NORDISK ARKITEKTURFORSKNING
NORDIC JOURNAL OF ARCHITECTURAL RESEARCH

1

ISSUE 1 2022

NORDISK ARKITEKTURFORSKNING

Nordic Journal of Architectural Research

1–2022

Nordic Journal of Architectural Research
ISSN: 1893–5281

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Published by SINTEF Academic Press
P O Box 124 Blindern, NO-0314 Oslo, Norway.

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Modell of the Viva-housing project in Gothenburg presented by the cooperative Housing provider Riksbyggen.
Photo: Sten Gromark.

NORDISK ARKITEKTURFORSKNING
NORDIC JOURNAL OF ARCHITECTURAL RESEARCH

LOST POTENTIALS? UNPACKING THE TECTONICS OF ARCHITECTURAL COST AND VALUE

ESZTER SÁNTHA, MARIE FRIER HVEJSEL AND MIA KRUSE RASMUSSEN

Abstract

Despite increased awareness of architecture's potential to create social value by improving people's quality of life, demands for reduction of construction costs still dominate the contemporary building industry. Consequently, there is a discrepancy in the translation from cost to value in architecture, possibly counteracting vital potentials for social value generation. This problem requires a clarification of the link between the construction of architecture as detailed spatial invitations (gestures) and their potential social value, depending on users' responses to these invitations. Understood as a spatial pronunciation of specific construction choices, the present article tests architectural tectonic theory's potential, towards establishing such clarity.

This potential is tested via post-construction interviews on two, strategically selected works by AART Architects. Using a methodological framework built on tectonic theory to identify the value intended by the architects in the form of key "intended spatial gestures", the interviews clarify how the actual construction seeks to impart this value to the users in the two cases. In conclusion, the article demonstrates how these intended spatial gestures reveal the trade-offs negotiated in the design process at a detailed level, hereby unfolding a critical tool for increasing social value potentials otherwise lost in the translation from cost to value.

Keywords:
Rethinking architectural practice,
Cost and value, Tectonics,
Intended gestures, Case study

Introduction

In a world of ever-increasing interests from multiple stakeholders, the contemporary building industry becomes more and more complex. This presents architects with the constantly evolving challenge of maximizing, communicating and releasing the value potential of architecture within this complexity (Broch, Sattrup, & Sejr, 2017; Hvejsel & Beim, 2019; Sattrup, 2020). However, despite increased awareness of the potential of architecture on the generation of combined economic, social and environmental value over time, focus on processes, efficiency and short-term demands for reduction of construction costs still dominate the building industry (Broch et al., 2017). This discrepancy is reflected in architectural practice, where architects often find themselves limited by the overarching pressure to reduce construction costs. From the architects' point of view, this potentially counteracts the spatial capacities of architecture to create social value by "contributing to the long-term wellbeing and resilience of individuals, communities and society in general" (Social Value Portal, 2017). As defined by Social Value International, social value is "the [economic] quantification of the relative importance that people place on the changes they experience in their lives" (Social Value International, n.d.), and so it is about the "preferences that people have about their lives and their environment, and how an investment into a program or activity can change that" (SIMNA, 2018). The problem is that decisions made during the design process do not always correspond with the architects' field-specific knowledge of how to design for added social value, created throughout a building's lifetime. And there is a risk that this possibly causes vital potentials for social value creation to be lost. Hence, there is a need to understand, quantify and report on this social value, to improve the decision-making process (SIMNA, 2018). This is supported by a growing body of research focused on the urban scale, showing how physical surroundings affect people's well-being (Fich et al., 2014; Ulrich, 1984) and overall quality of life (Bjørn, 2014; Siren, Grønfeldt, Andreasen, & Bukhave, 2019). This knowledge can potentially be translated into social value, quantified through monetary measures, based on welfare economic principles (Lundhede et al., 2013). In their booklet titled 'Architecture creates value', The Danish Association of Architectural Firms proposes a general and simplified framework and methodology for documenting the – social, environmental and economic – value of architecture, based on a collection of "best practices" (Broch et al., 2017). However, the challenge remains to activate this knowledge at a detailed and strategic level in the architectural design process (Sattrup, 2020). Hence, there is still a lack of methodology and research to document the impact of individual architectural instruments (such as materials, disposition, light, etc.) – constructed as spatial invitations ("gestures") – on social quality and value on a single building level, enabling such activation (Sántha, Hvejsel, & Rasmussen, 2021).

As it is evident from UN's Sustainable Development Goal 11, sustainable development of the built environment entails a complex juxtaposition of economic, social and environmental aspects that cannot be met without a qualified understanding of the long-term impact of products and practices (Mossin et al., 2018). Thus, under the constant pressure to reduce construction costs, architects risk failing to qualify their contribution towards sustainable development of the urban landscape as a whole, because they cannot translate from the immediate construction cost of architecture to the value of the social qualities embedded in the spatial capacities of this construction (Fabian, 2016; Jensen & Troelsen, 2017). This social value potential is defined through the choices and trade-offs people make, based on their experiences and behaviour (Freeman, Herriges, & Kling, 2014; Johnston et al., 2017). Thus, the latter can be used to identify the value of architectural gestures from a user perspective, in the ways that users consciously and unconsciously react to those spatial invitations. The task of unpacking this relation entails a combination of architectural, anthropological and economic descriptions of architecture. A combination whereby the choices of specific architectural instruments, applied in the design process and the value of their social qualities, can be analysed in combination, based on the users' responses to those choices via their experience and behaviour (Sántha et al., 2021). Understood as a spatial pronunciation of specific constructive choices, the present article tests the potential of a tectonic methodology – built on tectonic theory – in establishing such clarity on the architectural dimension of cost and value. Historically, tectonic theories of architecture have paved the way for comparative analyses of key works of architecture across stylistic periods. This was done by documenting the comprehensive spatial value resulting from choices applied in the minutest details of their construction, as a common denominator for describing their quality (Frampton, 1995; Frascari, 1981; Sekler, 1964; Semper, 1989). In continuation hereof, recent research, to which this article adds, has outlined a critical potential for the development of tectonic approaches for linking ecology and economy in the current architectural practice (Bech-Danielsen, Beim, & Madsen, 2014; Hvejsel & Beim, 2019).

This study is part of an ongoing Ph.D. research project that seeks to methodologically juxtapose architectural, anthropological and economic analyses, using tectonics as an interdisciplinary methodological framework, for acquiring knowledge on the social value potential of a set of strategically chosen architectural instruments. In this framework, we adopt and use the notion of gesture from tectonic theory as a central concept to describe the interaction between architecture and people, hereby stressing the core potential of architecture to "invite" and "encourage" a certain behaviour through its form that ultimately translates to social value. This article presents the sub-study related to the architectural dimension, focusing on the first step towards social value creation. In this matter, the article applies the notion of "intend-

ed spatial gestures" in the formulation and investigation of the aforementioned methodological framework for clarifying the translation from cost to value in architecture. This investigation is done through the architectural practice of the Danish architectural studio, AART Architects (AART), together with the architects themselves, guided by the following research question:

How and to what extent have the architects worked strategically with the formulation of spatial gestures to create value and negotiate their specific choices of architectural instruments in the design process?

The article investigates this potential through a set of post-construction interviews with the lead architects of two selected mixed-use projects, located in Aarhus, Denmark, and designed by AART. Here, tectonic theory is applied to identify the specific value intended by the architects, in the form of key intended spatial gestures. Hence, as the first step towards potential social value creation, the interviews clarify how the actual construction choices seek to impart this intended value in a series of spatial gestures addressing users approaching to, arriving at, working and living in, as well as visiting the two building complexes included as cases in this study. The first part of the article describes the theoretical approach (elaborated in Sántha et al., 2021) based on a (re) interpretation and extension of the existing body of knowledge within tectonic theory (Christiansen, 2020; Dam, 2007; Frampton, 1995; Hvejsel, 2018; Sekler, 1964), moving towards a "tectonics of cost and value" applicable as critical means in contemporary architectural practice. The next section presents a method for the application of this theory in the two cases, including an introduction to the two projects. Hereafter, the article reports an account for the empirical data collected through the interviews and, finally, an analysis of the empirical findings stemming from these. In conclusion, the article demonstrates and discusses how these intended spatial gestures are constructed, communicated and negotiated in the design process. The findings of this article form a critical foundation for the following studies of the Ph.D. research project, where the architect's perspective will be supplemented with anthropological and economic perspectives respectively. This will potentially enable us to move towards the establishment of a common language, aiming to describe the social qualities and values of architecture. However, there is no "guarantee" that these values will actually be accounted for in future construction budgets or decision-making processes in the architectural design phase. Nevertheless, clarifying the relation between individual architectural instruments and their potential social value will hopefully provide a deeper understanding of the architectural profession itself, towards a more conscious and reflexive practice, allowing the improvement of future design.

Tectonics of cost and value

Originating in ancient Greece, where it described the task of the Greek *tekton* (master builder, later *architekton*) as a unification of aesthetics and technique through construction, tectonics has evolved as a general architectural theory, referring simultaneously to the architectural work itself and to the task of creating it (Bötticher, 1844; Hvejsel, 2018; Semper, 1989). When considering the above-mentioned challenges facing the architectural discipline, the notion of tectonics opens a potential for the architect to engage in a process of change, focused simultaneously on the improvement of the physical products of architecture (design) and their service as advisors (communication). This "critical lens" facilitates the opportunity to move towards a critical, creative design approach (Dunne & Raby, 2013) within architecture as well. In 1964, Eduard F. Sekler outlined a foundation for further exploration of this potential in architectural practice with his seminal essay "Structure, Construction, Tectonics", investigating analogies between the written/spoken language and the spatial language of architecture. In the essay, Sekler argues that the ability to communicate the guiding principles behind a work of architecture is vital to the architect. He argues that "indeed an artist may feel that there is no place at all for verbal formulations in architecture and the visual arts; yet he will not be able to create without guidance from certain principles, which he once acquired or formulated and which are in themselves not visual but conceptual" (Sekler, 1964, p. 89). Below, we investigate this potential further by connecting the history of tectonic architectural theory with current research into tectonics, related to the pressing challenge of clarifying the translation from cost to value in architecture.

Interdisciplinary communication of field-specific knowledge

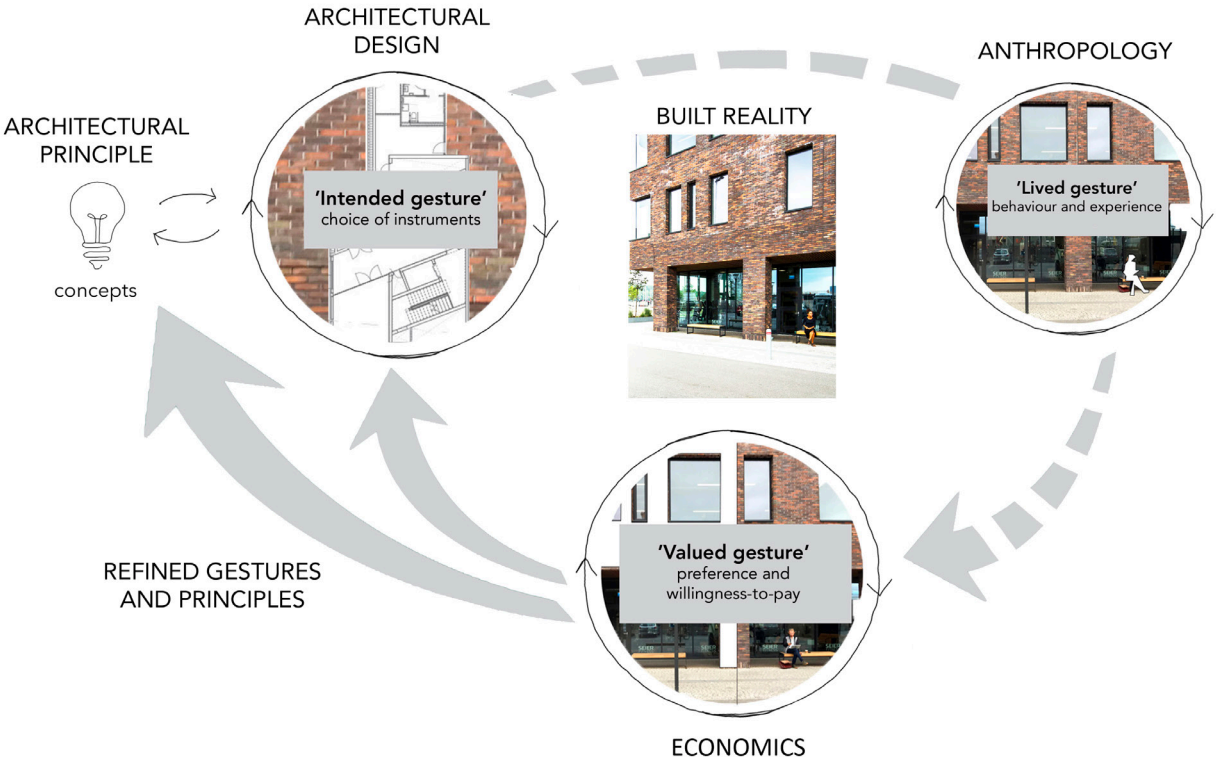
In summarising the application of tectonic theory in architecture across architectural history, it can be observed that the notion of tectonics has paved the way for comparative analysis of key works of architecture across stylistic periods. These analyses have identified and documented the comprehensive spatial value resulting from choices applied in the minutest details of the construction of these key works, as a common denominator for describing their quality and indisputable value to the history of architecture from an architectural point of view (Fabian, 2016; Frampton, 1995; Frascari, 1981; Sekler, 1964). Hence, in its point of departure, the notion of tectonics implies an understanding of architecture as a constructed cultural, ecological and economic correspondence between detail and whole, exploiting the physical resources applied in architecture to maximize its spatial capacities (Bech-Danielsen et al., 2014; Christiansen, 2020; Frampton, 1995; Frascari, 1981; Hvejsel & Beim, 2019). In continuation hereof, it is our observation that the notion of tectonics simultaneously implies a critical potential for referring the correspondence between the cost and value of architecture to the specific choices made in the design process. This is of significant importance when

considering the aforementioned challenges confronting the architectural discipline (Sántha et al., 2021).

As argued by architect Lino Bianco, the problem is that "architecture is often considered in terms of elevations and architectural elements, thereby failing to address its 'essence'" (Bianco, 2018 p. 93); its impact on the everyday life and value for its users (articulated here through the notion of spatial gestures), which are not efficiently addressed in either the design itself or its communication, leading to a discrepancy between means and ends. One may argue that, since the "meaning" of design can be understood as something that springs from the imagination of the architect, it is often implicit, which means that it is something architects have, consciously or unconsciously, control over but might find it hard to describe in words (van der Linden, Dong, & Heylighen, 2019). In fact, the implicit documentation of value created by architecture seems to be understood as the built project itself, through the "architects' own account of design intentions and the project documentation by drawing, renderings and beautiful photographs" (Sattrup, 2020, p. 24). In this regard, we argue that the explicit articulation of spatial gestures can provide a bridge between means and ends, architect and user. This allows the architect to return to the "essence" of architecture, while still maintaining a critical awareness of its construction in a complex building industry, where communication is key when making arguments and decisions during the design process. Correspondingly, the development and application of tectonic methodology in architectural practice represent critical means for architects to strategically activate their field-specific knowledge within an interdisciplinary context (Sántha et al., 2021). Tectonic thinking in architecture facilitates an opportunity to escape the classical description of architectural quality, located within the domain of aesthetics and focused on what architecture "is". Instead, tectonics implies an interdisciplinary description of architectural quality and value reaching beyond itself; focused on the contextual understanding of what architecture "does" (here through spatial gestures), related critically to "how it does it" (Hvejsel, 2018 p. 403) (here through construction principles). This, however, does not mean that it will "do" exactly and create the same value as it was intended by the architect, but the formulation and the communication of this value potential are understood here as a first step toward the process of social value creation. As Sekler describes, it is the tectonic choices that provide architects room to manoeuvre; "Among our three related concepts [structure, construction, tectonics], tectonics is the one most autonomously architectural; which is to say the architect may not be able to control the conditions or structure and construction as completely as he would like to, but he is the undisputed master of tectonic expression" (Sekler, 1964, p. 94).

It is our observation that tectonics hereby also represents an opportunity to expand and qualify this manoeuvring, if applied critically in unpacking the specific choices made in the design process (Sántha et al., 2021). Hence, with this research, we add to the existing body of knowledge on tectonics in architecture by applying the proposed tectonic theory as an interdisciplinary methodological framework for establishing a common language of analysis across architectural, anthropological and economic perspectives (Figure 1) (Sántha et al., 2021). The framework is built on the notion of spatial gestures, applied in interior studies (Hvejsel, 2011; Postiglione & Lupo, 2007; Sekler, 1964). The concept was used by Sekler in his account for the tectonic expression: "Obviously what matters, apart from other factors which are outside the scope of the present essay, is the tectonic statement: the noble gesture which makes visible a play of forces, of load and support in column and entablature, calling forth our empathetic participation in the experience" (Sekler, 1964, p. 93). Referring to human body language, the notion of spatial gestures helps to describe the interaction between architecture and people as a spatial dialogue, hereby stressing the core potential of architecture to "invite" and "encourage" a certain behaviour through its form that ultimately translates to value, depending on the users consciously or unconsciously accepting or rejecting those gestures.

Figure 1
Tectonic methodology by Sántha et al. (2021). **An interdisciplinary methodological framework** for acquiring knowledge on how a set of architectural instruments as intended architectural gestures – that are chosen based on predefined concepts (principle) in the architectural design phase and result in a visible and tangible form (built reality) – translate to economic value, depending on users who consciously and unconsciously react to the architects' intended gestures and define its value (valued gestures) through the choices and trade-offs they make (preferences), effectuated via their experience and behaviour of the architectural space itself (lived gesture). Ultimately, this knowledge can be used to inform and improve decision-making in future architectural design processes (refined gestures and principles).



This article presents the first study of the ongoing Ph.D. research project, representing the architectural dimension, where the proposed tectonic methodology is applied to identify the value intended by the architects, in the form of key spatial gestures within the specific choices negotiated in the architectural design process. The following presents how the method is specifically applied in this article, focusing on intended spatial gestures (architectural dimension), based on two selected mixed-use projects, located in Aarhus, Denmark, and designed by AART.

Application

Data collection was carried out from August to October 2020 in the form of qualitative interviews with the lead architects, in two rounds in each of the cases respectively. Project leading architects were chosen based on the assumption that they hold a key influence on the design and the decisions made in the process of development. As a further elaboration of this study, it could be interesting to investigate whether and how the understandings of key gestures differ amongst the different members of the design process; however, this is outside of the scope of this article.

The first round of interviews was conducted as semi-structured, individual, "face-to-face" interviews (Johansson, 2018; Wadel, 1991) at the company headquarters in Aarhus. These 1,5-hour interviews were focused on the identification of key intended spatial gestures, related to the overall "architectural vision" of each project, based on the material in the project's respective folder. At the beginning of each interview, a definition of the term "gesture" was provided to ensure the use of the same terminology and to keep the interview targeted. Supported by a loosely structured thematic interview guide (based on a prior review of project materials), open-ended questions were asked regarding the specific architectural instruments chosen to provide the identified key gestures addressing users "approaching" (urban dimension), "arriving" (site dimension) and "working-living-visiting" (interior dimension). This was done to systematically unfold these projects' potential in creating value – through their gesturing forms – not only as single buildings, but also as integrated parts of their respective urban environment. Finally, the interview ended in questions motivating the respective project's leading architect to consider whether and how they would have improved these gestures, in an "ideal" situation where there were no constraints in the construction economy. This was done to uncover potentials that might have been lost due to such constraints.

After the semi-structured interview, an on-site, "walk-and-talk" interview was conducted in each case to experience the gestures together with the architects, to discuss in greater depth how those gestures were constructed and how they work in practice. A walk-and-talk interview is an interview conducted on the move, where the researcher and partici-

pant(s) are talking while walking together in a specific location (Clark & Emmel, 2010; Kinney, 2017). "Walking interviews are a valuable means of deepening understandings of lived experiences in particular places" by providing rich, multisensory and detailed data (King & Woodroffe, 2017, p. 1). The walk-and-talk interviews took place on 29 October 2020 at the location of each case with the respective project's leading architect. Within a timeframe of approximately one hour, informants were asked to show the key spatial gestures they identified in the semi-structured interviews by taking a tour around and within the building in each case. Simultaneously, the walk and talk interviews opened a "forum" between us, researchers in architecture and practicing architects, for a critical discussion on the built reality and into further considerations as to whether and how they would have improved the key intended gestures had there been no constraints.

All the interviews were audio-recorded and photo-documented, then semi-transcribed and coded using the qualitative data analysing software NVivo Pro (version 12.6.0.959). The following sections present the findings from the interviews and the review of project materials from the two cases, through the above introduced tectonic lens.

Two cases unpacked

Both cases studied here are post-construction and post-occupation, mixed-use buildings designed by AART. The mixed-use typology is chosen in this study because it places particular demands on the building's ability to create spatial gestures in the transition between building and urban spaces. This is due to its complexity in application and user groups, in relation to social and socio-economic value creation. The cases have been selected based on the hypothesis that strategic choices made during the design process – in the form of intended gestures – have resulted in a number of social qualities improving the users' everyday life and sense of community. As such, an information-oriented, selection strategy was applied to maximize the utility of data collected from single cases (Flyvbjerg, 2010). Hence, the selected cases can be characterized as "critical, most likely cases". They provide access to rich information, and thereby enhance our understanding of the underlying causes of a phenomenon (here social qualities of architectural design) and its effects (here economic value creation for users) (Flyvbjerg, 2010).

Both projects can be found in the Danish city of Aarhus, which is located on the east coast of the Jutland peninsula, in the geometrical centre of Denmark, with a total area of 468 km^2 (Aarhus Kommune, 2020). Since the 20th century, Aarhus is the second biggest and the second fastest-growing city in Denmark. For centuries, the primary driver of growth was the maritime trade of agricultural crops. Today, Aarhus has become the largest centre for culture, trade, services, industry, tourism, research and

education in the region, while still holding its important trading role by being the country's industrial port for container handling and shipping. The port lies in Aarhus Bay (*Aarhus Bugt*), and along with the connecting Peri-Urban Harbour Areas (*De Bynære Havnarealer*), which not only historically, but also nowadays hold strategic importance in terms of urban development (Aarhus Kommune & Aarhus Havn, 2003; Aarhus Kommune & Planlægning og Byggeri, 2006). The rapid urbanization in Aarhus since the early 2000s, which is expected to continue until at least 2030, challenges the development of the city (Aarhus Kommune, 2020). In order to accommodate growth and create space for the many new inhabitants in a well-connected and sustainable way, Aarhus has seen an extraordinary building boom of new institutions, infrastructure projects, neighbourhoods and urban recreational areas since the turn of the millennium (Aarhus Kommune, 2020). Starting in 2008, the re-development of the Aarhus Bay harbourfront has been a key area in the accommodation of the growing urban population, guided by the vision of transforming the former industrial dockland to a new, vibrant, mixed-use urbanite, while functionally linking the city and the bay, thereby changing both the skyline and the land use of the inner city (Aarhus Kommune & Aarhus Havn, 2003; Aarhus Kommune & Planlægning og Byggeri, 2006). The area is still undergoing heavy development, but once fully finished it will provide a home for more than 12,000 and a workplace for more than 10,000 people, which makes the project among Europe's largest waterfront developments (Willacy, 2020). However, given its sheer size and scale, the development has also been undergoing some critique with regards to the gestures communicated on an urban dimension (Christiansen, 2020).

"The Warehouses" (*Pakhusene*) are located in the Northern part of the Peri-urban Harbour Areas, called Aarhus Docklands (*Aarhus Ø*) on Pier 4. It is a 40.000 m^2 complex (Figure 2), consisting of five mixed-use buildings, three with office units and two with residential units on the upper floors, and in both cases retail shops (bakery, furniture store), common facilities (barbershop, fitness centre, yoga studio, restaurant, meeting rooms, sauna) on the lower floors and parking spaces both above and below ground, thereby considered a pure mixed-use, walkable urban cluster. Of the three buildings with primarily office functions, two are 8/10-storey 9300 m^2 buildings and one is 9300 m^2 with 10/12 floors. The complex's two other, primarily residential, buildings have 9 and 13 floors, with an area of approximately 4600 m^2 for apartment units and 1850 m^2 for non-residential functions (Figure 2). The complex has an approx. 9750 m^2 underground and an approx. 1550 m^2 above-ground parking area with a 400 m^2 courtyard. The complex was designed by AART in collaboration with MOE engineers as a private assignment. The first phase – including one office building and the two residential buildings – was completed in 2016, developed by real estate developers Domis Ejendomme and Kilden & Hindby. Shortly afterwards, PFA Ejendomme invested and bought the office part of the complex, including the one completed, and the right

to develop the two others in the second phase, which finished in 2020. The project was designed with the involvement of future tenants of the office units, among others AART themselves. The project was led by Anders Tyrrestrup, architect and founding partner at AART.

As the first building on Aarhus Docklands, the Warehouses received a DGNB Gold certification for sustainability, including environmental, social and economic aspects. However, these kinds of certification schemes cannot realistically reflect the contribution of the architectural space itself towards sustainable development on the social dimension, as they are based on assessments of the building pre-occupancy, reflecting a theoretical performance, and not how the building actually performs in practice (Hay, Samuel, Watson, & Bradbury, 2018; Jensen & Troelsen, 2017; Stender & Walter, 2019). This ongoing research addresses this issue by proposing the above-described tectonic methodology, as a strategic framework for systematic documentation of architecture's social qualities, measured by the social and socio-economic value that they create in practice to allow a translation from cost to value.

The new media office building is part of the existing media cluster in the district called "Film City" (*Filmby*) located between Aarhus Docklands and the South Harbour Quarter (*Sydhavnskvarteret*), within the Peri-Urban Harbour areas. It is a 6-storey, vertical, mixed-use building with an area of 4400 m^2 (Figure 2) that has office units on the upper floors, called "Tower" and public functions on the lower levels, called "Base". The Base comprises elements such as a café/restaurant with a production kitchen, shared meeting rooms, flexible working niches and an urban "plaza", which is a public space on top of the Base, with an open-air cinema provided by the media-façade of the Tower. The building was designed by AART, in collaboration with Rambøll engineers and SLA landscape architects, as a winning proposal in a tender competition, "The extension of Film City", in 2015. The building is developed and owned by the Municipality of Aarhus. The project was led by Karsten Sinning, architect, partner and team leader at AART.

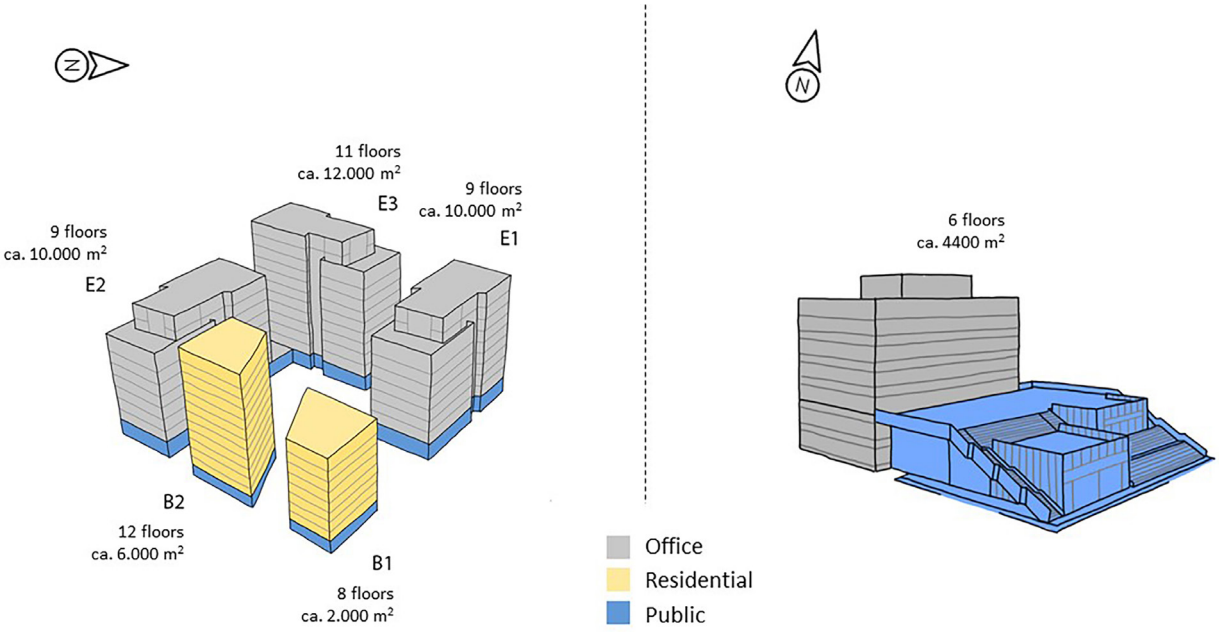


Figure 2
Overview of selected cases. The complex of "The Warehouses" (on the left) and the new media office building (on the right). Colours indicate main functions/units.
FIGURE MADE BY ESZTER SÁNTHA

Unpacking the potentials

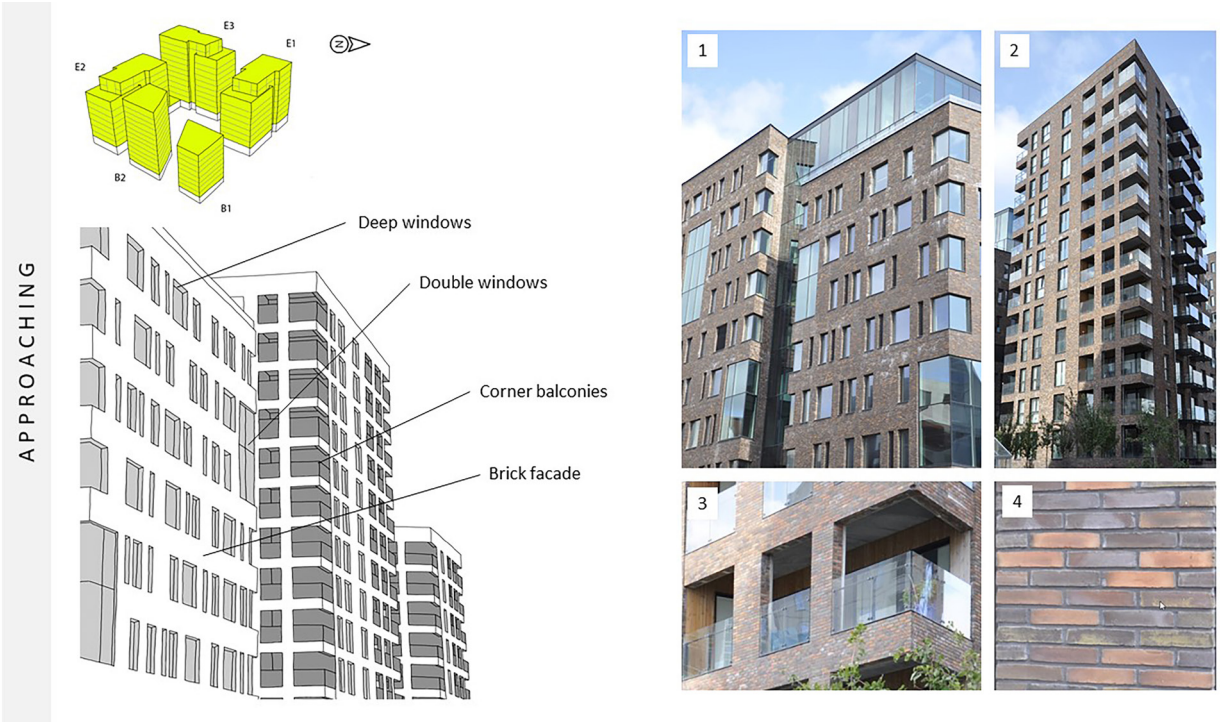
The following section presents the empirical findings of the interviews, focusing on how the architects articulated, constructed and identified the key intended gestures in their respective cases as a means for materializing potentials for social value creation. In this section, we unpack how the actual construction choices seek to communicate the intended value in each of the key intended gestures addressing users approaching (urban dimension), arriving (site dimension) and working-living-visiting (interior dimension), as identified by the leading project architects in the interviews in each of the two cases.

The Warehouses

Approaching

The key gesture addressing users approaching The Warehouses (Figure 3), identified by the architect, was to create a rough, heavy-looking warehouse (hence the name) that simultaneously has "sensible qualities". These sensible qualities are communicated firstly by breaking the volume of the buildings' mass with recessed windows of different sizes and covered corner balconies (also comprises the intention of providing a shield from the wind and thereby offer a more comfortable outdoor experience for residents). Secondly, the sensitivity is articulated by the choice of material on the façade, which is a high-quality, multi-coloured brick that provides warmth, a sense of familiarity and a feeling of home. This choice is based on the architect's field-specific knowledge, arguing that this type of brick is something Danish people can traditionally relate to because it reminds them of the "good old" architecture.

As Anders Tyrrestrup, the project's leading architect emphasizes: "The brick also attracts people, we know that. It has the warmth and the idea of home in many people, and it is another quality than concrete buildings". The intended value potential of these sensible qualities, identified by the architect, was to attract future tenants and apartment buyers, which has been an explicit focus in the project.



Arriving

The key gesture addressing users arriving at The Warehouses (Figure 4) was identified by the architect as inviting the public in by creating an "edge zone", a recessed exterior niche with a colonnade, wooden panels on this exterior "ceiling" and wooden benches, which welcomes people, provides a cosy space to meet and leads to the entrance, thereby signalling "I'm approachable day and night". This is furthermore enhanced by the open ground floor itself, displaying the activity happening inside the building. As Tyrrestrup describes it:

> *A good example of the purpose of an edge zone as a meeting point/ waiting area is today: it's raining, but we can still stand here and talk. In a huge complex like this, such an area, acting also as a welcome area can make it softer, more accessible, more inviting – otherwise, you would never stop here. It was a trade-off between this gesture and more rentable space. We really argued that this is the way to welcome this building.*

Figure 3
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users approaching The Warehouses. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the "built reality" showing: the façade of the office units (1) and the residential units (2), the covered corner balconies (3) and the multi-coloured brick (4) used on the façades.
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020. SKETCHES WERE MADE BY ESZTER SÁNTHA.

The intended value creation here, identified by the architect, was to stage the visibility of movement and activity, which invites to interact with space around and ultimately within the building, which is "important for any business".

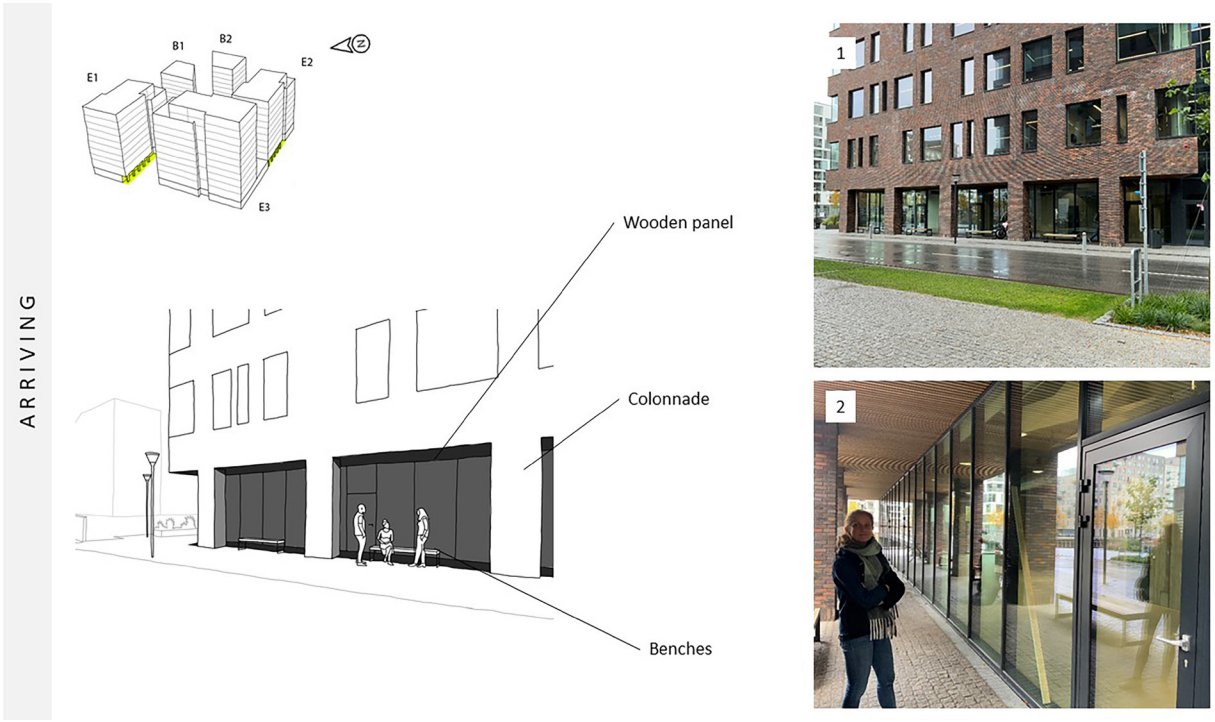


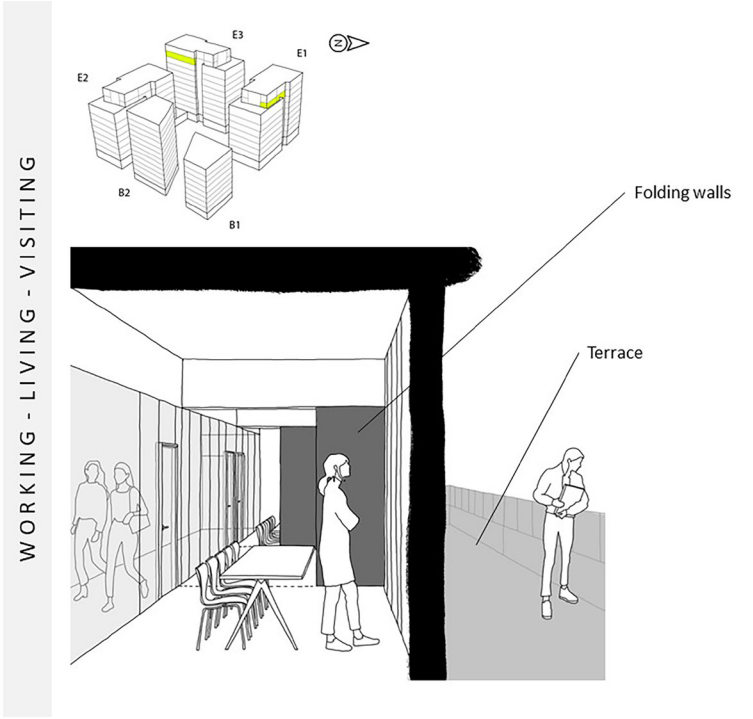
Figure 4
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users arriving at The Warehouses. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the "built reality" showing: the edge zone from a distance (1) and standing within its niche (2).
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020 WITH THE PERMISSION OF PEOPLE APPEARING ON THE PHOTOS. SKETCHES WERE MADE BY ESZTER SÁNTHA.

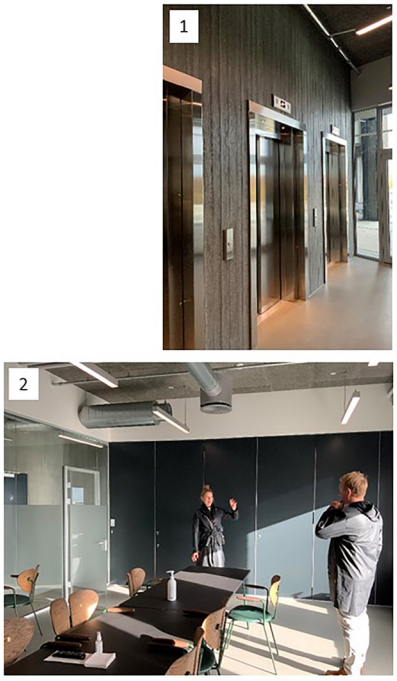
Working, living and visiting

The key gesture addressing users' everyday life (Figure 5) identified by the architect was to promote a sense of community on "many levels" by a number of architectural instruments. Firstly, by providing an open ground floor with small shops and businesses that offers a range of "decent" services (e.g., bakery, fitness centre, restaurants) within walkable distance, which are considered "add-ons" to everyday life. And secondly, by providing flexible office spaces and multifunctional shared spaces (e.g., meeting rooms, terrace, cantina, lounge), which are intended to be used by both the companies and residents of the Warehouses. Therefore, it aims not only to create a community among companies of different sizes but also bridging between the office and apartment units. Regarding the interior of these shared spaces, the same identity is communicated inside as outside, viz. an industrial look with visible installations, but also playing with the senses by introducing warmth with rough wooden furniture, wooden panels and a mix of wooden patterned and plain visible concrete walls in most common areas. As argued by the project's leading architect:

The flexibility really has proven its worth, also to the community; the gaining by sharing areas […]. I think it also comes down to some very basic design decisions that make it work, like the concrete cores that have this surface with the wooden boards. Everyone who comes here touches it. It is a beautiful concrete structure and that affects people. It is a rough house, but it also has its sensible qualities that people react to.

The intended value here, as identified by the architect, is to define and maintain a delicate balance between the ratio of shared and owned spaces and the idea of gaining more by owning less and investing in flexible common facilities with sensible interior qualities.





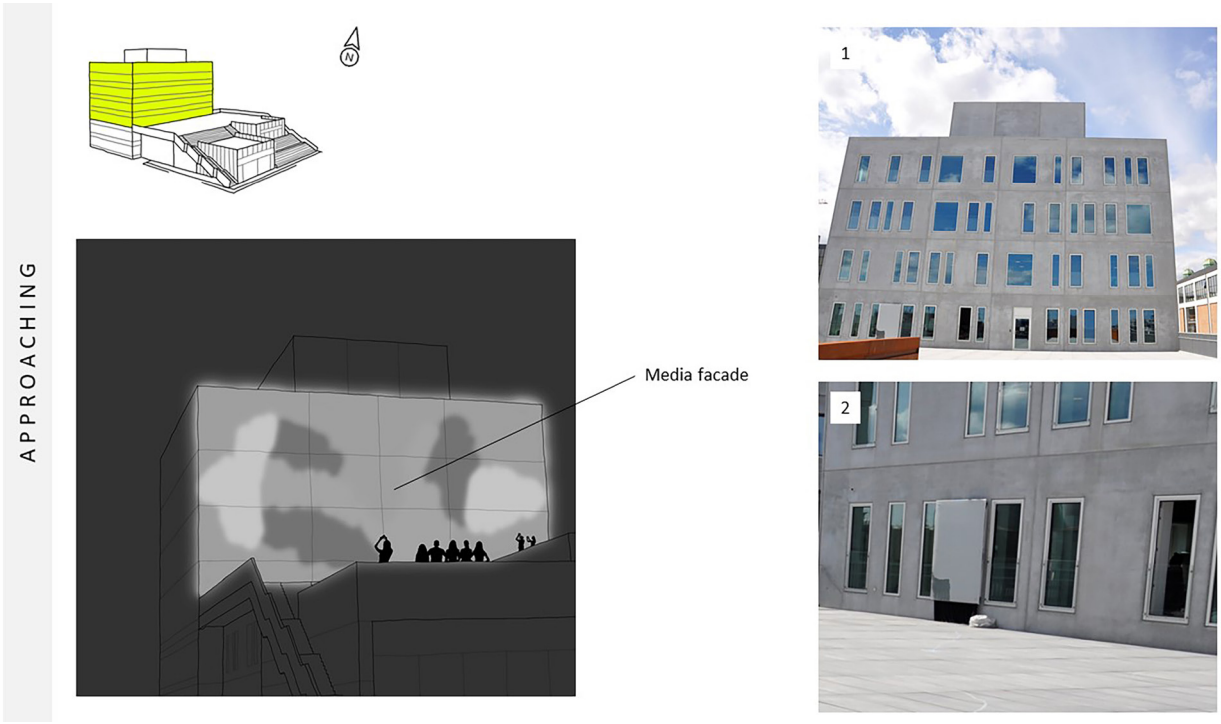
The new media office building in the Film City cluster

Approaching

The key gesture addressing users approaching the Film City complex (Figure 6) identified by the architect was, on one hand, to "blend" the new building into the existing complex, urban fabric and history of the neighbourhood; and on the other hand, to invite daily users and visitors by elevating the site to a new, modern level. Being a centre for media activity, the concept was to create a vibrant, modern, digital atmosphere. Guided by this principle, the gesture was to signal creativity and thereby arouse curiosity from a distance, while keeping the building authentic to its existing surrounding. These gestures are communicated through

Figure 5
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users "working-living-visiting" The Warehouses. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the "built reality" showing: the interior "core" of the buildings with wooden patterned visible concrete walls (1) and the interior of the shared meeting rooms (2).
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020 WITH THE PERMISSION OF PEOPLE APPEARING ON THE PHOTOS. SKETCHES WERE MADE BY ESZTER SÁNTHA.

the materials used, described by the architect as: “local, honest materials”, meaning materials that match the existing use of materials on the site (Corten steel, glass, concrete), with solutions that create a cinematic atmosphere. These solutions entail a so-called “media-façade” that consists of LED panels behind the glass façade. As explained by Karsten Sinning, the leading project architect of “The Extension of Film City”, the original intention of this solution was to “show the building inside out” and to showcase the different kinds of work produced within the media office building. However, due to economic constraints, this had to be financed externally, with a new intention to use the façade as an exclusive display for an art project using film and media technology to communicate a range of visual narratives. The intended value potential of these qualities identified by the architect is to attract talent, media companies and people from all over the world.



Arriving

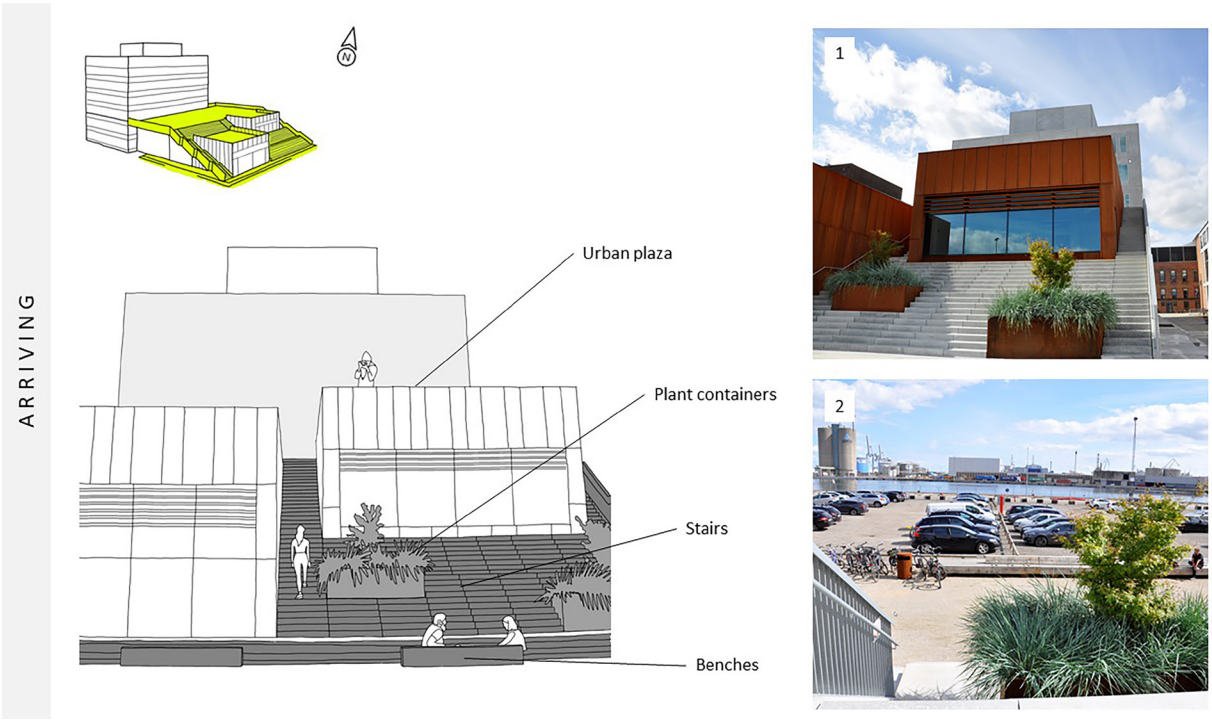
The key gesture addressing users arriving at Film City (Figure 7) identified by the architect was to provide a meeting place for the locals by creating an urban plaza, an elevated public space with a staircase, enriched with green elements (plant containers) and benches leading up to the media façade. A space that invites people to stop and look around by providing a cosy space to meet, have a coffee, engage with culture and be inspired by others through discussions in a creative setting. This “generosity” towards the public is furthermore enhanced by the open ground floor itself, which was a concept adopted from the case of the Warehouses. In-

Figure 6
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users approaching Film City. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the ”built reality” showing: the media façade under development (1) and its first piece (2).
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020. SKETCHES WERE MADE BY ESZTER SÁNTHA.

troducing this new media office building as a mixed-use type was based on the advantages of this typology and the positive experiences gained from the Warehouses project. This concept was described by Sinning as follows:

> *The concept was to make this plateau with these stairs […]. [In this way] this building becomes actually a public space to the city. It is not so much about making a new building only for itself, it's actually about giving back to the city.*

The intended value identified by the architect is the open ground floor and public functions inviting people to meet and interact with the space around, and ultimately within the building.

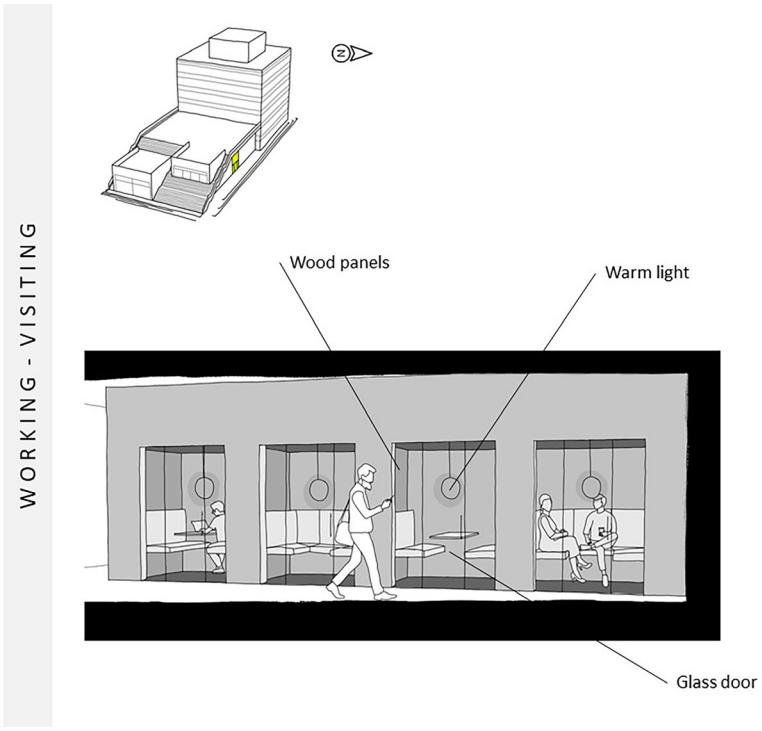


Working and visiting

The key gesture addressing users working in and visiting the new media office building (Figure 8) identified by the architect was to create a creative community among the companies located in the Film City complex by a number of architectural instruments. Firstly, by providing an open ground floor, the Base, with common facilities (e.g., cafe, cinema) that serves as a hub and a new urban place to meet within the city; and secondly by providing flexible office spaces and a number of shared facilities (e.g., meeting rooms, rooftop terrace, cantina, semi-private flexible workspaces – the meeting niches). In the interior dimension of these spaces, the same identity and atmosphere is articulated by an industrial

Figure 7
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users arriving at the new media office building in Film City. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the "built reality" showing: the staircase leading up to the "urban plaza" (1) and view from sitting on this staircase (2).
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020. SKETCHES WERE MADE BY ESZTER SÁNTHA.

look with visible installations, dark colours, with sensible qualities by introducing warmth with rough wooden furniture, warm light, wooden panels, Corten steel, green wall and visible concrete walls in these common areas. As in the case of The Warehouses, the intended value here identified by the architect is to define and maintain a delicate balance between the ratio of shared and owned spaces. The idea is of gaining more by owning less and investing in flexible common facilities with sensible interior qualities, creating a cinematic atmosphere.



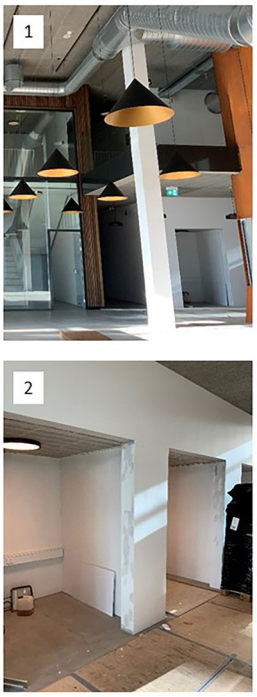


Figure 8
Visualization of key intended spatial gestures and corresponding architectural instruments addressing users working and visiting the building. Overview (top-left), a sketch of the architectural vision (bottom-left) and photos of the "built reality" showing: the canteen with the meeting niches in the background (1) and the meeting niches (2) under development.
PHOTOS WERE TAKEN BY ESZTER SÁNTHA ON 9 SEPTEMBER 2020. SKETCHES WERE MADE BY ESZTER SÁNTHA.

Discussion

In this study, we examined how and to what extent the architects have worked strategically with formulating intended gestures, as well as what corresponding constructive principles, they have specifically applied to negotiate choices related to these gestures in the design process. This was done by questioning how these intended spatial gestures are constructed and communicated in the design process, focusing on the underlying intentions of specific design choices, including the reasoning behind those decisions. Moreover, it was done by discussing whether and how architects would have imagined improving these gestures via the construction of further or different instruments in a possible "ideal" situation, where there are no construction-related economic constraints. This is reflecting a scenario where no design trade-offs have to be made due to budget restrictions.

Lost potentials: the neglected interior

Through a deeper understanding of the construction of spatial gestures in architectural design, the interviews uncovered the deliberate work by the architects to develop the potential for value creation. However, in addition to the identified intended gestures, they also revealed how these potentials in certain cases were lost due to construction-related, economic considerations aiming to reduce costs, resulting in solutions that did not correspond with the original architectural idea ("non-gestures").

Our findings show that it is especially in the interior dimension that spatial gestures intended by architects failed to be realised, thus possibly limiting architecture's potential to address its essence; to create value for its users from an architectural perspective. For example, in the Warehouses' shared meeting rooms, where – from the architect's perspective – the space visibly loses from its roughness, as the partitioning walls are white-painted plaster walls, the furniture is softer and plain and the door frames are plastic. These non-gestures leave the space as a quite poor, sensible experience – without interiority – that is, in the words of Anders Tyrrestrup, "struggling" with the whole architectural idea of the building's main identity. The same was experienced in the case of the new media office building. For example, in the meeting niches, where the intended gestures can hardly be traced. They are "overwritten" by a series of non-gestures, leaving the space – from the architect's perspective – a quite uninspiring space for working or even meeting, which questions its overall purpose and usability. This relates to the part-whole discussion, amplifying how these details are indeed the essential building blocks of "meaning" (value creation) in a piece of architecture (Frascari, 1981). In agreement with Frascari, it can be argued here, that the construction and formulation of spatial gestures (what he calls "careful detailing") – the complex art of combining architectural instruments (materials, components, building parts, etc.) in a functional and aesthetical manner – is "one of the most important means for avoiding building failure, on both dimensions of the architectural profession: the ethical and the aesthetic" (Frascari, 1981, p. 24). Hence, the construction and formulation of spatial gestures as careful detailing should not be underestimated when it comes to decision-making in the architectural design process.

Negotiating gestures

Parallel to the research on tectonic theories of architecture, our empirical findings in both cases showed how activating the architects' field-specific knowledge on the careful construction of spatial gestures is crucial in defining the goals for social quality and social value of an architectural project on several dimensions (urban, site and interior). As these construction choices are negotiated in the design process, a successful design also requires a very high degree of empathy and collaborative skills from all parties involved in the process. In this regard, the

notion of spatial gestures helps to communicate goals strategically in the design process. As Karsten Sinning stresses:

> *[…] they have to use our knowledge to make a COMPLETE design for the building, for everything to fit together. It is a part of the good points in the discussion between the architect, the client and the engineer on what is the final project and the key elements of gaining those goals for the complete design.*

This opens the discussion on the design process itself and the nature of collaboration between parties involved in the design process. The two investigated cases were designed by the same studio, hence with the same architectural approach, yet design choices on the construction of spatial gestures to create value for future users of the buildings were more successfully negotiated in one case than in the other. This is what Frascari defines as the complexity of this task: that a detail (here, a gesture) "performing satisfactorily in one building may fail in another for very subtle reasons" (Frascari, 1981, p. 24). As a response to the question regarding the reasons behind the successfully negotiated gestures in the Warehouses project, Anders Tyrrestrup said that it "takes a strong developer" and a good collaboration to build with social quality and value. The architect also pointed out here that the unique opportunity for future tenants to become a part of the design process from the beginning, and to have the opportunity to influence design decisions relating to their new office, also resulted in a more balanced discussion on cost and values between the developer and future user, with the architects as mediators and "creators" in this process. This is where the "design turns into the art of negotiating realities through built form" (Postiglione & Lupo, 2007, p. 150) when gestures are considered in relation to their context to address the user perspective. In this case, AART was not only the architect but also one of the future users. This opened a unique opportunity for AART to learn about co-creative approaches when negotiating cost and value. Here, the application of a tectonic approach, focusing on the explicit use of spatial gestures and their construction as an argument for value creation, can enable them to have the same discussion in a more qualified manner in future projects. The "lesson learned" was described by Tyrrestrup as follows:

> *It was also a learning process for us, because when we said we want that brick they could say, okay, so how much higher rent do you want to pay for that – then we learned we have to balance and prioritize and weigh the qualities, because if we all the time pick from the most expensive shelf, it doesn't connect, or would be too expensive [from a user and thereby from a developer perspective as well].*

In this realisation, it is also reflected that one simply cannot avoid making choices and trade-offs, whether it is conscious or unconscious,

neither from an architect nor from a user perspective. However, these choices remain intangible until they are "unpacked" – critically explored and discussed – and their corresponding value presumably remains "unseen"– unaccounted for – until they are expressed in monetary terms, reflecting the underlying preferences when making those choices. Therefore, spatial gestures need to be further explored from other (anthropological, economic) dimensions.

Future perspectives on the tectonics of cost and value

This study showed how, and to what extent, the application of a tectonic re-conception of architectural cost and value on the architectural dimension allows architects to materialise critical thoughts through design (in practice). This offers an alternative language to engage people in a spatial dialogue and to strategically activate their field-specific knowledge within an interdisciplinary context to create value. Doing this through critical awareness and a critical (co-) creative approach to architectural design (Dunne & Raby, 2013; Kleis, 2020), challenges the status quo assumptions on the role of architecture as a product in people's everyday life (through spatial gestures), while maintaining a critical awareness of its construction when negotiating choices in the design process. Tectonic thinking in architecture is thereby providing an opportunity for the architect to engage in a process of change, focused simultaneously on the improvement of the physical products of architecture as well as their service as advisors/collaborators in the design process. However, tectonic thinking as a critical approach to design is ultimately a "positive and idealistic" approach, as it is believed that the change is in fact possible (Dunne & Raby, 2013), in this context, that architectural practice can improve and move towards a more sustainable and human-centred direction, allowing for the maximisation of its social quality and value.

The architectural projects selected for investigation in this study were critical, most-likely cases. It was assumed that spatial gestures constructed and formulated by architects in these cases had resulted in buildings with high social quality and value. However, even empirical results have shown that there are unexploited potentials for creating social value from an architectural perspective. Strategic communication and formulation of spatial gestures can succeed in cases where the value of these gestures is mutually recognized by parties involved in the design process but might fail in others. It is the hypothesis of the Ph.D. project that this may be due to the lack of economic arguments expressing the exact economic value of those gestures. In a consumer society like ours, it is through the exchange of money we realize futures, based on accepting and rejecting – whether it is conscious or not – possible (built) realities (Dunne & Raby, 2013). This emphasizes the need for expanding tectonic thinking beyond architecture itself, towards an interdisciplinary description of architectural quality and value, where architects' field-specific

knowledge on social value creation provides a point of departure for further "translation".

The present article thereby outlines a first step towards the establishment of a common language, which allows for future conjoined analysis, supplementing the architect's perspective (architectural dimension) presented here, with anthropological and economic perspectives. The economic valuation, however, is dependent on an understanding of the user's perspective, i.e., knowledge about how these identified spatial gestures are experienced and lived when the building has been taken into use. The three key intended spatial gestures identified in this study thus establish the "context" (Postiglione & Lupo, 2007, p. 150) for future studies superimposing the dimensions of anthropology – investigating whether and how these intended gestures translate to social qualities, and investigating through daily practice – and economics – how the intended gestures translate to economic value through the choices users make, based on their experience and behaviour.

Conclusion

Based on two cases, this study examines how and to what extent project-leading architects at AART have worked strategically with formulating intended gestures, and what corresponding constructive principles they have specifically applied and used to negotiate choices related to these gestures in the design process.

Our findings show that it is especially in the interior dimension where spatial gestures intended by architects failed to be realised, possibly limiting architecture's potential to address its essence; to create value for its users. In both of the cases, the key intended gestures articulated by the architects were significant identifications of the spatial capacities of the building's exterior in addressing users approaching and arriving (urban and site dimension, respectively), whereas the interviews uncovered multiple "non-gestures" in the interior dimension that the architects would have liked to develop differently. This is despite the information-oriented, case selection strategy applied in this study, where critical most-likely cases were investigated with the underlying assumption that spatial gestures constructed and formulated by architects had resulted in a number of social qualities and values. Yet empirical results have shown that even these projects have unexploited potentials to be unpacked. The explicit communication and formulation of spatial gestures can succeed in cases where the value of these gestures is mutually recognized by parties involved in the design process but can fail in others. An important reason for this may be due to the lack of economic arguments, expressing the economic value of those gestures. This emphasizes the need for expanding tectonic thinking beyond architecture itself, towards an interdisciplinary description of architectural quality

and value, where architects' field-specific knowledge on social value creation provides a point of departure for further "translation".

In conclusion, this article demonstrated how these intended spatial gestures reveal the trade-offs negotiated in the design process at a detailed level, hereby unfolding a critical tool for increasing value potentials otherwise lost in the translation from cost to value. The findings of this article thereby form a critical foundation for the following studies of the Ph.D. research project, where the architect's perspective will be supplemented with anthropological and economic perspectives, towards the establishment of a common language to describe the social qualities and values of architecture.

Acknowledgements

This article is part of an ongoing Ph.D. research project at the Department of Architecture, Design & Media Technology at Aalborg University and the architectural studio AART Architects A/S, in collaboration with the Department of Food and Resource Economics at the University of Copenhagen, in Denmark. The work is funded by AART Architects A/S and Innovation Fund Denmark (Industrial Ph.D. grant 9065-00220B). The authors would like to thank the architects, Anders Tyrrestrup and Karsten Sinning for their continuous collaboration and engagement in the research project. The authors would like to furthermore thank all members of the Ph.D. project's follow-up group: Marie Stender (senior researcher at AAU-BUILD), Peter Andreas Sattrup (chief sustainability consultant at DanskeArk) and Toke Emil Panduro (senior researcher at AU-ENVS) for their engagement in a critical discussion on the topic. Finally, the authors would like to thank the two anonymous reviewers whose comments/suggestions helped improve and clarify this manuscript.

References

Aarhus Kommune. (2020). Aarhus i tal. Retrieved from https://ledelsesinformation.aarhuskommune.dk/aarhus-i-tal/default.aspx?doc=vfs://Global/AARHUS-I-TAL/Hjem.xview

Aarhus Kommune, & Aarhus Havn. (2003). *Helhedsplan for de bynære havnearealer*. Aarhus: Aarhus Kommune. Retrieved from https://www.aarhus.dk/media/5498/helhedsplan-for-de-bynaere-havnearealer.pdf

Aarhus Kommune, & Planlægning og Byggeri. (2006). *De bynære havnearealer – dispositionsplan for de nordlige områder*. Aarhus: Aarhus Kommune. Retrieved from https://aarhusoe.dk/media/5502/dispositionsplan.pdf

Bech-Danielsen, C., Beim, A., & Madsen, U. S. (2014). *Towards an ecology of tectonics: The need for rethinking construction in architecture*. Stuttgart: Edition Axel Menges.

Bianco, L. (2018). Architecture, values and perception: Between rhetoric and reality. *Frontiers of Architectural Research, 7*(1), 92-99. doi:10.1016/j.foar.2017.11.003

Bjørn, N. (2014). *Evidens for sociale effekter af fysiske indsatser i udsatte boligområder. Review af 27 effektstudier fra ni lande*. (). København: Københavns Kommune. Retrieved from http://www.nielsbjorn.dk/evidens-sociale-effekter-af-fysiske-indsatser-i-udsatte-omr%C3%A5der

Bötticher, C. G. W. (1844). The principles of the Hellenic and Germanic ways of building with the regard to their application to our present way of building. In H. F. Mallgrave (Ed.), *In what style should we build? The German debate on architectural style* (pp. 147-167). Santa Monica: Getty Publications.

Broch, N. R., Sattrup, P. A., & Sejr, K. (2017). In Sejr K. (Ed.), *Architecture creates value*. Copenhagen: Danish Association of Architectural Firms. Retrieved from www.danskeark.dk/en/content/architecture-creates-value

Christiansen, E. M. (2020). *Tectonics and the city: In search of a critical perspective on assembling the city*

Clark, A., & Emmel, N. (2010). *Using walking interviews*. Manchester: Morgan Centre, University of Manchester.

Dam, T. (2007). Does tectonics make meaning in landscape architecture? Paper presented at the *Tectonics Making Meaning Conference,* Eindhoven, Netherlands.

Dunne, A., & Raby, F. (2013). *Speculative everything: Design, fiction, and social dreaming*. Cambridge: The MIT Press.

Fabian, L. (2016). The spatial, the social and the architectural. In B. B. Jensen, & K. L. Weiss (Eds.), *Art of many, the right to space: The Danish pavilion – bienniale architettura 2016* (pp. 189). Copenhagen: DAC & The Danish Architectural Press.

Fich, L. B., Jönsson, P., Kirkegaard, P. H., Wallergård, M., Garde, A. H., & Hansen, Å. (2014). Can architectural design alter the physiological reaction to psychosocial stress? A virtual TSST experiment. *Physiology & Behavior; Physiol Behav, 135*, 91-97. Doi: 10.1016/j.physbeh.2014.05.034

Flyvbjerg, B. (2010). Five misunderstandings about case-study research. *SAGE qualitative research methods* (pp. 219-245). Thousand Oaks: SAGE Publications, Inc. doi:10.1177/1077800405284363 Retrieved from https://dx.doi.org/10.1177/1077800405284363

Frampton, K. (1995). *Studies in tectonic culture: The poetics of construction in nineteenth and twentieth century architecture*. Massachusetts: MIT Press.

Frascari, M. (1981). The tell-the-tale detail. In G. R. Owens, & E. K. Katić (Eds.), *Semiotics: The proceedings of the semiotic society of America* (pp. 325-336). Charlottesville, Virginia, US: Philosophy Documentation Center. Retrieved from https://www.pdcnet.org/pdc/bvdb.nsf/purchase?openform&fp=philosophin&id=cpsem_1981_0325_0336

Freeman, A. M., Herriges, J. A., & Kling, C. L. (2014). *The measurement of environmental and resource values: Theory and methods*. New York: RFF Press.

Hay, R., Samuel, F., Watson, K. J., & Bradbury, S. (2018). Post-occupancy evaluation in architecture: Experiences and perspectives from UK practice. *Building Research and Information: The International Journal of Research, Development and Demonstration, 46*(6), 698-710. doi:10.1080/09613218.2017.1314692

Hvejsel, M. F. (2011). *INTERIORITY: A critical theory of domestic architecture*

Hvejsel, M. F. (2018). Gesture & principle: Tectonics as critical method

in architecture. In I. W. Foged, & M. F. Hvejsel (Eds.), *Reader: Tectonics in architecture* (pp. 395-409). Aalborg: Aalborg Universitetsforlag.

Hvejsel, & Beim. (2019). Circular tectonics? – A critical discussion of how the architectural discipline can drive ecological continuity. Paper presented at the *Fourth International Conference on Structures and Architecture (ICSA 2019),* Lisbon, Portugal.

Jensen, M. B. V., & Troelsen, M. (2017). *Adding value to the social dimension of sustainable building*

Johansson, J. (2018). *Evaluering og arkitektur: Brugere, interview, analyse og fænomenologi* (1st ed.). Hørsholm: RUM.

Johnston, R. J., Boyle, K. J., Adamowicz, W., Bennett, J., Brouwer, R., Cameron, T. A., . . . Vossler, C. A. (2017). Contemporary guidance for stated preference studies. *Journal of the Association of Environmental and Resource Economists, 4*(2), 319-405. doi:10.1086/691697

King, A. C., & Woodroffe, J. (2017). Walking interviews. In P. Liamputtong (Ed.), *Handbook of research methods in health social sciences* (pp. 1-22). Singapore: Springer Singapore. doi:10.1007/978-981-10-2779-6_28-1 Retrieved from https://doi.org/10.1007/978-981-10-2779-6_28-1

Kinney, P. (2017, summer). Walking interviews. *Social Research Update,,* 1-4. Retrieved from https://sru.soc.surrey.ac.uk/SRU67.pdf

Kleis, B. (Ed.). (2020). *Co-creating architecture - EFFEKT*. Copenhagen: 10 · Grafisk Design & Forlag.

Lundhede, T. H., Panduro, T. E., Kummel, L., Ståhle, A., Heyman, A., & Thorsen, B. J. (2013). *Værdisætning af bykvaliteter-fra hovedstad til provins.* (). København: Institut for Fødevare-og Ressourceøkonomi, København Universitet.

Mossin, N., Stilling, S., Bøjstrup, T., Larsen, V. G., Blegvad, A., Lotz, M., & Rose, L. (2018). *An architecture guide to the UN 17 sustainable development goals.* (). København: KADK. Retrieved from https://kadk.dk/sites/default/files/downloads/article/un17_guidebook_single_page_low.pdf

Postiglione, G., & Lupo, E. (2007). The architecture of interiors as re-writing of space: Centrality of gesture. In J. Gigli (Ed.), *Thinking inside the box: A reader in interiors for the 21st century* (pp. 145-154). London, England: Middlesex University Press.

Sántha, E., Hvejsel, M. F., & Rasmussen, M. K. (2021). Intention, life, value: A multidisciplinary approach to understanding architectural quality in the city [conference presentation abstract]. Paper presented at the *Cities in a Changing World: Question of Culture, Climate and Design,* New York City, NY, US.

Sattrup, P. A. (2020). Documenting value creation: A business opportunity for architects, their clients and society. *Architectural Design, 90*(4), 22-29. doi:10.1002/ad.2586

Sekler, E. F. (1964). Structure, construction, tectonics. In G. Kepes (Ed.), *Structure in art and in science* (pp. 89-95). London: Studio Vista.

Semper, G. (1989). *The four elements of architecture* (2nd ed.). Cambridge, UK: Cambridge University Press.

SIMNA. (2018, February 20). Social value international: Accounting for value. Retrieved from https://simna.com.au/social-value-international-accounting-for-value/

Siren, A., Grønfeldt, S. T., Andreasen, A. G., & Bukhave, S. F. (2019). *Sociale mursten: En forskningskortlægning af fysiske rammers betydning i velfærdsindsatser.* (). København: Realdania. Retrieved from https://realdania.dk/publikationer/faglige-publikationer/sociale-mursten-en-forskningskortlaegning-af-fysiske-rammers-betydning-i-velfaerdsindsatser

Social Value International. (n.d.). What is social value? Retrieved from https://socialvalueint.org/what-is-social-value/

Social Value Portal. (2017, August 1). What is social value? Retrieved from https://socialvalueportal.com/what-is-social-value/

Stender, M., & Walter, A. (2019). The role of social sustainability in building assessment. *Building Research and Information: The International Journal of Research, Development and Demonstration, 47*(5), 598-610. doi:10.1080/09613218.2018.1468057

Ulrich, R. S. (1984). View through a window may influence recovery from surgery. *Science, 224*(4647), 420-421. doi:10.1126/science.6143402

van der Linden, V., Dong, H., & Heylighen, A. (2019). Tracing architects' fragile knowing about users in the socio-material environment of design practice. *Design Studies, 63*, 65-91. doi:https://doi-org.zorac.aub.aau.dk/10.1016/j.destud.2019.02.004

Wadel, C. (1991). *Feltarbeid i egen kultur: En innføring i kvalitativt orientert samfunnsforskning* Seek.

Willacy, S. (2020). Aarhus Ø. Retrieved

from https://aarhusoe.dk/media/44511/20200716_folder_aarhusoe_engelsk-m-foto.pdf

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