**AEOM keynote lecture**

**Exploiting Scarcity**

**Open Air Museums as instructive encyclopaedias for a sustainable building culture**

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**Introduction: green transition, and initial research questions**

*As teachers and researchers at the Aarhus School of Architecture, we are currently engaged in full-scale building research in close collaboration with Hjerl Hede Open Air Museum. The research is oriented towards sustainability and the green transition agenda. It would be impossible for us to unfold this research agenda without situating our main projects at an open air museum, and without benefitting from various resources at the museum. Besides all the practicalities of accommodation, access to materials and to workshop facilities, we are also harvesting the knowledge, skillfulness and cultural richness embedded in the buildings and embodied in the crafts people at the museum.*

*We are essentially exploiting the open air museum – and in return* ***we (hope to) contribute to a (re-)considering of the potentials of the museum – or open air museums in general: what ‘tasks’ and what societal and cultural importance and relevance could or should an open air museum take on in the future?*** *This, of course, mostly from a perhaps rather narrow perspective of architecture and architectural education.*

*More concretely, in relation to the ‘green transition agenda’, the open air museum Hjerl Hede and its collection of app. five centuries of rural, vernacular buildings, represents to us an instructive encyclopaedia of cultural refinement of what we today would consider a condition of scarcity.*

*In the following, we will present both general and more concrete* ***examples of how we exploit the buildings at the museum*** *as yielding solutions and inspiration for us and our students.*

*We believe that* ***the educational potential in open air museums*** *is immense, however underutilized. The pre-industrial and pre-technocratic conditions, which the buildings at the museum represent, can teach us some important things. And ‘us’ means not only architects but also politicians, technocrats, and not least lay people dealing with everyday tasks such as minor constructions and repairs at their own house.*

The collaboration that we have with HH is a research project, real construction assignments and an educational program, and started out in 2020, by forming the basis for a new so-called design/build Master’s education. AAA and HH found a shared interest in experimenting with letting the experience and knowledge of building culture inherent to the museum seep out and into contemporary practice. The experiments should not be mere ‘experimental structures’, but real, functional buildings. They should not be ‘historic’, not part of the museum, however in their material use, techniques and construction principles, the buildings could somehow deploy the centuries of skills and experience embedded in the museum buildings and embodied in the highly skilled craftspeople working there.

Simultaneously, the Danish parliament reserved 2 million kroner for AAA, to be used for “research and development projects within sustainable design and architecture underpinning the green transition” [[1]](#footnote-1). More concretely, “green transition” means steps toward a reduction of greenhouse gas emission with 70% by 2030. We applied and received enough money to start up the combined research and design-build education project.

In the original project description, the emphasis was on building materials, and the unused potentials that Denmark has, especially with regard to being self-sufficient with timber. The initial research question can be condensed as:

*How minimally processed and locally harvested materials can be used for construction, when timeframe and economy should not exceed what is normal, and when contemporary building codes and legislation are complied with?*

So the intention was to let centuries of accumulated experience unfold and be tested up against contemporary demands and practices. The rural, vernacular buildings of the museum are examples of adapting to, cultivating, refining, and technically optimizing conditions of scarcity. A condition where the available building materials were whatever could be harvested in the immediate surroundings: in older, obsolete buildings and in the landscape. Sustainable building was not motivated by *preference*, but by *necessity*. Despite that the present imperative for building sustainably is very different from, say, rural 18th century, it seems that looking into pre-industrial, *scarcity*-imposed ways of building, might be helpful in the so-called green transition, which our present and future construction has to go through. It also seems obvious to integrate research with education: as the political and societal aim is to reduce greenhouse gas emission by 70% in less than 10 years, the urgency requires future practitioners to participate directly and bodily in the innovation processes of the project.

Presumably, this makes sense, and the initial research question seems straightforward. Nevertheless, it quickly became evident that the project and the collaboration and situation at HH is more complex and yielding than this, especially in terms of educational, social, cultural and intellectual perspectives. The following is an attempt at drafting up some of the themes and questions that have emerged.

**How we use the resources of the museum in practice**

As already mentioned, we benefit from various resources at the museum. Besides accommodation, access to materials and to workshop facilities, we are also harvesting the knowledge, skills and cultural richness embedded in the buildings and embodied in the crafts people at the museum, and we see the rural, vernacular buildings of the museum as examples of cultivating and optimizing conditions of scarcity, and thus a constant source of inspiration.

As concrete examples, we could mention

1. structural principles involving thin and flexible pieces of wood (branches, or sticks). Known as ‘stejler’ (the vertical studs) and ‘veger’ (the horizontal, woven sticks; cognate with Swedish ‘veker’ and English ‘wicker’, as in ‘wickerwork’), it is a cheap, fast and ‘eco-efficient’ way of providing a screen wall, either as a wind-breaker or as substrate for plastering.
2. lashing, or using string or rope instead of steel.
3. the use of the full strength of the fibres in timber, by either not cutting it at all, or by splitting along its fibres instead of sawing it into rectangular cross sections. Obviously saw cutting weakens the structural strength of the timber, which has been optimised through billions of years of evolution.
4. the use of *spolia*: parts of obsolete buildings, used again – and quite often with a different structural function – in new buildings. The open-air museum is rich in examples of this, as is all older, vernacular buildings. This is particularly visible in the half-timber buildings.
5. making foundations without digging and casting. In terms of ‘green transition’, this might be one of the most important things to learn from older buildings. The general contemporary volume of earthwork and use of concrete, even for foundation of smaller buildings, is extreme. Both the digging and disposal of earth, and the production of concrete is extremely fossil fuel consuming, and in most cases completely unnecessary.
6. More generally, as the museum buildings are easy to understand and very legible in their structure and material use, they are great case studies. Especially so when compared to contemporary buildings displaying some of the same materials. As an example of this, we have compared the overgrown and weathered, but still intact and well-functioning thatched roof of Hjerl Hede’s Kvostedgård, with the few years old but already rotting thatch at the recent Wadden Sea Center building. The problem here is neither the craft nor the material, but the ignorance of the architects; an ignorance which becomes visible not only in the built but also in the drawing.
7. Open-air museums are also experimental grounds. Restoration, or maintenance and mending is not always successful, but sometimes valuable mistakes. The generosity and openness of the museum staff has made us aware of rather unfortunate experiments in the past, For example cleansing with sandblasting and use of concrete and of coal tar (which, besides destroying the timber, is toxic and carcinogenic) instead of wood tar. The architectural press and, in general, the discursive culture of the architectural profession, could benefit from this openness and willingness to share experience, not least the unsuccessful ones. Actually, we cannot afford not to. The so-called climate challenge demands of us that we change, and that we learn.

***Du musst dein Leben ändern:* edification, Bildung, bildning, oikeíôsis)**

In a Western context, it is a reoccurring theme that poets or artists, or anyone really, receives an epiphany from a *Muse* (or even Mnemosyne, mother of the *mousai*) in the form of an *imperative*. This happened to the German poet Rainer Maria Rilke when he saw the Apollo statue at the *Museum* Louvre, and heard an inner voice commanding: “Du musst dein Leben ändern”. This – let us call it ‘the Museal Imperative’ – is exactly what museums are capable of!

In fact I experienced a, perhaps more modest, museal imperative at the Eketorp Museum at Öland here in Sweden, where I was struck by the architect Jan Gezelius’ mix of archaelogy-based reconstruction and modern architecture, and the constellation of industrially produced parts of steel and glulam in perfect tectonic combination with water reed, woven and lashed sticks and branches. There is nothing to it, really. It is quite simple – however it exploded my habitual thinking about how materials can be used, and how seemingly very different technological and historical realms are really the same realm.

Behind the political initiatives of green transition is the recognition of a fast-approaching and all-encompassing catastrophe: the “Climate Challenge”, as called in the political deal. This ‘challenge’, which the German philosopher Peter Sloterdijk has called **“The Absolute Imperative**”[[2]](#footnote-2), demands of us that we learn something we do not master, and that we learn *fast:* “**You must change your life**”, says Sloterdijk, quoting Rainer Maria Rilke, and continues with what we all know but don’t really do anything about: “***It cannot go on like this****”*. This obliges us to question, challenge and *actively by-pass* the present paradigm – and to suggest and demonstrate alternative possibilities. Within an institution of research and so-called higher education, this obligation should be inherent already.

Therefore, there is something to be learned, and there are habitual patterns, built into institutions, legislation and not least into each individual, that need to be *exceeded*. Hereby, especially with regard to self-exceedance, the project is emphatically about *Bildung* in a classical sense. Interestingly, this concept seems to originate in a building metaphor: Besides German *Bildung* and Swedish *bildning*, which are etymologically cognate with the English word *building*, we have English *edification*, from Latin *edificatio* (from *aedes* house, building), and Danish *opbyggelighed* (literally *building-up*). The stoics used the term *oikeíôsis* (from *oikos*, house, home, building).

Even though it might have an anachronistic tinge*,* we use the word *edification* to designate a more encompassing concept than mere ‘learning’ or ‘education’.

The educational – or edifying – aspect of our collaboration with Hjerl Hede is characterized by *demanding* edification of each student: The aim of each student’s endeavours is not only their own learning and eventual graduation and diploma; there is a client, a community of people and, in this case, sheep, who need the student to do a good job. However, this condition of serving different interests than only one’s own seems to heighten motivation, performance and thus learning outcome. Furthermore, design development, which is integrated with construction work, is a collective process of all students. Consequently, each student is depending on the others to contribute to design solutions and construction of high quality. The fact that the others are depending on the individual, who then have responsibility for a group of peers and not merely her or his own learning and study progression, also seems to heighten motivation, performance and learning outcome. However, it necessitates a dismantling of the ‘Auteur’ concept, of the idea of the architect as the individual creative genius, which seems to be part of the self-image of the profession. It demands of each student to share attention and perspective with other students, i.e. literally to develop a *common sense*, to sometimes step aside and let the project come forward. These characteristics of the working mode and learning environment are consistent with a long tradition, which can be traced back to Aristotle,

Despite this long philosophical tradition, the idea of the individual genius and the *star-chitect* is prevalent. It seems to produce the norm that buildings should be original and eye-catching, anything but anonymous. Both buildings and names of *star-chitects* become props in a so-called *attention economy*, where the main value of buildings is the sign value of photographs of them – which might produce great pictures and signs, but most often poor, unsustainable buildings.

Real crises (like pandemics and natural disasters) tend to eradicate authority, habitual social hierarchies and roles – and the climate crisis *is* a real crisis. Instead of celebrating sign value, uniqueness and individual genius, we should take the obligation to build more sustainably seriously and recognise our own insufficiency. An important part of the learning process is to maintain a humility towards expertise, we do not yet possess – and to look for other authorities than the usual academic and technocratic. Therefore, we go to stonemasons, carpenters, thatchers and painters to learn, and we study non-pedigreed, vernacular buildings of all ages.

**Time, Place, Authenticity**

We do realise that touching upon topics like history, geographical origin and authenticity is audacious in front of an audience comprising historians, archaeologists and anthropologists. We are mere architects, so please bear with us.

Since mid-19th century***,*** a norm in architectural discourse has been a demand for authenticity, for honesty in use of materials, and for earnest, articulated structure. Heuristically, this architectural norm, seems to be highly compatible with intentions of sustainable building: things are what they seem; their beauty is in their structural use and immediate material appearance, hence no extra resources needed. Furthermore, it could be argued that locally sourced materials, and techniques of crafting and applying these materials, have been refined through centuries making them profoundly ‘in tune’ with a place.

Today, however, while still a prevalent norm in architectural criticism and discourse, practiced ideals of earnest structure and materials are hard to find. At a closer look, even buildings honoured for their regional authenticity, awareness and sensibility in material use can in fact be very far from this ideal. Built environments like Jakriborg in Sweden, and villages in Denmark and elsewhere, where buildings are constructed and renovated under conservation district plans, display incongruence between their regionally ‘correct’ appearance, and the globally retrieved and industrially produced materials used in their construction.

The ‘regionality’ or the place specificity of the buildings is all *appearance*: the reeds for thatch come from China or Romania, the clay for bricks come from England or Germany, the timber and wood from Sweden and South America, brackets, nuts and bolts from Malaysia, etc. Furthermore, the well-hidden structural principles and the mineral wool, plastic membranes and concrete, have nothing to do with how the buildings appear – or try to appear.

The specifically regional or local is thus purely semantic, reduced to signs, whereas the building as material reality is an aggregation of things from different parts of the world, acquired through global systems of industrial production, shipping, marketing and standardization.

In our collaboration with Hjerl Hede, we turn this relationship upside-down. The materials are local, acquired as ‘nearby *spolia’* or harvested in the forest that we build in, thus bypassing the usual globalized and standardized market for building materials, governed by multinational corporations.

On the other hand, construction principles, techniques, and the overall form and appearance is, in a sense, global.

This is not due to a semantic or aesthetic intention, but simply because the combination of considerations to program, animal welfare and work environment with locally accessible materials demands it. Thus, the design solution for point foundations that interlock granite and wood was developed with a look to Japan; techniques for splitting and roofing with shingles was developed with inspiration from Norway and Central Europe; layered timber construction took inspiration from Japan and Frisia; ventilation principle, roof shape and overall building geometry inspired from Gothic and East Asian architecture as well as Danish vernacular and tropical shanty buildings.

Like in previous times, when journeymen years were an unexpendable part of building culture, any relevant technique and construction principle can be brought in from abroad, and integrated with local culture, materials and climatic conditions. Provisionally, we call this *material regionalism*, as opposed to other architectural regionalisms that tend to be more formal or semantic – more specifically the trends and ideas in architecture which are called *critical regionalism*, a concept that emerged in early 1980’s and has been revived in architectural discourse within the last few years.

Though we can subscribe to most of the ideas behind *critical regionalism*, it can be argued that it remains within discussing architecture as signs, and excludes buildings as physical material reality.

Articulating an architecture of resistance towards the ‘technocratic-industrial complex’ and a critical-regional stance that avoids sentimentalism, kitsch and superficiality seems more important than ever. The ‘absolute imperative’ of today demands of us that we critically reconsider the notion of the regional, and that we avoid confining architecture to entertainment and to an airy realm of ideology, symbols and discourse, and integrate the sociality, the edifying potential and the materiality of building culture in the discussion.

As mentioned, building near an open-air museum, suggests awareness of history, and perhaps even a certain concept of history. Most concepts of history seem to share the fundamental idea that time is linear, progressing, and that the past is behind us. In contrast, the approach to history in our collaboration with Hjerl Hede could be characterised as *lateral*, i.e. history as present, the works of the past as contemporary. They are here with us, and represent possibilities and experiences for us to study and use. This lateral concept of history has some affinity with Nietzsche’s idea of a “monumentalist” concept of history[[3]](#footnote-3), which, instead of a merely *archival* or *critical* approach, asserts an inspirational and positively edifying value to the past, rich in accumulated and useful human experience. However, we are not embedded in a continuum of tradition, but have to relate to the techniques and artefacts of the past with reflectivity and deliberate estrangement, somewhat like the disciplines of anthropology and archaeology, which the architectural discipline seems to have overlapped with in 18th and 19th centuries. As Owen Jones expressed this; it is “the *principles* discoverable in the works of the past [which] belong to us; not so the *results*. It is taking the ends for the means.”[[4]](#footnote-4) Discovering these principles requires experimentation, reflectivity, and time and hard work. As T.S. Eliot has put it in his famous essay *Tradition and the Individual Talent*:

[I]f the only form of tradition, of handing down, consisted in following the ways of the immediate generation before us in a blind or timid adherence to its successes, ‘tradition’ should positively be discouraged. … Tradition is a matter of much wider significance. It cannot be inherited, and if you want it, you must obtain it by great labour. It involves, in the first place, the historical sense, which … involves a perception, not only of the pastness of the past, but of its presence.”

**Virus aerugo or aerugo nobilis? Decay, mending, and aesthetic sensibility – a shared research agenda**

During a ‘building inspection’ at Hjerl Hede, one of the restoration experts ascertained that the best preserved building at the museum is the one that has undergone the least technical intervention. Furthermore, that there is a clear correlation between *interference in the building's natural decay process* and *a shortened lifespan* (even when performed by highly competent specialists). This then led one of the experts to the conclusion that: "we are maintaining our buildings to death" - also addressing contemporary building culture at a more general level.

Too much maintenance as well as incorrect and excessive ‘renewal’ is directly destructive and the common cause of serious building damage. These damages (resulting from intentions of maintaining) - are thus *motivated* by impulse to satisfy a visual ideal which prioritises superficial appearance over physical reality.

The demand for extensive maintenance of the museum buildings emanates mainly from museum guests, who arrive with expectations of a well-maintained and idyllic representation of the past and upon noticing crackled lime layers or moss-covered surfaces express their concern for the condition of the buildings.

The conditions that the visitors are reacting to are mostly completely harmless – or beneficial even. The discomfort that they are feeling by ‘reality not accommodating their imagination’, is however in itself a potential threat to (amongst other things) the open air museum’s financial foundation. Hjerl Hede must therefore navigate between meeting the audience's aesthetic preferences in order to retain public interest - and on the other hand: protecting their buildings - with limited funds.

In other words, it seems that the visitor's (or rather the wider public’s) aesthetic preferences are in conflict with ambitions of making materials, building components and buildings last, [:*the fundamental interactions* of nature], and therefore with intentions of durability and sustainable resource handling.

Visible signs of aging and disintegration processes regarded aesthetically *desirable* is known from e.g. East Asia, with the Japanese concept of wabi-sabi. As early as antiquity, an aesthetic appreciation of decay is known in the Roman historian Pliny the Elder. In *Naturalis Historia,* Pliny described decay based on his observations of bronze sculptures, and thus introduced a rational distinction between 'benign' and 'malignant' patina: *Aerugo nobilis* and *virus aerugo* - a rational distinction based on the physical properties of the decay.

As mentioned, it seems that demands for sustainability and visual expectations, ‘pull in different directions’. Polemically, you could say that our taste is ethically and morally wrong. Though it could be argued that this is a categorical misjudgement: In Enlightenment’s philosophical tradition, ethics and aesthetics are very distinctive categories. However, we presuppose that taste and judgment are competences that are ‘formed’; that the development of taste *and* judgment actually requires ‘edification’ and reflexivity. As Rilke put it: “your doubt can become a good quality if you *train* it. It must become *knowing*, it must become criticism. Ask it, whenever it wants to spoil something for you, *why* something is ugly".

Seeing the development of taste and judgment as something that requires edification and reflection is thus not about narrowing down or 'elitising', but rather about more *tolerance*, insofar as edification and reflection are matters of self-transcendence; the ability to perceive something from other perspectives than solely one’s own.

Decay has an immediate 'semiotic value' that can be interpreted. Regardless of the interpretation, the process of decay works immediately to make a material 'more readable': Over time, 'a narrative' is developed which reveals information about the object's composition, age, construction, placement, use, etc. - but reading the 'index’ of decay requires *apprehension*.

A common research aim between us and the museum is to clarify the schism between *Aerugo Nobilis* and *Virus Aerugo* and hopefully serve a development of the museum's maintenance strategy (and possibly a communications strategy), by identifying and exemplifying 'types of decay' which should *not* be interfered with, the ones which require attention – and especially *how* to identify the *difference.* This ability to discern should ideally be available to the visitors as well.

The demand for ‘well-groomed nostalgia’ is opposing the scarce funds of the museum, successful conservation and not least the sustainability agenda. This of course calls the open air museums to act, and fortunately the knowledge and skills to tackle this conflict already exist within the museums; manifested in the dedicated, experienced craftsmen, to whom we are obliged to listen.

**Relevance for present and future society**

Finally some very general thoughts on what importance open air museums could have for the present and future culture and society – again, in the limited perspective of building culture. As argued in the beginning *we believe that* ***the educational potential in open air museums*** *is immense, however underutilized.*

The Latin word *museum* comes from Greek *mouseion*, which meant a "place of study, library, school of art or poetry," originally "a temple or shrine of the Muses," from greek *Mousa.* The mother of the nine muses (none of which represented architecture, by the way), and thus of the arts, was ***Mnemosyne***. The first syllable or two, where related words like ‘mental’ and memory might come to mind(!) comes from the proto-indoeuropean root \*MEN-, meaning "to think," with derivatives referring to qualities and states of mind or thought: Latin mens "mind, understanding, reason," Lithuanian mintis "thought, idea," Old Church Slavonic mineti "to believe, think, Old English gemynd "memory, remembrance; conscious mind, intellect“, Danish minde, mindelighed, etc., etc.

So the concept *Museum* represents a complex idea of both remembrance of past and projection into future; of the conscious mind of individual and entire culture, orienting both backwards and forwards at the same time.

The fact that open-air museums are called *museums*, and not something else, suggest that they should neither be amusement or theme parks, nor dry and idle archives, but powerhouses for learning and edification – which many of them probably are, but we believe they could be so much more. Our students’ experience from working with and at Hjerl Hede spills out and into projects outside the museum, and undoubtedly into their future practice, but it is not enough.

Worrying about both the economy of open-air museums and about the general depletion and lack of craft skills in contemporary society, Sten Rentzhog argued that “the aim should be that open-air museums come to hold a recognized responsibility towards the general educational system”.

We believe that this is equally valid for our profession. The idea that open-air museums (and vernacular, pre-industrial building in general) are of relevance for architecture and architectural education as a kind of canon or source is not new. In 1955, when a now listed house designed by the Danish architect Erik Christian Sørensen was inaugurated, several critics pointed to the American modernist influence, and to the obvious Japanese influence in the light and elegant wooden structure, but Sørensen denied this: “just go to the open-air museum, you will find it all out there”, he replied.

What the architectural profession (and all others) tends to forget, is that Modern Architecture arose from the Arts & Crafts movement’s scepticism towards industrialisation and its celebration of the vernacular, and from archaeology: A historically sensitive point of departure, which we perhaps should revisit. The Absolute Imperative calls for it. And open-air museums are obvious facilitators.

1. “Forskningen skal bidrage til den grønne omstilling, herunder især målet om 70 pct. reduktion af udledningen af drivhusgasser i Danmark i 2030 samt målet om netto-nuludledning i EU og Danmark og bidrage til at skabe løsninger på klima-udfordringen globalt. Endvidere skal forskningen styrke naturen, miljøet og bio-diversiteten.”

 (<https://ufm.dk/lovstof/politiske-aftaler/forskningsreserve-endelig-aftale-til-hjemmeside-docx.pdf>) [↑](#footnote-ref-1)
2. Peter Sloterdijk, 2014: *You Must Change Your Life*, John Wiley & Sons, [↑](#footnote-ref-2)
3. As presented in *Vom Nutzen und Nachteil der Historie für das Leben*, Nietzsche, 1874 [↑](#footnote-ref-3)
4. Owen Jones, 1856: *The Grammar of Ornament*, London. Here quoted from Oliver Domeisen, 2013: “Back to the Future”, in *Architese* 4, 2013. TV host and self-sufficiency expert Frank Erichsens house is a good example of what Jones warned about, as is the more general examples in the next paragraph. [↑](#footnote-ref-4)