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1:1 (Dis)section – Learning through Full-Scale Dissection and Transformations of Abandoned Buildings

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Abstract

The section is an essential tool for understanding, exploring, representing and communicating spatial relations, structure and materiality in architecture, design and engineering, and therefore a recurring topic in the curricula. The section itself is destructive of nature and incompatible with a built environment in use or under construction. Hence, students throughout their education meet the section in the form of diagrammatic representations, that is, as forms of meaning emptied from scale, spatiality and materiality.

This article reports on a series of four workshops, held in the spring semesters from 2011 to 2014 for first-year students at Aarhus School of Architecture. The aim was to provide first-year students with an experience of the relation between the section as a diagrammatic representation and the materiality, structure and spatial relations of a concrete building. The climax of each workshop was a full-scale dissection and transformation of an abandoned house. As we shall see, the workshops fulfilled not only the intended learning goals, but created an initially unforeseen and unique context for learning about the relations between building and place and introduced the question regarding depopulation of rural areas as a pertinent processional challenge. Beyond an educational value, the research project ‘Transformation on abandonment, a new critical practice?’ transpired from the workshops. This research project and the interplay between teaching and research are discussed in the last part of the article.

Keywords full-scale dissection, transformation, progressive education, research-based teaching, hands-on, preservation

Dissection and environment

Due to its brutal nature, full-scale dissections must be carried out on buildings, which are permanently emptied of function. Denmark witnesses a depopulation of rural areas and villages in the so called ‘peripheral regions’. We find these regions mostly on the many small islands and in what is known as the ‘rotten banana’. The latter refers, by virtue of the shape, to the western regions of Denmark from Thisted in the North to Lolland in the South. Similar to Denmark, the rural areas of many other countries experience severe demographical changes. The population of the rural areas are abandoning their home villages and move to the larger cities. Actually, the majority of the world’s population is now living in cities (OECD, 2013; UN, 2014; Thorbeck, 2012; Woods, 2011). Rural depopulation is globally contested in diverse ways (Versteegh and Meeres; 2015). In Denmark social migration towards the cities is mainly caused by a decline in employment in food production based on farming and the associated industries. Furthermore, a political tendency to centralize public institutions has challenged the rural population during decades. The overall demography is changing in the rural areas; the average age increases, as younger people seek educational or occupational opportunities in the larger cities. The depopulation has led to a rapid drop in the market value of houses, which causes solvency problems for property owners, as it is hard to obtain loans to pay for even essential maintenance of buildings. One consequence of this trend is an increasing number of abandoned houses, which gradually go from being uninhabited to be uninhabitable. In some areas, the municipalities have taken initiative to tear down some of the most decrepit and unsightly houses. A report by The Danish Town

Planning Institute estimated a volume of 60.000-100.000 abandoned houses for demolition in Denmark alone (The Danish Town Planning Institute, 2014).

This has given unique opportunities for the introduction of full-scale dissection in the curriculum for first-year students at Aarhus School of Architecture (Figure 1). All workshops and the research project take place in Thisted Municipality in the North Western, which contains several small communities in varied stages of depopulation.



Figure 1. Students work, single-family house, Snedsted, 2014, work in progress; the horizontal intervention is visible on the left, whereas the cross section is visible on the right.

Workshop design

The overall design was common to all of the four workshops, but was continuously improved. All workshops extended over a period at five to six weeks. They were divided into four phases: Introduction, iteration, dissection and reconstruction. The article focuses on the dissection and reconstruction phase, but to give a better understanding of the context, all four phases are briefly introduced.

Phase 1: Introduction

The opening lecture started with an introduction to the section as a tool for professional investigation and communication of the structure of a building. To facilitate students understanding of the section as a generic principle, the lecture drew parallels between the section as a professional tool in architecture, design and engineering and dissection in the world of medicine. The latter was illustrated with the baroque dissection theatre of the 17th century, because the upcoming public full-scale dissection of a building has several features in common with the dissection theatre in the sense that concealed scale, materiality and spatiality are exposed in front of an audience. Demolition processes from the built environment exemplified the rare opportunities for professional real life experience of sections at building scale, where full-scale sections occasionally occur as temporary phenomena.

Besides exposing structures and materials, the dissection has the potential to reveal the history and evolution of the building. The full-scale section can reveal a buildings private history through stratification of the built layers. However, the section must be undertaken in respect to the laws of structure. Therefore, the workshop included a number of smaller sub-investigations in which the impact on structural and material matters was less critical. These sub-investigations, called ‘probes of investigations’, could display the material history of the building, e.g. layers of paint, wallpaper or flooring, were uncovered with surgical precision. Many of the probes of investigation took the form of plots such as work plans, drawings and description of procedures. Other probes included physical toolboxes designed to be used in both the investigation and reconstruction phase.

The opening lecture illustrated the learning potential of these smaller investigations by cut-outs from ice core drilling. Similar to the revealed layers in a building, the layers of an

ice cores carry events and stories of the past into the present. The interplay between the full-scale section and probes of investigations allowed a continuous rotation of students between the building site and the nearby surroundings. The rotation principle had a double purpose. It created time and space for immersion in selected elements of the building and reduced the risk for injuries caused by too many students working on the larger interventions.

The creative arts have precedents in the use of building transformation and especially the section as an artistic practice. Therefore the introduction lecture covered architects and artists like Gordon Matta-Clark and Rachel Whiteread, who performed transformations of abandoned buildings in the 1970s and 1990s (Moure and Matta-Clark 2006). Their artistic work, however, addressed a more narrow audience with interests in art and had no educational aim. However, Matta-Clark performed full-scale sections in his artistic practice. In his piece *Splitting* from 1974, he made two vertical cuts through all structural surfaces of a traditional American small town house. In regards to the use of the section as method, he argued:

Yes, a cut is very analytical. It's a probe! The essential probe. The scaffold of sharp-eyed inspectors. Initially I also wanted to go beyond visual things. Of course, there are visual consequences to cutting, certainly to removal, but it was kind of the thin edge of what was being seen that interested me as much, if not more than, the views that were being created (Matta-Clark, 1974, 167).

Finally, the assignments for the preparation of the physical interventions were introduced (Phase 2) and groups of student were allocated to a specific building and provided with information about their building in the form of plans, sections and pictures.

Phase 2: Iteration Phase

A genuine understanding of the structure of the specific building was of paramount importance for both safety and learning outcome. The edges of the section must be parallel to the trusses and placed close to the trussed bridge in order to minimize the risk of a structural collapse. Hence, the structure of the building to some extent dictates the orientation and position of the section. As mentioned, interventions fulfilled as probes of investigation were not subject to this dictate, because their inconsiderable dimensions allowed them to intersect the structure of the building.

Each group of students developed proposals to different strategies for both the full-scale section and smaller probes of investigations as well as for process documentation. The different strategies were developed, tested and evaluated through drawings and models. During this phase engineers and architectural supervisors assisted the students. By the end of the week a committee of supervisors evaluated all the proposals for the two types of interventions. Based on the evaluation, one full-scale section and several probes of investigations for each building were selected for realization.

Planning of the sub-investigations included considerations about topic, techniques, tools and documentation. Besides providing a deeper understanding of the building, the sub-investigations should generate information and material for the last phase of the workshop (the reconstruction phase). A paramount element in planning was to develop ‘probes of investigation’, which contained all what the group would need to execute the sub-investigation and collect information and materials for the reconstruction phase, e.g. plans, tools and techniques. In some cases the probes of investigations were developed as physical toolboxes whereas they in others consisted of plots for on-site interventions.

The thorough planning of the probes of investigation had a triple purpose. The educational purpose was to teach students how to plan an investigation and documentation of temporary matters in architectural practice. The practical purpose was to ensure that the students' would actually be able to carry out the investigations under conditions, where no further information and tools would be available. The safety aspect was to avoid that students' would enter the area of the full-scale section to gather further information and tools to compensate for poorly designed probes of investigation.

Before departure, students were carefully briefed about safety procedures regarding the forthcoming dissection phase.

Phase 3: Dissection

The dissection phase was definitely the climax of all four workshops. The students worked in split shifts in order to carry out both the full-scale section and the probes of investigation including documentation and collection of information and materials in four full days of work. Local contractors were engaged to deliver needed equipment and assisted the students on site in performing the more difficult parts of the section. The last days of this phase were reserved for cutting out and packing up crucial building fragments for the reconstruction phase, before the transformed buildings were completely or partially demolished.

Phase 4: Reconstruction

After returning to the school, the workshop continued to the reconstruction phase, where building fragments collected through the probes of investigations were processed, analysed, interpreted and finally exhibited. Some unfolded probes established an imaginary space through constellations of fragments based on the spatial dimensions of the appurtenant building, while others unfolded autonomous material or spatial investigations. The aim was to

reflect upon the achieved material- and spatial experience in a new setting and to initiate an artistic mode of expression as an integrated part of the professional skills. The reconstruction was expressed both as digital section collages and in exhibited building fragments, supplemented by material gathered from the documentation of the process.

In the following sections we elaborate on selected topics from the dissection and reconstruction phase, outlined as phase three and four in the previous section. The key topics of the dissection themes are: Full-scale section and probes of investigation and hidden narratives. Then, we elaborate on the reconstruction phase.

Dissection theme 1: Full-scale sections and probes of investigations

Most of the completed vertical sections were performed by removing a full building segment of 1-1.5 meters width aligned with the trussed bridges, in respect of vital structural conditions. This produced a precise gap that separated the building into two full-scale sections, which mutually mirrored each other. The completed section provided an opportunity to observe most rooms in the building from a single viewing point placed in the gap and hence revealed hitherto hidden spatial relations and principles of construction (Figure 2). The learning experiences in the vertical full-scale dissection were linked to the ongoing exposure of the structure of the building as well as to the end result of the completed section.



Figure 2. Students work, Villerslev, 2013, the cross section was separating the school in two (Photograph by author).

Throughout the entire dissection each step was prepared and undertaken with caution and surgical precision. The precision served several purposes: From a learning perspective it ensured that material matters, structural issues and spatial relations stood out with a graphical clarity resembling the drawn section. Furthermore it increased the students' awareness of and experience with the nature of the different materials. From a safety perspective the precision required a continuously attention and awareness of the task and minimized the risk of injuries. Finally, it linked deconstruction of the building and construction of a temporary piece of art.

The exposed walls, decks and ceilings, reveal the history of the transformed building in chronological order as physical layers, each of which represent a major event in the lifespan of the building (Figure 3).



Figure 3. Students work, village house, Sundby, 2014, section collage; cinder from the neighboring cast iron factory used as insulation underneath the concrete floor, marked with circle. (Photograph by author).

The carefully designed probes of investigations urged the student' to concentrate on selected elements of the building, which the full-scale section could not reveal and led to a more complex understanding of the building. Some of the investigations dealt with details in the construction or chronology, e.g. layers of wallpaper. Others were more spectacular and allowed the students to experience the building from a perspective vertical to the trusses, for instance the inflow of light from both sides of the building as well as relations between the rooms (Figure 4).



Figure 4. Students work, vernacular farmhouse, Sundby, 2012, example of an intervention: a cylindrical subtraction (Photograph by author).

Dissection theme 2: The hidden narratives

As mentioned, the workshop has been held four times from 2011 to 2014. In the first cycle the focus was exclusively on the unique opportunities for learning about spatiality, relations, structure/tectonics and materials. By coincidence the building chosen for the first cycle was a combined family-house and grocery store situated next to the central square in a village.

The fact that most people in the village had a relation to the grocery store and expressed a genuine interest in what was going on, introduced new dimensions and unexpected learning potentials to the workshop. The interest rapidly emerged from distant observation to spontaneous interaction with the students. The dialogue between the locals and the students often started with questions about the project. The students' willingness to explain, what they were doing and why, was immediately rewarded by anecdotal stories about the house, its former residents and their positions in the social life of the village.

These personal anecdotes and narratives added a significant dimension to the students' learning experiences by anchoring the specific house in a very concrete social, historical and geographic context. The opportunities for interaction with local habitants then became an important parameter in the screening for buildings for future generations of workshops. Furthermore, it relates to French philosopher and sociologist Maurice Halbwachs

(1877-1945) concept of collective memory, who argues that encapsulated individual fragments of memory can be recalled through a social environment:

It is in this sense that there exists a collective memory and social frameworks for memory; it is to the degree that our individual thought places itself in these frameworks and participates in this memory that it is capable of the act of recollection (Halbwachs, 1992, 38).

And he continues: “..., in reality the past does not recur as such, that everything seems to indicate that the past is not preserved but is reconstructed on the basis of the present” (Halbwachs, 1992, 39-40). This notion is similar with concepts originating from German philosopher and cultural critic Walter Benjamin, who also claimed that the collective memory is always embedded in the material surroundings (Stead, 2003; Braae, 2015).

As a concrete example, from the educational workshops, the full-scale section of a house in the small village Sundby revealed a capillary break layer consisting of cinder (See figure 3). Initially it was observed and documented as pure substance “capillary break layer: cinder, 10 cm”. Cinder is not a common material for a capillary break layer, but the building itself did not provide any information about the reason for this. However, the social context revealed by the locals contributed to a meaningful whole: A former habitant, who had inherited the house from his father, who had originally built the house, had got the cinder from a neighbouring cast iron factory. Cinders were, at that time, valueless by-product from the cast iron production. Hence, the unusual structure and materiality exposed by the full-scale section, revealed itself as a meaningful symbiosis between subject matter (cinder), time (concurrency between factory and construction of the addition to the original house) and

sociality (access to material through employment and socio economic motivation to low-cost material).

Meaning can analytically be deconstructed into three dimensions: The subject dimension (what), time dimension (when) and social dimension (whom) (Luhmann, 1995: 59ff). The full-scale section and the probes of investigations emphasise the subject matter and time dimension, for instance when the sections revealed different construction principles as well as development in insulation practices, plumbing etc. In contrast the social dimension remained didactically unnoticed until the local narratives entered the scene. The students were, of course, aware that the building had been inhabited by ‘someone’ and that the specific construction and evolution over time to some extend was a product of the lived-life of these habitants. Through the dialogue with the locals this ‘someone’ gradually emerged as a concrete person that was or had been a vital part of the local community. Simultaneously, the process transformed abstract observations of the spatiality and interior into signs of real lived lives and transformed ‘a house’ into ‘a home’.

To acknowledge the contributions from the locals, the completion of the transformations was celebrated with a grand opening, where both the locals and the press were invited. Offering a formalized scene for informal interactions between local habitants, press, students and academics, the grand opening served both as a catalyst for further exposure of hidden narratives. But maybe more important, it gave the locals an unique opportunity to revisit and share the collective memory of the village (Halbwachs and Coser, 1992) The latter became the out spring of the previously mentioned teaching-based research project.

The reconstruction phase

The aim of the re-construction phase was to urge students to revisit and reflect upon the achieved material- and spatial experiences in a situation, which not constantly required immediate decisions and actions, and to introduce an artistic mode of expression in the curriculum.

The reflections were expressed in exhibitions made out of restored building fragments brought home from the site and material gathered from the probes of investigations. The building fragments were re-positioned to establish an imaginary space based on the spatial dimensions of the appurtenant building. The spatial reconstructions were combined with visual representations based on documentation of the onsite interventions as well as the deconstruction process as sections-collages and time-lapse movies (Figure 5). Also a broad variety of processed collections of narratives as well as selections of unfolded individual probes of investigations were exhibited into a range of physical biopsies, excavations, contextual documentations, interviews and cast latex imprints.



Figure 5. Students work, Villerslev, 2013, ‘section collages’ as digital reconstructions in the ‘Re-construction phase’ (Photograph by author).

First and foremost, the reconstruction phase gave the students a broader insight into the demolished building as a material, structural and spatial experience, now completely emptied from their original function, scale and place. Returning to the opening discussion on the section as a diagrammatic representation of a building, one might see the reconstructions as reinterpretations of the section; once again a representation of a building, but based on original materials. In this sense the spatial re-constructions and the investigation probes became abstract but still tangible displays of structure and spatiality in real-world buildings.

All the exhibitions were held in public areas, mainly in the exhibition areas at the school, but in one case as a re-constructed grocery store in the city hall of Aarhus. The public dimension served three purposes. Firstly, the deconstruction and the reconstruction represent the student's interpretations of the building before, during and after the dissection respectively. The hands-on disassembly and re-assembly of a building is a complex exercise, as the properties of material and structure change with the context. It also includes the social context. However, these are closely connected in historical sequence, as the past becomes present, revealed through the disclosed materiality. Secondly, it added an extra dimension to the students' work with the reconstruction by transforming it from a merely scholastic exercise to a 'real' exhibition, where their emerging professionalism was at stake. Last, but not least, it was an opportunity to highlight depopulation of rural areas as an urgent architectural problem.

The didactic rationale

In this section, we discuss the didactic principles behind the workshops. As mentioned the aim of the workshop was to give first-year students a fundamental understanding of the

relation between the section as an abstraction and the concrete building that the section communicates.

The didactic assumption was that full-scale, hands-on experiences of scale, materiality and spatiality would add significant dimensions to students' understanding of the section as an architectural tool, compared to what they could achieve in more traditional settings which combine lectures and projects at the drawing table.

The approach has strong similarities with the ideas about 'learning by doing' known from progressive pedagogy (Dewey 1997; Kerschensteiner 1971), project organized learning (Frey 1984; Kilpatrick 1918) and action learning (Brockbank & McGill 2004; Kolb 1984). The field is characterized by a significant internal differentiation, but share common ideas and principles. These ideas can be summarized as follows: Authentic and holistic learning situations; awareness of intellectual, social and aesthetic knowledge; the use of real-life phenomena to bridge the gap between school learning and the life outside the school and finally; teaching methods where the students are turned from receivers of information into a more productive role. The principles are excellently summed up in this quotation:

The teacher and the book are no longer the only instructors; the hands, the eyes, the ears, in fact the whole body, become sources of information, while teacher and textbook become respectively the starter and the tester. No book or map is a substitute for personal experience; they cannot take the place of the actual journey.
(Dewey 1915, 74)

On the other hand, the didactic design of the workshops differs fundamentally from one of the bearing principles in progressive pedagogy and experiential learning. The aim of the full-scale dissection is not to create authentic learning experiences. Actually, no student is ever

likely to dissect a building in his or her future practice. In contrast, the workshops offer learning experiences under thoroughly planned, highly controlled and artificial conditions. In this sense, they have a stronger resemblance to the learning process from the laboratory “defined as contrived experiences in which students interact with materials to observe phenomena” (Hofstein and Lunetta 1982, 201).

One fundamental difference between the workshop and the traditional laboratory is that the workshop is placed in the middle of everyday life, only marked by crime scene tape. The visual openness might invoke associations with street theatre, where the students and teachers are actors and the habitants of the village are spectators, or, as mentioned previously, to the baroque dissection theatres. The openness and the following informal interaction with the locals added important dimensions to the students’ learning experience.

Many of the contributors to progressive and action learning theory explicitly emphasize the dimension of planning and the function of plans in a continuous assessment and adjustment of learning activities (Dewey 1997; Kerschensteiner 1971; Kolb 1984).

In a project, where students work with full-scale buildings, planning, evaluation and adjustment of plans are crucial, both from a learning perspective and for safety reasons. While the safety dimension probably is obvious, the learning perspective is expressed elegantly by Kerschensteiner (1971, 93):

Purely mechanical work, which does not require mental activity, cannot be called work in educational sense. Nor play, where you are happy with any result due to the absence of clear goals be confused with work in the educational sense of the word

Also the didactics of the laboratory emphasize planning before acting (Hofstein and Lunett, 1982: 202). Reflection in and after action are essential in professional practice (Schön 1983) and fundamental to transform learning experiences into abstract and more generalised concepts and hence fundamental for development of transferable knowledge.

The reflective dimension was integrated in all phases of the workshop, but serves different educational purposes in each phase and accordingly directs the attention towards different aspects of the learning process. The opening lecture urged the student to reflect on the nature of the section: What is a section? What can we learn from a section? In the iteration phase the reflection concentrate on planning of the impending full-scale section: How can the section be executed in this specific building? How will a section placed here, influence the bearing structures? During the execution the students' must continuously observe the consequences of their intervention and if necessarily adjust both plans and actions. Finally, the reconstruction phase helped the students' to generalize their observations and to raise the urgent question about the depopulated areas as an architectural problem.

Hence, despite the flamboyant cases, the workshop design has several similarities with well-known didactic principles and can be used in various learning contexts aiming at higher order learning such as development and application of analytical strategies and abstract generalisation of observations (e.g. Kolb, 1984; Fraser, 2014; Schön, 1984). Furthermore, the process has many similarities with inductive and explorative research processes (e.g. Shields & Rangarjan, 2013), which makes it especially relevant in architectural and design education.

Teaching based research and research based teaching

The research project ‘Transformation of abandonment, a new critical practice’ emerged directly from the educational workshops. As mentioned earlier, former occupants, neighbours

and relations visited the grocery store during the first workshop in 2011 and contributed with their personal narratives. The collection of these narratives became like a puzzle, which, once assembled, represented a sophisticated collage of varying relations between local people, the involved building, and the place. The act of dissecting itself engaged the surrounding community and catalysed a local exchange of narratives of the building and the place. In other words, this exchange of narratives, unexpectedly, immaterially preserved the grocery store was as part of the collective memory. From here the founding idea for the research topic on radical preservation of endangered rural houses transpired.

The aim of the research project is to reveal and preserve values such as aspects of cultural heritage, local narratives and building density in depopulating rural villages through an emerging counter-practice of radical preservation as an alternative strategy to today's widespread state funded demolition programmes. In line with the workshops, the counter-practice is based on a series of physical transformations of abandoned buildings. The transformations are prototyped as full scale 'controlled ruins' through a partial demolition process similar to the dissection phase in the workshops.

The counter-practice is the crux of the research. From here questions arise and through reflections unleash indications on a possible future rural village-scape in form of preliminary strategies. Hence, the research is similar to the research paradigms Research by Design (Fraser, 2014), Creative Practice Research (Schaik, 2011) and practice based research undertaken in the newly completed ADAPT-r project (<http://adapt-r.eu/research-database/>).

The field of research touches the boundaries of several disciplines and research fields such as social sciences, history, archaeology and the arts. Nevertheless, the research is building on the physical transformations of built environments through architectural methods.

The assumption is that the 'controlled ruin' represents a prototype of a radical preservation strategy concerning possible ways of maintaining local identity, building density

and preserving cultural heritage in depopulating rural villages. Similar to the workshops, interaction with local people plays an important role in the research project. The local response to the prototypes is considered an important impact indicator of the potential of the controlled ruin as counter-practice to current demolition programmes. The project surveys and follows the decay process of the prototypes and the fluctuating local feeling regarding this present physical manifestation in the village over years. Both will influence the shape of future generations of prototypes.

The concept of controlled ruins is not entirely new. The enormous industrial extraction plants of the Ruhr District in Germany, Zeche Zollverein, were converted into industrial landscape park in the late 90s. Major parts of these built environments are allowed to continue on in a managed ruination process (Braae, 2015).

The interplay between research and teaching is a recurrent topic in higher education (e.g. Brew, 2003). In the next section, we briefly describe how a model for combined research and teaching was developed for the fourth workshop in 2014. One fundamental challenge in research-based teaching was to be able to meet both educational and the research goals in the dissection phase and to avoid that students and their learning process were taken hostage in the research project. The challenge was partly handled by separating the educational workshop and the research activities in time. The educational span contained all the elements of the original workshop with the one exception that the probes of investigation were replaced by a horizontal intervention. The horizontal intervention was carried out as a horizontal split level section in one of the remaining intact halves of the building and performed immediately after the completion of the full-scale vertical section (Figure 1). After the students had left the site, the research project inherited the transformed house. A demolition crew removed the intact half of the transformed building, including the vertical section. The horizontal split-level section was then all that

remained of the building, which now gained the status of prototype of a ‘controlled ruin’ and became a part of the research project (Figure 6). What follows is a brief outline of the presumptions of the ‘controlled ruin’ strategy, responses arriving from the local community, and how these were evaluated.

The ‘controlled ruin’ strategy

The ‘controlled ruin’ constitutes through partial demolition an attempt to compress and subsequently stretch the inherent matter of time in the natural decay process. The incipient stages of decay that follow in the aftermath of abandonment are often much criticised by the surrounding communities. The ‘controlled ruin’ aims at eschewing these stages of decay to avoid the incitement for complete demolition. Similarly to the educational workshops, a precisely defined partial demolition exposes the building’s private history. The private past becoming the public future acts deliberately catalyst in an exchange of memories of the building. The building is reinstated in the collective memory and hence, immaterially preserved.

In contrast to conventional building preservation the controlled ruin aimed at temporarily exposing several material-historic epochs simultaneously. The resemblance between the use of spatial-material stratification in the educational workshops and in the ‘controlled ruin’ as a research prototype became an important intersection for both researcher and students. It made a common ground providing a mutual understanding between researcher and students. This was particularly evident in the dissection phase.

One out of three ‘controlled ruins’ procured in the fourth workshop was allowed to stay unaltered for a four-year period after the implementation and formed the most consistent example of a radical preservation prototype (Figure 6).

Subsequent decay of the ‘controlled ruin’ proved to influence the feeling of the local community. This resulted in the ruin being taken into their care, added to and used for recreational purposes. Hence, the local residents turned the ‘controlled ruin’ into a picturesque vision of a romantic ruin.

The radical transformation reinstated the abandoned building as a new and unfamiliar element in the village setting. The ‘controlled ruin’ constitutes a prototype of a new rural palimpsest. While occupied by the locals, the on-going exchange of memories continues. Like a palimpsest it slowly turns into something else as a result of the engagement of the local residents or, more likely, of natural decay. Thus, the transformed building will enable the enclosed material history to be redeemed in interplay with the neighbouring community (Krag, 2016). Since the implementation in March 2014, ‘the controlled ruin at the church’ has been regularly surveyed through several ad hoc meetings on site, at parish council meetings, a public parish evening in which the international perspectives on abandonment contextualised ‘the controlled ruin’. Finally, photographic documentation of the decay process and re-inhabitation of the prototype were utilized to substantiate the responses of the local community.



Figure 6. Single family house, Snedsted, 2014, The ‘horizontal intervention’ changed its status to the ‘controlled ruin’ and the educational project became a research prototype (Photograph by author).

Separation of teaching and research in time did not hinder fruitful intersections. For instance, the hidden narratives of the buildings revealed in the interaction between students and locals became crucial to the research project, as an exponent of local identity and community cohesion. The other way around, the horizontal intervention is equivalent to the architectural plan drawing. The educational advantage of the redesign was that it allowed students to experience both a full-scale vertical section and a full-scale plan of the transformed building at the same time (Figure 1).

As the research project clearly benefitted from being a part of the workshops in the longer term, it was crucial to give something back to the students. Hence a lecture and subsequent discussion was arranged on the local attitude towards the controlled ruin. This lecture took place half a year after the workshop, and it was based on regular surveys and ad hoc meetings with local people. The aim was to provide the students’ with both an insight in

the social impact of the controlled ruin and looped back to previous learning by providing insights in the long-term effects of their earlier experiences and activities.

Students' experiences and learning outcome

The workshops revealed that the physical dissection of a building has several educative potentials. Among the intended outcomes, we saw an increased understanding of the structure of a building and relation between elements.

Besides the practical and safety aspects, the thorough planning in the iteration phase, forced the students to reactivate and use general structural principles to analyse the structure of a real building and to develop and collectively evaluate different approaches to the full-scale section. Translated into the language of taxonomies, the iteration phase increased the complexity of knowledge from basic knowledge to application and evaluation (Bloom 1956).

The dissection phase gave the students a first-hand bodily impression of scale, spatiality and materiality, including how materials age differently as well as a direct experience of how dimensions of rooms and materials are historical and social phenomena. In one of the buildings the floor-to-ceiling height was less than 1.70 m, meaning that several students were unable to stand upright.

The direct and visible learning forms an irreplaceable base in their on-going studies and especially in their future capability of understanding, analyzing, designing and contributing to the field of architecture. A student, who participated in the fourth and last workshop, referred directly to this holistic and concrete understanding of the interplay of form, substance and tectonics, when she later assessed a design made by students from the subsequent year: 'It is as if they completely lack that sense of construction and materiality that we got from the workshop'.

Most of the students enter Aarhus School of Architecture directly from high school. However, a few students have a craftsman background, e.g. bricklayer or carpenter. One of these students reflected on his learning as follows: ‘I was very skeptical. I have worked as carpenter for years and do know the physical construction behind a section. But I learned a lot. Dissecting a building layer by layer gives a completely different understanding of the building’.

Probes of investigations and the importance of proper preparation

The probes of investigations were developed during in iteration phase of the workshop. An essential function of the probe was to serve as a toolbox or a plot for the subordinate investigations and to prepare the final reconstruction phase.



Figure 7. An example of ‘Probe of investigation’ unfolded in the ‘Re-construction phase’ (2013) (Photograph by author).

Despite also serving highly practical purposes regarding safety and rotation of students working on the deconstruction site, the process of planning, investigation and reconstructing directly mimes the professional practice. In this case the process was relentless. The design of the probes defined which type of information and materials the students could gather during the sub-investigations and hence also created very concrete opportunities and limitations for the reconstruction phase. The relentlessness and the need for thorough planning and gathering of information and material were underlined by the fact that the transformed building in most cases was to be demolished immediately after the students had left the site. In addition and due to the remote locations, it was not possible for students to test and revise their probes of investigations after having arrived on the site. Therefore, all probes were tested and refined under conditions as similar to the site as possible before leaving Aarhus School of Architecture.

In most cases, the probes unfolded well on site and despite the complexity of the task, some probes so well designed that they directly displayed the results of the sub-investigation in the subsequent reconstruction phase. Accordingly, the same probe fulfilled both the investigation and the reconstruction (Figure 7).

A link to professional identity

Finally, we will discuss learning outcome relating to persistent changes in the understanding of what architecture is about and its societal role. First year students are in general fascinated by and introduced to outstanding and iconic architects and architecture (Steinø & Özkar, 2012). Often this fascination is stimulated through the use of masterpieces in teaching. From here, the ability to create new iconic buildings easily becomes the ultimate hallmark of the profession. Conversely, the immense challenge of abandoned buildings in depopulating rural

villages in Denmark is in general neglected as an architectural problem in architectural education as well as architectural practice. The relevance of the problem becomes visible in a report made by The Danish Town Planning institute, which estimates volume of 60.000-100.000 abandoned buildings for demolition in Denmark alone.

We do however see that the firsthand experience with the abandoned buildings and the interaction with the habitants of the villages influence students' professional engagement in a way that reaches beyond the workshops. To most students it manifests itself mainly as an awareness of a problem, but to other students it becomes a substantial dimension of the curriculum throughout their education. One example is a student who recently did his master project on transformation of a closed community center in Detroit City into a new topology of a town hall based on disperse democracy.

Learning related to personal values and acting consistently in accordance with the values the individual has internalized lies at the highest level of what Krathwohl et al (1964) calls the affective domain for learning. Hence, the workshop contributes not only to professional knowledge and skills but contributed to the students' emerging professional identity.

Conclusion

The initial goals of the transformation workshops was to give students a genuine, experience based understanding of the structure and materiality of a building behind the section as a diagrammatic representation. Besides an increased understanding of the structure of a building and relation between elements and a bodily impression of scale, spatiality and materiality, the students get a direct impression of how materials age in different ways and how spaces and materials are historical phenomena.

Materiality acted bearer of history when revealed through radical interventions in the workshops. This became an unforeseen asset in the students' education, as they in their early studies experienced that architectural intervention can be utilized to influence public discourse.

However, the workshops clearly show that the physical dissection of a building has educative potentials that reach far beyond the primary learning goals. The most significant additional impact was that the workshops raise the question regarding depopulation and abandoned houses in rural regions as an architectural problem. The architecture educations as well as the profession have a strong inclination towards new constructions and iconic architecture. If the change of the built environment in the rural areas shall be more than a result of depopulation, decay and demolition, the situations of these areas must be handled with the same architectural engagement as new development. The paper identifies two driving forces. Firstly, some students catch a genuine interest in the problem and makes it parts of their professional identify. Secondly, the research project will provide an increased understanding of the resources and challenges in a counter practice to strategic demolition and increased engagement of local habitants.

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