TU Delft
Faculty of Architecture & the Built Environment

Designing with Heritage: the future of our past

Chair of Methods and Analysis

AR3A160 Lecture Series Research Methods

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Architecture, like all fields of knowledge, does not exist in its own air-tight vessel. Rather, the vessel containing architectural knowledge is communicating to the ones containing knowledge of other fields. As physics tells us, changes in one vessel will affect the entirety of the system. This analogy illustrates the first level of awareness an individual must have when approaching one or more of these vessels: interdisciplinary awareness. In the practice of architecture, this could be seen in the necessity for a designer to aware of aspects like the properties of materials. Continuing to a more specific level, a designer must be aware of their design's contexts (e.g. geographical context, social context etc.). This awareness is also a product of research, conducted through more than one methods. This can be applied to many scales and levels, from detailing to urban scale. In return, the designer-researcher must be aware of their implemented research methods, in order to be able to evaluate results and draw relevant conclusions. All these levels of awareness can be called "epistemological awareness".

Admittedly, the Lecture Series Research Methods[1] is a course different to others. Also admittedly, it was not the easiest course to follow. While all presentations, some more than others, contributed to our knowledge, the one from which I gained the most was the one on Typology. Being a member of the team which composed this presentation, I am not trying to suggest that we produced the best result, as we did not. But the process of compiling this presentation was the most didactic experience of the course, as it allowed me to realise first-hand the sheer complexity of approaching Knowledge. This enabled me to realise what a plethora of authors wanted to communicate, acting as a catalyst to enable me to 'own' that knowledge. I also realised that there seldom is such thing as "self-evident", and that our individual experiences, points of view, expectations of results etc., heavily taint the way we think, and thus the way we learn and seek to learn.

For my final year project, I am following the Heritage & Architecture graduation studio centred on the site of Hembrug, in Zaandam, Netherlands. Hembrug was a former military area, housing the military production facilities of Artillerie-Inrichtingen[2] and a Dutch army base. My project is focused on Building 429[3] of the ensemble. Designed in 1955, it was destined to accommodate an order for 36 million .50" calibre rounds. Being a major employer, Artillerie-Inrichtingen was important to the local community. G429 in particular, has been called the "face of Hembrug", and is thus also significant in the memories of others. As expected by the studio, my project will be focused on intervening/revitalising that building. This is, perhaps, a first example of research predisposition. My position paper is guided by a research question: Which study methods are preferable when approaching a Heritage project, in order to examine, evaluate & comprehend a monument?

While research is necessary for every project, it is crucial for Heritage projects, as our collective memories, values, customs and history, i.e. some of the cornerstones of our identities, are often embedded in them. For one to approach a Heritage project correctly, one must first gain a well-rounded understanding of the object, its contexts (geographical, sociocultural, etc.), as well as its meaning. The meaning of a building is not mentioned here as a vague academic question; heritage buildings may be connected to the very identity of a people, as was the case of Stari Most in Mostar, Bosnia. Thus, in order to safeguard these qualities, an architect must deeply comprehend which they are and what their value is. This requires substantial research, in considerably more depth, breadth and detail compared to the design of an 'average' project.[4] A prominent method to follow is the Building Archaeological Research, as described by Marieke Kuipers & Wessel de Jonge (in *Designing from Heritage*, 2017), as well as by Paul Meurs (in *Heritage-based Design*, 2016).

According to Kuipers & de Jonge (2017), their approach stemmed from their realisation that no universal standard existed for studying heritage buildings, within the framework of a possible transformation. That realisation emerged with the first systematic restorations of modernist buildings, during the 1980s.[5]

In addition to this gap in the process, the sources of information were also different to what we would currently consider the norm. Specifically, primary sources, which nowadays cover a considerable portion of our research, were not commonly utilised. Instead, information was mainly obtained through secondary sources, such as the original drawings, found in archives. In my opinion, both are necessary;

an -at least basic- preparatory research should precede the in-situ investigation. That way, the researcher can be oriented as to the basic traits of the object, covering some basic fields such as its historic, contextual and technical aspects. Sourcing drawings of the composition in question is always a very good source of information, albeit one must be critical of that information, as it might not always present the latest state of the building or belong to the final set of drawings. Additional sources of information can include books, historic photographs, newspaper archives, historic maps, interviews and, as is the case with G429, corporate publications. The data from these sources can be processed in many ways. For example, I have found that recreating certain drawings by hand can provide a better understanding of the design intentions and principles. Additional ways to analyse data include creating a 'master' file, where all this information is documented through the implementation of a common system. That way, the organised data can be easily transformed to diagrams which instantly communicate that information. As these diagrams (in the form of technical drawings or visual representations of other information) should reflect the objective state of the site, subjective sources should be carefully considered.

Until quite recently, such research would be conducted by building archaeologists or building historians. These professionals were deemed as ideal for the task; having been specifically trained to conduct this kind of research they were seen as impartial evaluators. On the other hand, an architect's opinion, which would most likely be influenced by future design expectations and clients' wishes, was seen as biased. But let us not blame architects for their possibly compromised perspective, for approaching the world through the eyes of a designer, is their second nature. And let us not forget that their technical training and experience, as well as understanding design principles, can prove valuable in approaching our built heritage. This second view has been gaining ground over the past few years, enabling architects to form their own methods of research in the field of built heritage and to begin conducting that research by themselves.

It goes without saying that ex-situ research is not sufficient by itself. In-situ investigation can yield equally important results. These include material aspects, e.g. undocumented alternations, or immaterial aspects, e.g. feelings. While some of these aspects, such as feelings probed by the space, can only be experienced first-hand, some more objective information, like views or the effects of light, are better experienced in person as well. These less-objective observations can be recorded in an objective manner, i.e. through photography, or through more subjective media, like sketching. Both modes have their merits; the former can provide a true representation of the frame during that moment in time, while the latter can provide insight to the observer's personal preferences, like intriguing elements of the composition. These findings can also heavily contribute to creating an accurate record of the site, as long as possible bias is acknowledged. In my opinion, most importantly, any process must be transparent and available together with the findings, enabling a second reader to evaluate the findings for themselves.

The findings of both in- and ex-situ investigations will allow the architect-researcher to obtain a holistic understanding of the object's current state, which can be documented in in a referenced and objective report. In the case of the BAR, this report is usually trifold, evaluating the building from an architectural, technical and cultural point of view. That report is then used to produce the Value Assessment, which will allow the architect to proceed to designing.

Figure 1: Architectural floor plan of a garden, Egypt, ca. 1550–1295 BCE.

Figure 2: Exploded axonometric drawing showing the Cultural Value Assesment of G429.
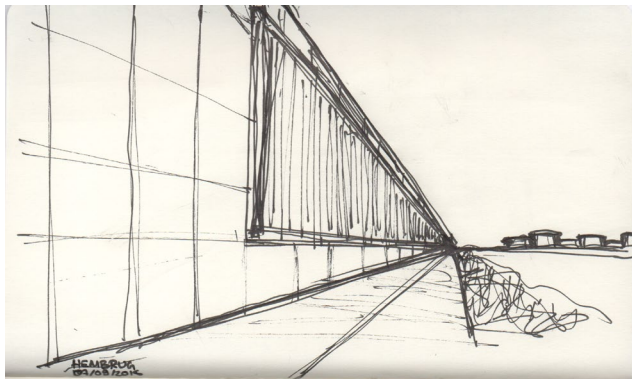

Figure 3: In-situ sketch of G429 along the North Sea Canal, enhancing its long proportions.
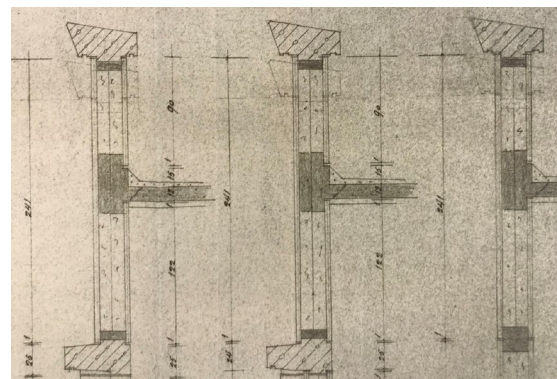

Figure 4: Original details for G429.

The techniques used in the documentation of our built heritage have not evolved as rapidly as the ones of other fields of study. Thus, graphic representations of our buildings, especially drawings, have been used to convey information about our built environment for at least 3500 years.[6] While media may have changed, the most significant changes occurred after the second half of the 20th century, when computer-aided design started to appear, making these drawings digital. This evolution did not only change the production of drawings, but also the mindset of designers. Regardless of all these innovations, though, qualitative -and/or immaterial- aspects of a composition, cannot be recorded using these methods. This further confirms that additional methods need to be implemented, as a one-sided approach will not produce complete results.

Understanding the logic behind the Building Archaeological Research has enabled me to organise the research for my graduation project. While it is hard to define when research begins, my systematic research commenced with a historic overview of the site and its context. This was primarily conducted through written sources, both physical and digital, complimented by visual material such as drawings and photographs. As expected, this posed the first challenge to my research, as the majority of information was in Dutch, a language I do not speak. Having established some basic knowledge on the subject, I was prepared for the first site visit, aimed at site-scale investigation. This enabled me to restrict my thinking to a scale level different to the one I usually focus on and to produce an extensive record of the site, through photography and sketching, documenting both material and immaterial aspects of the site, respectively. After completing the urban analysis and settling on a building I was ready to focus on the object of my graduation project, G429. This transition was also reflected in my research, initially as a shift of the focus of my secondary sources, followed by a shift of my primary sources during later visits. This step of the research included visits to municipal and national archives, where I found original drawings for the building.

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During the site's decommission, the previous owners stripped the building of all interior elements, making its original operation hard to read. As their work was classified, staff are still not allowed to discuss their work, and only seven interior photographs of the building's operation were sourced. The technical drawings themselves provided some insight to visually inaccessible aspects of the building, such as the foundations & construction details. Comparing these to other material, like core samples and the three construction photographs found, revealed that not all drawings were correct.[7] All objective findings were compiled and translated in a digital model of the building. This BIM model was used to produce two-dimensional drawings as bases for diagrams to convey both objective (e.g. building phases) and subjective (e.g. cultural value) information of the composition.

The BAR is the main research method I am implementing for my graduation studio, as students are highly encouraged to follow it. While it can appear that this method is sufficient to cover the entirety of my research for this project, following this lecture series has made me question this statement, which is given as a fact by the studio's tutors. A glaring element neglected by the BAR is the building's user. This realisation is very important, as the selected method of research can greatly influence results.[8,9]

When implementing the First-Person Phenomenological Research method, the observer relies on personally experiencing the phenomenon first-hand by immersing themselves in that reality. This empirical method has been used in various settings, from interpreting the immaterial qualities of the -built- environment to communicating the life of a person suffering from an incurable condition.[10] This method could be useful for a designer trying to understand the way in which users would interact with their design. It should be acknowledged that this method is highly tainted by individual habits, preferences, expectations etc, and is thus subjective. This effect can be minimised if the researcher is aware of their predispositions. Additionally, it is not always a systematic method, as it could be argued that a person conducts 'research' in that manner throughout their lifetime.[11] For example, having experienced the feeling of openness of the Acropolis Museum in Athens[12], parallels can easily be drawn to one's experience of the Jewish Museum in Berlin[13], which would be quite uncomfortable even if the building was dedicated to a completely different subject. Albeit possibly unintentional and unsystematic, our experiences can contribute to our research at a later time. A systematic implementation of this method can allow the designer to understand the mindset of their design's future users. In other words, to address the issue of the user.

Regarding my graduation project's architectural position, I stand by my initial observation that culturally significant buildings are exceptions to many rules, written or otherwise, in the interest of preserving their truly important character. This statement does not imply a passive approach which would dictate the placement of G429 on a metaphorical podium. It should be useable building, its preservation ensured through its use, without it being a burden to society. Thus, proposing the accommodation of a Military History Museum in Building 429 is not only fitting to its original function and context, but will also allow for the general public to experience its interior for the first time. This experience will be based on three legs: programmatic, physical and visual. The findings of the Building Archaeological Research will be vital in setting these interventions in the right bearing. Additionally, research along the lines of First-Person Phenomenological Research will allow me to fill in the gaps left by BAR, most notably the issue of the user. This combination can lead to a truly holistic approach which will transform the building in question to a useful aspect of our future.

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[1] Henceforth abbreviated as LSRM.
[2] Artillerie-Inrichtingen was a Dutch firearms and ammunition production company.
[3] Henceforth abbreviated as G429.
[4] Marieke C. Kuipers and Wessel de Jonge, *Designing from Heritage: Strategies for Conservation and Conversion,* (Delft: Delft University of Technology, 2017), 27.
[5] Marieke C. Kuipers and Wessel de Jonge, *Designing from Heritage: Strategies for Conservation and Conversion,* (Delft: Delft University of Technology, 2017), 103.
[6] The Metropolitan Museum of Art. N.D. *Architectural Drawing of a Garden.* https://www.metmuseum.org/toah/works-of-art/14.108/.

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[7] It should be acknowledged that these inconsistencies could jeopardise the validity of other findings, e.g. the foundation piles' carrying capacities, although this is not a major issue within the confines of an academic exercise.

[8] Linda N. Groat and David Wang, *Architectural Research Methods,* (New York: John Wiley & Sons, 2013), 10.

[9] Ray Lucas, *Research Methods for Architecture.* (London: Laurence King Publishing, 2016), 37.

[10] David Seamon, "A Way of Seeing People and Place: Phenomenology in Environment-Behavior Research." In *Theoretical perspectives in environment-behavior research: underlying assumptions, research problems, and methodologies*, by Seymour Wapner, Jack Demick, Takiji Yamamoto and Hirofumi Minami, 157-178, (New York: Springer Science+Business Media, 2000), 165.

[11] Linda N. Groat and David Wang, *Architectural Research Methods,* (New York: John Wiley & Sons, 2013), 8.

[12] Designed by Bernard Tschumi & Michael Photiadis, 2007.

[13] Designed by Daniel Libeskind, 2001.

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The Metropolitan Museum of Art. N.D. Architectural Drawing of a Garden. https://www.metmuseum.org/toah/works-of-art/14.108/

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