

THE NECESSARY THE APPROPRIATE & THE BEAUTIFUL

TEXT: NICOLAI BO ANDERSEN

AT THE MOMENT, THERE IS MAYOR FOCUS ON THE CONCEPT OF CIRCULAR ECONOMICS. THIS ARTICLE ASKS WHAT THIS MEANS IN REGARD TO BUILDING CULTURE. FOCUSING ONLY ON ENERGY CONSUMPTION AND RESOURCES, THERE IS A RISK OF DESTROYING HERITAGE VALUES. IN CONTINUATION OF VITRUV, IT IS ARGUED THAT SUSTAINABLE ARCHITECTURE IS ABOUT TECHNICAL MATTERS, PROGRAMMATIC CONDITIONS AND ARCHITECTONIC VALUES. IT IS ARGUED THAT SUSTAINABLE ARCHITECTURE MUST BE NECESSARY, APPROPRIATE AND BEAUTIFUL.





Introduction

Sustainability is defined in the Brundtland Report as: “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN 1987). In the widest sense of the word, sustainability is to “promote harmony among human beings and between humanity and nature (UN 1987). The report describes sustainable development as a balancing of three aspects: the environmental, the social and the economic. In continuation of this, the government report ‘Bæredygtigt byggeri’, from 2016, describes how environmental, social and economic dimensions must be balanced from a lifecycle perspective and from the building as a whole (Trafik- og Byggestyrelsen 2016: 4). Sustainability is here understood as founded on two paradigms, aiming at creating sustainability in the building sector: long term thinking including not only the building process but the entire lifecycle of the building, and thinking the building as part of a larger context not just as an individual entity.

The environmental quality is in this perspective about optimizing the use of energy, reducing the use of (scarce) resources, limiting the environmental impact and use of poisonous materials, optimizing the use of space and the potential of disassembling, reusing or recycling the building and its parts. The social quality is about indoor climate, creating healthy and attractive spaces, making sure the building fits with the surroundings, accessibility, work environment and responsible production. The economic quality is about total economy, good quality, flexibility and optimal use of space.

At the moment, there is major focus on the concept of ‘circular economics’. The concept is defined as “keeping materials and products in the economic circuit with the highest value the longest time” (Miljø- og Fødevareministeriet 2017). It is about reducing the use of limited resources, optimizing the use of resources and reducing pollution and waste, i.a. through circular design and using healthy materials (Advisory Board for cirkulær økonomi 2017). But what does that mean in regard to building culture? When focusing only on energy consumption there is a risk of destroying the heritage values of the building (which ironically might reduce the life of the building making it less sustainable in the long run). Focusing only on materials and resources there is similarly a risk of overlooking other sustainable aspects in the old – and the new – buildings.

The Austrian architects Baumschlager Eberle points out, that not only technical and material properties, but also aesthetic values are decisive in terms of the administration of the world’s resources (Baumschlager Eberle, Schweigkofler & Walden 2007). And more than 2000 years ago Vitruv underlined that architecture “should possess durability, convenience and beauty”, in Latin *firmitas*, *utilitas* and *venustas* (Vitruvius 1914: 17). Even though the concept of sustainability was not a part of the vocabulary at the time, one might argue that it is exactly what he describes. Sustainable architecture is about organizing the world for human inhabitation, using the available resources in the best way, with regard to the given technical possibilities.

The Swedish architect Johan Celsing argues, in a similar manner, that sustainable buildings have to be durable. He underlines that architecture is a slow media that “requires major resources for its creation” and that “the robust is important if architecture is to be taken seriously and contribute to the development of a sustainable community” (Celsing 2008: 391). One might thus argue that sustainability is not just a question of optimizing the use of energy and minimizing the use of resources, but in a broader perspective a question of the building being robust. In continuation of Andersen (2015a), sustainable building culture is thus assumed to be about technical matters: that the building has a long life; programmatic conditions: that the building can be used in accordance with changing needs and architectonic values: that the building has aesthetic quality. The question is what parameters are contributing to make a building last long? Which properties characterize sustainable transformation in a holistic perspective? How can building culture contribute to a sustainable future? In the following, selected student projects made at the Master’s Program in Architectural Heritage, Transformation and Conservation (KTR) at The Royal Danish Academy of Fine Arts, Schools of Architecture, Design and Conservation, School of Architecture (KADK) are

described and discussed using different theoretical lenses. The projects made during the past three years represent five different modes of transformation: inside, outside, around, on top of and next to.

Inside, outside around, on top of and next to

The project for a hostel on the Faroe Islands (fig. 1) proposes to restore the existing boulder boathouses and to add a woollen lining inside the space, suspended like a cocoon. A wooden floor makes a space for living and sleeping well protected from flooding. The intervention introduces vibrant tension into the existing structure with this new texturally rich element.

The project for youth housing in Malmö (fig. 2) proposes to transform a shipyard factory building, that has lost its function, by adding new steel structures inside the large space. Partial insulation allows the massive concrete construction, built to carry a large crane, to remain visible. The project gives new life to a worn-out building, under the threat of demolition, by continuing the distinctive tectonic articulation in a refined interpretation.

The project for resting spaces along a bicycle route on Funen (fig. 3) proposes new additions outside of the transformer towers, which used to exist all over Denmark. The proposal calls for new functions not in need of insulation to be located in the existing brick structures, and new functions with higher comfort demands be placed in new building volumes. The additions continue the architectural language in a subtle contemporary understanding.

The project for a stonemason workshop at Frederiksborg Castle (fig. 4) proposes an extension outside the existing brick building located at an unfinished corner of a listed site. The volume is a direct continuation of the existing wing, but built in new materials. The new space is just like the old generally usable and functionally flexible. The project is a new interpretation of the existing heritage values on the terms of modern materials.

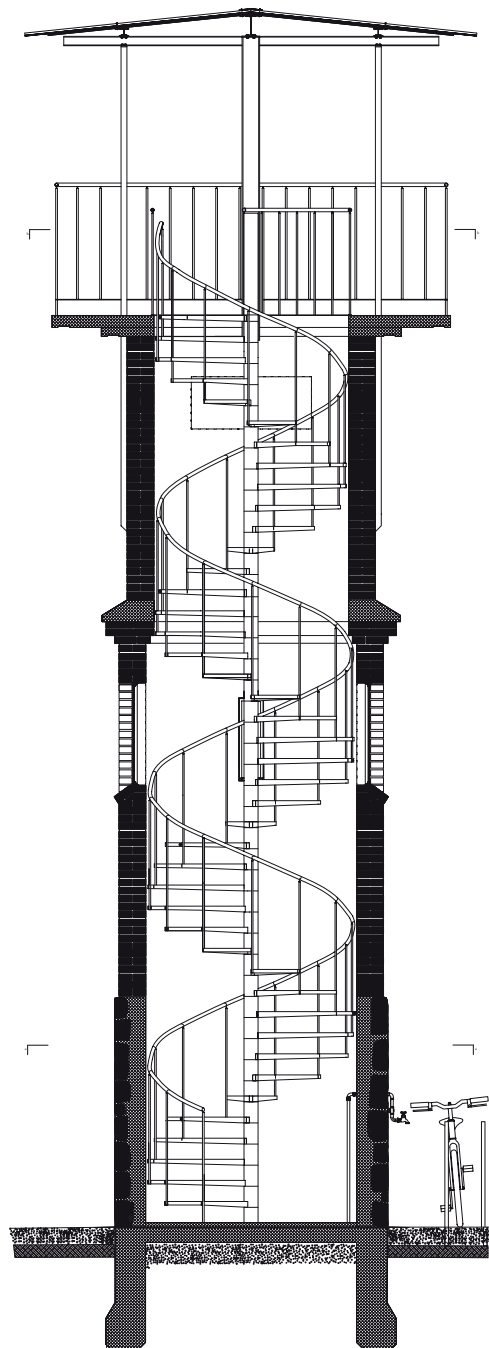
The project for transformation of the Viking Ship Museum in Roskilde (fig. 5) proposes a new layer around the existing listed building. A new bay extends the existing concrete structure, which has major problems with deteriorated concrete, thermal bridges and flooding. The project secures the physical structure and reinforces the rich spatial experience of the landscape and the ships with respect for the heritage values.

The project for energy renovation of youth housing on Vesterbro (fig. 6) proposes an entirely new architectural expression around a worn concrete building with low preservation value. The new façade made of timber and glass protects and insulates the existing structure and allows the balconies to be used all year round. The project prolongs the life of a worn building and adds a new character in dialogue with the existing structure.

The project for a brewery on Østerbro (fig. 7) proposes a new floor on top of an existing transformer building located as part of an ensemble with high preservation value. The new structure uses the existing concrete walls as base for a lighter, filigree structure made of timber clad with polycarbonate. The addition makes it possible to re-use the existing building by adding a new light space supplementing the existing interior.

The project for a hostel on the Camino in France (fig. 8) proposes to restore a building ensemble with high preservation value threatened by demolition. The project adds new brick reinforcements on top of the existing structure to stop the decay. The interior is organised by large wooden furniture making space for new functions. The project gives the ruined buildings a second life by adding a new character resurrecting the old.

The project to extend the arboretum in Hørsholm (fig. 9) proposes a series of new buildings next to the systematically planted trees from all over the world. The proposed buildings for the caretaker, the scientist and the visitor are constructed in timber and clad with wood and printed textile. The project adds a built interpretation to the organically grown structure of the landscape.



Title page:
 Fig. 1: Elin Maria Nolsøe Joensen, Thesis project
 Photo: Christoffer Harlang

Previous page:
 Fig. 6: Benjamin Egebak, Thesis project

This page:
 Fig. 3: Katrine Liv Nielsen, Thesis project

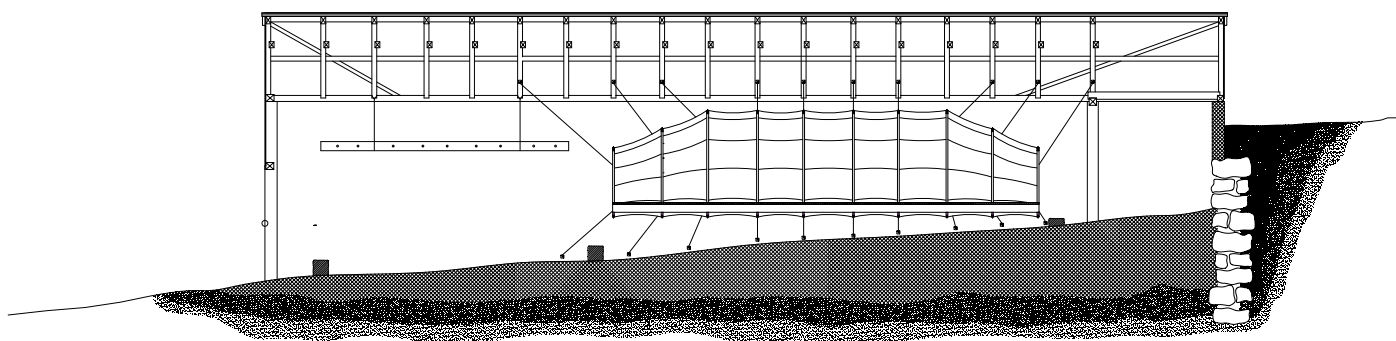
Opposite page:
 Fig. 10: Tilde Andersen, Thesis project











Previous spread:
Fig. 7: Signe Bech Reinholdt, Thesis project

This page & opposite page: Fig. 1
Elin Maria Nolsøe Joensen, Thesis project

Next spread:
Fig. 5: Jesper Skovby,
The Viking Ship Museum, transformation.
Photo: Nicolai Bo Andersen

The project for an elderly home on Østerbro (fig. 10) proposes a new unit directly next to a former monastery built in red brick. The addition continues the existing spatial composition of courtyards and corridors, but instead of bricks, the new buildings are constructed with insulated clay blocks clad with wood. The project is a new interpretation of the significant spatial structure and the strong material character of the existing building.

The necessary

As pointed out, energy optimisation and reduction of the use of resources seem to be the most important questions when discussing sustainable architecture. Since a building can be considered a spatial organisation of resources, it may be argued that the longer they can stay on their location, the better. But which conditions are of special significance when working with existing buildings? The investigated projects relate to the question of energy and insulation in different ways. In order not to compromise existing heritage values and to save resources, some projects propose just a partial, internal insulation, minimizing the use of material and optimizing the use of space (fig. 1, 2, 8). Other projects propose an entirely new, external building envelope, in order to meet contemporary energy demands (fig. 5, 6, 7). Several projects propose moving functions with high comfort demands away from the existing, uninsulated building, to a new structure that complies with contemporary demands with regard to energy and materials (fig. 3, 4, 9, 10).

All the projects aim at optimising the use of resources by reusing buildings, structures and materials. All the projects reuse the building parts described as having high preservation value, and only few projects remove building materials. Only one project removes an entire existing building to make room for a new intervention (fig. 10). Some projects propose adding a new structure using the same, heavy materials as the existing buildings (fig. 3, 5, 8). The heavy materials are generally characterized by being able to last long and to weather with beauty and grace. If used in the right way, they can be repaired, reused or recycled if necessary. Other projects add lighter materials not present in the existing building (fig. 1, 4, 6, 7). Materials with a shorter lifespan are proposed built into the structure allowing them to be disassembled and replaced if they are broken, reused in another situation or recycled. A single project adds a material not often used in buildings. It is easy to produce locally without the use of much energy, it is non-toxic, easy to repair and it can be reused or even composted when it can no longer be used (fig. 1). As suggested above, sustainability is not about stopping time. Sustainable development is rather a “process of change” (UN 1987) optimizing the resources in relation to the given technical and social possibilities – in strong consideration of future generations being able to meet their needs. It includes the idea that

sustainable development requires meeting the basic needs of all and extending to all the opportunity to satisfy their aspirations for a better life” (and that) “living standards that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long-term sustainability (UN 1987).

It may be argued that to escape our non-sustainable throw-away culture, one must reduce the use of resources, reuse the building elements and recycle the materials, in other words: “Reduce. Reuse. Recycle. Rethink.” (Advisory Board for cirkulær økonomi 2017: 5). In this perspective, sustainable building culture is about necessity in two different manners: One must create the development that is needed to be done and one must limit the intervention to the basic requirements. In continuation of this, sustainable building culture may be defined on the technical level as reducing the use of energy by strategic insulation and by optimizing the use of space and minimizing the use of resources by ensuring the future existence of the building and preventing degradation and decay. The added elements must be made of non-toxic, quality materials produced under sustainable conditions and they must work well with the existing structure. And it must be possible to repair or disassemble the building in order to maintain, reuse or recycle the materials. Sustainable building culture is about doing neither too much nor too little, but just the necessary.

The appropriate

It may be argued that the reason a building has been preserved in the first place is that it is possible to use it according to changing functional needs. It demands a certain adaptability to reach a high age, or as Steward Brand puts it: “Age plus adaptivity is what makes a building come to be loved” (Brand 1994: 23). At the same time it only makes sense to preserve an existing building if it can be used, or as the Agency for Culture and Palaces put it: “Protection goes through function” (Kulturarvsstyrelsen 2016: 3). But what properties determine whether a building is adaptable to changing functional needs? The investigated projects propose, to a greater or lesser degree, functional changes to the existing buildings. Some projects propose an entirely new function in the existing structure (fig. 1, 2, 3, 7, 8, 9) while others propose just a smaller adjustment of the use (fig. 4, 5, 6, 10). It is likely that the changes in function are possible because the buildings to begin with are adaptable.

The American writer Steward Brand describes how an existing building must be understood as a series of systems, each with its own individual lifetime. According to Brand, the six S’s constitute the “shearing layers of change”: the site, which has the longest life since the context has an influence through generations; the primary structure, which has a time perspective of 30 to 300 years; the exterior skin, which undergoes changes approximately every 20 years; services (installations), which must be replaced every 7-15 years; the space plan, which will be reorganized every 3-30 years; and finally the stuff (furniture), which has the shortest time perspective, as it is moved all the time (Brand 1994). In transformation projects the architect has no influence on the location and orientation of the building. On the other hand it could be argued that the quality of the site has been confirmed during the lifetime of the building. According to Brand it is important to respect the structural hierarchy and to allow a “slippage between the differently-paced systems of the Site, Structure, Skin, Services, Space plan and Stuff” to prevent that “the slow systems block the flow of the quick ones, and the quick ones tear up the old ones with their constant changes” (Brand 1994).

All the investigated projects respect the structural hierarchy of the existing building. To ensure the future life of the existing building the projects avoid tearing down primary structures or making large penetrations in loadbearing walls. And they restrain from limiting the flexibility of the interior by designing temporary elements that can’t easily be changed or moved. To prevent systems with different paces to tear up each other all the projects respect the tectonic articulation: building basis, primary structure, complementing elements, surfaces and furniture. A building is like a living organism. The parts of the system are constantly changing, some slow and others fast. It is impossible to predict the future use since the functions, according to Brand, are constantly changing. For this reason Brand is calling for “scenario planning” able to take future change in program into consideration, or in other words: “A good strategy ensures that, no matter what happens, you always have manoeuvring room” (Brand 1994: 92).

Some of the investigated projects propose a very specific new functional element to the building (fig. 1, 3, 9), others suggest a more general plan (fig. 4, 5, 7, 8) while some propose a combination (fig. 2, 6, 10). The generally usable plan allows a future flexibility of the building and by ensuring that interventions are not compromising the hierarchy of the existing structure also very functionally specific programs avoid limiting the future adaptivity. The Danish architect Vilhelm Wohlert describes very precisely how an “integration of a new function must not represent a threat to the existence of the building” and that the intervention

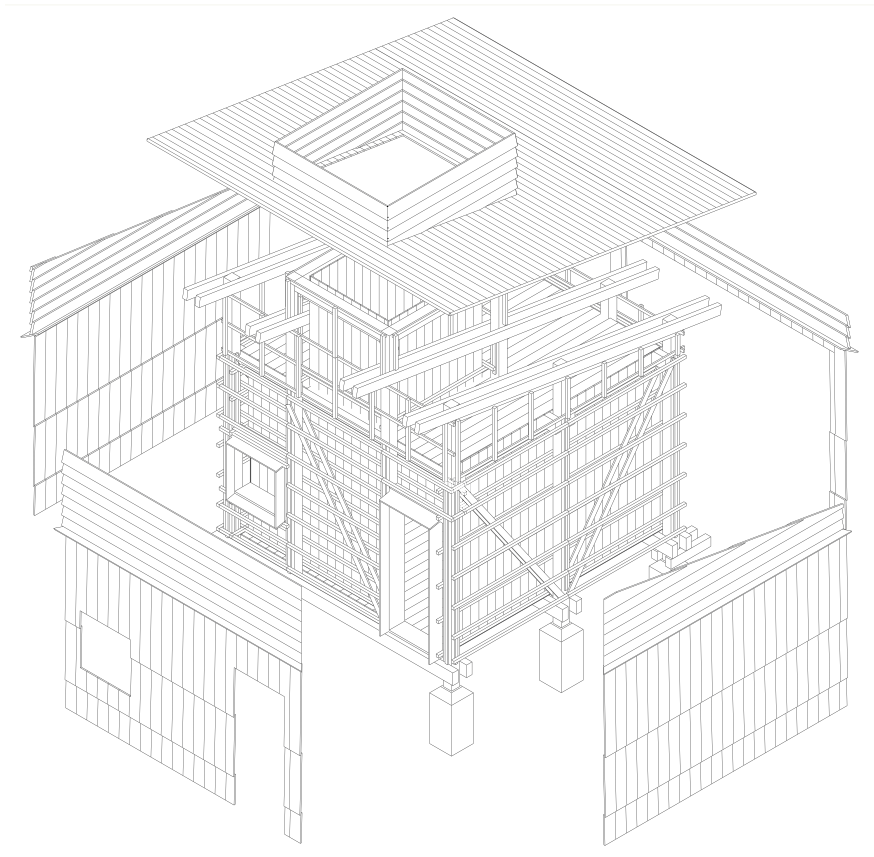
must be loyal to the properties of the building, i.e. the construction, the structure, the volume, the proportions, the materials and valuable decorations, the basic properties like the building envelope, and possible additions must not change the main balance and proportion (Wohlert 1976: 276).

The adaptability of a building may thus be a question of the building being functionally future-proof. A long life must be ensured by making sure the building can be used now – and in the future. It is about









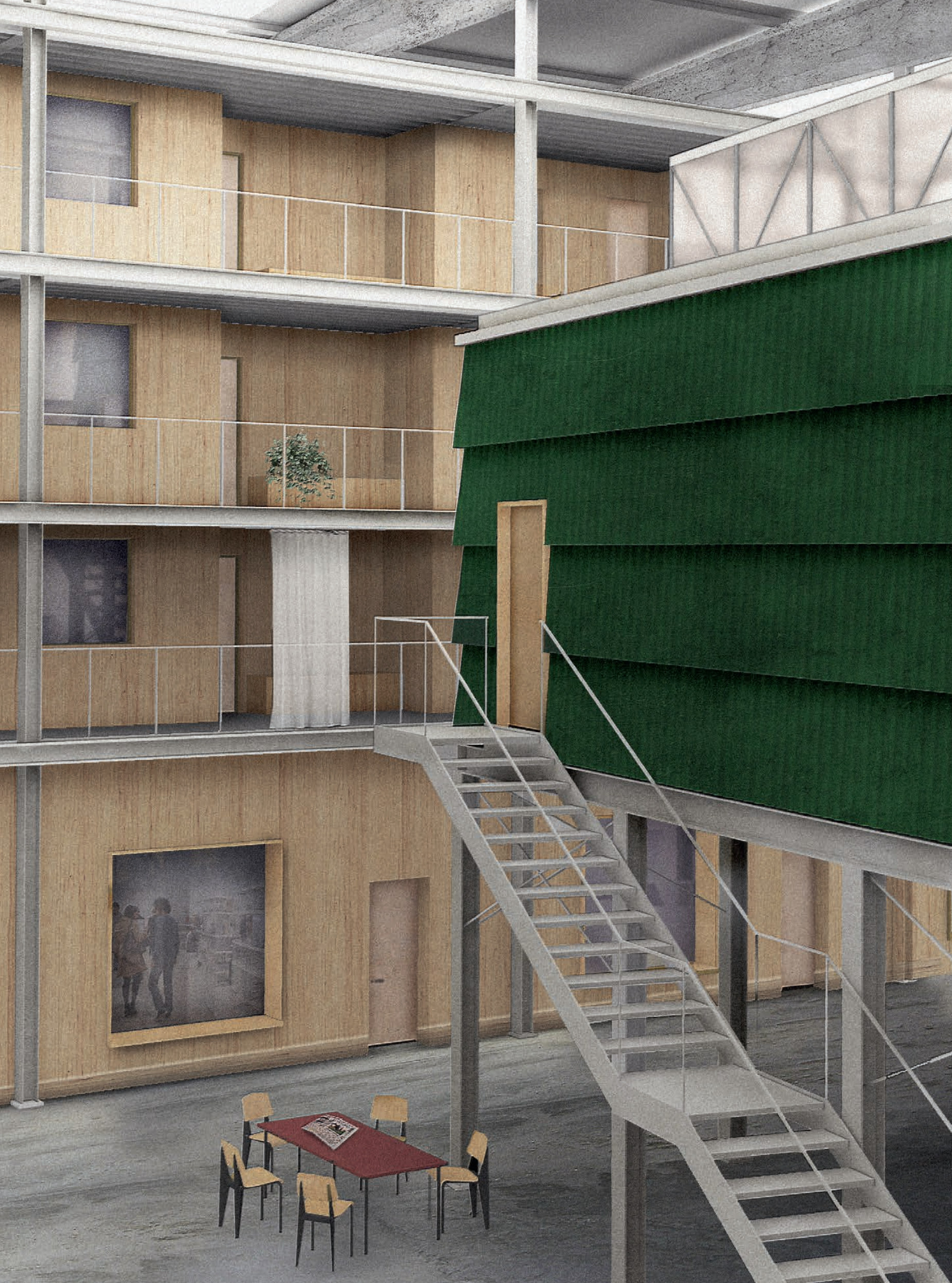
Previous spread:
Fig. 4: Eva Sievert, Frederiksborg Slot addition

This page:
Fig. 9: Alexander Vedel Ottensten, Thesis project

Opposite page:
Fig. 8: Anna Kampmann, Thesis project

Next page:
Fig. 2: Erik Järninge, Thesis project





respecting the structural and tectonic hierarchy, planning for general usability and allowing interior flexibility. In other words: A sustainable architectural intervention must be appropriate.

The beautiful

It may be argued that listed buildings in themselves are sustainable because they have already had a long life. When a building is preserved the resources built into the structure are secured. But why are some buildings worth preserving at all? The German philosopher Gadamer argues that some buildings have become classic because they are able to re-actualize themselves to our attention. To Gadamer a work of art “is ontologically defined as an emanation of the original” (Gadamer 2004: 135). The work of art adds something new to the world by representing the original in an “event of being” which is “repeated each time in the mind of the viewer” (Gadamer 2004: 152). In this perspective the transformation of existing structures may be a question of making the essence of the building available to a contemporary attention. The question is, how can this be done?

All investigated projects depart from a thorough description of the buildings’ heritage values. The existing buildings have all been surveyed, analysed and assessed following the principles of Vadstrup (2015) in an attempt not to jeopardize the technical, historical and architectural values. In addition the interventions are based on a phenomenological survey as described by Andersen (2015b) aiming at specifying the experiential qualities of the building. Some of the buildings are listed or located on a site with high preservation value (fig. 1, 4, 5, 9, 10) while other buildings are in risk of being demolished (fig. 2, 3, 6, 7, 8). All projects respect the assessed heritage values of the existing building by not making interventions that would reduce them. On the contrary, every project adds a new technical, functional and aesthetic layer aimed at re-actualizing the building to a contemporary attention. In some cases, the intervention is done in contrast to the existing structure (fig. 1, 4, 6, 7, 10) in others as a subtle accent (fig. 3, 5, 8). Common for the investigated projects is that they express a new, overall character in close relation to the old.

The Swiss architect Peter Zumthor argues that: “if the intervention is to find its place, it must make us see what already exists in a new light” (Zumthor 2015: 18). Similarly, Vilhelm Wohlert argues how an intervention “just like the baroque epitaph implemented in a gothic church only adds something valuable to the existing if it is of artistic quality”. To make sense

only changes and additions caused by the transformation are valuable to the whole if they themselves are characterized by quality, i.e. if they are designed by a qualified architect (Wohlert 1976: 276).

Sustainable building culture may thus be understood as a question of architectural quality. To the German philosopher Martin Heidegger art is aesthetic knowledge, but on its own premise: “Art then is a becoming and happening of truth” (Heidegger 1978: 127). Art is about beauty, not in the banal understanding of the word, but as a question of letting appear, or in Heidegger’s words “Beauty is one way in which truth essentially occurs as unconcealment” (Heidegger 1978: 116). Thus, it could be argued that sustainable building culture is about re-interpreting the heritage values and experiential qualities. To secure the building a long life, the intervention must unconceal the essence of the existing building and re-actualize the architectural character to a contemporary attention. Sustainable building culture must address us on an intellectual level as well as touch us on an emotional level. In other words: sustainable architecture must be beautiful.

Sustainable building culture

On the question of what parameters contribute to make a building last long we may thus answer: because it is well built, because it can be used and because it talks to us. Sustainable building culture is in other words based on long-term technical, functional and aesthetic solutions that are far from becoming obsolete. It is characterized by technical aspects: the structural and tectonic hierarchy, energy reduction, optimization of space, the properties of the materials and the potential to repair, reuse or recycle; programmatic needs: the adaptability of the building, the generality of the plan and the flexibility of the interior and finally aesthetic properties: the heritage values, the experiential qualities and the general architectural quality of the intervention. In this perspective, the role of the architect is threefold: The architect is manager of resources, organizer of space and creator of architectural character. As mentioned in the introduction, the Brundtland Report defines sustainability as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (UN 1987). This definition is according to Staniforth as referenced by Muñoz Viñas the whole meaning with preserving cultural heritage, that similarly may be defined as a way to “pass on maximum significance to future generations” (Muñoz Viñas 2005: 195). This understanding underlines that building culture is not just a question of preserving the past for historic reasons, neither is it a matter of just solving practical needs for the present but it is also an ambition to pass on meaning to future generations. In continuation of this it could be argued that sustainable building culture is “a way of maintaining and reinforcing the meanings in an object” (Muñoz Viñas 2005: 213). This may be done securing technical durability, programmatic usability and aesthetic quality. In other words: Sustainable building culture is characterized by the necessary, the appropriate and the beautiful.

Acknowledgement

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