarg has been described and doc- umented photographically (fig. 3, 4) and the material – which in itself may be un- derstood as authentic architectural knowledge – is considered empirical findings that have been described and analysed as a "reflection on reflection-in-action" (Schön, 1986; 2001). Finally, the significance of the results of the (re)making of the Haubarg are discussed in relation to the overall research question regarding the development of (more) sustainable building culture(s) and a conclusion is made.

3 3 Results and Analysis

3.1 Cultural-Historical Qualities

The historic Rothelau Farmhouse was originally located in the tidal marshland of the Ejdersted province on a reclaimed area protected from the sea by dikes. The landscape was structured by a large patchwork of dams, divided by drainage canals, sluices and ponds. To further protect the buildings against floods and poten- tial breaches of the dike, the Farmhouse itself was built on a *warf*, a large, humanmade dwelling mound. Built in 1651, the Rothelau Farmhouse was one of the oldest in Ejdersted (Pedersen, 2004, p.44). The building is characterised by a single large roof supported by four tall wooden posts, called the *vierkant*, sur- rounded by the living quarters, stables, and threshing floor. Being used for storing hay during the winter, the central square gave name to the building typology *hau- barg* [German *Heu zu bargen*].

The typology presumably came to Ejdersted from Holland in the 16th century and the building typology gradually became considered the culturally significant way to build (Pedersen, 2004, p.43). The owners of the Rothelau Farmhouse be- longed to the elite of the Ejdersted population that was divided into four social groups: the large landowners, the smaller milk farmers, the workers, and the arti- sans (Pedersen, 2004, p.27). Being the largest contributors to

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Fig. 1 Rothelau Farmhouse, 1651. Photo: The Authors

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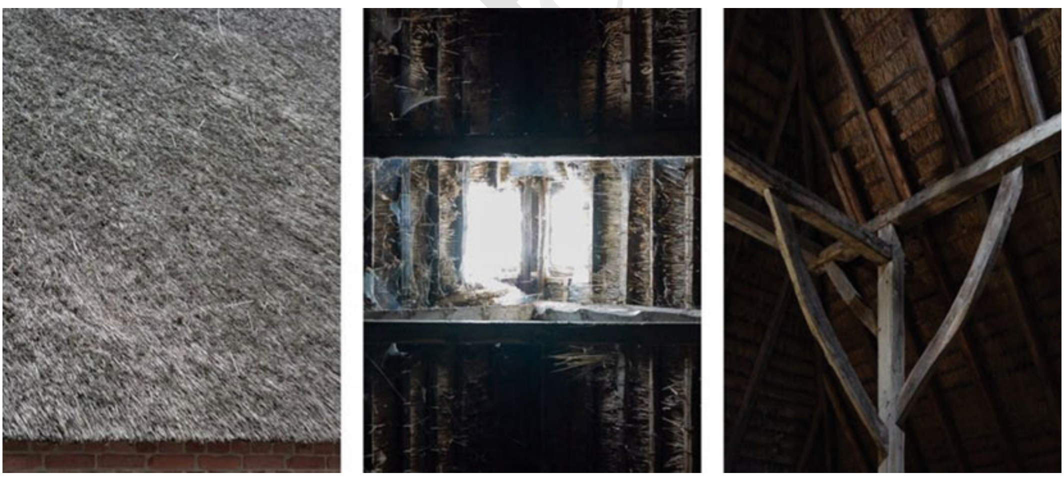

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Fig. 2 Rothelau Farmhouse, 1651. Photo: The Authors

establishing and maintaining dikes, the largest landowners had control of the administration of the landscape. As such, it is impossible to imagine the Rothelau Farmhouse without both its geographic and administrative landscape (Petersen, 2004). The Rothelau Farmhouse – today located at the Danish Open Air Museum – thus conveys the historically created material, political, and economic values, just as dikes, canals, and buildings may be understood as

Fig. 3 Haubarg, 2022. Photo: Lars Rolfsted Mortensen

scenes of cultural meaning (Petersen, 2004, p.82).

According to Tim Ingold, landscape may be understood as a temporal process that is continuously transformed by activities, i.e., "perpetually under construc- tion," always "work in progress" (Ingold, 1993, p.162). Landscape not only com- prises related elements and features, but likewise related activities or "tasks," that are understood as constitutive acts of "dwelling" (Ingold, 1993, p.158). To Ingold, "landscape" is "*continuously going on*," in the sense that hills, valleys, paths, tracks, trees, crops, buildings, and people are understood as engaged in mutual "resonant" relations. As such, the materials, practices as well as the presence and character of landscape may be understood in a "dwelling perspective," suggesting agency of the elements that constitute "landscape" through rhythmic interrelations (Ingold, 1993, p.160–164).

As with the relationship between the Rothelau Farmhouse and its geographic and administrative landscape, this perspective entails moving beyond a division of "inner and outer worlds," "mind and matter," "meaning and substance" (Ingold, 1993, p.154). Dwelling is, according to

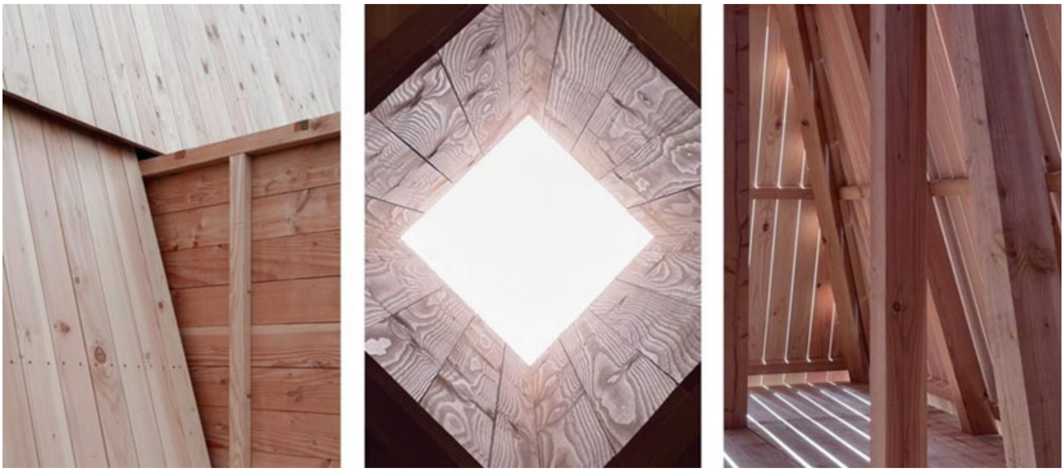

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Fig. 4 Haubarg, 2022. Photo: The Authors

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Ingold, "*with* us, not against us" as "land- scape" is understood as the lived involvement in a temporal world (Ingold, 1993, p.154). In this perspective, forms of buildings, landscapes and relations do not arise from nowhere, but "grow from the mutual involvement of people and materi- als" in an interweaving, that may soften a distinction between "artefacts and living things" (Ingold, 2000, p 339, 347). With functional, cultural, and historic signifi- cance and consid- ered as a physical manifestation of lived involvement in a tem- poral world as dwelling, the (re)making of the Haubarg may thus be understood as a mean of *communication* through which cultural-historic values and meanings are conveyed.

3.2 Experiential Effects

From a distance, the Rothelau Farmhouse is characterised by a large, hipped roof, that sits on low, heavy set masonry walls elevated on a dwelling mound. The thatched roof expresses a softness in character, while also producing articulated edges with defined shadows at the footings. Entering through a low opening under the eaves, the interior space is dark, and one feels the uneven brick floor under- neath one's feet. As one's eyes adjust to the dim raking light, an unexpected tall space, lit only by a single open- ing at the ridge of the roof is revealed. Entering this central space, a large loadbearing structure of squared timber posts becomes visi- ble. The structure is experienced as an upright, steady support to the tent like drape of the roof and produces an enclosure around which the walls are both per- meable and closed. Towards the living quarters, a double wall containing alcoves separates the residential spaces from the barn. On one side, the alcoves are sombre with a clear structural layering. On the other side, they are more elaborate, fin- ished in planed timber with painted sliding doors that are articulated by del- icate profiles that catch the light.

From a distance, the (re)made Haubarg is characterised by a steep hipped timber roof, that extends to just above the ground, elevated on a dwelling mound. The roof is made of overlap- ping planed wood boards, that produce folds and tucks with distinct shadows, adding depth to the sharp figure. Entering through a low opening that protrudes outward above the terrain, the interior space is warm, and one feels how the structure lightly gives way under one's feet. As one's eyes ad- just to the flickering light coming through the loose-fit cladding, an unexpected tall space, articulated by a single pointed aperture at the ridge of the roof, is re- vealed. The space is made up from a clearly layered load bearing structure

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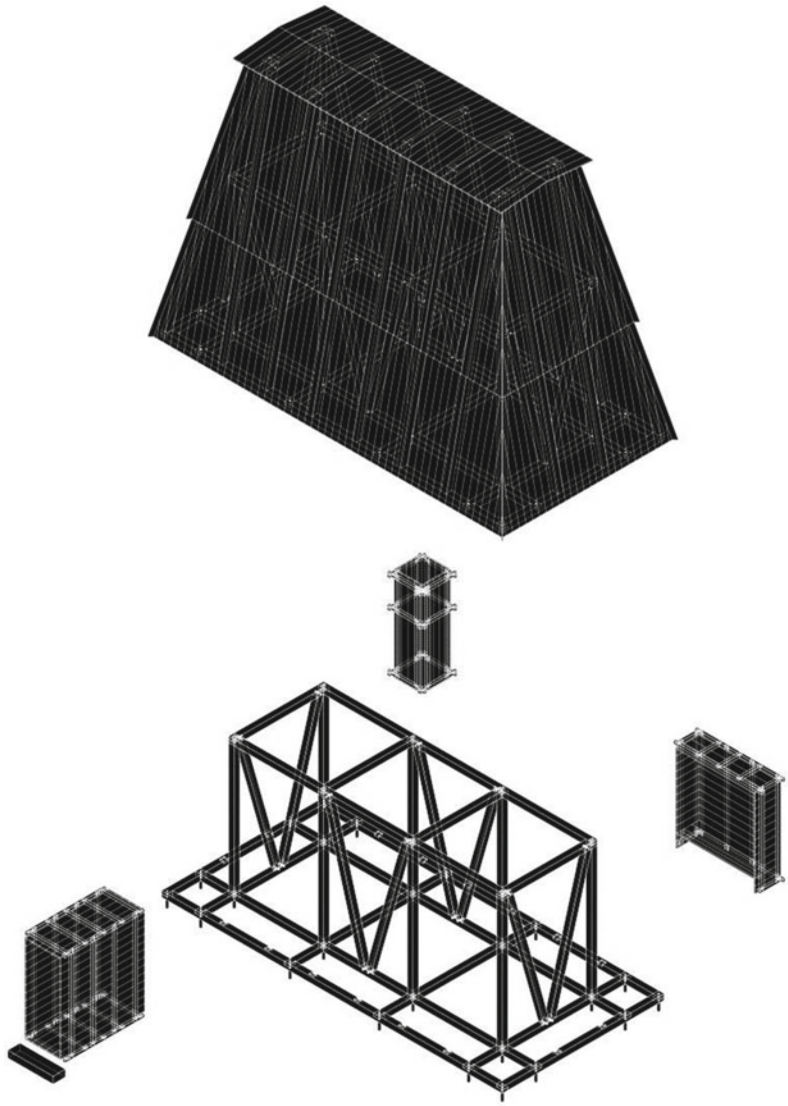

Fig. 5 Haubarg, 2022. Photo: The Authors

of rough sawn squared timbers. The upright, steady structure supports an inclined roof structure, in between which the entrance, the aperture and an alcove are lo- cated. Sitting down in the alcove, the delicate planed timber of the wooden lining feels soft to the touch, providing pause from the wealth of structural elements.

As the above phenomenological descriptions point out, the seemingly contradic- tory "ways of working" (Leatherbarrow, 2009) at play in the Rothelau Farmhouse – the settled and closed character of the building in relation to the open march landscape, the stability and upright articulation of the timber structure against the enveloping drape of the roof, the opposition of ceiling heights, material finishes, sheen, mattness, softness, and sharpness of light – all contribute to the production of distinct bodily felt experiences which are re-interpreted in the Haubarg. To Her- mann Schmitz, the body is conceived as the basis for human experience and phi- losophy defined as one's contemplation of how one finds oneself in one's sur- roundings (Schmitz, 2014, p.9). To Schmitz, *dwelling* is

Fig. 6 Haubarg construction process, 2022. Photo: The Authors

understood as the *cultivation* of emotions in an enclosed space that may take place through the artic- ulation of *suggestions of movement* and *synesthetic characters* which may be sensed on both one's own felt body and perceived in figures, whether static or in motion (Schmitz, 2016).

Suggestions of movement are signs of imminent movement, without actual move- ment, or gestures that go beyond the limit of movement, such as "the gait of a per- son;" "the space spanned by the rhythmic and tonal movement suggestions of the sound, such as piercing noise, diminishing echo, rising and falling, pressing and circling;" or the broadening and narrowing of space (Schmitz, 2012, p.4, 2). *Syn- esthetic characters* are qualities "which run through all specific senses and often, but not always, bear the names of specific sensory qualities," (Schmitz, 2016, p.5) such as "the sharp, bright, gentle, pointed, hard, soft, warm, cold, heavy, compact, delicate, dense, smooth, the roughness of colours, sounds, smells, sound and si- lence, bouncing and trailing gait, joy, zeal, melancholy, freshness, and fatigue" (Schmitz, 2014, p.31).

In an architectural perspective, *embodied communication* may lead to "the for- mation of atmospheres of emotion" and to the "tuning of the occupants and/or vis- itors into these atmospheres" (Schmitz, 2016, p.15). As such, things, materials, and spaces may become bearers of atmospheres of emotion so "that the person can attune to them in harmony with his *corporeal mood*" (Schmitz, 2016, p.14). This includes the experienced material qualities of e.g., the walls, the ceiling, and the floor, as well as the furnishing and control of incoming light, temperature, and sounds. In this perspective, the Haubarg may be understood as a new interpreta- tion of a bodily experienced spatial sequence enacted between the closed and open, dark and light, matte and sharp that may be considered a mean of embodied *communication* as atmospheres through which experienced architectural meaning as dwelling may be conveyed.

3.3 Technical Properties

In the traditional Haubarg post-and-beam typology, the timber structure com- prises four, sometimes six or even eight posts joined by longitudinal and trans- verse beams and stabilised by diagonal bracing, all structural elements joined with traditional wooden joints. Independent from the outer brick walls, the timber frame is resistant to the forces of nature, especially storm surges, just as it is protected from the weathering effects of the environment. The (re)making of the Haubarg is executed entirely in locally sourced Douglas fir. The timber was pro- vided by *Bondeskovgaard*, a 3rd generation sawmill established in 1900 which is located about 50 km from the building site. The sawmill combines inherited knowledge of timber with the use of modern machinery, securing a recourse-effi- cient use of the entire trunk. The timber was grown in Danish forests and sawed to specified dimensions as either rough or planed (PAR and PSE) lumber. In the building, the main structure comprises 3 modules of eight 5x5" timber posts in to- tal, stabilised by diagonal bracing and leaving a rectangular 4x8 meter large floor- plan. The 4x5" roof rafters, supported by the timber frame and fitted with battens, are clad with overlapping planed wooden boards, that serve as a contemporary ref- erence to the historic building's distinctive thatched roof. The entrance, alcove and skylight, constituting re-interpretations of three spatial situations identified in the historic Farmhouse, are made using 1" planed wooden boards, supported by a slender exterior structure.

Wood has been used as building material around the world for thousands of years and the technical properties of wood in historic buildings are well described. Not only is the molecular and cellular structure of wood fundamental to its use as a material well suited for building construction (Ramage et al., 2017), also the se- lection, processing, and treatment may be of critical importance as a way of crafts- manship to improve the properties of the material (Glarbo, 1959; Vadstrup, 2021). As a building material, wood has some very specific properties that are completely different from, for example, concrete or bricks. Thus, the opposition between the tectonic culture of the filigree *light* to the stereotomic culture of the *heavy* (Sem- per, 1989) is clearly articulated in the Rothelau Farmhouse as well as in the Haubarg. In addition to the structural effect, the timber structure – including diagonal bracing, battens, and cladding – makes visible the "[…] tectonic statement: the no- ble gesture which makes visible a play of forces, of load and support in column and entablature, calling forth our own empathetic participation in the experience" (Sekler, 1965, p.93).

Because unprotected structural timber is likely to be exposed to elevated levels of moisture, making it susceptible to fungal degradation, wood protection by de- sign details such as raising the timber structure above ground level and providing overhanging roofs that limit the exposure to wetting and direct sunlight, may ensure that timber components can last, potentially for centuries (Ramage et al., 2017, p.351; Vestergaard, 2000). In addition to the geometrical configuration that limits exposure to wetting and shows water off, the clear tectonic articulation and layering – i.e., visually separating the structural timber frame, the secondary members, and the cladding – may allow the visitor an intuitive understanding of how the building is built as well as of the structural hierarchy and varying temporality of its "shearing layers" (Brand, 1995). As such, the structural configuration of the Haubarg may lead to an *engaging capacity* (Verbeek and Kockelkoren, 1998) that may support easy maintenance, selective replacement and intuitive repairs to the building over time.

Condensation of water around materials with high thermal conductivity – i.e., metal fastenings, nails, and bolts – may be considered 'poisonous' to timber struc- tures and counteractive to material longevity (Vadstrup, 2021). Accordingly, the Haubarg is joined together without the use of modern steel fastenings, just as all nails used for cladding are made entirely out of wood. Only the ground screws are made of galvanised metal, reducing the carbon dioxide emission regarding the foundation (according to the manufacturer) by 89% compared to a contemporary concrete solution. In a detail perspective, the joints themselves may be understood as a minimal unit in the process of signification, as "[…] the 'construction' and the 'construing' of architecture are both in the detail" (Frascari, 1983, p.325). As such, the wooden joints have the double effect of connecting the individual structural members using durable wood-on-wood details as well as being the place where ar- chitectural meaning is created. The physical properties of the material itself, the processing, and treatment, including the significant joint, the tectonic articulation and the static principle may thus be understood as a mean of *communication* through which material and technological qualities and meanings are conveyed.

3.4 (Re)making the Haubarg

As described and analysed above, the (re)making of the Haubarg has been exten- sively informed by crafts tradition and local vernacular as manifested in the his- toric Rothelau Farmhouse, both in terms of cultural-historical qualities, experiential effects, and technical properties. All three aspects are characterised by *communicating something*, both regarding the relation to the landscape, the spatial character as well as the physical material, inviting visitors to reflect on how they dwell. All in all, the Haubarg may be understood as the re-making of technical, cultural-historical, and experiential characteristics of the Rothelau Farmhouse con- veying values, qualities, and meanings as dwelling.

4 Discussion and Conclusion

In light of the accelerating ecological crisis including sea level rise, extreme weather events and loss of biodiversity, all leading to higher mortality (Kemp et al., 2022) the question is how the cultural-historical qualities, experiential effects, and technical properties of a historic building, as described above, may become re-actualized as part of the development of (more) sustainable building culture(s).

The concept of sustainability was used for the first time in 1713 by Hans Carl von Carlowitz advocating the balancing of growth and harvest through the principles of rationalisation, substitution, and limitation as a reaction to the acute scarcity of timber caused by the heavy exploitation of forests by the mining industry. Even though contested, the most widely used definition of the concept of sustainability today, is the one offered by the Brundtland Commission Report defining sustaina- ble development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (UN, 1987). In continuation, the sustainable development goals, SDGs "provides a shared blueprint for peace and prosperity for people and the planet, now and into the future" (UN SDGS, 2022). The (re)-making of the Haubarg supports primarily SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production) and SDG 15 (life on land). More specifically, the following tar- gets may be identified: 11.4, strengthening efforts to protect and safeguard the world's cultural heritage; 11.c, building sustainable and resilient buildings utiliz- ing local materials; 12.2, sustainably managing and efficiently using of natural re- sources; 12.5, substantially reducing waste generation through prevention, reduc- tion, recycling and reuse and 15.2 sustainably managing of all types of forests and the halt of deforestation. As the project aims at inspiring a future sustainable building culture, SDG 3 (good health and well-being) may also be considered rele- vant. Similarly, SDG 4 (quality education) and SDG 13 (climate action) may be considered pertinent, as the project is part of a master program curriculum (UN SDGS, 2022). It is, however, important to underline, that even if individual goals have been identified, the SDGs should be considered in a holistic perspective since optimization at sector level will most likely fail as the individual sectors may compete with each other at the expense of the whole.

It has been argued that the SDGs prioritize economic growth over ecological in- tegrity as they fail to monitor absolute trends in resource use (Eisenmenger et al., 2020). On a bounded planet, material resources are limited (Daly, 2007) and the safe operating space of numerous planetary boundaries are long exceeded (Rockström et al., 2009; Steffen et al., 2015; Raworth, 2012; 2018). In the construction industry, the concept of absolute environmental sustainability requires actions to respect the planetary boundaries and stay within the safe operating space (Hauschild et al., 2020). In this perspective, a sustainable building culture must prioritise the balancing between the just demand for welfare among the living creatures and the bounded biophysical capital seen in a planetary perspective.

As a crucial part of the carbon cycle, wood accumulates and stores carbon diox- ide while growing and acts as a carbon storage as long as it maintains its chemical form. When rotting or burned, carbon dioxide is released into the atmosphere again (Riebeek, 2011). As such, wood may be considered a renewable resource and potentially abundant, carbon neutral and recyclable. With recommended rotations for forestry harvests ranging from 35 to 70 years depending on species and location, wood – compared to mineral resources like rocks, ores and soils – has a very short geological timescale and may as such be considered the only widely used building material that is truly sustainable (Ramage et at. 2017, p.340). However – with an alternative response to climate mitigation and adaptation – the Climate Land Ambitions & Rights Alliance (Dooley et al., 2018) argues in favour of approaches that safeguard food security and food sovereignty, land rights, and biodiversity. According to this, major shifts in today's land use and land manage- ment is required – including end of deforestation, forest ecosystem restoration, natural forest expansion, agroforestry, improved management of forests for timber and reduction in wood production (Dooley et al., 2018).

Understanding the building as a physical manifestation of lived involvement in a temporal world as dwelling, the historic Rothelau Farmhouse as well as the exper- imental timber structure have been informed by a large number of parameters, in- cluding material, political, and economic values that may hold a number of poten- tial sustainable potentials. The position of the building – protected from the sea by dikes and placed on top of a human made dwelling mound – may in itself become re-actualised as a necessary strategy in a near future with sea level rise and ex- treme weather events. The small size of the building may potentially inspire living on fewer square metres. In the building scale, traditional timber framing may be considered significantly more economical than the contemporary massive CLT construction, regarding the amount of wood used. With the recommendation that wood be employed in products with a design lifespan that (at least) matches tim- ber rotation periods (Ramage et al., 2017, p.351), wood utilization should move to longer-lived products (Dooley et al., 2018) and building longevity. In this perspec- tive, the significant joint, the tectonic articulation and the static principle as means of empathic participation and conveyor of meaning has an engaging capacity that may potentially invite maintenance, reuse, refurbishment, and recycling, according to the principles of a circular economy (Ellen MacArthur Foundation, 2022).

One study investigating the value of building heritage concludes that in Den- mark, listed buildings have a higher economic value than comparable not-listed buildings (Incentive, 2015) suggesting that architectural and cultural-historical qualities may have a positive influence on building lifespan. According to the European Environment Agency EEA, the ecological crisis is closely linked to eco- nomic growth, including increase in production, consumption, and resource use. It is pointed out, that 100% circularity is impossible, just as full decoupling of eco- nomic growth from environmental pressures and resource consumption is not pos- sible. As such, a sustainable future requires change of qualitative aspects, such as consumption and social practices, not only a change of technology. As pointed out by EAA, "[w]hile the planet is finite in its biophysical sense, on a biophysically finite planet, infinite growth in human existential values, such as beauty, love, and kindness, as well as in ethics, may be possible" (EAA, 2021). In a cultural-historic perspective, vernacular building culture manifests an embodiment of both material and landscape conditions, cultivated by using the ability of a given society. This involvement in the temporal world may be described as a meaningful material practice where resources extracted from nature are deployed in a building system and cultivated to make *dwelling*.

From a phenomenological perspective, the fundamental existential structure in- dicating how one feels is characterised by *attunement* [*Befindlichkeit*]. According to Heidegger, "[i]n attunement lies existentially a disclosive sub- mission to world out of which things that matter to us can be encountered" (Heidegger, 1996, pp.129-130). As such, attunement makes it pos- sible to direct oneself towards something, to be touched and have a sense for something. The making as disclo- sure of landscape characteris- tics, material qualities and static principle experi- enced through embodied communication through which architectural meaning as dwelling is con- veyed may thus potentially invite "[…] staying with things for a longer while" (Andersen, 2022, p.335). In this perspective, it may be argued that longevity seen from both a technical, cultural- historical and experiential perspec- tive is dependent on "[…] maintaining and reinforcing the meanings in an object" (Muñoz Viñas, 2005) that may potentially contribute to a resource- saving strategy and sustainable development by ensuring maximum meaning for present and fu- ture generations.

In continuation of the above, it is recom- mended, that sustainable design strategies include material parameters that may enhance the engaging capacity such as the selection, pro- cessing and treatment, wood-on-wood joints, wood protection by design, separation of tem- poral layers, clear tectonic articulation and structural con- figuration; environmental param- eters that may enhance the sense of interrelation, such as administration, geography, topography, ground, vegetation, weather and climate condi- tions; and spatial parameters that may enhance emotional attachment such as bodily experienced spatial sequence enacted between the closed and open, dark and light, matte and sharp. All parameters are conveying meaning through communication and may as such highlight the lived involvement and the capacity for mainte- nance and care that may support building longevity.

It may be concluded that technical properties, cultural-historical qualities, and experiential effects as found in crafts tradition and local ver- nacular, as in the case of *The Rothelau Farm- house*, may inform a contemporary design practice, exem- plified in the specific case of (re)making the Haubarg. Architecture should not be understood as a building in and of itself, but rather as situated in a larger material, environ- mental, and social (eco)system. As reduction in wood production is re- quired in order to safe- guard food security and sovereignty, land rights, and biodi- versity, a holistic approach including building longevity should be observed. Made with a potential abundant, carbon neutral and recyclable bio-based material (if used correctly) and as conveyer of technical, cultural-historical, and experiential values, qualities and meaning, the (re)making of the Haubarg may supplement and qualify contemporary sustainable design strategies. As *embodied communication* through which meanings as *dwelling* are conveyed, the (re)making of the Haubarg may thus inspire future (more) sustainable building culture(s) in careful considera- tion of the biophysically bounded Earth.

Acknowledgements This paper is a part of the research project "Where We Live, Now, Then and in the Future" which is conducted in collaboration with the Danish Open Air Mu- seum and Roskilde University (RUC) with financial support from the Velux Foun- dation. Ground screws were generously sponsored by Fremtidens Fun- dament ApS and wooden nails by BECK Fastening.

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