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MATERIAL DRAMATURGY

Tracing trails of dust in the architectural design process

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TRACING TRAILS OF DUST IN THE
ARCHITECTURAL DESIGN PROCESS

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Oslo School of Architecture and Design for the degree of
Philosophiae Doctor (PhD) by Mara Trübenbach

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For my sister, trust your gut.

Abstract

Following the digital turn of the 1990s, architectural practices moved into a digital world, a development that was further accelerated by the Covid-19 pandemic. In this shift from analogue to digital there is a risk of losing touch with the physical, and skills that are essential for collaborating with physical materials. Widespread digitalisation requires a platform for discussion to recognise the performative potential of materials and to grasp the range of emotions they can induce. The effects generated by materials have implications for human decision-making. Ultimately, materials – as communicators, mediators and performing agents – act with our individual bodies, our memories and our subconscious, participating in a dialogue with them.

To come to a better understanding of the performative potential of materials, this research project deals with what it terms ‘the inner and outer worlds’ of humans and materials, highlighting the lack of a common language to describe their encounters. Focusing on the activities of model-making, textile design and scenography, in this thesis I explore a range of hidden agencies in architectural production that question the relation between human agents and the materials that make up the world around them. I investigate how different understandings of materials operate in the work of human actors, especially individuals who often have a latent agency yet contribute to the process of architectural production. The aim is to understand better the ways in which interrelations and performativity feed back into architectural practice.

To understand such processes, I turn to theatre and performance studies, which provide alternative methods for participation, as well as performance itself. Theatre studies theorise how performance generates a nuanced range of feelings imaginatively and visually, aided by different actors and agents. In this thesis a similar perspective is brought to bear on processes internal to architectural production. As well as the theory of performance, I refer to feminist scholars such as Karen Barad (2003), Rosi Braidotti (2013) and Donna Haraway (2016), whose

perspectives on the Anthropocene have been instrumental in shaping awareness of the relationship between humans and non-human beings. These contributions offer fundamental insights to rethinking the ways in which architects might work with, intellectualise and sense materials.

Using the methods of ‘site-writing’ as outlined by architectural theorist Jane Rendell (2010), ethnography and practice-based research, I aim to demonstrate that the actors I study, and the interactions they engage in – between specialist skill and general practice development – generate fruitful but often insufficiently respected sites for the creation of ‘material literacy’ in architectural design. I argue that this potential resides in the ambiguous status of making with materials, which is simultaneously situated within and outside the core concerns of architectural practice. The conclusions in this thesis suggest that individuals who bring sophisticated material literacy into their ways of working play a unique role in learning processes, through which architects can better understand the impact of diverse materials. The empirical work with the model-maker Ellie Sampson and my own model-making practice was carried out at the London-based architectural firm Haworth Tompkins. The studies on the performance were conducted with artist Judith Raum in Berlin, the artistic collective Go Plastic Company in Leipzig, and scenographer and theatre maker Jozef Wouters in Brussels/Vienna.

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Preface

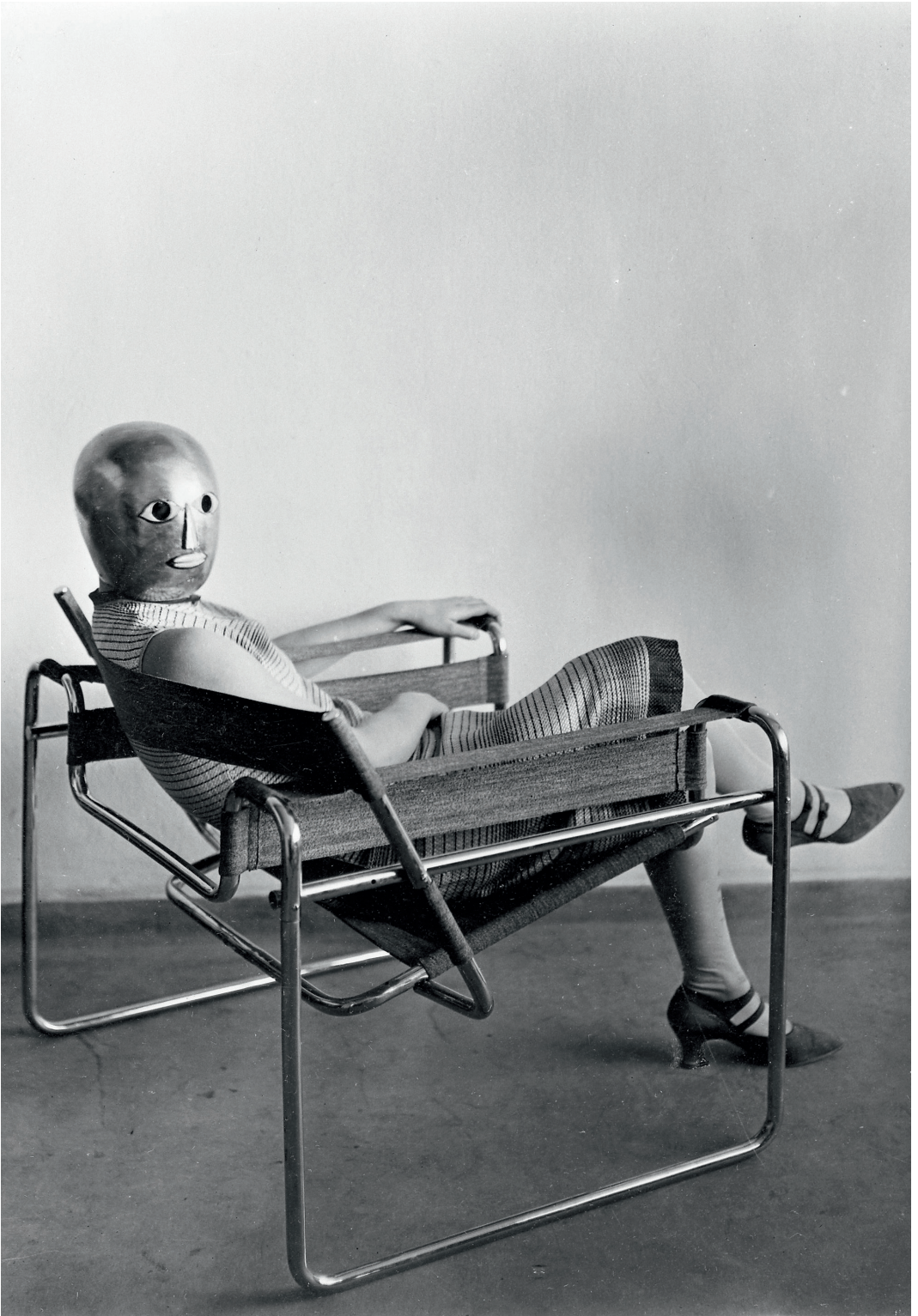


Fig. 1 Woman [Lis Beyer or Ise Gropius] in a B3 club chair by Marcel Breuer wearing a mask by Oskar Schlemmer and a dress in fabric designed by Lis Beyer

*Moreover, like women, textiles have traditionally been cast in the supportive role: one notices the chair, but not its cover.*¹ (Fig. 1)

During my research on Bauhaus women in exile in Britain for my Master's thesis (2017–18), I was confronted with the inequality women had to deal with in their professional lives. When the Bauhaus opened in 1919, Gertrud Grunow was the first woman to teach there. She was a singer who had completed her music education and was influenced by the model of 'rhythmic education' as outlined by the Swiss music educator Émilie Jaques-Dalcroze. Based on three basic elements, 'timing, strength and space' in relation to the body, Grunow's education resonated with the reforms to pedagogical ideas proposed by Bauhaus founder the architect Walter Gropius. Therefore, she was able to function "as the only woman in the position of a form master",² an exception to the dominant outlook: "the teaching staff [remained] recalcitrant against female colleagues".³

Statistics collected for the Statistische Reichsamtsamt in Weimar between 1919 and 1925 show that at the beginning of the winter semester 1919–20 equal numbers of female and male students attended the Bauhaus. Only one semester later, the number of female students had dropped by a quarter. This seemed to be Gropius's aim, curbing the number of female students after their initially strong attendance. In 1921, for example, Gropius replied to a request from the young and motivated painter and potter Grete Heymann to join the pottery workshop: "in the pottery [women] can no longer be admitted for the time being".⁴ He sent most female applicants to the weaving department, which was specifically intended for women,

¹ Sigrid Wortmann Weltge, *Bauhaus Textiles: Women Artists and the Weaving Workshop* (London: Thames & Hudson, 1993), 9.

² Ulrike Müller, *Bauhaus-Frauen: Meisterinnen in Kunst, Handwerk und Design* (Munich: Elisabeth Sandmann Verlag, 2009), 7. Author's translation.

³ Anonymous, *Die rote Köchin Geschichte und Kochrezepte einer spartakistischen Zelle am Bauhaus Weimar* (Mainz: Ventil Verlag, 2012), 54. Author's translation.

⁴ Letter from Staatlichem Bauhaus to Grete Heymann, 28 March 1921, LATH – HSTA Weimar: Staatliches Bauhaus Weimar, No.152, Bl. 1761. Author's translation.

reserving room for men in the metal and wood workshops. Thus, the weaving workshop became the department most visited by female students. With seventeen female and only two male students, it was by far the largest class at the Bauhaus, while other classes were mostly represented by seven male apprentices.⁵ Bookbinding and mural painting, also considered typical work for women, were the second and third largest, and contained five and four women respectively. Not a single female apprentice was trained in 1920–21. It was not until the winter semester of 1923–24 that there were three female apprentices again – two in weaving and one in mural painting. In the meantime, the number of women had been reduced in the remaining workshops. Thus, only the wood sculpting/metal workshop, pottery, mural painting, and still the largest workshop – weaving – were attended by women. The demand from women regarding apprenticeships in craft workshops was high. However, their interests were restricted, because Gropius was not the only one who believed that the “women’s question at the State Bauhaus [...] was unresolved.”⁶ “[Women] did not belong in the building workshops”.⁷ In 1922, the bookbinder and master craftsman Otto Dorfner, for instance, wrote in his letter “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar” (Proposals for the Structure of the State Bauhaus Weimar) that the “textile and women’s departments” had to be further developed so that “they have a work area within which they can be productively active, taking into account their physical condition”.⁸ Dorfner and his colleagues dictated what women were to do: “Let us let the woman weave carpets, weave cloth, dye, print, paint, let her embroider and make dresses”.⁹ It is clear from his

⁵ Landesarchiv Thüringen, Hauptstaatsarchiv Weimar, Staatliches Bauhaus Weimar, No. 137. Author’s translation.

⁶ Otto Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar” (Proposals for the Structure of the State Bauhaus Weimar), 12 May 1922, 3 ll.18–19. Author’s translation.

⁷ Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, l.19. Author’s translation.

⁸ Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, ll.23–24. Author’s translation.

⁹ Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, ll.23–24. Author’s translation.

writing that women were seen as “productive force[s]”,¹⁰ but not as artists. Architecture remained men’s business, which women should furnish with their “cosy” works.¹¹ It is therefore not surprising that in the summer semester of 1922, Dorfner’s proposal to build a “women’s and children’s clothing workshop”, in addition to the weaving and embroidery workshop, was accepted.¹²

There had been a completely different mood at the Bauhaus in the winter semester of 1919–20, when an interested female student, requesting whether there was a fashion and advertising class, was told that this was “not affiliated with the Bauhaus”, exposing the institutions disinterest in art forms associated with women.¹³ The change in view two years later can probably be attributed to the steadily increasing demand for textiles from various buyers, as well as to Gropius’s interest in bringing his Bauhaus to the market. “The weaving workshop [was] [...] supplied with the most operating and turnover capital.”¹⁴ According to art historian T’ai Smith, the representation of Bauhaus fabrics in photographs had a significant impact on the demand for fabrics.¹⁵ An understanding of material was an advantage when it came to mediating the textiles. Successful photographs made it possible to present the textiles produced in such a way as to promote sales. In the short time of its existence, the Bauhaus weaving workshop managed to make a name for itself. It was not uncommon for it to have to turn down applications from interested students due to insufficient capacity. This also had an influence on production. In January 1924, there was a request from the *Werkkunst der Deutschen Frauen* (Artwork

¹⁰ Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, II.23–24. Author’s translation.

¹¹ Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, II.23–24. Author’s translation.

¹² Dorfner, “Vorschläge zum Aufbau des staatlichen Bauhauses in Weimar”, 5 II.19–20. Author’s translation.

¹³ Letter from Bauhaus to Thora Baacke, 11 December 1919, LATH – HStA Weimar: Staatliches Bauhaus Weimar, No. 128, Bl. 565. Author’s translation.

¹⁴ Staatliches Bauhaus, 20 May 1924, LATH – HStA Weimar: Staatliches Bauhaus Weimar. Author’s translation.

¹⁵ T’ai Smith, “The Haptics of Optics: Weaving and Photography”, in *Bauhaus Weaving Theory: From Feminine Craft to Mode of Design* (Minneapolis: University of Minnesota Press, 2014), 79–110.

of German Women) for products from the Bauhaus to contribute to an exhibition on the subject of “women’s clothing”.¹⁶ Due to the “strong demand”,¹⁷ however, this was rejected because the weaving workshop “was not sufficiently equipped [with workshop products]”.¹⁸ The Bauhaus postponed the request until a later date, when the warehouses would be filled again with equipment.¹⁹ The weavings produced by women were thus used to present the Bauhaus to the outside world.

The female students had often already been trained in some form of craft before they began studying at art academies or had at least been able to mentally prepare themselves for their upcoming studies: “The soul remained hungry! It had to be craftsmanship! Almost all of us came from academies and schools of arts and crafts and wanted to free ourselves from the dry life of painting and drawing.”²⁰ This view was partly due to recent historical developments. Young women were not conscripted as soldiers. They took over men’s roles in productive craft. In addition to all the dilettantism, there were educational institutions like the girls’ school of the Sophie Foundation in Weimar, which made sure that their “young girls” were informed about possible career paths.²¹ The head of the Bauhaus weaving workshop, Helene Börner, was invited to give a short lecture on the subject at the Sophie Foundation in 1924.²² The weaving workshop established itself as a vocational training centre. It counted as “a workshop in which much capital [was] anchored”.²³ As a result, the weaving workshop was seen as a foundation for many women to pursue a further career

¹⁶ Letter from Werkkunst der Deutschen Frauen to Staatliche Bauhaus, 8 January 1924, LATH – HStA Weimar: Staatliches Bauhaus Weimar, No. 303, Bl. 303. Author’s translation.

¹⁷ Letter, Bl. 303. Author’s translation.

¹⁸ Letter, Bl. 304. Author’s translation.

¹⁹ Letter, Bl. 304. Author’s translation.

²⁰ Gunta Stözl, “Die Entwicklung der Bauhausweberei” [1931], in *Handwerk wird modern. Vom Herstellen am Bauhaus*, ed. Regina Bittner and René Padt (Bielefeld/Berlin: Kerber Verlag, 2017), 154. Author’s translation.

²¹ Schule des Sophienstifts, 13 January 1924, LATH – HStA Weimar: Staatliches Bauhaus Weimar, No. 167, Bl.1439. Author’s translation.

²² Schule des Sophienstifts, Bl.1439.

²³ Leitung des staatlichen Bauhauses, 26 April 1924, LATH – HStA Weimar: Staatliches Bauhaus Weimar. Author’s translation.

path after education that regularly had nothing to do with textiles.²⁴ Upon leaving the Bauhaus, apprentices were fully trained “prototypes for industry”.²⁵ Through constant trial and error, weaving almost gained an equivalent status to the foundation course of painter Johannes Itten, who with his charismatic and autonomous teaching brought his students to new insights – whether artistic or spiritual. Experimentation with materials, successes and failures, brought students the knowledge of what the Bauhaus was all about.²⁶ Not just learning, but living.

Although women achieved considerable success and were influential, they were never fully integrated into the Bauhaus community. Despite not being fully accepted by their male colleagues, the women’s idealism continued to grow. They began to describe their work and articulate their ideas and understandings of materials in essays, with their theory of weaving grounded in practice.²⁷ The women’s work was recognised as less individual; they felt they belonged to a larger project that was given a framework by their cohesion as a group, collaborating with textiles. Positioned between the external image and the self-created internal – where did the women want to locate themselves? With whom or what had they identified? With a lot of perseverance and courage, the Bauhaus weavers designed new fabrics and made it possible to use previously unthinkable materials such as synthetic fibres. This self-awareness and sensitivity were based on empathy and trust in the materials they used, which in a way made it possible to build social structures between humans and non-humans. Above all, it made clear that material does more than depict – it communicates, mediates and performs. The cover of the Bauhaus magazine of July 1931, for instance, features a close-up of a woven fabric by the weaver Margarete

²⁴ Wortmann Weltge, *Bauhaus Textiles*, 10.

²⁵ Weltge, *Bauhaus Textiles*, 16.

²⁶ Weltge, *Bauhaus Textiles*, 44.

²⁷ Smith, *Bauhaus Weaving Theory*, 14.

Leischner.²⁸ It shows thin fibre and coarse wool woven into an unusual structure. Twenty years later, Leischner used similar pronounced handling of the possibilities of industrial machinery, coupled with her material literacy, to re-interpret Harris tweed for the British furniture industry in Manchester.²⁹ The material, through its performative potential, challenged Leischner to create social networks within the creative centre of the British textile industry, which, among other things, helped her settle into her exile.

This story about women's (hidden) collective power in the development of the material culture of the Bauhaus, and its dependence on the intimate relationships with textiles that developed in the Bauhaus weaving workshop has lessons for contemporary studies in architecture: How does material become an actor and to what extent does material trigger social action? How does the theory of making serve practice? What creates knowledge about and with material? How does empathy emerge in the making process? How can trust in material be an indication of social fabric in the making? This set of questions and the diverse perspectives and knowledge of the Bauhaus women gave me the impetus to explore materials and their social components. I wanted to do this by engaging with creative disciplines beyond architecture to reveal untold stories that deserve to be revealed. The research that emerged from this desire demonstrates the need for understanding materials and their performative potential in architecture today.

²⁸ Burco Dogramaci, "Bauhaus-Transfer. Die Textildesignerin Margarete Leischner in Dessau und im britischen Exil", in *Entfernt. Frauen des Bauhauses während der NS-Zeit – Verfolgung und Exil*, ed. Inge Hansen-Schaberg, Wolfgang Thönder and Adriane Feustel (Munich: edition text + kritik, 2012), 98.

²⁹ Dogramaci, "Bauhaus-Transfer", 103.

Structure of the Thesis

The following text contains five acts. “Act I: Material Empathy” tackles the issue of theorising material. The act turns to performance studies and theatre studies to provide a perspective on material, which I argue is of relevance for architectural practice. I suggest that performativity, participation and emotions can play a crucial role in investigating the understanding of materials in architectural practice and offer new methodological approaches to mediation in architecture. The ‘performative turn’ in the cultural sciences, from text-centred to performance-centred concepts, offers insights into sequences of actions in architecture.³⁰ Act I will establish the terms of definition for two concepts that become central in my theorisation: material literacy and material empathy. The background and adoption of those terms will be explored in this act.

“Act II: Methods in the Making” considers strategies of proximity to material. To counter the tendency for the ‘material turn’ to operate more as a textual phenomenon of description than a material phenomenon per se, I directly engage with material in the process of writing. My aim is to explore alternative ways of theorising through insisting that doing and sensing can constitute knowledge development, a possibility unfolded in the form and content of Act II. I am interested in how information moves and the kinds of knowledge that flow organically and implicitly in the work produced. One way to explore this is to write a text in collaboration with material while reflecting on the process of creating a (digital and analogue) book. I draw inspiration from journals like *Metode*, *Emotion*, *Space and Society* and *Dimensions* that deal with experiential approaches and/or emotions to generate knowledge in the transdisciplinary fields between art, architecture, and design.³¹

³⁰ Angelika Schnell, Eva Sommeregger and Waltraud Indrist, *Entwerfen Erforschen: Der “Performative Turn” im Architekturstudium* (Basel: Birkhäuser, 2016), 14.

³¹ *Metode* was launched in 2022 and focuses on the working process behind research practices (text and work based) in art and architecture; *Emotion, Space and Society* is an multidisciplinary platform for “theoretical informed research on the emotional intersections between people and places”, see <https://www.sciencedirect.com/journal/emotion-space-and-society> (accessed 19 July 2023); the architectural journal *Dimensions* explores processes from practice and research in the architectural design.

“Act III: Models as Actors and Stages” fills a critical gap in current discourse and breaks new ground by examining material and physical scale models in architecture practices in a digital context. My study contributes towards revealing what insights could be gleaned from these kinds of sources also in relation to architectural history, as well as the potential of using architectural ethnography towards the development of theory. In my research the physical model is seen as an active agent in generating an understanding of materials. The work of producing the models is used as an example of material agency in contemporary architectural practices.

“Act IV: Textiles and Material Agency” looks at disciplines outside architecture to examine other ways of engaging with material. It explores what material can reveal through its interactions with human bodies. Here I align myself with scholars such as Harriet Harris, Roberta Marcaccio and Rory Hyde in their approach to expanding the horizon of possibilities around architectural research. Although their aim is to show alternative pathways for architects, I truly believe in a “version of architecture that is plural and diverse”.³² My research focuses on how methods of knowledge generation that are not so easily grasped, (because they are rather instinctive and informed by the senses) are recorded and communicated.

“Act V: Empathy and Trust in the Architectural Design Process” presents a lightly edited conversation between model-maker Ellie Sampson and me. We ask questions about architectural models, how they are constructed, how they function, and how the process of model-making serves as a medium for communicating material literacy. We review the relationship between paper, textile design and architecture as well as questions that arise from considering Sampson’s work within larger architectural projects. We discuss the role of hands-on work against the backdrop of the increased prevalence of the digital, which brings forth a broader debate about the work of crafts people and

³² Harriet Harriss, Rory Hyde and Roberta Marcaccio, *Architects after Architecture: Alternative Pathways for Practice* (New York and Abingdon: Routledge, 2021), 10.

materiality in relation to empathy. Concluding the thesis, Act V speculates on the value of material empathy in the architectural design process to recognise the performative potential of material.

1

ACT I

Material Empathy

1

**INTRODUCTION: CAN THE ARCHITECTURAL
DESIGN PROCESS BE EMPATHETIC?**

*I ask everyone involved to be tender in their approach to this piece.*³³

Author Leo Meier opens his play *Two Gentlemen from Real Madrid* gently with the above line.³⁴ The piece, which had its world premiere in January 2023 at the municipal theatre in Oberhausen, humorously describes homosexuality as a taboo in football and speculates on the pursuit of happiness.³⁵ The first scene begins in a forest. Two gentlemen meet each other by chance. They don't know each other, although they both play for the same football club, Real Madrid. Meier plays with absurdity. He intertwines fiction and reality under the assumption that he is living in a society that doesn't care whether football players are homosexual or not. Meier's approach to fiction and reality is of interest to my research. I am not writing fiction, but I am challenging an architectural world to celebrate tenderness in the context of sustainable action. By sustainable I mean the ways in which we can learn how to work from each other, how we can generate new thinking to nurture and combine new thoughts. I want to shed light on something that is rather unexplored in the field of architecture – something that operates on an emotional level, that takes care of the feelings and memories captured in the human body, what I will call: material empathy.

I immediately face the first hurdle of my research. It is easy to end up in a web of misunderstandings around the translation of experience with materials through text, spoken words, blueprints and models in architecture.³⁶

³³ Original "Ich bitte alle beteiligten, zärtlich im umgang mit diesem stück zu sein.": Leo Meier, *Zwei Herren von Real Madrid* (Frankfurt: S. Fischer Verlag, 2021), 2.

³⁴ Original title: *Zwei Herren von Real Madrid*.

³⁵ See also <https://theater-oberhausen.de/production/zwei-herren-von-real-madrid/> (accessed 5 January 2023).

³⁶ For a discussion of such misunderstandings and the relationship between building construction and verbal construction, see Adrian Forty, *Words and Buildings: A Vocabulary of Modern Architecture* (London: Thames & Hudson, 2004), 15.

Like in English, in German, which is my mother tongue, the word *material* is a noun that describes what something is made of. Other words can be associated with material too, such as the term ‘Stoff’, which overlaps with the English ‘stuff’, and could be a chemical substance, a piece of (woven) fabric, a subject or a drug. Material could also in a more general way mean that which makes up a collection – as in archive material, or film material, both of which indicate the collection of various ‘materials’ to constitute an archive or a film, something with overtones of selection, and therefore with connotations of attention. In addition, there is a relational nuance to the term: material is often used to describe something with which one engages, frequently in dialogue, in reciprocity. The presence of the term in the discourse around contemporary craft is certainly strongly marked by this sense. Understandings of the meaning of material vary from context to context. My research explores the overlaps and ambiguities of these misunderstandings as one reason for the challenge of the ‘translation’ of knowledge and the understanding of material in the architectural design process.

Could materials be understood as pluralities? In this thesis I tend to use the term material and materials interchangeably. This flexibility reflects a certain lack of precision in common usage. Indeed, one might argue that it reflects a slipperiness associated with the very terms themselves. There is, I argue, a need for architects to understand the linguistic limitations of the vocabulary we use. I propose that the solution to these limitations is to embrace the tangible and haptic feel of materials and their significance in the architecture process. The engagement with haptic material is approached in this research as a co-constitutive part, as a condition that connects different strands of different disciplines that I draw on for my research. In his article “Material against materiality”, anthropologist Tim Ingold discusses the fine line between material and materiality. Ingold questions how misunderstandings in theoretical contexts/academia affect material culture and can create distrust about materials’ essence. I embrace Ingold’s suggestion that materials’ properties are relational.

As he argues, “They are neither objectively determined nor subjectively imagined but practically experienced. In that sense, every property is a condensed story. To describe these properties of materials is to tell the stories of what happens to them as they flow, mix, and mutate.”³⁷

In the 1950s, philosopher Susanne Langer was one of the first female pioneers to address the sensual. She questioned how we experience our environment through our senses. Among other art forms, Langer refers to music, claiming that “sounds are much easier to produce, combine, perceive and identify, than feelings.”³⁸ For Langer, the creative process is the symbolic form of feeling. Importantly, she distinguishes between artefact and work of art, the latter “emerges from the arrangement of tones or colors, which was not there before, and this, rather than the arranged material, is the symbol of sentience.”³⁹

Returning to the two gentlemen embedded in a social system that has a very limited, one-sided view of what we humans call love, tenderness and the absurdity of the human condition, I argue for an openness in questioning how we think about materials. My research aims to draw attention to the fact that the acceptance of a more diverse understanding of material can demonstrate that material not only ‘is’ but also ‘acts’. While conducting my research, I encountered voices saying, “How does your work contribute to architecture?” For me, that was and still is the biggest challenge to articulate. I suggest that this research has relevance for the profession in its endeavour to find words that explain the intuitive and tacit, to make room for something that exists in the world of architecture that is necessary and that, I claim, deserves more serious attention:

³⁷ Tim Ingold, “Materials against Materiality”, *Archaeological Dialogues* 14, no. 1 (2007): 14.

³⁸ Susanne K. Langer, *Feeling and Form: A Theory of Art* (New York: Charles Scribner’s Son, 1953), 27.

³⁹ Langer, *Feeling and Forms*, 40.

What?

My thesis *Material Dramaturgy* explores how material understandings operate in the work of individuals engaged in creative practices who are considered to have a less pronounced agency. I investigate their less clearly defined contribution to the processes of architectural production than others involved in those same processes, such as the client, the architect or the site manager. The primary focus of this project is to raise awareness of the potential of what I call material affect. Material affect is a conscious emotional reaction that occurs in response to a physical experience with material. It differs from material effect, which results from the consequences of an action with material. In doing so, I examine the activities of model-making, textile design and scenography to expose the importance of several less acknowledged actors within creative practice. I want to demonstrate that such actors, and the interactions they engage in, constitute fruitful sites for the creation of material literacy in architectural design. I am particularly interested in the significance of these underacknowledged actors. I study their specialist skills and the general practice environment in which they operate. By studying these now often sidelined or ignored processes in which human actors are active contributors, I highlight how underacknowledged aspects of the use of material have an effect in architectural design more widely. These processes involve some kind of extended proximity to the materials from which constructions are made, with human actors constructing and discussing their 'behaviour' within the design process, which is rather unusual in architectural design. These could be considered as theatres in which bridges are constructed between design activity and the material world in ways that do not always exist elsewhere.

I follow Nishat Awan, Tatjana Schneider and Jeremy Till's critique in *Spatial Agency: Other Ways of Doing Architecture* (2011) of the term 'alternative' as this leads to defending a position, to be a presenter of "something that could be seen as marginal because of its associated

implication of being ineffectual”.⁴⁰ Instead, I intend to “present a powerful counter, an otherness” to architectural practitioners.⁴¹ My investigation of the roles of model-makers, fashion designers, scenographers and dancers follows their expertise, a special knowledge that “present[s] a new paradigm as to how to operate” with materials and which tends not to be included in conversations around the “standard histories of architecture”.⁴² In my view, this potential resides in the ambiguous status of making with materials as at once belonging within and outside the core concerns of architectural practice. In this respect, I suggest a unique role for individuals of the ‘powerful counter’ in architectural design processes, who bring sophisticated material literacy to architecture practice using skills based on insights gained through direct sensory engagement with material.

It might seem ironic to select the word ‘literacy’ to describe something that is embodied and approached through ‘sensing’. In this research these two divergent ways of knowing come together. It is precisely the point where they interface that interests me. Material literacy is usually approached through making, seeing materials as the starting point for knowledge formation and critical thinking.⁴³ In this thesis, some aspects of what I call ‘material literacy’ are explored in relation to what I will define as ‘material empathy’. I examine these terms in detail below (scene 2), but simply put, in my enquiry empathy is the sensing element that complements material knowledge and literacy. If material literacy is in some sense operative in a practical sense, material empathy is more essential, more emotionally charged. One refers to the logic of enabling productive practices, the other is more concerned with what productive practices do bodily, emotionally and socially. These terms are two sides of the single coin of a system but nevertheless need to be distinguished from each other. I approach

⁴⁰ Nishat Awan, Tatjana Schneider and Jeremy Till, *Spatial Agency: Other Ways of Doing Architecture* (New York: Routledge, 2011), 27.

⁴¹ Awan, Schneider and Till, *Spatial Agency*, 27.

⁴² Awan, Schneider and Till, *Spatial Agency*, 27.

⁴³ Ann-Sophie Lehmann, “Material Literacy”, *Bauhaus*, no. 9 (2017): 22.

the two as the complementary parts of holistic thinking. They touch each other, like the ping-pong activities of architects within the design process, alternating between a performative carrying out and observing the sensing in the process. The interaction between ‘material literacy’ and ‘material empathy’ is not about abstraction: it addresses the endless battle with language by pointing to the physical, which is why I have landed in practice-based research.

My understanding of practice-based research is an interplay of perceiving and reflecting in doing. I am interested in some forms of mediation outside academia. Theory is sometimes seen more as the tool with which a problem is approached and practice as the tool that solves it. In practice-based research this sequential hierarchy is not simply reversed but replaced by a notion of complementarity.⁴⁴ According to Christopher Frayling there are three types of research into/through/for art and design.⁴⁵ In an interview for the Research Through Design 2015 conference, Frayling adds almost 20 years later that one of the big challenges is that design does not yet lead the process of research: “Design should be generating a lot of this research and then you got research through design and not design as a bolt on.”⁴⁶ This research aims to reveal the action of practice and reflect on the ways practice takes place, rather than present artefacts as the result of the research.

A human body – mine – accompanies this research insofar as it stores knowledge. Memories and emotions are decisive for what subsequently happens as a reaction in the human body awoken by the most diverse senses, such as hearing,

⁴⁴ For a discussion see Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), 27–8; Lara Schrijver (ed.), *The Tacit Dimension: Architectural Knowledge and Scientific Research* (Leuven: Leuven University Press, 2021), 11; Katharina Voigt, Uta Graff and Ferdinand Ludwig (eds.), *Research Perspectives in Architecture* (Bielefeld: Transcript Verlag, 2021), 228–29.

⁴⁵ Christopher Frayling, “Research in Art and Design,” *Royal College of Art Research Papers* 1, no. 1 (1993): 5.

⁴⁶ Christopher Frayling, “Provocation by Sir Christopher Frayling Part 1: Research Through Design Evolution”, *RTD Conference Series*, 2015: 6:47 min., available at <https://vimeo.com/129775325> (accessed 31 January 2023).

smell, tactile feeling, the sensing of temperature, experience of light, etc. In terms of the architectural process, what interests me most is decision-making: how these impressions are shared between individual parties as a basis for new insights. I came to this angle of research through a defining moment: while conducting an ethnographic study of a model-maker, which was initially planned to be in-person, but Covid-19 regulations kicked in. My study had to be conducted remotely. The model-maker and her forced limited physical interactions with her team confirmed, defined and directed my particular interest in recognising what the material ‘wants’ or ‘desires’. I was inspired by my observation of the model-maker putting herself into the material’s shoes and trying to communicate what she felt was needed to architects and clients.

What I mean by the ‘desire’ of material is the need to listen and not project our ‘knowledge’ of how things should be onto the material. The material used in the model teaches the model-maker while she works. The shift in how I was conducting part of my research brought insights about how analogue making and sensing could be communicated to an audience in a digital environment. This intersection of the digital with a very physical practice provided a strange, happy accident that subsequently influenced my whole research process. Important to note here is that I am not anti-digital. I am aware of the enormous potential of digital tools. I want to restore a balance that could easily be lost when information is simply flattened through digital mediation.⁴⁷ It is important to recognise that more goes on in interactions relating to material than such flattened mediation can reveal. To counter this, I set out to explore what can be gained by being able to acknowledge the significance of emotions, which are often associated with haptic experiences, encounters with material. I also propose to consider how these aspects can be communicated through material mediation. The material literacy of the model-maker outlined above was the starting point for aspects relevant to this research.

⁴⁷ Betsy Sparrow, Jenny Liu and Daniel M. Wenger, “Google Effect on Memory: Cognitive Consequence of Having Information at Our Fingertips”, *Science*, no. 333 (2011): 778.

My research argues that soft skills can be developed by interactions with material in the architectural design process. In this case I am using material to refer to that which is known to be haptically sensible. It's what we know through sensing. This form of material literacy is not always developed through the tangible but can be sensed through empathy.⁴⁸ In my case the articulation in language is about a translation from one form of knowing to another through articulation in words. Certain forms of knowing cannot be translated in direct language, but I argue that the 'knowing' is in the 'sensing'.

If we were to trust materials, we might well have a better understanding and acceptance of different forms of knowing. Those are aspects of the world that, even when encountered through mediation, we expect to be sensible through touch, smell, temperature, or mass. There is a need to explore the complicity of this sense of material in architecture, not only to respond appropriately to material properties, but also to explore the wider potential of materiality and its relevance for architecture. Considering material empathy in terms of the communication, performativity and mediation of collective knowledge can happen in the learning process. Paying attention to this potential can offer additional guidance for architects in the design decision-making process. Therefore, the overall research question I aim to address is: How can material empathy contribute to the architectural design process?

⁴⁸ In Walter Benjamin's "The Task of the Translator", he argues that translation gives a text an afterlife in another language, making it accessible in another time and place. Benjamin, writing about the mysteries of translating text, noted that the most important to translate is the 'sense' rather than the literal meaning, claiming that the sense must emerge from a translation that is not a reproduction but "expresses itself, as its own kind of *intention*" (260). Benjamin introduces the concept of '*intention*' and distinguishes "between what is meant and the way of meaning it" (257). The empathetic quality referred to is that quality that allows the sense of the material to be uncovered. Materials, by this analogy "desire" or "want" certain kinds of treatment in the same way that a text might "desire" or "want" a translation is true in terms of sense. See Walter Benjamin, "The Task of the Translator" [1923], in *Walter Benjamin. Selected Writings Volume 1 1913–1926*, ed. Marcus Bullock and Michael W. Jennings (Cambridge, MA and London: Belknap Press, 1996).

Why

We build up a relationship to materials when we physically relate to them.⁴⁹ I find myself in the middle of the effects of the Anthropocene, which have led to an unprecedented change that is man-made. Humans have been living *on* the planet, not *with* it. So far, we have largely ignored the needs and desires of all other non-human beings. Now that we are slowly beginning to realise that there is no going back, a shift in thinking is required towards the fact that perhaps there is more than just ‘us’ – the human. Author Ursula K. Le Guin is quite right when she states, “I guess I’m trying to subjectify the universe, because look where objectifying it has gotten us.”⁵⁰ This commitment is mainly driven by emotions. How, then, to evoke and allow emotions in architecture? Practices that open up this possibility emerge in the work of certain contemporary actors who station themselves between art and architectural discourse and whose work shows alternative understanding about materials to create relationships with them.

Among young, emerging central European architecture and design studios such as Assemble Studio (London), ma-tt-er (London) or Formafantasma (Milan), there is an effort to make visible the research and analysis that takes place before the ‘actual’ design process in which an emotional capital becomes evident. Each of these practices and their approaches aim to break away from categorisation within one discipline. They blur the lines between art and architecture. Their work could therefore be described as in-between disciplines.⁵¹ Like the Bauhaus weavers of the 1920s designer Seetal Solanki, founder of ma-tt-er, stresses the importance of looking for alternatives that are already present in a spirit of diverse collaboration. This

⁴⁹ For a discussion of the ancient roots of the trope about writing vs. memory, see Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (London and New York: Routledge, 1998), 99.

⁵⁰ Ursula K. Le Guin, “Deep in Admiration”, in *Arts of Living on a Damaged Planet*, ed. Anna Lowenhaupt Tsing, Nils Bubandt, Elaine Gan and Heather Anne Swanson (Minneapolis: University of Minnesota Press, 2017), 16.

⁵¹ Jane Rendell, *Art and Architecture: A Space Between* (London: Bloomsbury Academic, 2006), 25.

inclusive thinking opens up to a spectrum of possibilities that does not necessarily only emphasise human agency. In the interview series *Space Talks*, Solanki highlights the need to “start to understand [materials]” and see them as collaborators rather than resources.⁵² This way of engaging with materials can evoke emotions among the various actors involved in the design process and enable different dynamics of sharing knowledge.

What might the suggested collaborations look like?

When I do something consciously, I wonder if my actions are controlled or even regulated. At the very least, this reflection helps me better understand and contextualise my local or global environment. According to evolutionary biologist Lynn Margulis, “life is a process [...] a way of behaving”.⁵³ This means that through sensitivity to material I would at least recognise that I am part of the wider life cycle of the globe. In other words, I would have to collaborate with others to be able to ‘grow’. To work together is not about liking everything, but about acknowledging and working with the needs of others. The use of language, and thus the communication of identities between different human collaborators, requires continuous work with real things in real places.

The title of this thesis includes the term ‘dust’, which on the one hand refers to the messiness of practice with real things. On the other, the metaphor relates to memories that vanish if not traced.⁵⁴ In my view, architectural practice could benefit from finding a suitable way of communicating modes of knowing and relating that would otherwise collect

⁵² Space Available, “Understanding and Humanising Materials with Seetal Solanki”, in the series “Space Talks” episode #005, 2020, (3:38 min.), available at https://www.youtube.com/watch?v=VKGfTni_3U4 (accessed 27 September 2020).

⁵³ Lynn Margulis, *From Life to Symbiosis*, single channel video, digitised, colour, sound, 05:02 min., 00:34 min., archival source: NHK TV (video), available at <https://critical-zones.zkm.de/#/detail/lynn-margulis-archive-arbeitsite!> (accessed 8 October 2021).

⁵⁴ See also Jorge Otero-Pailos’s site-based art installation series *The Ethics of Dust* (2008-2016), which explores what dust holds in terms of what the stories it can tell and where material and metaphorical reading superimpose; available at <http://www.oteropailos.com/the-ethics-of-dust-series> (accessed 18 July 2023); Jorge Otero-Pailos (ed.), *Historic Preservation Theory: An Anthology: Readings from the 18th to the 21st Century* (Design Books, 2022).

dust. Although there is already a high level of material literacy among architects and other practitioners within and outside the architectural studio, I argue that another point of conversation needs to emerge in relation to empathy. I argue that this can happen if we shift the focus towards the relation between architects and materials. Ironically, the physical manifestation of architectural offices may be one reason for a rather detached relationship. Not all studios allow for spaces to be dusty. In some sense, this form of detachment is part of the identity of an architectural practice, which almost by definition takes place ‘away from the building site’. Although not all offices are maintained as clean, clinical spaces, the slick and the chic are very much part of the architectural imaginary: when you ask a layperson to envisage an architectural office, they don’t imagine piles of offcuts or whirling saws, but white walls, lots of light, a wall with a big shelf, large desks arranged symmetrically with people working at their computers. At the same time, in most architectural practices messy and noisy areas, such as workshops tend to be kept separate from the ‘main’ work of the office. Allowing architectural space for dust could also create real places for the development of material empathy.

How

My project starts from the position that it is necessary to set up two points of reference, using methods from other disciplines to interrogate the contemporary situations in architecture. One such area is Actor-Network-Theory, which suggests that researchers trace the actions and their effects of all actors and agents in a situation without foregrounding one over any of the others. The researcher has what philosopher Bruno Latour calls a controversial authorial agency through their writing.⁵⁵ However, using Actor-Network-Theory runs into trouble when making observations for which no vocabulary/language is readily available; instead of descriptions leading to clarity, in such cases Actor-Network-Theory creates a conundrum

⁵⁵ Bruno Latour, “On Actor-Network Theory. A Few Clarifications plus More than a Few Complications”, *Soziale Welt* 47 (1996): 374.

precisely because existing structures and expectations make it difficult to articulate alternatives. Instead of being an insurmountable hurdle, this conundrum can also be situated as a productive challenge that urges us to find words that describe a certain situation. This leads me to the second point of reference: performativity. The aim is to go beyond forms of representation and assumed pre-existence of subject and object. According to Karen Barad, “performativity, properly construed, is not an invitation to turn everything (including material bodies) into words; on the contrary, performativity is precisely a contestation of the excessive power granted to language to determine what is real.”⁵⁶ Because I am doing the sensing in the doing/making in my research, I need to explicitly talk about the difficulty of making that translation from sense to word. Because of the double translation from sensing to writing, in much of this text the ‘I’ voice makes much more sense than ‘we’, where in much academic writing ‘we’ tends to denote the more generic, objective level of knowledge that everyone can agree on. In other words, the first-person perspective is essential when I articulate through writing, particularly because making/doing/sensing resides in ‘me’ and needs to be translated to ‘you’ the readers, and the wider field of knowledge and understanding.

In addition to considering the importance of material literacy and material empathy, this thesis introduces the concept of ‘material dramaturgy’ to explore how material is perceived and converted into a narrative. Dramaturgy is a particular word related to performance, originally understood as guiding a story in a certain direction. In its use within the field of dramatic art, dramaturgy has already been extended to cover a sense of material presence that goes beyond language and text, in performance practices so far beyond the literary.⁵⁷ According to José A. Sánchez, dramaturgy is “an interrogation on the relationship between

⁵⁶ Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham and London: Duke University Press, 2007), 133.

⁵⁷ José Sánchez, “Dramaturgy in an Expanded Field”, in *Rethinking Dramaturgy* (Murcia: CENDEAC, 2011), 40.

the theatre (the spectacle/the public), the performance (which implies actor and spectator as individuals) and the drama (that is, the action which the discourse constructs).⁵⁸ In contemporary performance studies, “dramaturgy is beyond or prior to the text.”⁵⁹ The elements that contribute to the practice of dramaturgy, then, exceed words and include gestures, relational situations, physical expressions, etc. There is no essence like a text but rather moments of exchanges between texts, bodies and materials that define dramaturgy.⁶⁰ Within post-humanism and post-colonialism, the definition of dramaturgy has changed, but it is still concerned with “structuring forms of narrative and the production of meaning”.⁶¹ Dramaturgy refers, in some sense, to the collective that is experienced. Unlike material literacy or material empathy, then, material dramaturgy has to do with actions of assembly with the collection of materials themselves. In my enquiry I introduce dramaturgy in a discussion about the ways in which architects use materials. My interest is focussed on situations that are about “*letting* things happen, rather than *making* things happen”.⁶² If dramaturgy is about finding ways to communicate what was understood in a particular *experienced* moment, material dramaturgy is concerned with how we consciously let material influence the process of planning architectural projects. Architects know where they want to go with their project, but to *sense* where it is going puts them in a vulnerable position. This vulnerability has to be experienced by the living body in that moment. The bodily perception becomes part of the memory that creates knowledge with and through material. The embrace of a personal attachment evokes emotions that can help better convey the understanding of material through dramaturgy.

Important for my research is also the potential of the materiality of the human body, as conceived in

⁵⁸ Sánchez, “Dramaturgy in an Expanded Field”, 39.

⁵⁹ Sánchez, “Dramaturgy in an Expanded Field”, 39–40.

⁶⁰ Sánchez, “Dramaturgy in an Expanded Field”, 45.

⁶¹ Camilla Eeg-Tverbakk, “Dramaturgies of Reality – Shaping and Being Shaped by Things”, *Nordic Journal of Art and Research* 10, no. 3 (2021): 2.

⁶² Eeg-Tverbakk, “Dramaturgies of Reality”, 6. Italics in original.

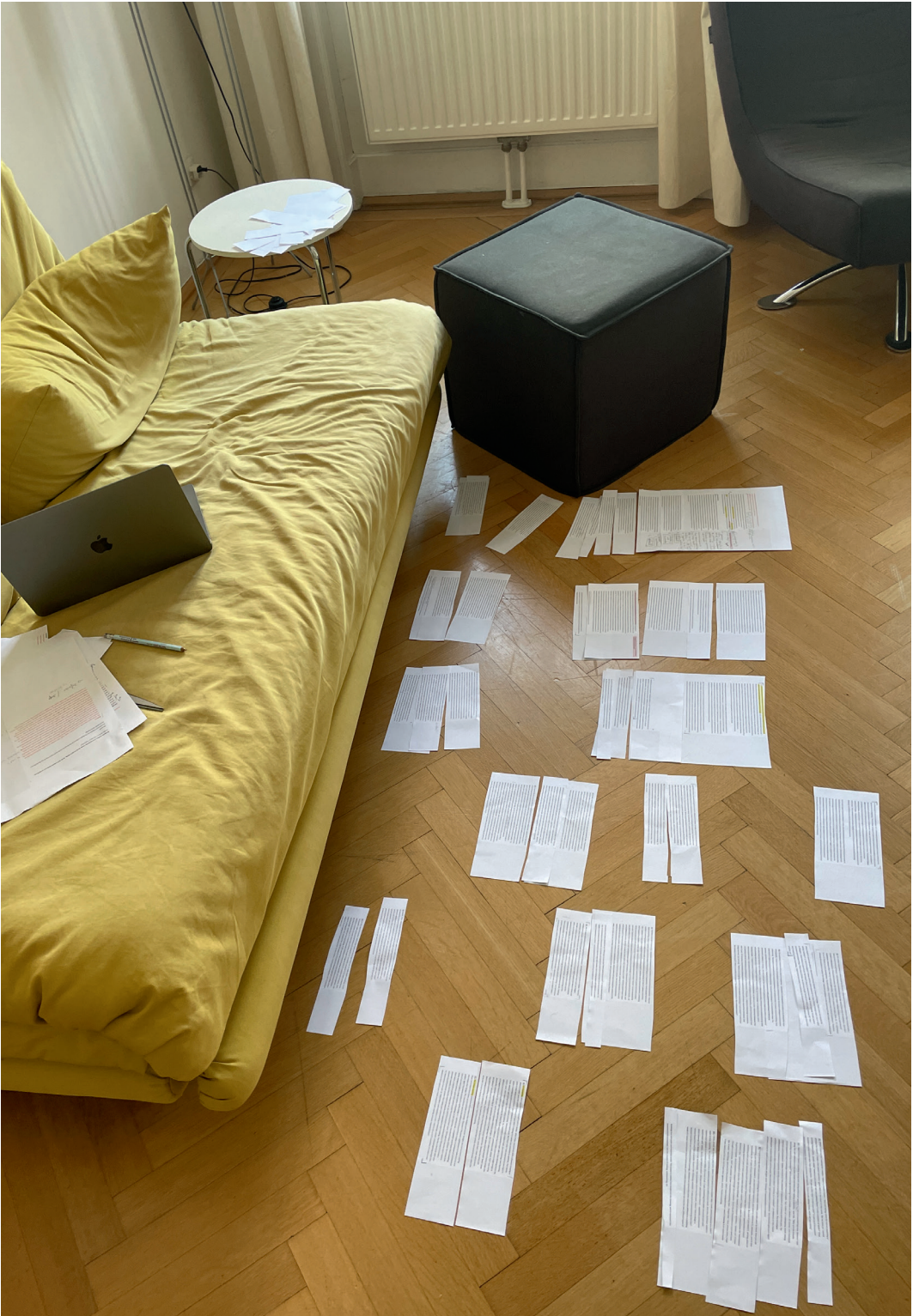


Fig. 2 Process of writing the thesis, Vienna 2022



Fig. 3

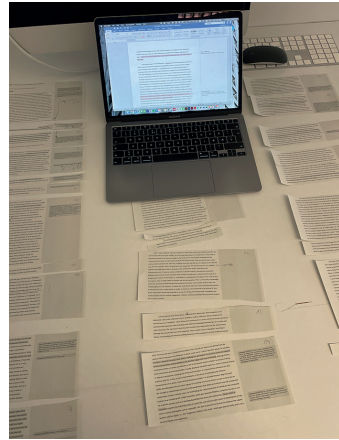
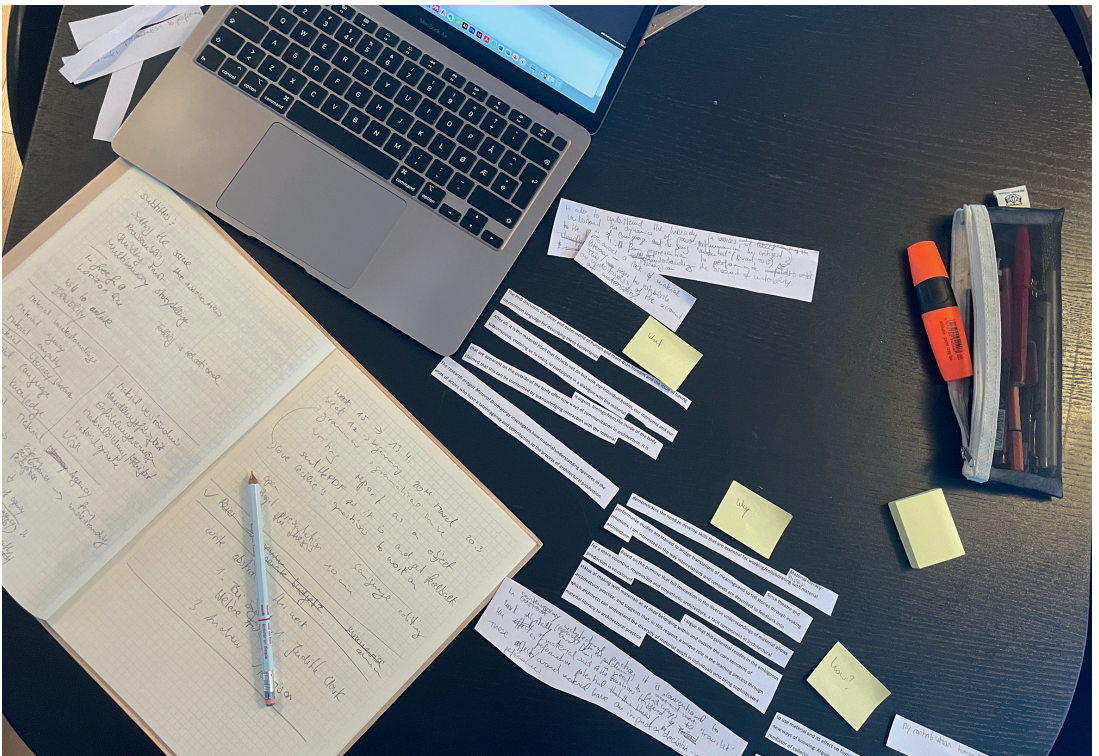


Fig. 4

Fig. 5



ACT 1

the performing arts, to tell a story in architecture. Performance and theatre studies have discussed the idea of performativity since the late 1990s.⁶³ My enquiry suggests using the notion of performativity to describe those understandings of material that are not necessarily situated in language, in words, but in sensing. Telling a story here consequently also means adding something personal to a design process, through one's own body (gesture, mimic, movement, voice, etc.). The concept that I label 'material dramaturgy' encourages the architect's awareness of senses and emotions related to materials.

In recognition of the effect of performance on my thinking, I tried to evoke its spirit through the introduction of its language. This thesis therefore contains five Acts, each comprising a sequence of scenes. I use such terms to preserve a certain sequential order in the text. In all of the Acts, I include the messy life activities of design as a leading part from the beginning. Material is not simply introduced at a later stage, but the perplexities around thinking material charge the enquiry throughout.⁶⁴ A very simple example might illustrate this. I wrote the text related to this research as a Word document. To start to try and create order in the text, I printed it out. Not only was it easier to cut the paper and restructure the text, add notes, or remove entire parts altogether using a physical process, but the material itself performed and somehow informed the final outcome (Figs. 2–4). In my view, there is no either/or, but a correspondence between digital and analogue components here that complement each other in a kind of feedback loop. The printouts helped me get an overview, but the magnetising effect that the cut paper scraps had on my colleagues also created effects. They swung by my desk to see what I was doing. Questions about the process of writing followed (Fig. 5). In these encounters, cast-off parts could return, turned from discarded scraps to nuggets of new ideas. I can conclude that paper has a certain quality that also allows people to communicate and exchange

⁶³ Hans-Thies Lehmann, *Postdramatic Theatre*, trans. Karen Jürs-Munby (London: Taylor & Francis, 2006 [1999]), 48.

⁶⁴ See also Frayling, "Research in Art and Design", 5.

because it is possible to access/view in a public workspace, something that captures and generates emotions and memories.

In his memoir of his Berlin childhood around 1900, Walter Benjamin wrote about the socks that he played with, rolled up like ‘little presents’ in his wardrobe:

I drew [woollen fabric] ever nearer to me, until something rather disconnecting would happen: I had brought out “the present,” but “the pocket” in which it had lain was no longer there. I could not repeat the experiment on the phenomenon often enough. It taught me that form and content, veil and what is veiled, are the same. It led me to draw truth from works of literature as warily as the child’s hand retrieved the sock from “the pocket”.⁶⁵

Material not only contains knowledge but also forms it. To have the printed outcome of my enquiry at hand alongside the digital PDF on screen shapes not only some kind of material content, but rather creates a performative pairing that can now be read as a textual patchwork. It is a tactile text stitched together from embodied knowledge, emotions, attempts, failures – all resulting from an awareness of and respect for material and its tactility. The coupling reveals the processes of research, much like an appendix to a text, which is not that obvious but can be acknowledged, nonetheless. In relation to the research questions, the case studies focused on viewing material through a lens that privileges not just a human perspective, but which focusses attention on the more-than-human, which is a central element to my thesis. This document is an invitation to let your thoughts wander and consider how texts about and *with* materials come to be. Just as Leo Meier did in his play, I invite everyone – and everything – involved to handle this textual weave with tenderness.

⁶⁵ Walter Benjamin, *Berlin Childhood around 1900*, trans. Howard Eiland (Cambridge, MA, and London: The Belknap Press of Harvard University Press, 2006), 97.

THE MULTIPLE NATURES OF MATERIAL

Where do materials come from? Who has engaged with them? What emotions do they awaken? According to art historian Petra Lange-Berndt, “[f]or some, to engage with material still seems the antithesis of intellectuality, a playground for those not interested in theory, while material studies are defined, at best, as an auxiliary science.”⁶⁶ I follow Lange-Berndt’s critique on critical academic writing, when “materials are not allowed to be vagabond, dirty and contagious, they [...] again act as the indicator of something else.”⁶⁷ What she calls for is an action with material, which subsequently means exploring “social power relations.”⁶⁸ In my research, I understand material as mediators. To explore the multiple natures of material embedded, I support her proposed methodology of “material complicity”, which means “to acknowledge the non-human” and using the senses to overcome the limitations of human bodies and their surroundings.⁶⁹ In what follows, I argue for an experimental setting that allows materials to act as performative agents.

One of the ironies about the ‘material turn’ that emerged in the 1990s in the humanities, is that architectural scholarship has necessarily continued to describe material with words: “Thus, just like contemporary architecture, the material turn seems unable to escape the question of language and its extension to the nonhuman realm.”⁷⁰ Scholars’ interaction may begin with material but still ends with text. They have rarely touched the materials they write about, even as they acknowledge that knowledge is embedded in the materials that do not appear in the text. I refer to materials through a relational ontology approach that is the roles that objects

⁶⁶ Petra Lange-Berndt, “Introduction”, in *Materiality*, ed. Petra Lange-Berndt, (Cambridge, MA, and London: MIT Press and Whitechapel Gallery, 2015), 12.

⁶⁷ Lange-Berndt, *Materiality*, 13.

⁶⁸ Lange-Berndt, *Materiality*, 16.

⁶⁹ Lange-Berndt, *Materiality*, 17–18.

⁷⁰ Antoine Picon, *The Materiality of Architecture* (Minneapolis: University of Minnesota Press, 2021), 51.

play in human practice. I lean therefore not only on the insights distilled during the ‘material turn’ but also on those of the ‘practice turn’ as it emerged in the second half of the twentieth century with scholars such as Etienne Wenger and Judith Butler.⁷¹ There, a kind of learning process is described that provides a sense of the space beyond the text, which must be explored to obtain a sense of a more-than-textual literacy of materials. These descriptions of literacy through making create “[c]ommunities of practice [...] the prime context in which we can work out common sense through mutual engagement. Therefore, the concept of practice highlights the social and negotiated character of both the explicit and the tacit in our lives.”⁷² This theoretical stream focuses on the making/practice of individuals. The situatedness of the practice in a social structure as well as a material structure is created through the effect of agency. According to Theodore R. Schatzki, Karin Knorr-Cetina and Eike von Savigny,

[T]he social is a field of embodied, materially interwoven practices centrally organized around shared practical understandings. This conception contrasts with accounts that privilege individuals, (inter) actions, language, signifying systems, the life world, institutions/roles, structures, or systems in defining the social. These phenomena, say practice theorists, can only be analyzed via the field of practices. Actions, for instance, are embedded in practices, just as individuals are constituted with them. Language, moreover, is a type of activity (discursive) and hence a practice phenomenon, whereas institutions and structures are effects of them. Needless to say, practice theorists have different understandings of these matters.⁷³

⁷¹ Etienne Wenger, *Communities of Practice: Learning, Meaning and Identity* (Cambridge: Cambridge University Press, 1998), 47–48; Judith Butler, *Gender Trouble* (London: Routledge, 1990), 198; Judith Butler, “Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory”, *Theatre Journal* 40, no. 4 (1988): 527.

⁷² Etienne Wenger, *Communities of Practice: Learning, Meaning and Identity* (New York and Cambridge: University Press, 1998), 47.

⁷³ Theodore R. Schatzki, Karin Knorr-Cetina and Eike von Savigny (eds.), *The Practice Turn in Contemporary Theory* (London and New York: Routledge, 2001), 3.

This text is an attempt to respond to these different understandings in order to find more embodied ways of describing the interaction between materials and architects in practice. In her essay “Objektstunden: Vom Materialwissen zur Materialbildung” (Object Lessons: From Material Knowledge to Material Literacy), art historian Ann-Sophie Lehmann deals with the shift from material knowledge towards material literacy. Lehmann argues that there is a need for a new form of material literacy in the humanities suggesting that although the humanities have made a material turn, they still lack a holistic theoretical and methodological foundation.⁷⁴ Her concern is, for instance, that there is only a description of material, but no inclusion of texture. Therefore, the term material has the capability to abstract things, while humanistic classes at universities see concrete mediation as “childish” and don’t take material seriously.⁷⁵ However, there must be something other than writing and reading that fosters understand of material. Lehmann notes, “The next step, and certainly one of the greatest challenges of the material turn for the humanities, is to place actual material alongside textual interpretation and also to make direct observation and contact acceptable and necessary for the formation of a theory of knowledge.”⁷⁶ Building on this perspective, I advocate going beyond textual and visual mediation, accompanying reading with listening to sound, touch, smell, and other sensory expressions and movement that come from humans and materials equally – to acquire material literacy.

Literacy and Empathy in/on/of/with Materials

In her essay “Material Literacy” Ann-Sophie Lehmann first refers to László Moholy-Nagy: “Everyone is talented [...] and can give form to his [sic] reactions in any material.”⁷⁷ She contends that the evolution of how materials have

⁷⁴ Ann-Sophie Lehmann, “Objektstunden: Vom Materialwissen zur Materialbildung”, in *Materialität. Herausforderungen für die Sozial- und Kulturwissenschaften* (Paderborn: Fink Verlag, 2015), 173.

⁷⁵ Lehmann, “Objektstunden”, 178.

⁷⁶ Lehmann, “Objektstunden”, 177. Author’s translation.

⁷⁷ Lehmann, “Material Literacy”, 22.

been seen in history is related to an understanding of the “substances of which this world and the things within it are made.”⁷⁸ The essay underlines the need for exploring material literacy in relation to “human-material interaction”.⁷⁹ According to Lehmann, material literacy means having a broad sensitivity to materials, which differs from the more situated and less accessible material knowledge of craftspeople. She establishes a link between materials and education in architecture and design by comparing current studies with the pedagogical strategy of László Moholy-Nagy’s preliminary Bauhaus course. The pedagogical effect in current studies is achieved by letting students work with material, “often drawing from their personal relation with a certain material.”⁸⁰ According to Lehmann, material literacy even has the potential to “change the world”.⁸¹ It is important to create encounters in which intimacy with material forms the basis for knowledge generation. As a result, learning and self-reflection can evoke tactile experiences and visual sensations. However, she notices that it is not only individual experience that generates material literacy. Students also gain material literacy through observing others while they engage with material, when materials become interactive agents, mediators and “critical substances” all at once.⁸² Lehmann even considers materials as “prime mediators” in an interdisciplinary context of scholars and practitioners.⁸³

But if we really take the role of materials as agents, mediators and critical substances seriously, shouldn’t we learn to empathise with materials? Especially when we are left with pixels on our screens and without physical materials at hand? The Cambridge Dictionary states that empathy is “the ability to understand and share other people’s feeling and problems”, whereas sympathy is

⁷⁸ Lehmann, “Material Literacy”, 22.

⁷⁹ Lehmann, “Material Literacy”, 22.

⁸⁰ Lehmann, “Material Literacy”, 25.

⁸¹ Lehmann, “Material Literacy”, 27.

⁸² Lehmann, “Material Literacy”, 27.

⁸³ Lehmann, “Material Literacy”, 27.

“a feeling of pity or sorrow for a person in trouble”.⁸⁴

We know that we develop our cultural identity from our education.⁸⁵ It therefore stands to reason that empathy is a prerequisite for intercultural education. For example, if we don't feel understood by our teacher, this can affect our willingness and ability to perform. Conversely, we tend to listen more actively to someone we empathise with. The idea that empathy is a prerequisite for knowledge generation can also be transferred to the material world. Being able to put myself in a material's place can allow me to better understand why it acts like it does. This means that empathy can also be understood as the willingness to hand over control to the material. I argue that this open stance is crucial to being guided by material affects in the architectural design process. Part of that greater openness is “developing the mental persistence to continue working *with* the material resistance rather than against it”, which I outline in Act IV.⁸⁶

To be able to better understand material affects, the process of making requires more attention and therefore time. In the process, attention shifts from initially having a very precise idea to welcoming the unexpected. This means that if I create a clay wall, for instance, I may encounter material reactions and behaviours that slow down the process, or force me to adjust my initial intention. I build a bond with the wall because I have touched the materials. I have not only perceived them but at best also understood how the conditions of clay, silt, sand and moisture came about to build this wall. To be able to appreciate this ‘coming about’, I need knowledge of the sensations that accompanied the process of creation. Such sensations generated by materials can be made explicit through empathy. My definition of material literacy in architecture thus broadens Lehmann's focus on considering materials as critical substance; this

⁸⁴ “Empathy”, Cambridge Dictionary online, Cambridge University Press 2022 (accessed 17 December 2022).

⁸⁵ Theodora Regina Berry and Matthew Rees Candis, “Cultural Identity and Education: A Critical Race Perspective”, *Educational Foundation* (2013): 44.

⁸⁶ Bilge Aktas and Camilla Groth, “Studying Material Interactions to Facilitate a Sense of Being *with* the World”, *Proceedings of DRS2020 4*, (2020): 1673. Italics in original.

broadening is based on the explorations of emotions that I believe shape knowing.

The term empathy derives from Greek *empathia* (em- 'in' and pathos 'feeling'). It follows the German word *Einfühlung*, translated into English as 'empathy' by Edward Titchener in 1909.⁸⁷ Empathy is defined as "the action of understanding, being aware of, being sensitive to, and vicariously experiencing the feelings, thoughts, and experience of another of either the past or present without having the feelings, thoughts, and experience fully communicated in an objectively explicit manner."⁸⁸ According to Susan Lanzoni, the possible definitions of empathy are endless. Scholars from various fields have investigated "the extension[s] of the self–imagined, projected, or extended–into others or the world."⁸⁹ In *Empathy: A History* (2018) Lanzoni claims that the earliest meaning of empathy "captured the aesthetic activity of transferring one's own feeling into the forms and shapes of objects."⁹⁰ The connecting force is feeling. In other words, feeling enables us to relate. To better understand the mechanisms of empathy David Freedberg and Vittorio Gallese make a distinction between the observation of "actions, intentions and objects" and "emotions and sensations."⁹¹ Knowing that these realms are very much interdependent, they investigate the human neuron system. Based on various neuroscientific research, they confirm that "[e]mpathetic feels can no longer be regarded as a matter of simple intuition and can be precisely located in the relevant areas of the brain that are activated both in the observed and in the observer."⁹² By extension, it becomes possible to explore how emotion and intention are based on

⁸⁷ "Empathy", Oxford English Dictionary (OED), <https://www.oed.com/view/Entry/61284?redirectedFrom=empathy#eid> (accessed 17 December 2022).

⁸⁸ "Empathy", <https://www.merriam-webster.com/dictionary/empathy> (accessed 18 August 2023).

⁸⁹ Susan Lanzoni, *Empathy: A History* (London: Yale University Press, 2018), 3.

⁹⁰ Lanzoni, *Empathy*, 2.

⁹¹ David Freedberg and Vittorio Gallese, "Motion, emotion and empathy in esthetic experience", *TRENDS in Cognitive Sciences* 11, no. 5 (2007): 199.

⁹² Freedberg and Gallese, "Motion, emotion and empathy in aesthetic experience", 201.

the “process[es] of embodied simulation”.⁹³ In my research, I use the phrase material empathy to signal a heightened sensitivity to the performative potential of material. In the pages that follow I seek to understand the potential of the interconnection between sensing, processing and empathy in architecture.

In-between the Embodied and the Conceptual

I am aware that I am adopting a term – empathy – that has a rich and complex pedigree used in arguments about architecture before. According to Dee Reynolds and Matthew Reason, “empathy can also concern relationship to objects rather than exclusively intersubjective relationships with other people” – where I extend “objects” and “with other people” by bringing materials into play.⁹⁴ I believe that the orchestration of materials, constructions and the exchange that happens within this process, can be sensed through architects’ bodily experience with material. “The empathetic part of this experience is the sensation in one’s own body of the movement, tension or posture seen in the other person.”⁹⁵ Following Maiken Hillerup Fogtmann, the ability to empathise sits in close relation to “anticipation of movement”, which helps translate what has been observed into “one’s own motor system.”⁹⁶ Fogtmann describes kinesthetic empathy in intersubjective relationships using the example of athletes. Team sports players have the ability to assess other team members’ movements in such a way that they adapt their own movement. A simple example would be a ball pass from one player to another, where the receiving player would be able to anticipate where to move based on experience and kinesthetic empathy. What is

⁹³ Freedberg and Gallese, “Motion, emotion and empathy in esthetic experience”, 202.

⁹⁴ Dee Reynolds and Matthew Reason (eds.), *Kinesthetic Empathy in Creative and Cultural Practices* (Chicago: University of Chicago Press, 2012), 19.

⁹⁵ Maiken Hillerup Fogtmann, “Kinesthetic Empathy Interaction: Exploring the Concept of Psychomotor Abilities and Kinesthetic Empathy in Designing Interactive Sports Equipment”, in *Kinesthetic Empathy in Creative and Cultural Practices*, ed. Dee Reynolds and Matthew Reason (Chicago: University of Chicago Press, 2012), 306.

⁹⁶ Fogtmann, “Kinesthetic Empathy Interaction”, 306.

crucial here is “to be able to read, react and build on each other’s movements”.⁹⁷

What would have to happen for that quality to manifest in my case? If I were to replace a human subject for whom someone feels empathy – based on a whole set of cues and a history of bodily experience with other human subjects – with something inanimate that is not corporeal but still perceived as an independent entity, made up of “stuff”? According to textile student Kristel Laurits, “we all have a relationship with [materials] [...] we have met them. We have touched them. We have a feeling about them.”⁹⁸ In my research, material empathy is a term that conceptualises the ability to perceive and to sense the “encounter through the materiality connecting us.”⁹⁹ The framing of an idea about material empathy is part of a specific development that is mostly found in craft education.¹⁰⁰ Such courses seek a sensitive approach towards engagement with materials. The focus is on the process in which materials are explored. I define this sensing through which material empathy can develop as ‘in-between’. This ‘in-between’ bridges realities, I argue, suggesting that material empathy can weave the physical and digital world together. For this to happen, trust in the material and in the producer of the object being made is a necessity. Here I follow Matthew Reason, who describes the encounter between a viewer and an image as follows:

⁹⁷ Fogtmann, “Kinesthetic Empathy Interaction”, 314.

⁹⁸ Kristel Laurits’s master project “Material Empathy” from 2016 deals with “how colours and materiality can create a sense of wellbeing.” One case study conducted in Copenhagen directly asks people how colour and material make them feel. See <https://royaldanishacademy.com/project/material-empathy> (accessed 17 August 2023).

⁹⁹ Laurits, “Material Empathy”.

¹⁰⁰ For a discussion see Charlotte Karin, “Material Empathy: Making cordage and yarn from nature”, workshop at Royal College of Art London, July 2023, <https://2023.rca.ac.uk/events/material-empathy-making-cordage-and-yarn-from-nature/> (accessed 18 August 2023); Cathy Treadaway, “Materiality, Memory and Imagination: Using Empathy to Research Creativity”, *Leonardo* 4, no. 3 (2009): 236; Bilge Aktas and Camilla Groth, “Human-Material Interaction”, higher education course at Aalto University, March 2019, <https://mycourses.aalto.fi/course/view.php?id=22559> (accessed 18 August 2023).

We should see this moment of encounter as attempting to communicate knowledge in process and at the stage of in-between-ness and flux, a set of metaphorical likenesses rather than propositional certainties: between ineffability and articulation; between the work and the spectator; and most significantly in-between the embodied and the conceptual.¹⁰¹

To give an example: if a textile designer designed a costume in such a way that she knows that the actress will be affected in her movements, it is up to me not only to perceive the effects of the costume through the movements of the actress but also through empathy with the fabric to *sense* these effects and trust the emotions evoked. Or an example in architecture: if a model-maker with her material literacy presented different material samples to use for a model on screen, knowing that certain materials are less easy to process than others, it is up to the architect to understand why some materials are utilisable and others are less by not only observing visually but “*experienc[ing] sensorially.*”¹⁰² Thus, based on the architect’s ‘in-between’ mode of understanding they would need to trust the performative potential of the material. In *Intermediality in Theatre and Performance* (2006), Freda Chapple and Chiel Kattenbelt describe a similar phenomenon in theatre and performance:

Intermediality leads us into an arena and mental space that may best be described as in-between realities. [...] There is a need to assess how the incorporation of digital technologies and the presence of other media within the theatrical and performance space is creating new modes of representation; new dramaturgical strategies; new ways of structuring and staging words, images and sounds; new ways of positioning bodies in time and space; new ways of creating temporal and spatial interrelations. These new modes of

¹⁰¹ Matthew Reason, “Photography and the Representation of Kinesthetic Empathy”, in *Kinesthetic Empathy in Creative and Cultural Practices*, ed. Dee Reynolds and Matthew Reason, (Chicago: University of Chicago Press, 2012), 244–5.

¹⁰² Reason, “Photography and the Representation of Kinesthetic Empathy”, 245.

representation are leading to new perceptions about theatre and performance and to generating new cultural, social and psychological meaning in performance.¹⁰³

These *in-between realities*, which are also noticeable in architecture, require new ways of collaborating with material. To overcome the hurdle of suspicion in the hybrid settings they work with nowadays, architects would need to gain material empathy by trusting the sensed performative potential of material. I claim that the quality of material empathy is the ability to allow oneself to lose control of the urge to dominate the design process rather than letting the material teach/contribute to the decision-making. ‘Losing control’ is a sensitive point in the architectural design process. There are reasons why architects need to have the control; they are expected to retain control over, for instance, the budget, time management or compiling with health & safety related regulations. But as the information of materials unfolds in the process of the development of a project, an architect ideally also has the ability to adjust the course by responding with their senses. An architect would be receptive to the information their senses offer. I contend that an intelligent flexibility to ask what’s negotiable and what’s not, would allow materials to more fully act as mediators.

The design reader *Architecture and Empathy* (2015) offers essays of by architectural theorists questioning the relationship of violence to space. They deal with the world’s connectivity and how architects coexist with their environment. I share their need for finding ways to create relationality between humans and nonhumans in the architectural design process. At the end of a roundtable discussion within the book Sarah Robinson summarises the issues as follows: “Our nest, all our many nests, are fundamental in shaping our experience and I think this is what you all said in various ways. Having a philosophy of

¹⁰³ Freda Chapple and Chiel Kattenbelt (eds.), *Intermediality in Theatre and Performance* (Amsterdam and New York: Rodopi, 2006), 11. Italics in original.

the nest seems to be a necessary thing.”¹⁰⁴ Responding to Robinson’s ‘philosophy of the nest’, my argument is that empathy with material allows architects to acknowledge contributions, exploding the “traditional architectural skills of design and spatial intelligence”.¹⁰⁵

Individual and Shared Understandings of Material

The knowledge transfer with and through material and the relationship between language and things is essential in architectural education.¹⁰⁶ There is no doubt that we sense material. Even our health does. An example familiar to some is the moment the trousers you are wearing just don’t feel right against the skin. The fabric is either too thin or too thick, the fit too tight or too loose. Sometimes you can’t even describe why you can’t stand the garment, even though other people say it looks good on you.¹⁰⁷ It is exactly these feelings that I want to explore. I am interested in the tension between how something looks externally compared to how it feels from the inside. It is material itself, after all, that (re)acts not *on* but *with* our individual bodies, our memories and our subconscious, enabling us to react, to participate in a dialogue with it. Through feeling your clothes, you become conscious of yourself and your feelings, in a way that is not dissimilar to closing your eyes during meditation. You start to connect to your body by beginning to feel the ground that supports it. This bodily and material awareness is not easy to maintain in stressful everyday life. That makes it even more important to pay proper attention to it, to get know how material in architecture can actively help architects to build more sensitively and, ultimately, sustainably. In concrete terms, this means that through the dialogue that develops between materials and our bodies, a relationship is created that ensures that we more easily understand our responsibility

¹⁰⁴ Juhani Pallasmaa, Harry Francis Mallgrave, Sarah Robinson and Vittorio Gallese, “A Conversation on Empathy”, in *Architecture and Empathy: Assemblage*, ed. Philip Tidwell (Espoo: Tapio Wirkkala-Rut Bryk Foundation, 2015), 86.

¹⁰⁵ Awan, Schneider and Till, *Spatial Agency*, 26.

¹⁰⁶ Lehmann, “Objektstunden”, 189.

¹⁰⁷ Karin Lindgaard and Heico Wesselius, “Once More, with Feeling: Design Thinking and Embodied Cognition”, *She Ji* 3, no. 2 (2017): 88.

and care for the environment, which I elaborate on in scene 3 of Act II.

Materials are relational.¹⁰⁸ This relationality appears in the etymology of the term material. Understanding of the term “material” varies over both time and by cultures. The Oxford English Dictionary offers an etymological triad: *Material*, *matter* and, of particular interest to this scene, *matrix*.¹⁰⁹ Beginning in the early third century AD in post-classical Latin, *materialis* was formed from the Latin adjective *materia* or ‘matter’. In parallel, in the third century in post-classical Latin, the term *matrix* meant “of the earth as source of minerals” and became more common from the mid-third century.¹¹⁰ Womb, source, and origin are the main meanings, obviously related to *māter* (mother). In the twelfth century, *matter* was a borrowing from French. It was also found in opposition to ‘mind’ or ‘form’ and related to *māter*, which referred to the “trunk of a tree regarded as the ‘mother’ of its offshoots”.¹¹¹

The term matrix nowadays signals order, universality, neutral placement, among other things. Its etymology, on the other hand, reveals the feminine side in ‘material’: as mentioned, *matrix* in post-classical Latin signifies both *māter* (mother) and womb. A womb that supports the fundamental changes that bring forth life has a fundamental connection to that which it supports. Therefore by definition womb is involved in relational connections. It is capable of controlling networks. The body that bears is engaged inside as well as outside in caring for itself and the new arrival, even after birth.¹¹² However, the concept of the

¹⁰⁸ Ingold, “Materials against Materiality”, 14.

¹⁰⁹ “Material”, Oxford English Dictionary (OED), <https://www.oed.com/view/Entry/114923?rkey=iFGB92&result=1&isAdvanced=false&print> (accessed 21 October 2020).

¹¹⁰ “Matrix”, Oxford English Dictionary, <https://www.oed.com/view/Entry/115057?rkey=XS3xzU&result=1&print> (accessed 21 October 2020).

¹¹¹ “Matter”, Oxford English Dictionary, <https://www.oed.com/view/Entry/115083?rkey=wAYgbm&result=1&isAdvanced=false&print> (accessed 21 October 2020).

¹¹² Sarah Robinson, “Boundaries of Skin: John Dewey, Didier Anzieu and Architectural Possibility”, in *Architecture and Empathy: Assemblage*, ed. Paula Lee (Espoo: Tapio Wirkkala-Rut Bryk Foundation, 2015), 43.

matrix nowadays seems to be a carrier without agency. Architectural theorist Katie Llyod Thomas describes this through an ethnographic study conducted in The Neonatal Intensive Care Unit, where mothers are replaced by high-tech practices of clinical care. Llyod Thomas claims “it is only through the relationship that individuals can be said to come into being.”¹¹³ She refers to the psychoanalytic work by artist Bracha Ettinger and to the fact that the uterus should not be seen only as an “interior space”, but also “has an ‘outside’ – the mother”.¹¹⁴

As Llyod Thomas already asserts in an earlier study, it is important to consider “materials in terms of effect, either on the process of design or on performance”.¹¹⁵ Effects, and the implication that materials produce them, provide a link between Llyod Thomas’ specific case study about a neonatal unit and a broader notion of materiality in my research. The process of making materials is not only defined by the process, but also by the knowledge that is created and transmitted through the sensing of material. Llyod Thomas’s metaphorical charge that the material (*material*), the mother (*mater*) and the womb (*matrix*) are connected can be usefully extended: material is something where you engage, in some sense, with both an ‘inside’ and an ‘outside’. I introduce the term *matrix* to rediscover relationality. In particular the relation of form and matter in architecture.¹¹⁶

Starting from the notion of the matrix as a material construction that also allows gestation, I argue that empathy leads to the connecting element between an internal and

¹¹³ Katie Llyod Thomas, “‘Between the womb and the world’ Building matrixial relations in the NICU”, in *Relational Architectural Ecologies, Architecture, Nature and Subjectivity*, ed. Peg Rawes (London and New York: Routledge, 2013), 206.

¹¹⁴ Thomas, “‘Between the womb and the world’”, 194.

¹¹⁵ Katie Llyod Thomas, *Material Matters: Architecture and Material Practice* (London and New York: Routledge, 2007), 5.

¹¹⁶ In his well-known book *The Four Elements of Architecture and Other Writings* (1815), Gottfried Semper already stated that the separation of form and material limited architecture itself. Semper questions whether the choice of material depends on nature or is made by the ideas “embodied” in the form. See Gottfried Semper, *The Four Elements of Architecture and Other Writing*, translated by Harry Francis Mallgrave and Wolfgang Herrmann (Cambridge and New York: Press Syndicate of the University of Cambridge, 1989 [1851]), 102.

an external haptic experience. It is about the emotions that are evoked through materials in these *in-between realities*. This empathetic quality is tied to the experience of material substances and material constructions in the world. By allowing for contributions to architectural practices that see materials' needs and desires a more inclusive relationality could emerge. Especially in today's world, where "digital technologies have become a part of our lives and of who we are" my approach to sensing and doing becomes particularly pertinent when we consider our bodies as a form of matter and substance that effects what we create.¹¹⁷ This can only happen when the relationship between form and substance is recognised. To trace the trails of dust in the architectural design process, the in-between is crucial for better comprehension of the sensitivities alongside materials. This space of sensing makes room for the ability to *experience* empathy through noticing other movements than those of architects themselves.

I argue that the interaction with material of practitioners in architecture through physical engagement is a performance of the senses. I propose that in architecture paying real attention to what material engagement is, means involving emotional engagement. I do this in the context of a perspective developed by scholars who have been bracketed as representing a New Materialism that emerged in humanities discourse as part of the material turn in the 1990s. Social theorist Diana Coole and political theorist Samantha Frost, for instance are useful for understanding social and biological entanglement. They emphasise the interaction between physical and biological systems, leading scientists to think about biological matter and its involvement of the social. "As human beings, we inhabit an ineluctably material world. We live our everyday lives surrounded by, immersed in, matter. We are ourselves composed of matter. We experience its restlessness and intransigence even as we reconfigure and consume it."¹¹⁸

¹¹⁷ Samantha Frost and Diana Coole, "Introducing the New Materialisms", in *New Materialisms: Ontology, Agency, and Politics* (Durham: Duke University Press, 2010), 17.

¹¹⁸ Frost and Coole, "Introducing the New Materialisms", 1.

Such a perspective posits that everything is material, even immaterial things like emotions, time or agency. Similarly, I also make a distinction from anthropocentrically oriented historical materialism by considering the properties and agency of matter in this research.¹¹⁹ According to sport scientist Javier Monforte, it is not only its adherents that define the ‘New’ of New Materialism but also the audience that interacts with the term by translating it and positioning themselves within the debate.¹²⁰ As initial critiques of the material turn argued, there is still a risk of losing our relationship with materials. There is an abstract distance from materials that prevents a deeper level of engagement. New Materialist scholars seek to contribute to acknowledge the role of the senses in order to reduce this distance: “The most compelling contribution of the new materialisms is not conceptual or analytic, strictly speaking, but sensory. The attempt to attend to the force of liveliness of matter will entail not just a reawakening or redirection of critical attention, but a reorganizing of the senses.”¹²¹

Learning how to position oneself as a practitioner in both current theories around materiality and architectural design processes is important. But how can practitioners be invited into such discussions? Instead of looking at the research object from the outside, New Materialist scholars focus on matter to find alternative answers to their research by situating themselves as part of the phenomena they study. My perspective in this research is similarly situated similar when I acknowledge my body as matter, including my senses, feeling and emotions while doing. This also means there is no disciplinary boundary when trying to capture the constantly changing materiality I encounter in my daily life, giving material a platform that enables its agency.

Despite its usefulness for my thesis, New Materialism has its critics and limitations, which I don’t want to disregard.

¹¹⁹ Barad, *Meeting the Universe Halfway*, 225.

¹²⁰ Javier Monforte, “What Is New in New Materialism for a Newcomer?”, *Qualitative Research in Sport, Exercise and Health* 10, no. 3 (2018): 378–90.

¹²¹ Cécile Roudeau, “How the Earth Feels: A Conversation with Dana Luciano”, *Transatlantica* 11, no. 1 (2015): 7.

One of the critiques comes from social theorist Thomas Lemke, who argues that Jane Bennett's famous *Vital Materialism* "is insufficient to explain the relationality of matter; it is also empirically limited and provides only a selective account of agency."¹²² Lemke discusses Bennett's point of view in relation to posthumanist politics, claiming that it presents a "romanticized and one-sided picture of the 'vitality of things',"¹²³ and does "not sufficient[ly] to account for the political."¹²⁴ Bennett sees materials merely positively,¹²⁵ but she does not, Lemke cautions, "distinguish between differently composed materialities and various complexities of conjunctions between bodies – in which the distinction between animate and inanimate bodies may play a crucial role."¹²⁶ Lemke's critique of her stance is directed towards "how" vital forces come to matter. He pleads for a "different understanding of responsibility".¹²⁷ But despite the fact that such perspectives can be critiqued as 'romanticized', they are still useful in the context of including the senses. Notions of sense, empathy and feeling are not directly embedded within material but are part of the wider sets of circumstances in which they are mobilised, and central to creating a sense of material empathy.

Architectural theorist Antoine Picon discusses the role of affect and empathy in relation to material, highlighting "the threshold between the perceived and the felt, between visual impression and internal sensation".¹²⁸ In his view, materiality is constructed through our knowledge and beliefs, which are in flux. Given the increase of digitalisation there is a need for new ways of thinking about materiality. As Picon puts it in *The Materiality of Architecture* (2021), "More generally, materiality raises questions about the connection between what falls within the realm of the sense and the language that serves to

¹²² Thomas Lemke, "An Alternative Model of Politics? Prospects and Problems of Jane Bennett's Vital Materialism", *Theory, Culture & Society* 35, no. 6 (2018): 31.

¹²³ Lemke, "An Alternative Model of Politics?", 39.

¹²⁴ Lemke, "An Alternative Model of Politics?", 42.

¹²⁵ Jane Bennett, *Vibrant Matter: A Political Ecology of Things* (Durham, NC and London: Duke University Press, 2010), 13.

¹²⁶ Lemke, "An Alternative Model of Politics?", 40.

¹²⁷ Lemke, "An Alternative Model of Politics?", 43.

¹²⁸ Picon, *The Materiality of Architecture*, 32.

organize sensations and perceptions into conscious thoughts and emotions.”¹²⁹ Picon does not agree with Ingold that materiality is matter. Although I concur with Ingold’s view, I agree with Picon’s statement that “materiality contributes to the emergence of subjectivity as simultaneously opposed to and closer to matter.”¹³⁰ As a result, prelinguistic communication has the ability “to touch the emotions by means of direct appeal to the way in which we sense and understand our bodies – in other words, empathy.”¹³¹ Similarly, in this research I posit that exploring emotions through material engagement can enable empathy in architecture encourage more caring architectural practice.

If I am to understand materials and explore emotions then the interdependency of making and responding must be a starting point. Historian and curator Glenn Adamson used the example of the Japanese ceremony of tea drinking, *chanoyu* (The Way of Tea), to describe a similar phenomenon.¹³² The care with which the object, a cup of tea, is touched and appreciated is crucial for sending and receiving knowledge. Here, the object embodies both materials and skills, which makes drinking tea possible in the first place. Therefore, the object establishes a relationship between user, maker and material. Subsequently, a generative conscious sequence of actions enables trust to be built between the person engaging with material and material itself. I rely on Adamson’s analysis of the tea ceremony to point to the question of how materials stimulate emotive response. The ritual-like approach is useful for my study as it offers access to knowledge of material through a different mode of articulation than text-based knowledge. Furthermore, an almost meditative state is achieved, which not only gives access to oneself, but importantly also to material. In this generative loop, material can create an experimental environment for the evocation of emotions, going beyond

¹²⁹ Picon, *The Materiality of Architecture*, 74.

¹³⁰ Picon, *The Materiality of Architecture*, 72.

¹³¹ Picon, *The Materiality of Architecture*, 32.

¹³² Glenn Adamson, “The Way of Tea”, in *Fewer, Better Things. The Hidden Wisdom of Objects* (London: Bloomsbury, 2019), 114–18.

(social) norms. Admittedly material sometimes also conforms to and reaffirms norms. Norms return to what has become schematic in the process of making. In other words, emotions experienced are grounded in imagination, associations and memories, through which norms can be challenged: by risking losing control and taking a detective stance/breaking the rule to achieve a shift in perception. This new perspective would perceive material as an accomplice in the process of making.¹³³

How Understanding Is Formed

The digital turn since the 1990s has shifted the perspective of material and material application towards an ‘in-between’ of experiencing, performing and mediating. I have not yet fully learned or understood how my senses can be used in a different way, or rather that there may be ways of using and sensing my body that I cannot yet imagine. The Covid-19 pandemic, for instance, forced me to think about how I interact with others as the number of zoom meetings exploded. I was thrown into a certain mode of performing I couldn’t have imagined before. Architects had to explain their projects to clients without a combination of models and drawings. In the studio I observed, model-makers began to mediate material in new ways.¹³⁴ They had to invent an alternative manner of communicating a physical object digitally so that architects could understand and trust what was mediated to transfer it to their design and vice versa.¹³⁵ The use of the term ‘mediate’ in this research is linked to the idea of a mediator who is not the model maker or other practitioner, but material itself.

How, then, to think-theorise this role of material mediators? In *Reassembling the Social* (2007), Bruno Latour proposes

¹³³ Gesa Ziemer, *Komplizenschaft: Neue Perspektiven auf Kollektivität* (Bielefeld: Transcript Verlag, 2013), 46.

¹³⁴ See also Albená Yaneva, *Architecture After COVID* (London: Bloomsbury, 2023), 4.

¹³⁵ Jeremy Packer and Stephen B. Crofts Wiley, advocates of NM, claim that communication and media can be considered material. They argue that the debate about social space should not be neglected as a material process “that crosses human-environment boundaries.” Jeremy Packer and Stephen B. Crofts Wiley, “Communication Matters”, *Midwives* 18, (2012): 8.

that what he understands the social to be is the drawing of connections between “controversies themselves” instead of distinguishing how to resolve “any given controversy”.¹³⁶ Individuals are thus not only defined by their framework of cultural habits, but also by the ability of that framework to act for them. Latour argues that the social is produced through the performance of different actors, which “should remain as a surprise, a mediation, an event.”¹³⁷ Therefore, it is important to pay attention to “who and what act[s] when we ‘act’.”¹³⁸ Action entails the indeterminate and unpredictable. People also have to be made to “talk”, and therefore “very elaborate and, often, artificial situations have to be devised to reveal their actions and performances.”¹³⁹ An actor can be identified because it actually *acts*; we should talk less about the actor and more about the result of their acting. In cases where an actor does not have a figuration yet, Latour calls them an *actant*. The transformation from possible actor to actual actant happens in the tracing and description. It is about situating the actors in narratives of agency as they are written. The task of the researcher is therefore to integrate actants and situate them as actors.

Following Latour’s argument, I posit that architecture should be aware of the performative potential of materials in their decision-making. What may happen when architects become aware is that materials become part of the social constellation, effectively turning materials from actors into actants. As Latour simplifies: “When a new telephone switchboard is installed, this is not social. But when the colors of the telephone sets are discussed, this becomes social because there is, as designers say, ‘a human dimension’ in the choice of such a fixture.”¹⁴⁰ I want to add here that emotions generated by engagement with materials in particular are crucial to creating sociality. Therefore, I see my task as a researcher involves materials as active

¹³⁶ Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (New York: Oxford University Press, 2007), 23.

¹³⁷ Latour, *Reassembling the Social*, 45.

¹³⁸ Latour, *Reassembling the Social*, 45.

¹³⁹ Latour, *Reassembling the Social*, 79.

¹⁴⁰ Latour, *Reassembling the Social*, 83.

participants in the architectural design process through inscription in the narrative I write.

Architectural theorist Douglas Spencer offers significant criticism of Latour's theory. In his view, it excludes "those forms of agency that might interrupt its essentially horizontal perspective."¹⁴¹ That is, the agency of human actors that have the cognitive capacity to change over time and "arrive at reflective forms of knowledge".¹⁴² This developed knowledge moves out of focus in the endeavour to record the agency of things. Spencer critiques Latour on the basis that the human ability to reflect and allow for new knowledge is "especially unwelcome[d] at [Latour's] 'parliament of things'".¹⁴³ We may run the risk of losing the ability to understand what difference actually means. Spencer also criticises Latour's supporter Albená Yaneva and her assumption, which emerged from her ethnographic study at the architectural office OMA in Rotterdam,¹⁴⁴ that there is no hierarchy in the office: "Is the agency of a foam cutter really equivalent to that of the architect? Is the agency of every architect working at OMA of the same order as that of Rem Koolhaas?"¹⁴⁵

I share elements of Douglas's critique because of my interest in acknowledging differences between voices, listening to them and empathising with human and materials alike. I also think that Latour and Yaneva's way of working could be adjusted to meet the critique levied at their ideas but preserve its creative view. I argue that although the flatness of Actor-Network-Theory seems to avoid differences at first glance, the effects of various agencies differ in their contribution to the overall ontology. As Latour writes, these can be pursued primarily horizontally to create a dimension within the social.¹⁴⁶

¹⁴¹ Douglas Spencer, *Critique of Architecture: Essays on Theory Autonomy, and Political Economy*, ed. Elisabeth Blum, Jesko Fezer, Günther Fischer and Angelika Schnell, *Bauwelt Fundamente* (Basel: Birkhäuser, 2020), 154.

¹⁴² Douglas, *Critique of Architecture*, 154.

¹⁴³ Douglas, *Critique of Architecture*, 154.

¹⁴⁴ Albená Yaneva, *Made by the Office for Metropolitan Architecture: An Ethnography of Design* (Rotterdam: 010 Publisher, 2009).

¹⁴⁵ Douglas, *Critique of Architecture*, 159.

¹⁴⁶ Latour, *Reassembling the Social*, 172.

An undifferentiated view leaves no space to discuss equality and other interpersonal problems.¹⁴⁷ For this research, this means that when I use voices from theory and practice to flatten hierarchies with the process of understanding material, I also need to highlight the different backgrounds they come from. The aim is to create a vehicle in which both practical voices from the ‘powerful counter’ in architecture and materials are taken as seriously as theoretical approaches. I address the critique of passing over differences when engaging with and through materials, when I point out that ‘sensing’ differs from ‘knowing’ as an approach to knowledge generation, in the ability of materials to evoke emotions in human bodies discussed in Act II.

In this scene I have explored how a more expansive understanding of material can be formed. I looked at individual and shared understanding of material in architecture to create a common ground to accommodate nuances. My invitation is to establish knowledge with/through material, which requires attention to shift from the terms architects and scholars use that are based on text. This engagement with material can be used in the context of architectural education to explore how material generates what I term material literacy. The architectural lexicon can benefit from expanding different forms of mediation that take into account a ‘powerful counter’ and bodily experience. I give an account of empathy and extend this discussion to define material empathy. I also examined the mediation of materials through communication from the perspective of time, meaning that the process from which everything emanates in flux is associated with knowledge in motion. This is where Actor-Network-Theory comes in, which defines material by shifting from what it is to what it does. In my exploration of how understandings of material are formed, Actor-Network-Theory provides a useful mode for explaining how the issue of movement impacts the transfer of knowledge. The fluid emergence of knowledge

¹⁴⁷ Hanna Meissner, “Von der Romantik imaginärer Verluste: Bringing the material back in?”, *Femina Politica – Zeitschrift für feministische Politikwissenschaft* 23, no. 2 (2014): 108.

shapes the definition of network as movement and is the reason why networks are connected in the first place. However, it has also made me realise I must be careful not to lose the ability to see what difference means when hierarchies flatten.

TRACING MATERIAL LITERACY AND PERFORMATIVITY

The critical theory and philosophy of posthumanism assumes that a shift from representation through words to engaging with the performance of matter in other ways can help to detect and (re)define relationships between humans and non-humans. Feminist theorist Karen Barad has commented that language has the power to be “substantial” in the world.¹⁴⁸ She has also coined the term “intra-action”, which is the counterpart to interaction, representing a “profound conceptual shift”.¹⁴⁹ Her focus is on interaction as predicating the involvement of “bodies” that are one defined entity acting on another, whether human or not. That intra-action concerns a notion of network, in effect challenges epistemologies of the body: “relata do not preexist relations; rather, phenomena emerge through specific intra-actions.”¹⁵⁰

In her 2007 book *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*, Barad clarifies that intra-actions “extend the entanglements and responsibilities of which one is a part. The past is never finished.”¹⁵¹ Barad explains the difficulties of the localisation of agency when it is situated within (non-) human individuals through the example of writing a book. Her focus is on being aware of individuals’ exchange/ contributions to each other, their entanglement, “since writing is not a unidirectional practice of creating that flows from author to page, but rather the practice of writing is an iterative and mutually constitutive working out, and reworking, of ‘book’ and ‘author’.”¹⁵² Those individuals could be friends and colleagues, but also places that helped

¹⁴⁸ Karen Barad, “Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter”, *Women, Science, and Technology: A Reader in Feminist Science Studies* 23, no. 3 (2003): 188.

¹⁴⁹ Barad, “Posthumanist Performativity”, 200.

¹⁵⁰ Barad, “Posthumanist Performativity”, 200.

¹⁵¹ Barad, *Meeting the Universe Halfway*, iv.

¹⁵² Barad, *Meeting the Universe Halfway*, x.

generate the book and the author. In that sense, material in this research is ‘intra-active’. My interest in material literacy is intended to add to the usefulness of literacy in the conventional sense in text. As I have begun to explore how material understanding depends on social interaction, this scene looks at the reciprocal relationship between material literacy and how things are brought into being through performativity.

In architectural practice, the architect does not primarily write. They draw, model or explain with words, relying extensively on the visual communication of ideas. The fact that architects communicate visually ought to condition the ways in which researchers look at how architects operate. Oral storytelling and graphic representation help “to see the story” and lay the foundation for the “transition to writing”.¹⁵³ I would like to support the interdisciplinary research methodology of “ficto-critical writing” as outlined by H el ene Frichot and Naomi Stead’s (2020),¹⁵⁴ or Jane Rendell’s “critical spatial practice” (2006).¹⁵⁵ The aim is to offer another approach for practitioners who find their work in a position between architecture and everyday social rituals of design. With the involvement of experiential writings, I follow the trend in academia to challenge the so-called “textual imperialism”.¹⁵⁶ That is a culture which risks undermining the claim of creative practice to knowledge production. This education typically requires following the conventions for the production of a specific text such as an introduction, a literature review, a methodology, a discussion, and a conclusion.

Creative practitioners in academic research are increasingly experimenting with new ways of representing research. They are followed by in-practice sections in academic

¹⁵³ Brett Dillingham, “Performance Literacy”, *The Reading Teacher* 59, no. 1 (2005): 74.

¹⁵⁴ H el ene Frichot and Naomi Stead, “Walking Ideas from Their Sleep: An Introduction to Ficto-critical Writing in and of Architecture”, in *Writing Architectures: Ficto-Critical Approaches*, ed. H el ene Frichot and Naomi Stead (London and New York: Bloomsbury, 2020), 11.

¹⁵⁵ Rendell, *Art and Architecture*, 1.

¹⁵⁶ David C. Greetham, *Textual Transgressions: Essays Toward the Construction of a Bibliography* (New York and London: Garland Publishing, 1998), 556.

journals that seek to accommodate “other ways” of representing knowledge.¹⁵⁷ Accordingly, just as I use literacy to describe stories and connect with what touches me, material literacy is the capacity to understand and work with materials in a reflective way.¹⁵⁸ Following Barad’s question, “How did language come to be more trustworthy than matter?”¹⁵⁹ I ask myself: How did knowing come to be more trustworthy than sensing?

The Ability to Re-Act

The approach of not having a “plot”, but only interaction between performer and audience, is the core of the theory of post-dramatic theatre by Hans-Thies Lehmann. Lehmann claims that there is no performative act in theatre. Instead, theatre “only pretend[s] to perform”, which in turn means that theatre even eludes “the active”.¹⁶⁰ Therefore, he pleads for a post-dramatic theatre, which detaches itself from classical drama and its authorship. Even though it has been almost 25 years since the publication of Lehmann’s well-known book, the focus on “the simplicity of an encounter, a look or shared situation” and the openness to other genres and techniques is useful for this thesis.¹⁶¹ I believe that performativity, the ability to *re-act*, may offer potential to develop empathy for and work with material in the design process. An increased awareness of performativity may enable architects to learn to articulate what they relate to. Architects need to understand when performativity is coming in to play *to create a story* that is able to transfer

¹⁵⁷ See for instance *Journal Artistic Research* (video format); *Journal of Embodied Research*; Susan Schuppli, *Material Witness: Media, Forensics, Evidence* (Cambridge, MA: MIT Press, 2020).

¹⁵⁸ The exemplifying of thoughts and the execution of the spoken word are the basis of the speech act theory advocated by philosopher John L. Austin in the 1950s. His theory argues that speech does not only present information but is tied to action, through which things change and new conditions are created (Austin, 1962). More recently, philosopher Judith Butler pointed out the simultaneity of speech and action and their potential for confusion, because while I act through speech, speech also acts on me. Judith Butler, “When Gesture Becomes Event”, in *Inter Views in Performance Philosophy* *Performance Philosophy*, ed. Anna Street, Julien Alliot and Magnolia Pauker, (London: Palgrave Macmillian, 2017), 175.

¹⁵⁹ Barad, “Posthumanist Performativity”, 187.

¹⁶⁰ Lehmann, *Postdramatic Theatre*, 179.

¹⁶¹ Lehmann, *Postdramatic Theatre*, 181.

knowledge and a personal perspective that recipients can easily identify with and appreciate. This awareness of the centrality of *re*-action would allow for the development of different narratives about the place of materials in design processes in architecture. The various factors that play a role in material issues could be better taken into account. Below, I consider a number of historical and contemporary examples that suggest ways to reinforce the importance of reaction in material architectural practice.

Bauhaus textile artist Otti Berger, who published the article “Stoffe im Raum” (Fabric in Space) in 1930, emphasised the need to understand fabrics and their role in space: “The feel of stuff in the hands can be just as beautiful an experience as colour can be to the eye or sound to the ear.”¹⁶² Berger was unable to hear. This sensory absence may have led to an emphasis on the need to touch and to involve other senses to experience material. She describes the feedback loop between material and material use, where according to her, tactile textiles teach us to understand the diversity of material: “Colour begins to sound in material and – I say – the sound of colour in material is richer than the sound of colour in any other form.”¹⁶³ What I mean by ‘tactile textile’ in relation to Berger’s description of material characteristics is the touching qualities, in the sense of emotional effects, that textiles have. I want to extend touching to its emotional aspect. It’s unusual to use the word ‘tactile’ in the context of the emotional sense of touch, but it is common to say, “What a touching story!”. Everybody would understand I meant emotionally touching. If I said, “What a tactile story!”, the connection between tactile/emotion would probably not be so easy to understand. Therefore, I refer to Berger’s theory of weaving to demonstrate the link between the performative potential of material and its possible effect on knowledge formation in practice.

¹⁶² Otti Berger, “Stoffe im Raum” [1930], trans. Ethel Mariet [1940], see Antonia Behan, *The Journal of Modern Craft* 14, no. 3 (2021): 288.

¹⁶³ Berger, “Stoffe im Raum”, 288.



Fig. 6 Tactile board made of threads

In 1927 Berger attended the weaving workshop at the Bauhaus in Dessau, where she was able to develop her talent from translating technical two-dimensional drawings into practical three-dimensional textiles. During her second term on the preliminary course taught by painter and photographer László Moholy-Nagy in 1928, she developed a tactile board made of wire, thread and paper that helped her to specify a sensitivity for the feel of the fabric (Fig. 6). In 1929, it was shown in Moholy-Nagy's publication *Von Material zu Architektur* (From Material to Architecture). In his chapter "the material" he wrote,

In his [sic] initial exercises, the bauhäusler thus dealt with the material mainly by means of his tactile organs (the tactile organ is at the same time an organ for sensations of pressure, sting, temperature, vibration, etc.). [...] he compiles them into tactile boards which contain partly related and partly contrasting tactile sensations. [...] The exercises have nothing to do with scientificity or practical construction intent. But experience teaches that their experiential processing has wide possibilities of interpretation, also for practice.¹⁶⁴

Nearly a century later, Moholy-Nagy's explanation of tactile experience in 1929 and Berger's description of the performative potential of fabrics in 1930 reappears in the approach of contemporary textile designer Seetal Solanki and her London-based material research consultancy ma-tt-er. Solanki's approach is to 'humanise' material, which means to build a "more respectful and caring relationship" to material.¹⁶⁵ The shift away from regarding materials as consumable resources may help us not only to understand the importance of sustainability but also diversity in a collaborative spirit. One example of expanding on material's potential from ma-tt-er's practice is called

¹⁶⁴ László Moholy-Nagy, "Von Material zu Architektur", in *Neue Bauhausbücher: Neue Folge der von Walter Gropius und Laszlo Moholy-Nagy begründeten »Bauhausbücher«*, ed. Hans M. Wingler (Mainz and Berlin: Florian Kupferberg, 1968 [1929]), 21. Author's translation.

¹⁶⁵ Space Available, "Understanding and Humanising Materials with Seetal Solanki", in the series "Space Talks" episode #005, 2020, (6:20 min.), available at https://www.youtube.com/watch?v=VKGfTni_3U4 (accessed 27 September 2020).

“Digital Materials”, which was undertaken for the first issue in the redesign of *CRAFTS Magazine* in 2019. By elaborating on a series of practitioners working in the interface between the digital and analogue, Solanki explores what a digital material is and how it can be applied. She emphasises the need to address relationality: “We questioned the place of emotion in spaces with no haptic stimuli, how to evoke tactility behind the screen and what it means when materials are a series of pixels behind the screen.”¹⁶⁶ By doing so, Solanki challenges current value systems. In relation to her practice, she wrote in a 2019 article in which she aims to channel the enlightenment of material knowledge through a three-stage process: identity, life cycles and application. The shift of focus towards an interest “in emotional and functional qualities” of material supports the idea of sustainability when working with material in design processes.¹⁶⁷ Solanki conceptualises the changes she is creating in terms of material literacy, arguing that they create a “natural” shift in perception that will “reach the wider public”.¹⁶⁸ Solanki’s idea of humanising materials and belief in the potential of interacting, comes back to the notion of performativity – learning to react. By engaging with materials, we build trust in and respect for them. The knowledge embedded in material can be accessed through material literacy. As Solanki argues this ensures a broader relational understanding of sustainability. Both these examples, from Berger in the 1930s and from Solanki in 2019, have a similar emphasis on the informational potential of materials as a component in a design practice. This sensitivity to materials has to be acknowledged as being part of the knowledge production associated with architecture. That is, it has to be valued as a form of capital associated with the practice. How might that happen?

¹⁶⁶ Digital Materials, see <https://ma-tt-er.org/work/crafts-magazine/#forward> (accessed 16 August 2023).

¹⁶⁷ Seetal Solanki, “Material Literacy: Why We Need to Rethink Language to Survive the Climate Crisis”, *It’s Nice That*, (2019), online article available at <https://www.itsnicethat.com/features/response-and-responsibility-seetal-solanki-material-literacy-product-design-260619> (accessed 6 June 2020).

¹⁶⁸ Solanki, “Material Literacy”.

To explore this, the question of objectivity as tackled in Barad's idea of the performativity of matter could be useful. As Barad suggests, the notion of intra-action involves a specific knowledge production, which might be termed agencies of observation.¹⁶⁹ For Barad to observe and be observed is the "condition for the possibility of objectivity."¹⁷⁰ Barad introduces the term agential cut to tackle the interconnection between "effect" and "cause". Whereas effects are the "measuring agencies", cause is the "measured object", which shifts the perspective of the agential cut to the relationship between cause and effect. The distinction between subject and object implies a clear responsibility. In her understanding of responsible action, the world is not only embedded, but is "a dynamic process of intra-activity in the ongoing reconfiguring of locally determinate causal structures with determinate boundaries, properties, meanings, and patterns of marks of bodies."¹⁷¹

Bodily Storytelling

In *Ästhetik des Performativen* (2004), theatre scientist Erika Fischer-Lichte situates performativity as the ability to transform by creating a new reality that is not interpreted but experienced first-hand. Fischer-Lichte argues that the transformation of the "subject-object relation" is closely linked to the relationship between the signifier and the signified posited in semiotics. According to her, identity is defined by performative acts, which means that the body only acquires an identity through "repetitions of specific gestures and movements."¹⁷² Thus, the repetition of an act can be identified as a "re-enactment" and "re-experiencing"

¹⁶⁹ An example of how the problem of knowledge production has tended to be treated can be found in the article "Architecture as Embodied Knowledge" (1987), in which architectural historian Alberto Pérez-Gómez considers architects' tacit knowledge and how this can be captured not only in the present but also historically. Pérez-Gómez considers knowledge as "embodied consciousness", and identifies a lack of clarity among architects when it comes to formulating architectural ideas (57). The article points out the danger of intertwining cultural values and personal knowledge and that "objectivity in the physical sciences was a delusion" (58). See Alberto Pérez-Gómez, "Architecture as Embodied Knowledge", *Journal of Architectural Education* 40, no. 2 (1987): 57–58.

¹⁷⁰ Barad, "Posthumanist Performativity", 200.

¹⁷¹ Barad, "Posthumanist Performativity", 202.

¹⁷² Erika Fischer-Lichte, *Ästhetik des Performativen* (Berlin: Suhrkamp, 2004), 37.

of a set of meanings that are already socially embedded.¹⁷³ Fischer-Lichte further suggests that subjective embodiment requires a certain objective disembodiment, a tension that puts the recipients in a state of “betwixt and between”.¹⁷⁴ Here she distinguishes between “phenomenal”, which is the physical body of the actor and the “semiotic” body, which is to express meaning of a text.¹⁷⁵ The latter can only occur through the existence of the former and its ability to create a story. Fischer-Lichte emphasises that the phenomenal body “forms the existential ground for the emergence of the character.”¹⁷⁶

The faster the change of directed perception from ‘presence’ to ‘representation’, the more attention is focused on the actual process of perception. Fischer-Lichte claims that this process has clear effects on the viewer. These effects create an attentional feedback loop that she defines as *autopoiesis*. According to her, attention is a valuable resource that is crucial for the perception of subjects and should not be overstimulated. The capacity for attention varies from spectator to spectator, because they are not only paying attention to the bodies on stage but are also preoccupied with their own body.¹⁷⁷ Fischer-Lichte’s position reflects that articulated by Thomas Csórdas concerning the significance of somatic experience: “somatic modes of attention are culturally elaborated ways of attending to and with one’s body in surroundings that include the embodied presence of others”.¹⁷⁸ She infers that this “embodied mind” is a crucial part of the aesthetic experience of a performance.¹⁷⁹

Relying on Fischer-Lichte, the potential of materiality in this research is seen not only in material itself, but also in the materiality of the architect: their body, their voice,

¹⁷³ Fischer-Lichte, *Ästhetik des Performativen*, 39.

¹⁷⁴ Fischer-Lichte, *Ästhetik des Performativen*, 151.

¹⁷⁵ Fischer-Lichte, *Ästhetik des Performativen*, 132–33.

¹⁷⁶ Fischer-Lichte, *Ästhetik des Performativen*, 256.

¹⁷⁷ Fischer-Lichte, *Ästhetik des Performativen*, 291.

¹⁷⁸ Fischer-Lichte, *Ästhetik des Performativen*, 291–92; see also Thomas J. Csórdas, “Somatic Modes of Attention”, *Cultural Anthropology* 8, (1993): 138.

¹⁷⁹ Fischer-Lichte, *Ästhetik des Performativen*, 138.

their gestures and movements. Architect Juhani Pallasmaa points to the body as a site that links the ‘world’ and the ‘self’.¹⁸⁰ In 2009 he wrote: “[W]e must not try to make materials speak our language, we must go with them to the point where others will understand their language.”¹⁸¹ This perspective suggests the double process of including embodiment and the inter-action of (non-)human actors involved, challenging architecture in how it functions, what architecture *does* and could *become*, and not what it *is*. If we think through the notion of the “existential boundary line” it would expand the architect’s “deep personal internalisation” in terms of agency.¹⁸² I see the architect’s body as a relational entity that helps to connect with the surroundings.

I suggest making these personal internalisations accessible by taking material seriously in its ability to awaken emotions through our sensing, enables other modes of communication to the outside. Pallasmaa’s view that the self can be read as site, however, forgets a crucial argument formulated by feminist author Donna Haraway in 1988. Haraway questions the notion of site by way of her concept of “situated knowledges” and critiques the privilege of the insider perspective as a matter of power rather than truth.¹⁸³ She argues that “[s]cience has been about a search for translation, convertibility, mobility of meanings, and universality which [is] call[ed] reductionism only when one language (guess whose?) must be enforced as the standard for all the translations and conversions.”¹⁸⁴ Following this critique, I want to argue for other kinds of mediation of knowledge in architectural practice, which are non-representational and event-based.¹⁸⁵ In this thesis

¹⁸⁰ Juhani Pallasmaa, *The Thinking Hand: Existential and Embodied Wisdom in Architecture* (Chichester: Wiley, 2009), 124.

¹⁸¹ Pallasmaa, *The Thinking Hand*, 56.

¹⁸² Pallasmaa, *The Thinking Hand*, 125.

¹⁸³ Donna Haraway, “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective”, *Feminist Studies* 14, no. 3 (1988): 576.

¹⁸⁴ Haraway, “Situated Knowledges”, 580.

¹⁸⁵ I rely on Phillip Vannini’s argument that non-representational research focusses on events. According to Vannini, events have the potential to show “failures of representations”, which I believe foster new ways of thinking. See Phillip Vannini (ed.), *Non-Representational Methodologies: Re-Envisioning Research* (New York: Routledge, 2015), 7.

I propose to use the materiality of the human body in relation to the materials of architecture to offer a story that creates relationality. This performative approach is a possible way to bridge the inside/outside problematic of emotions, challenging singular notions of authorship in the architectural design process by allowing material to intervene. Juliet Rufford, curator, researcher and lecturer in theatre and performance, has a similar view. She recognises that “theatre, as an art-form that is expressly concerned with human events and interactions, may help us to a better understanding of architecture’s social and emotional dimensions.”¹⁸⁶

To grapple with the questions of the relation between knowing and sensing in this research, I draw on non-representational theory.¹⁸⁷ This strand of theory aims to attend to and intervene in the taking-place of practices, focusing on processes of becoming where much happens before and after conscious reflexive thought. Its critique is directed against the tendency of practice to just represent. The focus is very much on affects (interrelational) and emotions (personal). This ‘in-between’ is not visible per se, but exists nevertheless relationally between senses. I argue that emotions are acknowledged but not yet widely explored in terms of what emotions could teach architecture.¹⁸⁸ Cultural geographers Gillian Rose and Begüm Başdaş and sociologist Monica Degen argue that theorists, especially those aligned with Actor-Network-Theory, engage with feelings in a limited way, suggesting that these emotions “are acknowledged rather than explored.”¹⁸⁹ They further criticise theorists concerned with affect theory who evoke feelings but evacuate human subjectivity. I follow Rose, Başdaş and Degen’s argument in which they propose a third take in-between:

¹⁸⁶ Juliet Rufford, *Theatre & Architecture* (London: Palgrave Macmillan, 2015), 10.

¹⁸⁷ As defined in Nigel Thrift, *Spatial Formations* (Thousand Oaks: Sage, 1996), 6–7 and Nigel Thrift, *Non-Representational Theory: Space, Politics, Affect* (London: Routledge, 2007), 5.

¹⁸⁸ Gillian Rose, Monica Degen and Begum Başdaş, “More on ‘Big Things’: Building Events and Feelings”, *Transactions of the Institute of British Geographers* 35, no. 3 (2010): 337.

¹⁸⁹ Rose, Degen, and Başdaş, “More on ‘Big Things’”, 337.

[R]ecent accounts of building events, in their enthusiasm to emphasise affect, materiality, performance and corporeality, should not forget that humans can, on occasion, bring what might broadly be termed ‘rationality’ to bear on buildings. [...]

[I]t is not only materiality that is interrogative: so is subjectivity. That is, humans can reflect on what they are co-performing and, in this case, make comparisons in order to assess that co-performance.¹⁹⁰

This ‘in-between’ of highlighting how people can reflect over experience could help bridge, if not close, the gap between subjectivity and materiality. Material empathy can only be brought to light by attempting to convey the intimate relationship between the architect and material through emotions. Subsequently, architecture can be argued to have a hybrid function somewhere between design and performance that can be said to move between the spatial and the performative. It can also be argued to move between mediation and perception, where its identity is constituted by various performative acts that become visible through engagement with material.¹⁹¹ The double agency of performativity lies in both embodied knowledge and the material used. Material has the ability to respond to the design process, influencing it at a very early stage when material comes into contact with the body. In other words, the architect’s awareness of the use of material when sketching, drawing or model-making can be instrumental in increasing their responsibility for ‘material design’ and determining which building materials are ultimately used.

When I perceive something, I immediately associate emotions with that moment: feelings are then transformed into stimuli for action.¹⁹² When I go to see a play, my first aim is not to understand the plot, but relate to the story, trying to understand myself in relation to the life stories

¹⁹⁰ Rose, Degen, and Başdaş, “More on ‘Big Things’”, 346.

¹⁹¹ Katie Lloyd Thomas, *Building materials: material theory and the architectural specification* (London and New York: Bloomsbury Visual Arts, 2022), 3.

¹⁹² Fischer-Lichte, *Ästhetik des Performativen*, 267.

of others.¹⁹³ This potential for relational attachment that storytelling in the performing arts achieves through the use of the human body is also highly relevant to architecture. Because of the empathy that aesthetic practices evoke, it is fruitful to look for a productive analogy between the components of the performance of architectural work and the components at play in the performance of dramatic work. Similar to the performing arts, I see the body in architecture as an aid to sense performativity. In other words, to *make* sense is not possible without the *relationship* between the material and the architect. This co-presence of actor and spectator is what makes the perception of the present human body in relation to the design process possible in the first place.¹⁹⁴ I suggest performance and theatre studies as fields that can help develop empathy for materials in architecture. Given the diversity of bodies on, behind and in front of the stage, different perspectives of analysis need to be established to provide a sense of inclusivity of different views.¹⁹⁵

Here I have highlighted how material literacy and performativity are connected. In architecture, the interaction of body, perception and material forms a loop that feeds back into how we understand material. This means that we can consider the design process as performative in terms of the different knowledges that emerge through physically experiencing materials by various actors. This raises the question of how architects can tell stories and empathise with different voices, if they do not have methods to imagine what materials really can offer. New ways to articulate those needs that include all voices and pay attention to material have to be found. In the pages that follow I set up a comparison that explains the logic found in the relationship between actor and spectator in theatre. The juxtaposition attempts to apply that logic to the relationship between architect and material.

¹⁹³ Fischer-Lichte, *Ästhetik des Performativen*, 272.

¹⁹⁴ Fischer-Lichte, *Ästhetik des Performativen*, 162.

¹⁹⁵ Benjamin Wihstutz and Benjamin Hoesch, "Für einen Methodenpluralismus in der Theaterwissenschaft", in *Neue Methoden der Theaterwissenschaft* (Bielefeld: Transcript Verlag, 2020), 11.

RELATIONS, REALITIES AND THE PERFORMING ARTS

Unlike architecture, the performing arts generally do not set off the search for concrete responses to certain issues, but instead offer possible scenarios for telling stories by evoking emotions, memories and associations. Scenarios for telling stories are also the starting point of this thesis, with the aim to arrive at an alternative epistemological approach for the architectural design process. The performing arts work mainly through imagination. Performing arts makers such as actors, costume designers, directors, musicians, and set designers often begin by intuitively brainstorming what they remember, what they have experienced, and what they associate with a subject in order to transfer this individual knowledge into collective knowledge to facilitate the creative process of constructing a story. This way of working does not reproduce memories but provides a bridge to access the imagination, which does not exclude memories from being a source for the performing arts. This method of eliciting memories, collaboration, and improvisation is based on trust. It recognises that knowledge exists in a variety of forms, which I find useful to apply to architecture. I follow Philip Beesley's perspective as an architect acknowledging the sensitives of another field:

Being trained as a visual artist and a performer, but then as an architect, things have tended to be quite channelled for me into the public forum, the *res publica* of architecture, with the responsibility that that carries, and also the languages in architecture of durability and use [...] The example of another artist measuring things with her body first, as a dancer, with the minutely calibrated set of qualia and criteria, that are not verbal but preverbal, with exquisite precision, has been transformative for me.¹⁹⁶

¹⁹⁶ Jessica Hemmings, *Iris van Herpen: Rethinking Fashion* (Arnhem: ArtEZ Press, forthcoming), 80.

One reason I bring architecture and the performing arts together in this research is to consider what the *experience* of developing a story can teach the process of designing architecture. I am more interested in the experience of the latter than the experience of the built environment, although this mutual exchange of experience also comprises performative aspects.

Stimulating Imagination

Starting from the premise that imagination and its associated actions have huge potential for architectural design, I want to look into the connection between mind and body when stimulating imaginations. More specifically, I want to shed light on the embodied impulses – such as a gaze, a gesture – within an architectural team that relate in design to a particular action with material – such as drawing, sketching or model-making. In short, there are different kinds of embodied actions that are used in particular procedures. The intention is to communicate that by studying how architects’ bodies engage in the procedures they engage with, a wider architectural understanding of materials in general can be accessed. This requires a certain amount of attention. Above all, it needs trust in one’s own body and the knowledge of its power. Following Sánchez, “Honesty is not in the body, but it is very difficult to be honest without recognising one’s own body and that of others.”¹⁹⁷

I believe that boundaries between what I call the internal and the external do not exclude but rather invite reflection. This in-between must be understood through the transformation of the inner mind, which begins to reflect on the outside what happens inside.¹⁹⁸ In *The Thinking Hand* (2009) Juhani Pallasmaa notes, “[i]n this sense, the art form of architecture does not only provide a shelter for the body, it also redefines the contour of our consciousness, and it is

¹⁹⁷ Sánchez, “Dramaturgy in an Expanded Field”, 48.

¹⁹⁸ Judith Hanson Lasater and Ike K. Lasater, *What We Say Matters: Practicing Nonviolent Communication* (Boulder: Rodmell Press, 2009), 5.

a true externalisation of our mind.”¹⁹⁹ Pallasmaa highlights that educational approaches and pedagogies continue to separate “mental intellectual and emotional capacities from the senses and the multifarious dimensions of human embodiment”.²⁰⁰

In the following, I will follow Pallasmaa’s main argument of the body as a ‘knowing entity’. I add another layer of investigation to bridge between body and mind by considering how theories of performance studies and theatre studies provide architectural theory with a platform capable of acknowledging and incorporating such ‘subjective’ aspects as researchable, valid and productive components of architectural practice. Pallasmaa is one of a set of scholars who address the overlooked interpersonal relationships between person, subject and emotion embedded in architectural production. To align this research with Pallasmaa et al,²⁰¹ I attempt to address the intuitive sense that transcends the rational in the design process. To do so, I use theories of performance and theatre, which have taught me methods that deal with the entanglement of imagination in the actor-spectator relation. I want to gain insights from a broader set of senses than the visual priorities of much design, trying to formulate what could be useful for architectural theory.

I posit that the integration of strategies to develop scenarios to tell a story for architectural practice and research would help to unmask “tacit hierarchies of knowledge, power, labour and cultural value” of the ‘powerful counter’.²⁰² Here, I am critical of Pallasmaa’s mode of describing the authority of architects, seeing the architect as the only “testing ground” for design.²⁰³ How can the possibilities he develops, placing the architects and architecture at the centre, become more nuanced? I make use of techniques

¹⁹⁹ Pallasmaa, *The Thinking Hand*, 20.

²⁰⁰ Pallasmaa, *The Thinking Hand*, 12.

²⁰¹ These include Glenn Adamson, Jonathan Hill, Tim Ingold, Ann-Sophie Lehmann, Michael Polanyi, Donald Schön, and Albená Yaneva.

²⁰² Anna Harpin and Helen Nicholson, *Performance and Participation: Practices, Audiences, Politics* (London: Palgrave, 2017), 11.

²⁰³ Pallasmaa, *The Thinking Hand*, 125.

and protocols common in the performing arts to understand the relationships between human actions and affects in architecture. I focus in particular on the potential of performativity to create new realities that are experienced. Such experiences drive reality-constituting actions that are of interest to the study in architecture.²⁰⁴ These constructed realities invite architecture to expand the possible spectrum of intimacy. I use *affect* as a means of establishing relations and connecting with the context by being in direct bodily contact with things.²⁰⁵ *Emotion*, on the other hand, is understood as a readiness to act and the potential for empathy.

Pointing at Complex Systems

Feelings internal to the body that are apparent externally are visible in the system of interactions in which the body is involved. They can offer alternative ways of communicating material understandings. To better illustrate this, I use the photograph *My Mother's Back* (Fig. 7) by photographer Elinor Carucci, which depicts a naked back showing the mark of what was presumably a tight clothing worn by a woman before the picture was taken. Such traces or imprints on the body convey what I want to explore about the in-between of human bodies and materials that remains difficult to put into words. According to architect and writer Sarah Robinson, "the skin is the surface of our nervous system turned inside out."²⁰⁶ My research aims to highlight the significance of surfaces in architecture for integrating emotion and imagination, opening new ways in which humans and materials can build a more empathetic world. *Theatre and The Body* (2009) by Colette Conroy deals with the relationship between theatre and the body in relation to physical and conceptual understanding. She argues that in theatre the struggle is to represent the soul without using human form, suggesting that to point to a

²⁰⁴ Fischer-Lichte, *Ästhetik des Performativen*, 19.

²⁰⁵ Sara Ahmed, "Happy Object", in *The Affect Theory Reader*, ed. Melissa Gregg and Gregory J. Seigworth (Durham, NC and London: Duke University Press, 2010), 32.

²⁰⁶ Robinson, "Boundaries of Skin", 44.



Fig. 7 My Mother's Back, 1996

body is to point at a “complex system, not an object.”²⁰⁷ Transferred to architecture, I use the notion of “complex system”, by which I mean the whole of the architectural project. I attempt to help feel what it means to engage in and be a part of this complex system.

In the example of drawing with the hand that Pallasmaa uses to describe the interrelation between body and mind, participatory potential is seen in the “eye-hand-mind fusion” of the process and in the joining of “perception, action of the hand and thought”.²⁰⁸ Pallasmaa discusses the flow between “external and internal, material and mental” by referring to the act of painting, which is not only represented in an object, but rather “it is the object”.²⁰⁹ That is, the fusion of what is seen, understood/associated and rendered visible/tangible in re-creating the lived world. There is a fine line between perceiving, being perceived and reflecting while perceiving. Conroy notes that imagination and perception still take place in the visible body of the actor. Theatre is a place where bodies can be experienced and reflected on, where bodies can be seen as cultural texts. The potential in theatre is to read these texts “as an act of communication” in a social context.²¹⁰ Spectators are familiar with analysing the body and its action, where “[t]he ability to read dynamics of concealment and revelation, identity and disguise into human behaviour is a basic human social skill.”²¹¹ In contrast, Pallasmaa argues that ideas must be tested by the designer’s own mind and body, which includes only the architect’s subjective view.²¹² Theatre, on the other hand, includes the audience’s perceptions. It plays in particular on and with their feelings, in other words it uses the actor’s body as a communicator and acknowledges material as a performative agent.²¹³

²⁰⁷ Colette Conroy, *Theatre and The Body* (London: Red Globe Press, 2009), 16.

²⁰⁸ Pallasmaa, *The Thinking Hand*, 82.

²⁰⁹ Pallasmaa, *The Thinking Hand*, 82.

²¹⁰ Conroy, *Theatre and The Body*, 41.

²¹¹ Conroy, *Theatre and The Body*, 75.

²¹² Pallasmaa, *The Thinking Hand*, 135.

²¹³ For a discussion of the relations of co-presence between humans and non-humans, as well as actors and spectators, see Pedro Manuel, “Theatre Without Actors: Rehearsing New Modes of Co-Presence” (PhD thesis, University of Utrecht, 2017), 79.

According to Erin Hurley, theatre's entire existence is based on its nature as a place where feelings are evoked. Hurley's *Theatre and Feeling* (2010) looks at theatrical feeling as a research object to help students of performance studies to understand theatre's emotional effects, defining four: affect, emotions, mood, and sensations. All of these rely on crossing boundaries from the inside to the outside of the body form, a coherent rationale for what Pallasmaa's fails to describe: how humans perceive, understand themselves and their values is reflected in their feelings.

In his chapter "Body, Self and Mind", Pallasmaa points out that one needs to acknowledge the body as a site, which in turn requires a high degree of self-reflection and a less objective problem-solving approach. But what is subjectivity? What is a body? Thanks to the developments in queer theory since the 1970s, we are more and more being challenged to question the definition of the human body.²¹⁴ The discussion led by queer theorists of the complexity of the inside and the outside shows that we are still moving into unknown territory. Whereas Pallasmaa argues that human beings live in a world of possibilities defined by the mental faculties of imagination, Hurley refers to the connection of body and mind. According to Hurley, acting trains the body and theatre viewers understand the interconnections between body and mind in what they see.²¹⁵ One could argue that architecture also does this through drawing, modelling or other bodily activities in practice, but what is missing in the architectural discourse is a clearly identified bridge between body and mind to express the interconnections, which I argue can be emotions. What if there were a tool that engaged with and expanded on emotions in the architectural design process? People other than architects might not only observe, but also experience an "expanded, more expressive, and nuanced range of feeling imaginatively and viscerally with the aid of another person or agency."²¹⁶ Pallasmaa

²¹⁴ Éléonore Lépinard and Elizabeth Evans, *Intersectionality in Feminist and Queer Movements: Confronting Privileges* (New York: Routledge, 2020), 12.

²¹⁵ Erin Hurley, *Theatre and Feeling* (London: Red Globe Press, 2010), 69.

²¹⁶ Hurley, *Theatre and Feeling*, 77.

highlights the great potential of imagination when he states that “[p]erhaps, after all, we are humans not because of our hands or intelligence, but thanks to our capacity for imagination.”²¹⁷ But he overlooks the potential of a feedback loop of imagination generated by affects and emotions between different actors/actions, which the performing arts not only know very well but also use to train the body in cognitive and bodily knowledge.²¹⁸

To tap into this intermediary zone of subjective investment and attachment and the realities of the development process, architecture needs a discourse for imagination and empathy, which includes alternative perspectives of how to make use of the body in relation to material. In architecture, many of us are at a loss when it comes to actively engaging our body in the design process. In some architecture schools, first-year students are asked to think about their bodies in the context of form, function and material. At the Bauhaus-University Weimar, for instance, the preliminary course (inspired by Johannes Itten’s ideas from 1919) suggests that first-year students do a public group performance in the city centre of Weimar to reflect on the historic Bauhaus stage and its spirit of experimentation.²¹⁹ But what happens to this performative approach in the following years of architectural education, especially afterwards in the ‘real world’? Why did I learn to experiment in the first year, but at the same time was told that things work differently outside university? Why are there few tools to maintain this curiosity? What tools could be used to include the human body and its imaginative potential in this ‘complex system’ that we call architectural process? Architect and co-founder of assemble studio, Maria Lisogorskaya, offers us a clue here: “At university, I found it difficult to understand the separation between how things are designed and how they are made. There was a real disconnect between the drawings and details students worked on and the worlds around us. But when I was building on-site, it started to

²¹⁷ Pallasmaa, *The Thinking Hand*, 133.

²¹⁸ Hurley, *Theatre and Feeling*, 70.

²¹⁹ See also <https://www.uni-weimar.de/de/architektur-und-urbanistik/professuren/baufenformenlehre/lehre-bachelor/einfuehrungskurs/> (accessed 1 June 2023).

make more sense.²²⁰ I argue that to give serious meaning to materials, we need to be able to *make* sense of and with them.

Encouraging Complicity

In her book *Komplizenschaft. Neue Perspektiven auf Kollektivität* (2013), cultural theorist Gesa Ziemer deals with a particular way of working in creative collectives. Ziemer compares the criminal law term ‘complicity’, which defines the level of involvement in a crime, with the innovative processes of collectives that take place when practitioners with different expertise take on a certain task within a group. The argument is that the actors involved take responsibility for the whole project, although their actual work lies in their expertise, which requires trust to play a crucial role. According to Ziemer, rule-breaking and informal working processes are key concepts in art. They enable perceptual shifts. The more the actor is emotionally bonded to the ‘cultural aim’, which is not defined from the project’s start, the greater the willingness to break ‘social norms’. Following Gilles Deleuze and Félix Guattari’s definition of affect, which states that affects catch up with the subject and therefore cannot be fully controlled, Ziemer argues for speaking of affects, which is the reaction to an experienced emotion instead of emotions. Affects challenge our perception in a way that cannot be assigned to usual emotions such as sadness or joy and thus promote new ways of thinking.²²¹ According to her, emotions such as sadness and joy cannot really challenge perception, because they only let us move in our common environment. Although Ziemer emphasises the impact of affects, in my research emotions do play a role in decision-making in the design process. The common assumption is that decisions should be made as a result of rational analysis or objective reasoning, circumventing a direct response to an acute

²²⁰ Catharine Rossi, “Crafty Rather than Crafted: Assemble and 6a in Conversation”, in *Postcraft 3*, ed. Alex Coles and Catharine Rossi (London: Sternberg Press, 2022), 25.

²²¹ Ziemer, *Komplizenschaft*, 61; see also Gilles Deleuze and Félix Guattari, *What Is Philosophy?* (New York: Columbia University Press, 1991), 173.

situation. In such situations emotions are perceived to only interfere with rational thinking. My approach aligns with Antonio Damasio who argues that in the affective consequences of an action, emotions make rational decisions possible.²²²

This complicity relies on a form of cooperation based on informal interactions in which trust and a willingness of the complicit party are key. I argue that building trust is part of material empathy, which can be fostered through physical and visual engagement with material. Therefore, material literacy is needed, which requires the development of skills that are essential for working/collaborating with material. In the following discussion, I apply three essential qualities for cooperative behaviour in sociology, defined by sociologist Richard Sennett: dialogical, subjunctive and empathic behaviour. Dialogical behaviour is the ability to listen to meaning by means other than words; subjunctive speech allows for some interaction rather than a dominant way of speaking. It can also lead to ambiguity; while empathy is the ability to be open to and curious about ‘otherness’ without having to identify with it: “Empathy is a more demanding exercise, at least in listening: the listener has to get outside him- or herself.”²²³ What happens when architects apply these social skills, or according to Sennett such craft, to their interactions with materials?

There is the tendency of rising young architectural studios to explicitly work with concerns of how to understand material, how to talk *with* rather than *about* material.²²⁴ To follow this trend and more easily create a relationship with material, I am interested in establishing something in architectural practice that translates mechanisms/techniques used in the performing arts that focus on how to be aware of emotions. Performing arts practitioners are trained to translate meaning. They tell stories through the evocation

²²² Antonio Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (New York: Putnam, 1994), 2.

²²³ Richard Sennett, *Together: The Rituals, Pleasures and Politics of Cooperation* (New Haven: Yale University Press, 2012), 21.

²²⁴ For instance, Counterspace (Johannesburg), Material Cultures (London), Something Fantastic (Berlin), Atelier Dalziel (Oslo).

of emotions. I mobilise the ambiguity between architect, the field of architecture and the architectural project here by advocating empathy to be situated in the architect themselves. Architects should expand on their ability to empathise, tap into and understand different points of view. However, they should not and need not become the client, model-maker, builder or material. What, then, is the framework through which collaborative feelings of trust can be generated in an architectural project? Architectural projects almost inevitably involve decisions to take actions that affect people's lives over which the ultimate occupants often have little control. People tend to have the option to engage with architecture on only a few levels, through some form of home renovation for instance. To exist in the environments that produce architectural processes, and actual buildings, means that a great deal of trust is placed in the architect by those who do not actively 'design'.

To highlight the performative potential of material in architecture, awareness of *and* engagement with emotions that permeate from inside to the surface of the body can play an important role. This means that the ability to interpret the signals of nonhuman actors can help detect unspoken issues or feelings. For instance, when it comes to the first mock-ups and testing of material during the design process, the architect may experience that the material does not work the way they thought it would. My suggestion is that the frustration this brings can lead to an expansion of material understanding through active 'listening' to the material.²²⁵ The 'voice' of materials could be sensed through practitioners such as model-makers' and builders' material literacy and through architects' material empathy.

²²⁵ However, I also understand 'listening' to materials exists on an abstract level: materials do not have unspoken feelings in the literal sense. NM tends to support all agents having a voice – but in this thesis, I am cautious when I speak of the literal. 'Listening' to material may sound unrealistic, and when I take 'listening' out of the purely philosophical context and apply it to the practical, I mean an awareness of the performative potential of materials. However, because there is often more space for imagination in the performing arts than in architecture, this has helped to develop empathy for materials in my own field.

What this may boil down to is a conscious coming together of a group of people, first inside, then outside the architectural studio. In the world of blueprints and other common phases of architectural projects, the visual is the focus of the conversation simply because the architect has learned to read and speak visually, but the client often has not. There are several layers in which communication also flows the other way. These layers are full of unanticipated elements that take time to respond to materials such as a specific material is cold, or that material bends more than expected. Material acts here as an accomplice, not as a representative, between the inside and outside of the architectural studio. Taking this into account explicitly could offer alternative ways of sharing material understandings.

The need to listen to materials is also at the centre of Pallasmaa's thesis. He argues that architects should not aim for a common language between material and humans, rather they need to ensure that they reach a point at which they can understand and respond to the language of material. But what might such a response look like? My interest lies in how design decisions can be made differently if they are not completely abstract but allow for some material learning between architects and the material they work with. When my body comes in contact with material, my senses immediately generate a feeling that tells me how to explore it, giving me what could be called an intuitive reaction. To avoid a certain levelling of material here, a distinction needs to be made between the material I work/design/think with and the material I live with/encounter. There can be quite a gap between the material experience of the architect and the occupant of a space after all the design decisions have been made. This difference lies mainly in process-based work. During the architectural design process, the architect sees the material from different perspectives, anchored in, for instance, two-dimensional drawings, physical and digital three-dimensional models, written and spoken words. Thus, they not only build a haptic experience with materials, but also challenge their imagination. The occupant, on the other

hand, tends to perceive the material as part of a finished object, which rarely reflects the process of its creation. I argue that the architect with greater material empathy is better equipped to close this gap. This would mean that the architect's empathetic engagement with the material would also suggest a different appreciation for the space of the occupant. For instance, accessibility to the design process for occupants could give specific meaning to the materiality of a space. For the occupant it may become a question of "what the object might 'say', rather than what the actor intends."²²⁶

The sense of improvisation of bodies in the performing arts enables knowledge to emerge that in my view architects do not gain unless they actively seek out or have a personal interest in breaking with common perspectives on behavioural patterns. While what individual creative minds come up with differs vastly, the amount of freedom within a typical architectural practice tends to be quite limited. This scope adheres to a common perspective or often follows a certain level of creative compromise.²²⁷ Assuming that architectural knowledge production is aware of materials as accomplices, a more explicit embrace could shift who or what is perceived to hold authority, or have agency through attentive listening in sense-making. In architecture, this

²²⁶ Jacob Buur and Preben Friis, "Object Theatre in Design Education", *Nordic Design Research Society Conference (NORDES '15)* 6, no. 6 (2015): 3. This is particularly evident in object theatre, where everyday objects are used to create a scene, act out and perform a story. Imagination and improvisation are of great importance for this kind of storytelling, as an apple doesn't necessarily have to represent an apple but can be associated with anything that serves the narrative. Even the movement of the object is crucial to activate the actors' and audience's imagination and explore the variation of movements – be they independent or influenced by the interaction with the human body. The movement of an object can represent a particular character of the story being told, where the use of everyday objects highlights the meaning we attach to them and how they can become symbols for a specific topic. See for instance Katy Warner, *A Sonatina: Direct from Denmark. Years 1-6* (Melbourne: Arts Centre Melbourne, 2001), 20.

²²⁷ A recent example of challenging contemporary architectural practice is done by my PhD colleague and architect Matthew Dalziel. His Oslo-based practice Atelier Dalziel designed and built the installation *Multispecies Neighbourhoods* as part of the Oslo Architecture Triennale 2022, using local timber, hemp, straw and clay. With the conceptual prototype the studio wanted to show the strong link between humans and nature by embedding agriculture into architecture. See <https://www.dezeen.com/2022/10/06/multispecies-neighbourhoods-atelier-dalziel-edible-plants/> (accessed 2 June 2023).

could mean that the architect not only listens to the client or their own demands, but also pays attention and listens *again* to materials involved. In fact, being “open and receptive” in the visual and haptic communication chain of architectural production could mean that new entanglements emerge and come to play an active role.²²⁸

Material Dramaturgy

To respond to Pallasmaa’s argument that “the prevailing values of culture tend to discourage fantasy, suppress the senses, and petrify the boundary between the world and the self” I propose artistic education is used as a means of cultivating “imagination and empathy”, advocating a performative method of ‘material dramaturgy’.²²⁹ Material dramaturgy underlines being with material. It puts spending time with material forward before, for instance, covering a floor with wood, even though the computer program suggests it looks beautiful when compared to the floor without the wood. Inspired by Cathy Turner’s book *Dramaturgy and Architecture* (2015), in this thesis I propose the term ‘material dramaturgy’ in relation to architecture when discussing similarities between dramaturgy, material and performativity.²³⁰ While Turner looks at narrative in relation to space, I explore narration as a guide to describe what *is* understood about material in architecture or *is not*. This method describes how material is perceived. In a next step, material dramaturgy narrates what is understood. The concept weaves together the different agencies of protagonists, the conflict as the lack of material literacy and the message as material empathy.

²²⁸ Deirdre Heddon, “The cultivation of entangled Listening. An Ensemble of More-Than-Human Participants”, in *Performance and Participation. Practices, Audiences, Politics*, ed. Anna Harpin and Helen Nicholson (London: Palgrave, 2017), 19.

²²⁹ Pallasmaa, *The Thinking Hand*, 20.

²³⁰ In addition to Cathy Turner’s book *Dramaturgy and Architecture. Theatre, Utopia and the Built Environment* (London: Palgrave Macmillan, 2015) 2, see Ramona Mosse and Anna Street, “To Be Like Water: Material Dramaturgies in Posthumanist Performance”, *Journal of Contemporary Drama in English* 10, no. 1 (2022): 116–32. Their article investigates material (water) and its “dramaturgical functions as matter, medium, and metaphor to sketch performance alternatives that highlight nonhuman forms of agency” (1).

As the main argument of my thesis is about performativity, I rely less on traditional dramaturgy practises and more on New Dramaturgy, which understands that there is no essence. Reality is not a given, but dependent on the way “reality is organised materially, culturally and conceptually”.²³¹ In her article “Dramaturgies of reality – shaping and being shaped things” Camilla Eeg-Tverrbakk discusses New Dramaturgy and connects to discussions around the Anthropocene, and to Object-Oriented Ontology (OOO) specifically. She uses three performance examples to show how artists gave materials agency to co-create. The artists step back from their own authority by letting go of control. The chosen materials or objects “perform agency that transgresses human (and artistic) intentions.”²³² Here Eeg-Tverrbakk emphasises the crucial point of “sensory encounters” that are key to making the link between New Materialism and performance studies in my research and highlights the concept of material dramaturgy.²³³

[T]here are dramaturgical possibilities for an artist to open up for other perceptions of realities by letting things happen, rather than making things happen, thereby expanding our relationship to objects and the hierarchical position of humans in the Anthropocene. Perceptions of the real take form through the assemblages, co-creation, and entanglements of things, including humans, and how they are organised in relation to each other.²³⁴

Material dramaturgy asks architects to spend time with materials, without words, by perceiving how their bodies react and how they are influenced in their thoughts. The tenderness I invited in the introduction to this thesis plays a precise part here: tenderness should not be understood as being careful when touching but is exerted through touch.²³⁵ According to Silvia Benso, “[l]ike touch, tenderness is

²³¹ Eeg-Tverrbakk, “Dramaturgies of Reality”, 2.

²³² Eeg-Tverrbakk, “Dramaturgies of Reality”, 4.

²³³ Eeg-Tverrbakk, “Dramaturgies of Reality”, 5.

²³⁴ Eeg-Tverrbakk, “Dramaturgies of Reality”, 6.

²³⁵ Silvia Benso, *The Face of Things: A Different Site of Ethics* (New York: SUNY Press, 2000), 166–67.

affected from the outside. Its motives are exterior to it, independent from it, acting on it.”²³⁶ In other words, in my view material demands tenderness, which material dramaturgy invites.

In her editorial “New Materialisms and Performance Studies”, Rebecca Schneider deals with the blurring between the animate and the inanimate. New Materialist and performance studies scholars have been working with a similar goal to downplay the significance of “language” as the sole tool for meaning-making. They underline the role of materials in such processes, arguing for “matter as *discursive*”.²³⁷ Pursuing this line, Schneider refers to cultural historian Robin Bernstein’s “Scriptive Things”, wondering “how things initiate and choreograph behaviour,”²³⁸ and asking “how far can [performance studies] extend the agency of ‘scriptive things’.”²³⁹ In the course of my research, Schneider’s call for re-thinking the “real” via the matter of mimesis as “agential theatricality” is of particular interest as I encounter material when moving between the digital and analogue, between showing and experiencing, and between the inside and outside.

Theatre scholars Liesbeth Groot Nibbelink and Sigrid Merx suggest a relational approach to dramaturgical analysis, which in dramaturgy is also seen as a methodology. They distinguish three components: principles of composition, modes of addressing the spectator, and ways in which “a performance may relate to a wider social and artistic context”.²⁴⁰ One component cannot be discussed without evoking the other two. The model is inspired by non-dualistic assemblages and networked modes of thinking in poststructuralist and new materialist theory. The authors place emphasis on relationality by referring to the dramaturg Marianne van Kerkhoven. In the 1990s,

²³⁶ Benso, *The Face of Things*, 166.

²³⁷ Rebecca Schneider, “New Materialisms and Performance Studies”, *TDR - The Drama Review - A Journal of Performance Studies* 59, no. 4 (2015): 7. Italics in original.

²³⁸ Schneider, “New Materialisms and Performance Studies”, 10.

²³⁹ Schneider, “New Materialisms and Performance Studies”, 14.

²⁴⁰ Liesbeth Groot Nibbelink and Sigrid Merx, “Dramaturgical Analysis: A Relational Approach”, *Herfst* 28, no. 3 (2021): 9.

Van Kerkhoven introduced two forms of dramaturgy. She distinguishes between ‘minor dramaturgy’, which deals with what happens inside a theatre production, and ‘major dramaturgy’, to explain that this production only “comes alive through its interaction, through its audience, and through what is going on outside its own orbit.”²⁴¹ Nibbelink and Merx therefore expand the scope of dramaturgical analysis by adding three other components: spectatorship, statement and situatedness (Fig. 8).²⁴² The spectatorship reveals the position for the spectator. The statement presented is meant as a reflection *of* and *on* the outside world. The situatedness is the interference belonging to both the maker and the spectator who engages with the performance.

Applying Nibbelink and Merx’s model to recognise material as a performing actant, I posit the idea of ‘material dramaturgy’, which weaves together the different strands of architect as spectator, the context of sensing and the composition of material empathy (Fig. 9).²⁴³ Following Van Kerkhoven’s definition, I would argue that there is a larger context in which the performance takes place between the material and the body than the one I have learned to describe in words or visually in architectural education. Architects need to be aware that they are spectators situated in the realm of the ‘powerful counter’ and their material literacy, and the architectural studio as their environment of spectatorship. Considering material as a serious performer challenges the traditional way in which using materials in architecture is represented. The lens of material dramaturgy turns representation on its head.²⁴⁴ It proposes the ‘composition’ of material empathy, where materiality can have a significant impact on the arrangement of power and meaning.²⁴⁵ Architects could extend the potential of using

²⁴¹ Marianne van Kerkhoven, “The Theatre Is in the City and the City Is in the World and Its Walls Are of Skin”, *State of the Union Speech*, Theaterfestival 1994. See <http://sarma.be/docs/3229> (accessed 1 March 2023).

²⁴² Liesbeth Groot Nibbelink and Sigrid Merx, fig. 2 in “Planes of Dramaturgy”, in “Dramaturgical Analysis: A Relational Approach”, *Herfst* 28, no. 3 (2021): 9.

²⁴³ Mara Trübenbach, ‘Material Dramaturgy’ diagram based on Groot Nibbelink and Merx’s ‘Planes of Dramaturgy’.

²⁴⁴ See also Barad, “Posthumanist Performativity”, 190.

²⁴⁵ Mosse and Street, “To Be Like Water”, 122.

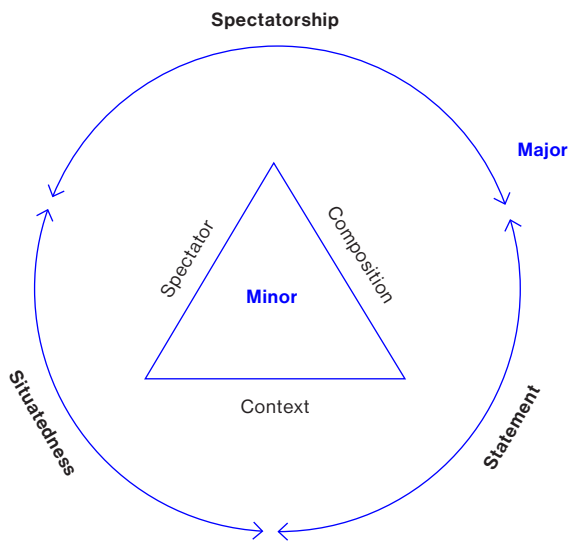


Fig. 8 'Planes of Dramaturgy' by Liesbeth Groot Nibbelink and Sigrid Merx, fig.2 in "Dramaturgical Analysis: A Relational Approach", *Herfst* 28, no. 3 (2021): 9

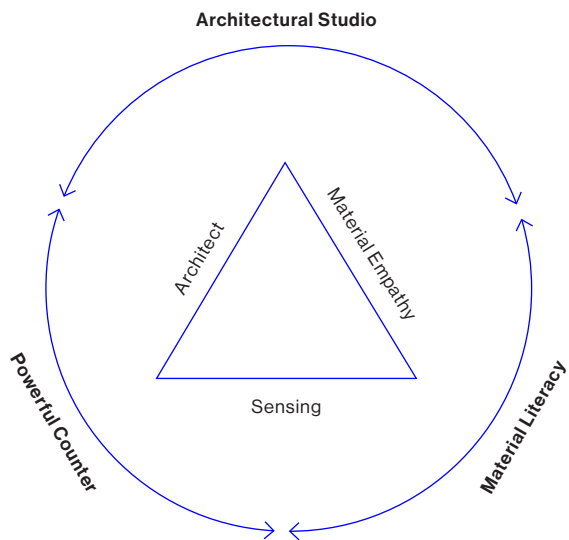


Fig. 9 Material Dramaturgy

their bodies as dramaturgical tools in the construction of reality, drawing on such senses of material empathy.²⁴⁶

In theatre, a distinction tends to be made between translation through script, choreography, costumes, scenography and the issue of authorship and relational networks. There is also a different understanding of authenticity than in architecture, due to the fact that the work can be reproduced independently by means of stage direction and script; another form of authorship lies here with the actors who contribute to the performance. Literal actors, but also set and costume designers produce new realities through their interpretations.²⁴⁷ In both cases, it is not a question of loss that happens in translation, but shedding light, not on what is lost, but what is added.²⁴⁸

As described earlier, knowing my own boundaries is a desired aim. If I consider participation as being part of an assemblage rather than an activity, it becomes apparent that it is more than crucial to know how and to what extent material is also to participate *with* me.²⁴⁹ I argue that material has precisely this ability to expose boundaries when evoking emotions in me. In architecture, this could mean that architects are aware of the power of material. They can recognise the impact on decision-making in different constellations through conscious engagement with materials on their own or from the ‘powerful counter’. This could happen, for example, during working with model-makers, during model or sample presentations within the team or to the client, or when communities are involved in the production of building materials. A useful example of the latter is the collaborative process

²⁴⁶ Sánchez, “Dramaturgy in an Expanded Field”, 55.

²⁴⁷ Stan Allen, *Practice: Architecture, Technique and Representation* (New York: Routledge, 2009), 45.

²⁴⁸ Harry M. Collins, *Tacit and Explicit Knowledge* (Chicago and London: The University of Chicago Press, 2010), 10.

²⁴⁹ See also Harpin and Nicholson, *Performance and Participation*, 12. The authors’ suggestion to shift from a (two-dimensional) collage to an (three-dimensional) assemblage could not only help provide insight in different modes of participation but also create new narratives about participation in the feedback loop – of learning not *about* but *with* the environment.

of the selection of architectural ceramics in the Granby workshop in Liverpool, facilitated by assemble studio.²⁵⁰ A tactile way of engaging with objects/material could offer potential for sensory participation within the architectural design process. This could lead to a stepping back from the decision-making guided by rationality to give space to emotional and affective responses. In the performing arts, practitioners and scholars have focused on the development of tools to consider communicative practices such as looking, feeling and listening that provide insights into how bodies give verbal and non-verbal signals.²⁵¹ If more architecture were to incorporate sensory experiences into the design process, it would need to move away from senseless aspects and introduce emotion/subjectivity as factors worth acknowledging.

Here I have discussed the inner and outer worlds of humans and materials and the lack of a common language to describe where they encounter and affect each other. Returning to the concern of sharing needs and empathy in relation to architects' boundaries, this scene suggests two areas of research worthy of further attention. On the one hand, performance studies and theatre studies, which explore how emotional effects are charged. This opens up to the question how creative architectural practice can engage with imagination and its associated actions in the way Pallasmaa refers to: "The ability to imagine and daydream is surely the most human and essential of our mental capabilities."²⁵² The audience here is not similar to that in the performing arts examples, rather it is (predominantly) the architect as the recipient of greater material empathy through the material literacy of practitioners, while the end user is more of secondary concern. On the other hand, there is the question of emotional effects, the presence of the body and material as a kind of scaffolding around which questions of 'audience' and 'participation' play out. By

²⁵⁰ See <https://assemblestudio.co.uk/projects/granby-workshop> (accessed 1 March 2023).

²⁵¹ Holly Eva Ryan and Matthew Flinders, "From Senseless to Sensory Democracy: Insights from Applied and Participatory Theatre", *Politics* 38, no. 2 (2018): 143.

²⁵² Pallasmaa, *The Thinking Hand*, 133.

highlighting the issue of the need to bridge between body and mind, the scene suggests engaging with material. It takes into account affect theory.²⁵³ I believe the trust that comes from engaging with material, affect and emotion are of great importance for architectural practice. This interdependence deserves more attention. The concept ‘material dramaturgy’ can help make visible the potential of material in decision-making processes. It redefines the architectural project as a whole and can enable greater levels of perception that incorporate subtle resonances in the design process. In the following Act II, I will discuss how such emotions that generate knowledge can be traced.

²⁵³ For a general discussion see Melissa Gregg and Gregory J. Seigworth (eds.), *The Affect Theory Reader* (Durham, NC and London: Duke University Press, 2010); Amanda Bailey and Mario DiGangi (eds.), *Affect Theory and Early Modern Texts: Politics, Ecologies, and Form* (New York: Palgrave, 2017); Duncan A. Lucas, *Affect Theory, Genre, and the Example of Tragedy: Dreams We Learn* (Cham: Springer, 2018).



ACT II

In this research, direct material engagement in the process of writing means a certain sensitivity. An example of this is that I typed into the keyboard to print out on paper and edited my writing together with the paper by cutting, folding, laying and (re)arranging individual paragraphs/sentences. Touching the white, flat material, which is essentially made of fibres of plant origin, I was able to enter a flow of making/creating. It was at that moment that I felt similar to the 'imprints on the body' I mentioned in the previous Act, wondering if the performative potential of material in relation to my bodily movements allowed me to hold on, to pause my thinking process, let it happen and flow into the design. This tacit knowledge gained through this 'sensing' goes hand in hand with my feeling, evoked by a piece of paper. Turning thinking into making revealed a certain level of performativity of the material.

Not only the paper on which the text was occasionally printed, but also other materials I engaged with using all my senses during the exploration of my case studies led to an awareness of the influence of material on a creative writing process. These strategies of proximity to material led me to a crucial point in my work: while experimenting with materials, I became more aware of my own senses and movements, which helped me to reflect on feelings and emotions. Something that would not have happened if I had not engaged with the print out on paper. The general approach to writing takes on certain characteristics when working with an object that is in the process of being made. What follows is a meta-discussion on method at the start, then an analysis of how I write, arriving at the end of Act II with a discussion of how I have applied these insights.

Methods in the Making

ALTERNATIVE: DOING WHILE SENSING

Having conducted an environmental scan relating to the conceptualisation of material, my proposition is to support the epistemological argument by exploring emotions. To become explicit about material sensing, I expand on the alternative methodological lead of ‘doing while sensing’, which suggests that performative thinking and action can be used to document post-qualitative or performative research. That is, it is about engaging with relationships of research phenomena, involving them and exploring the impact of their agency within the research. Whereas qualitative inquiries are also about non-countable things that evolve through researchers’ observations, post-qualitative research mainly focuses on the relationship of the researcher to what has been studied, questioning the privilege of knowledge. Such observations need to be contextualised and interpreted, which is different from quantitative studies in which the researcher needs a broad data collection strategy.²⁵⁴ Following Tone Pernille Østern, Sofia Jusslin, Kristian Nødtvedt Knudsen, Pauliina Maapalo and Ingrid Bjørkøy, I aim to shift from qualitative research towards a paradigm “that different disciplines can enter, where artistic research, as well as post-qualitative research, can thrive, and where different approaches can be applied, depending on how a specific topic, or area of research interest, is approached and what knowledge claims are being made as an outcome.”²⁵⁵ The performing arts are generally concerned with the issue of bringing together

²⁵⁴ For a discussion see Sharan B. Merriam and Elizabeth J. Tisdell, *Qualitative Research: A Guide to Design and Implementation* (Perlego: John Wiley & Sons, 2019), 138; Carol R. Bailey, *A Guide to Qualitative Field Research* (Newbury Park: SAGE, 2006), 181; Lisa M. Given, *The SAGE Encyclopaedia of Qualitative Research Methods* (Newbury Park: SAGE Publications, 2008), 13; Frederick Erickson, “A History of Qualitative Inquiry in Social and Educational Research”, in *The Sage Handbook of Qualitative Research*, ed. Norman K. Denzin and Yvonna S. Lincoln (Newbury Park: SAGE Publications, 2018), 54.

²⁵⁵ Tone Pernille Østern, Sofia Jusslin, Kristian Nødtvedt Knudsen, Pauliina Maapalo and Ingrid Bjørkøy, “A Performative Paradigm for Post-Qualitative Inquiry”, *Qualitative Research* 23, no. 2 (2021): 3.

creative practice and textual elements.²⁵⁶ This performative approach was the central theme that motivated my choice of research methods, attempting to trace changes of my own situated knowledge: “Learning/be(com)ing/knowning is performative, always in-becoming – as is the performative paradigm itself.”²⁵⁷ I draw on a range of ethnographic practices (digital ethnography, sensory ethnography, para-ethnography) and on the embodied experience of practitioners outside the realm of architecture. The bodily experience of material knowledge is instilled through repetition and therefore part of the everyday experience of these people. There are a few well-known scholars, among them architectural theorist Albena Yaneva, anthropologist Tim Ingold and design anthropologist Sarah Pink who call for interdisciplinary work between architecture and anthropology.²⁵⁸ The ethnographic approach informs my way of working through and with material in Western culture, following scholars creating “theoretical exploration[s] of sensory experience, perception, sociality, knowing, knowledge, practice and culture.”²⁵⁹

The entanglements of the digital in everyday life also catapults research and its methods from various disciplines into complex challenges. The editors of the *Routledge Companion to Digital Ethnography* (2017) emphasise a need to develop progressive forms of ethnography and fieldwork.²⁶⁰ In my case something of the ‘progressive form’ that is called for happened by accident when I began my research. Covid–19 pushed me to rethink the place of the

²⁵⁶ See also Harriet Hawkins, “Thesis”, in *Geography, Art, Research: Artistic Research in the GeoHumanities* (New York: Routledge, 2021): 154.

²⁵⁷ Østern, Jusslin, Nødtvedt Knudsen, Maapalo and Bjørkøy, “A Performative Paradigm for Post-Qualitative Inquiry”, 7.

²⁵⁸ For a discussion see Yaneva, *Made by the Office for Metropolitan Architecture*, 47–8; Tim Ingold, *Making: Anthropology, Archaeology, Art and Architecture* (London: Routledge, 2013), 8; Sarah Pink, *Doing Sensory Ethnography* (London: SAGE Publications, 2009), 33; Similar contributions in the recent years include: Marie Stender, Claus Bech-Danielsen and Aina Landsverk Hagen (eds.), *Architecture Anthropology* (London: Routledge, 2021), 1; Adam Jasper, “Architecture and Anthropology: A Misplaced Conversation”, *Architectural Theory Review* 21, no. 1 (April 2017): 1.

²⁵⁹ Pink, “Situating Sensory Ethnography”, 7.

²⁶⁰ Larissa Hjorth, Heather Horst, Anne Galloway and Genevieve Bell, (eds.), *Routledge Companion to Digital Ethnography* (New York: Routledge, 2017), 1.

digital in our lives. In her book *Doing Sensory Ethnography* (2009), Pink deals with ethnography extended through sensory perception. Pink pays attention to how culture affects the senses. Her focus is on the need for reflexivity that “goes beyond the interrogation of how culture is ‘written’ to examine the sites of embodied knowing.”²⁶¹ I agree with her position of doing an experimental ethnographic approach by acknowledging multisensory relationships to materialities, environments and their associated feelings. My aim is not only to represent the concerns of each individual practitioner, but also to offer a platform to evoke empathy and intimacy in the audience that is the reader, the viewer, the user of these texts, images and videos. Storytelling in the first-person points towards my own situatedness of being embedded in and observing a practice that I originally come from. I want to show the actual live experience of what my study felt like, to engage the reader/viewer/user more in ‘sensing’ than ‘knowing’. This intention in method relates to the issue I want to discuss. Following Ashley Dawkins and Alex Loftus, “senses are relationally produced through, in part, everyday practices of making”.²⁶² I believe that to understand what I call the material literacy of practitioners and how they interact with material in their everyday work is an important method of analysis based in sensing as much as knowing. According to Pink, this newfound knowledge can, “when interrogated theoretically [...] challenge, contribute to and shift understandings conventional to written scholarship.”²⁶³ Important here is that this research does not contribute to develop ethnography but rather architectural practice. This way of working, as well as making the scholarship of ethnography “better”, in my case also has the potential to make “better” architectural practice by bringing the digital and sensing closer together.

²⁶¹ Pink, “Situating Sensory Ethnography”, 18.

²⁶² Ashley Dawkins and Alex Loftus, “The Senses as Direct Theoreticians in Practice”, *Transactions of the Institute of British Geographers* 38, no. 4 (2013): 665.

²⁶³ Pink, “Situating Sensory Ethnography”, 153.

Performing Knowledges

Conducting research on one's own practice and that of colleagues, carries risks: how does one gain critical perspective? How can the conclusions have value that goes beyond the personal?²⁶⁴ Autoethnography had its breakthrough in the second half of the twentieth century. According to communication scholars Carolyn Ellis, Tony E. Adams and Arthur P. Bochner, researchers were worried that science would limit findings in how research was presented. The research method in which the researcher's personal experience (auto) was contextualised in a cultural analysis (ethno) should offer a new approach towards the "relationship between author, audience and text".²⁶⁵ I call upon autoethnography not only to acknowledge, but also to explore subjective, emotional and relational aspects of material in relation to myself and the broader context of architectural practice. In the words of Alexander Antony, I do so to "articulate some of the 'tacit' and 'invisible' dimension[s]" of practice.²⁶⁶ These analytical reflections are supported by references that make the research result different to mere 'storytelling'.²⁶⁷

The texts in this thesis are written in an inclusive way, using the first-person voice to take the reader into the problematics of 'knowing' and 'sensing'. Important to me here is the possibility to reach a wider audience. I want to create a more diverse discussion platform through the 'storytelling' manner of writing. This inclusiveness is particularly important for my research since I had various dialogues with practitioners, whose reflections I want to capture through an evocative writing style. One crucial aspect of my research is to give their voices the same position that literature spinning around material has,

²⁶⁴ Carolyn Ellis, Tony E Adams and Arthur P Bochner, "Autoethnography: An Overview", *Historical Social Research* 36, no. 4 (2011): 273.

²⁶⁵ Ellis, Adams and Bochner, "Autoethnography: An Overview", 274.

²⁶⁶ Alexander Antony, "Tacit Knowledge and Analytic Autoethnography: Methodological Reflections on the Sociological Translation of Self-Experience", in *Revealing Tacit Knowledge*, ed. Frank Adloff, Katharina Gerund and David Kaldewey (Bielefeld: transcript Verlag, 2015), 140.

²⁶⁷ Ellis, Adams and Bochner, "Autoethnography: An Overview", 276.

situating their emotional responses that are hard to capture otherwise. The statements of practitioners woven into the text challenge the reader not only to follow the flow of the narrative but to imagine their different voices and to pay attention to distinctions. By producing a textual object that can also be presented in a more performative way, I hope to respond to Lange-Berndt's concerns about the antithesis of intellectuality and direct engagement with material mentioned in scene 2 in Act I. According to writer Jo Steffens, "[b]ooks have a quality of performance, which in part explains our fascination with them."²⁶⁸ The process of writing through engaging with material and conducting interviews in relation to theories around materiality resulted in a performative acting out. I hope to make the 'quality of performance' also clear through the different voices of practitioners appearing throughout the thesis.

Irit Rogoff suggests that as we increasingly engage with the performative nature of culture, with meaning that "*takes place*" as events unfold, "we need to also move away from notions of immanent meanings that can be investigated, exposed and made obvious".²⁶⁹ As those who lead studies cannot be separated or distanced from what they study and being studied themselves, Rogoff suggests that one must accept criticality as a "state of duality", in which knowledge and experiences are married through embodiment. In this way, theoretical activities "access a different mode of inhabitation" that is also known as embodied knowledge. Following Rogoff, I want to challenge the kind of research that aims to expose some kind of hidden truth and claim to 'see through' things. Instead I want to foreground that "meaning is not excavated for, but rather, that it *takes place* in the present".²⁷⁰ My research is based on the kind of constructivist ontology that we do not posit a 'real' world independent from our own understanding of it.

²⁶⁸ Jo Steffens, "Preface", in *Unpacking my Library: Architects and Their Books* (New Haven: Yale University Press, 2014), vii.

²⁶⁹ Irit Rogoff, "'Smuggling' – An Embodied Criticality", (2006), 2, available at <https://transversal.at/transversal/0806/rogoff1/en> (accessed 10 June 2023). Italics in original

²⁷⁰ Rogoff, "'Smuggling'", 2. Italics in original.

The Privilege of Situating Myself

One critique of autoethnography is its breadth of sampling/ data collection. “Autoethnographers are criticized for doing too little fieldwork, for observing too few cultural members, for not spending enough time with (different) others.”²⁷¹ In my case, I see the value of having worked with only a few cases. The legitimacy of data from the few cases I worked with is informed by a wider informal set of research discussions. Another critique is about the distance of the observer – the implications of my actions by being the key observer. However, the focused nature of the studies allowed me to properly get to know the participants within a tight time frame. This probably would not have happened if the study had used a wider basis, as it would have been necessary to draw conclusions based on quantitative analysis such as survey data. Experiencing their work first-hand and being shown their working and/or living environment made it easier for me to develop empathy for their situatedness. To avoid the risk of having only a perspective from architecture (myself) upon architecture (case studies), I also considered different artistic disciplines. This allowed me to not only analyse differences but also reflect on my own and that of my colleagues’ thinking around material. Important to mention here is the fact that I do not seek to fix the different practices to definitive trajectories or canonise certain forms of practice or ways of working. On the contrary, I “take a different point of view toward the subject matter of social science” than a researcher trained in the social sciences.²⁷² In the following, I set the scene for my argument of unexplored emotions in architecture in relation to material.

For this research, another important integrated approach towards shared process interpretations is para-ethnography. It deals with research practices in which scholars work on spaces and knowledge economies with which they have affinities, and in which they encounter subjects whose perspectives, curiosities and intellectual ambitions chime

²⁷¹ Ellis, Adams and Bochner, “Autoethnography: An Overview”, 283.

²⁷² Ellis, Adams and Bochner, “Autoethnography: An Overview”, 284.

with the ethnographer's own. Para-ethnographers fully acknowledge their privileged agency and claim a capacity to destabilise existing power hierarchies based on their professional knowledge.²⁷³ The ambiguities implicit in this condition can be seen in the metaphor of the 'parasite' related to research activities, introduced in 2000 by anthropologist George E. Marcus in his penultimate volume *Para-Sites: A Casebook Against Cynical Reason*. The book addresses social actors and their situatedness in privileged and powerful sites by "looking for a certain space of ambivalence forged by – accessible through interviews – in which [the scholars of the volume] let dialogue do its work instead of delivering an authoritative concept or interpretation."²⁷⁴ The lines of reasoning can be traced back to French philosopher Michel de Certeau, cited in Marcus as follows:

Many everyday practices (talking, reading, moving about, shopping, cooking, etc.) are tactical in character. And so are, more generally, many 'ways of operating': victories of the 'weak' over the 'strong' ... clever tricks, knowing how to get away with things, 'hunter's cunning,' manueuvres, polymorphic simulations, joyful discoveries, poetic as well as warlike.²⁷⁵

Marcus responds to Certeau's "distinction between strategy and tactics in the practices of everyday life",²⁷⁶ by situating the *parasite* at the heart of the enquiry, "[a]nd like that narrative, it is precisely this sense of parasite – as the wily transgressor within – that we wanted to avoid by selecting empowered subjects complexly entwined and complicit with major structures of power."²⁷⁷

²⁷³ See also Tim Ingold, "Anthropology contra Ethnography", *HAU: Journal of Ethnographic Theory* 7, no.1 (2017): 24; or Tim Ingold, *Being Alive: Essays on Movement, Knowledge and Description* (London and New York: Routledge, 2011), 154–55.

²⁷⁴ George E. Marcus, *Para-Sites: A Casebook Against Cynical Reason* (Chicago: University of Chicago Press, 2000), 5.

²⁷⁵ Michel De Certeau, trans. Steven Rendall *The Practice of Everyday Life* (Berkeley: University of California Press, 1984), xix-xx, quoted in Marcus, *Para-Sites*, 7.

²⁷⁶ Marcus, *Para-Sites*, 6.

²⁷⁷ Marcus, *Para-Sites*, 7.

In my research, these “major structures of power” are a symptom that points to a complexity within academia, whether language betrays power relations or whether those embedded within these relations themselves do. I understand the “empowered subjects” to be practitioners in architecture (architects, model-makers) and other artistic professions (dancers, fashion designers, fine artists, scenographers, textile artists, theatre makers). Through them, I want to show alternative ways of understanding material by using their voices to make writing *with/through* material more visible in the academic context emphasising the great power structure inside academia. While there are long-established hierarchies among voices in the making of architecture, my research aims to construct new perspectives on material understandings, that is, to make weak stories (parasites) stronger and strong stories (authoritative concepts) weaker by learning not only to tell those other stories, but also to change the nature of the story (empowerment) cultivated in architectural profession.

Subjectivity as Data

Last but not least, my methodological lead takes me to practice-based research. As I wrote in the introduction, my understanding of practice-based research is based on a feedback loop between perceiving and reflecting while doing. I rely on scholars such as Donald Schön and Christopher Frayling who changed the research focus from the production of an object to the process of making.²⁷⁸ In his preface to his remarkable book *The Reflective Practitioner* (1983) Schön wrote, “[w]e are in need of inquiry into the epistemology of practice.”²⁷⁹ His call to analyse the reflection-in-action that a practitioner implicitly does in their practice is key to this research. Although I don’t have one main research object that I investigate, the thesis still contains parts where my own practice in architecture (model-making) is, on the one hand, applied to gain knowledge about historical contexts.

²⁷⁸ See, for instance, Schön, *The Reflective Practitioner*, 139; Frayling, “Research in Art and Design”, 3.

²⁷⁹ Schön, *The Reflective Practitioner*, 7.

On the other hand, I reflect on my doing to learn about emotions embedded in the engagement with material, which I would not have been able to experience without practice. “Moreover, each new experience on reflection-in-action enriches [my] repertoire.”²⁸⁰ However, I do not want to exclusively focus on my own practice, but also learn from other practitioners and their “repertoire of examples, images, understandings, and actions”.²⁸¹

According to chemist and philosopher Michael Polanyi, “*we can know more than we can tell.*”²⁸² This well-known statement highlights the implicit, tacit knowledge we can’t explain, but we may demonstrate through practice. Here my research problems of an inside and outside of knowledge becomes relevant, where I propose material empathy as a bridge to overcome these misunderstandings when we talk about materials. The complex inside-outside issue meets Polanyi’s claim, which I want to tackle via explorations based in practice-based research: “Tacit knowing is seen to operate here on an internal action that we are quite incapable of controlling or even feeling in itself. We become aware of subliminal processes inside our body in the perception of objects outside.”²⁸³ Although Polanyi argues the body is the “ultimate instrument” we have, a perspective that neither aligns with more recent scholarship in New Materialism nor Actor-Network-Theory’s thinking of relationality, I still build upon his explanation that when we perceive things “we incorporate it into our body – or extend our body to include it – so that we come to dwell in it.”²⁸⁴ Although his form of knowing was articulated 60 years ago, we should still pay attention to his insights into the different stages and situatedness of personal knowledge. According to Lara Schrijver, “[Polanyi’s] work opens the way for a more fundamental integration of matter and things into an understanding of tacit knowledge construction to an actor-network type of

²⁸⁰ Schön, *The Reflective Practitioner*, 116.

²⁸¹ Schön, *The Reflective Practitioner*, 114.

²⁸² Polanyi, *The Tacit Dimension*, 4. Italics in original.

²⁸³ Polanyi, *The Tacit Dimension*, 14.

²⁸⁴ Polanyi, *The Tacit Dimension*, 15–16.

knowing.²⁸⁵ In my research, the difficulty I struggle with is as ‘who’ I meet the practitioners I interview. If I am not a contributing practitioner to their projects, I have to find ways to better understand their knowledge. Polanyi unfolds the “dwelling” at a later stage, stating that “[t]he performer co-ordinates his moves by dwelling in them as parts of his [sic] body, while the watcher tries to correlate these moves by seeking to dwell in them from outside.”²⁸⁶ I therefore strive for a method that explores reflexive knowing.²⁸⁷ Reflexivity investigates the roots of thoughts and goes beyond reflecting on actions. It situates the perspective in the context of who we are as humans in our society. I don’t use Polanyi’s method but appreciate that there is something important in what he tried to formulate. I reframe his thinking in terms of reflexivity and follow a more updated discourse by scholars such as Margitta Buchert, Tim May and Beth Perry as well as Silvia Henke and Dieter Mersch.²⁸⁸

The increasing awareness of the relationship between humans and non-human beings has in recent decades particularly been shaped by popular feminist scholars such as Donna Haraway, Karen Barad and Rosi Braidotti.²⁸⁹ What they have in common is an emphasis on the validity of individual research, subjectivity and everyday life as data, alongside methodological considerations. I position and critique myself as a researcher by engaging with

²⁸⁵ Lara Schrijver, “Material Knowledge and Cultural Values”, in *The Tacit Dimension: Architecture Knowledge and Scientific Research*, ed. Lara Schrijver (Leuven: Leuven University Press, 2021), 113.

²⁸⁶ Polanyi, *The Tacit Dimension*, 30.

²⁸⁷ See, for instance, Nigel Cross, *Designerly Ways of Knowing* (London: Springer, 2006), 98; Gokce Ketizmen Onal, “3 A’s of Reflexive Design Thinking in Architecture”, *International Journal of Social Science Studies* 6, no. 11 (2018), 49.

²⁸⁸ Margitta Buchert, “Reflexive, Reflexivity, and the Concept of Reflexive Design”, *Dimensions. Journal of Architectural Knowledge* 1, no. 1 (2021): 67–76; Tim May and Beth Perry “What is Reflexivity?”, in *Reflexivity. The Essential Guide* (London: Sage, 2017), 3–5; Silvia Henke and Dieter Mersch et al., “Aesthetic Reflexivity”, in *Manifesto of Artistic Research: A Defense Against Its Advocates* (Zurich: Diaphanes 2020), 60–62.

²⁸⁹ See, for instance, Rosi Braidotti, *The Posthuman* (Cambridge: Polity, 2013), 48; Barad, “Posthumanist Performativity”, 203; Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene, Experimental Futures* (Durham, NC: Duke University Press, 2016), 49.

and through material in nuanced and intimate ways.²⁹⁰ According to Haraway, “[s]ituated knowledges are about communities, not about isolated individuals. The only way to find a larger vision is to be somewhere in particular.”²⁹¹ Taking this stance, the layer of connecting through making is accompanied by the question “why am I doing it, while I am doing it?”²⁹² My research deals with (my) human body in constant connection with physical/digital material. I don’t use it as the “ultimate instrument” (as Polanyi suggests), but I see my body in relation to engagement with material, which means its affective capacities are important to a non-representational methodology.²⁹³ Following geographer Hayden Lorimer, I endorse the various nuances of subjectivity and identity and his assertion that “[u]nsurprisingly, there is no ‘one-size-fits-all’ policy for accessing embodied knowledge and emotional response.”²⁹⁴ In doing so, I take on different roles to learn more about the range of material understandings; I test, experiment with and encounter material from different positions: as researcher, practitioner, spectator, observer.

Having studied architecture in Germany and Austria and worked in Western European practices ranging from interior design to landscape architecture, from competitions to civic participation, I have the most professional experience in architecture practice, which I situate in this research in relation to theories of other kinds of knowing. Besides my professional background, I am fluent in German and English. These are the two languages I can work in. I understand my practice as leading to research through *and* with material. The process of writing adds another, important layer in this thesis. According to architectural historian Jane Rendell, “writing, particularly the writing of art criticism is an architectural practice [...] can be

²⁹⁰ Jan Boelen and Michael Kaethler (eds.), *Social Matter, Social Design, For Good or Bad, All Design is Social* (Amsterdam: Valiz, 2000), 30.

²⁹¹ Haraway, “Situated Knowledges”, 590.

²⁹² Siv Stangeland, “Wilding and Weaving – a Relational Design Practice”, lecture at AHO PhD course, 6 May 2022.

²⁹³ Vannini (ed.), *Non-Representational Methodologies*, 9.

²⁹⁴ Hayden Lorimer, “Cultural Geography: The Busyness of Being ‘More-than-Representational’”, *Progress in Human Geography* 29, no. 1 (2005): 86.

understood as a spatial construction.”²⁹⁵ In a similar way, I make use of the reflexive feedback loop between practising, sensing, reflecting, researching and writing to learn about what material can tell us.²⁹⁶ There are currently a few scholars in architectural research whose research is positioned at the intersection of practice and performance.²⁹⁷ I want to support and contribute to this field with my own interdisciplinary research approach.

Ethical Domain

The usage of qualitative and post-qualitative inquiries raises important questions about research ethics. It aligns with this project’s overall research problem of the relational and collaborative issues embedded in the architectural design process. According to social scientist Normann Denzin and methodologist Yvonna Lincoln, “critical radical ethics is relational and collaborative; it aligns with resistance and marginality.”²⁹⁸ The authors critique traditional social science that applies ethics “as following particular methodological rules in practices [...] to ‘save’ humankind.”²⁹⁹ Although I don’t come from social science and did not initially conceptualise my entire research “from the embeddedness of ethics (and what that means) to the role of ethics in constructing research questions, methodologies, and possibilities for transformation”, I

²⁹⁵ Jane Rendell, “Site-Writing”, available at <https://www.janerendell.co.uk/chapters/site-writing> (access on 31 August 2023).

²⁹⁶ See also the research network TACK Communities of Tacit Knowledge <https://tacit-knowledge-architecture.com> (accessed 25 May 2023).

²⁹⁷ For instance: Andrew Filmer and Juliet Rufford (ed.), *Performing Architectures: Projects, Practices, Pedagogies* (London and New York: Bloomsbury, 2018); Juliet Rufford, *Theatre & Architecture* (London: Red Globe Press, 2015); Breg Horemans and Gert-Jan Stam, “KHOR II: An Architecture-as-Theatre Project by TAAT”, in *Performing Architectures: Projects, Practices, Pedagogies*, ed. Andrew Filmer and Juliet Rufford (London and New York: Bloomsbury, 2018); Alex Schweder, “Performing Architecture”, in *Performance Now: Live Art for the 21st Century*, ed. RoseLee Goldberg (London: Thames & Hudson, 2018), 236–240.

²⁹⁸ Gaille Cannella and Yvonna S. Lincoln, “Ethics, Research Regulations, and Critical Social Science”, in *The Sage Handbook of Qualitative Research*, ed. Norman K. Denzin and Yvonna S. Lincoln (Newbury Park: SAGE Publications, 2018), 173.

²⁹⁹ Cannella and Lincoln, “Ethics, Research Regulations, and Critical Social Science”, 173.

support their call for a “critical radical ethics”.³⁰⁰ This engages with as well as honours the individual power of the selected participants/collaborators. In some cases, I anonymise names to protect the identities associated with the project, as a matter of discretion, where naming would create potential issues related to privacy or integrity. In all other cases, I issued an ethical agreement to each participant, which offers the opportunity to ask for transcription and review of the text. The option to provide feedback on the textual content and to maintain their voice in decisions relating to the publication of that voice was also given. This feedback loop, depending on/acknowledging the participants’ voice, emphasises the attention on relationality and power dynamics. Without getting their confirmation and trust, it would not only have been unethical as research, but it would also have felt like I didn’t respond to their material understanding. In other words, their agreement to my writing highlights their ability to not only communicate a sophisticated material understanding of their work of materials but also to push forward the notion of different sources than literature when writing with/through material.

³⁰⁰ Cannella and Lincoln, “Ethics, Research Regulations, and Critical Social Science”, 173.

ESTABLISHING THE LANDSCAPE

After having explained the meta-analysis of the methods, Act II changes gear. It moves to my way of writing to establish the research landscape. The fortunate circumstance of being part of the international research network and PhD programme *TACK Communities of Tacit Knowledge in Architecture*, funded by the EU Marie Skłodowska-Curie Actions programme, involved various dedicated and time-consuming research activities across Europe. Among other things, it provided me with the opportunity to meet the London-based award-winning creative design studio Haworth Tompkins (HT). HT was founded in 1991 by architects Graham Haworth and Steve Tompkins. Since then it has worked across a range of sectors including higher education, housing, performing arts and cultural sector, and master-planning. The studio has a keen interest in sustainability, as evidenced by their 2019 co-launch of Architects Declare. Architects Declare is an international association of architects and people working in the building industry to raise awareness of climate and biodiversity emergencies.³⁰¹ Among other things, this involves strengthening regenerative design principles and sharing knowledge beyond the studio. HT has established internal research groups for specific topics, such as a ‘healthy material research group’ and a ‘sustainable and regenerative design group’. In addition to their focus on the use of sustainable material in architectural design, HT’s ethos is strongly aligned with architecture’s social and environmental responsibility, as well as collaborating with artists. To gain a broader understanding of material in architectural studios, normative cultures around material within and outside the studio play a crucial role, as does the different understandings of material by, for instance, contributing model-makers and artists.

³⁰¹ Architects Declare, “About Us”, UK Architects Declare Climate and Biodiversity Emergency, available at www.architectsdeclare.com/about (accessed 13 January 2020).

These advantageous conditions of similar interest created a solid foundation for a six-months practical secondment. I had planned to visit HT and work on site with the in-house model-maker Ellie Sampson, interviewing her and observing how her work informed that of the practice as a whole. However, in the same period, the Covid-19 pandemic broke out. New forms of work had to be found by both HT and myself. I joined the office during a time when no one was working in their usual way. The entire office was shut from March 2020. It was only slowly reopened from spring 2021. The physical space I planned to visit was therefore closed during the period of my investigation in autumn 2020. I found the office improvising its way around the limitations this imposed. When my travel was suspended, I improvised by conducting a digital ethnographic study through an iPad sent to Sampson. Trying to do ethnography through an iPad changed the process. When sitting on the other side of the screen rather than on the other side of the room, the challenges I had to deal with were multiple. They extended from the visual. My view was limited by the angle provided by the webcam, an angle either dictated by whoever was handling the iPad in London, or by blind chance when they become involved in their work and forgot. But there were also limitations of a haptic nature. Emotions and nuances had to be gleaned from that reluctant oblong of the iPad screen. At the same time, sitting hidden on the desk ‘within’ the iPad brought unexpected possibilities. The ‘Mara in London’ was a disembodied voice and occasional image. She was not exactly Siri but, in some sense, less obtrusive than a whole human and could perhaps glean other kinds of information.

In the third part of *The Routledge Companion to Digital Ethnography* (2017), titled “Visibility and Voice”, the limitations of digital ethnography are discussed.³⁰²

Although the papers deal with more political issues, such as inequality and freedom, I also noticed that I couldn’t observe the whole workshop and HT’s office. My newfound limited perspective made it impossible for me to get a

³⁰² Hjorth, Horst, Galloway and Bell, *The Routledge Companion to Digital Ethnography*, 137.

thorough sense of Sampson's everyday life and that of her colleagues. These limitations altered when everyone else also joined online. The interactions shifted from analogue to digital. Everyone was forced into the same position of a limited perspective. This experience of being part of perceiving material digitally, incentivised me to have a closer look at how material is understood individually. It provided the first impulse to address the research challenge of an imbalance between 'knowing' and 'sensing'.

According to Pink, there is "no standard way of doing ethnography" and thus I provided an alternative route into the different understandings of material at HT.³⁰³ The research schedule changed to a part-time remote ethnographic study, starting in October 2020 and ending in March 2021. The remoteness was complex: it allowed me to join over fifty meetings and conversations focused on discussions about materials online. In this scene, I outline two of three case studies to observe the firm's internal understanding of material through the work of HT's in-house head of sustainability and three in-depth conversations with staff members from HT. A more detailed remote ethnographic study with HT's internal model-maker will be discussed in scene 1 in Act III.

Noting Normative Cultures

For several weeks during January until March 2021, I remotely observed HT's head of sustainability and architect Diana Dina in regular review meetings of various projects. I followed discussions within Architects Declare practices as well as her participation in a university course at University College London. In a session on sustainable and regenerative design that Dina facilitates within HT, she introduced a material database in which she and architect Nick Royce have started to bring attention to materials and their properties in the design process. Royce started compiling a spreadsheet while researching materials for the "American Repertory Theatre" project at Harvard

³⁰³ Pink, "Situating Sensory Ethnography", 4.

University during the first lockdown in March 2020. This list grew to include materials HT had used in the past, as well as potential materials to use in the future to create transparency and promote healthier and more sustainable alternatives, reducing CO₂ emission (Fig. 10).

A year later, in February 2021, this database served as the basis for an online meeting with Architects Declare practices in the UK, Ireland and the Nordic countries that Dina and Royce organised. They began with ten participants. Today they consist of a larger group of volunteers who have since expanded the database. Initially, they collected all the information about the materials used in the various international offices involved to share in a smaller group and then published it as an open access resource to be used everyone who may be interested. The group is working together to find a tool that architects can use daily in the early stages of their design process. Such a tool is relevant to initial decisions. The early decisions an architect has to make are highly dependent on costs and determine the choice of materials, for flooring, insulation and construction, etc. Similarly, an ingredients list of healthy and sustainable materials can be a great help not only for architects, but also for clients, to generate common ground for the future. Since there are already existing databases, such as *Material Pyramid*, collaboration can speed up the process.³⁰⁴ The structure is not currently “good as a design resource”, Dina comments to her colleagues in one of HT’s Sustainable and Regenerative design meetings, as it serves more as a holding page.³⁰⁵ She believes the database can be used as a design resource. Materials and information included should be verified and checked regularly. Therefore, it needs to be revised so that people can not only add to it, but also compare it to other projects to learn from a toolkit session by Dina. Sharing new

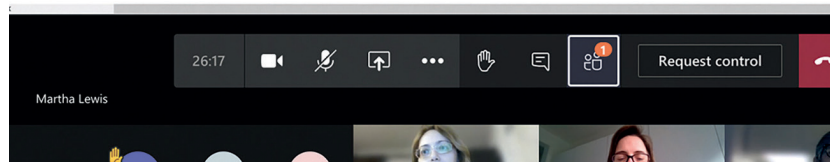
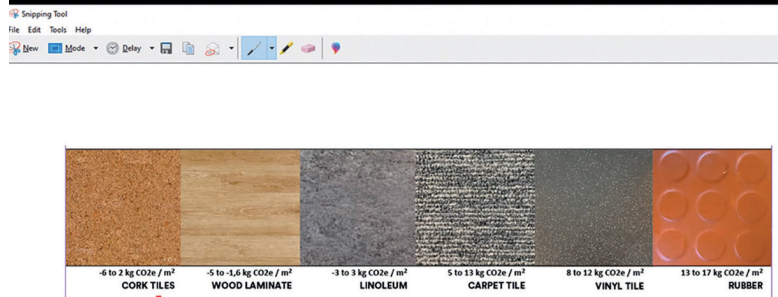
³⁰⁴ The concept of the *Material Pyramid* was developed by architect Pelle Munch-Petersen during his industrial PhD project with Henning Larsen Architects and CINARK at the Royal Danish Academy, School of Architecture. Since 2019 it has become an online tool to configure an Online Material Pyramid for a specific project to check the CO₂ impact of used materials. See <https://www.materialepyramiden.dk> (accessed 20 February 2021).

³⁰⁵ Online meeting, 27 January 2021.

	A	B	C	D	E	F	G	H	I	J
3										
4	Resources:			Material Categories		Use Category				BANNED I E.U. Reach
5	Green Spec	https://www.greenspec.co.uk/green-products/		Timber*	Solid timber products - Hardwood, Softwoods, CLT, GLT, etc. Brettschlag, Plywood etc.	Substructure	Foundations - ground slab, retaining wall, piles, fill			Asbestos
6	EPD database	https://www.envidoc.com/EPD-Search/		Earth*	Earth products for bricks, walls, clayboards, plastic render, flooring lime, Slips, Cement - ceramics, mortar, plastic render floors, tubby concrete, whitewash, etc.	SuperStructure	Loadbearing structure - walls, beams, columns, slabs			Asbestos
7	Cradle to Cradle	https://craa.com/en/about-us/cradle-to-cradle		Minerals*		Thermal Insulation	All thermal insulation for walls, floors, roofs			Cadmium
8		https://www.ecocertified.org/products/registry		Natural Fibre/Crops*	Wood fibre, Hemp, Cork, Bamboo, Myrcium, Sis, Wool, Cotton, Paper, Algae, Rubber etc.	External wall cladding	External wall cladding/and weather protection finishes - also includes render			Calcium (or sodium admixtures
9	Living Product Challenge	https://living.future.org/lpc/basics/		Stone*	Compact stone products and stone/mineral wool	Window system	Glass panes, frames, curtain wall, full systems			Chlorofluorocarbo
10	Harvard healthy materials resource	https://healthymaterialslab.org/material-collections/product-libraries/external-certification-libraries		Concrete	In situ, precast, blocks, tiles, finishing products	Roof cladding	External roof cladding/and weather protection finishes			Chlorobenzenes
11	BRE Green guide	downloaded on our Resource server		Metal	All types of metal - steel, aluminium, zinc, copper etc for reinforcement, cladding, roof systems etc	Internal wall	Wallboards, vapour barriers etc			Chromated Copper (CCA)
12	FSC Timber	https://fsc.org/en/news/whats-in-a-label-what-the-fsc-labels-actually-mean		Glass	Window systems, blocks, panes, glasswool aggregates, interior finishes	Wall lining				Chromium IV
13	Back to Earth Guides	https://www.backtoearth.co.uk/resources/		Plastic	All types of plastics	Internal wall finishes	Paints, render, tiles			Creosote/Coal tar
14	ADB Materials Library	https://materials.adb.org.uk/		Composites	Products with less than 70% of one key material - i.e. laminates, sandwich panels, waste based products etc	Acoustic insulation	Acoustic panels, acoustic battens etc			Flame (<3 microns long)
15	Wood for Good	https://woodforgood.com/lifecycle-database/		Paints & Coatings	All paints and coatings	Floor covering	All types of flooring - planks, tiles, screed, sheets, mats, raised access floor systems			Formaldehyde rele compounds
16	FSC Timber Notes	https://fsc.org/en/news/whats-in-a-label-what-the-fsc-labels-actually-mean		*Aligned to ACAN Natural Materials Group and ADB Materials Library		Calling finishes	Panels			Oxyphenol board (o
17						Multiflex Granules				Hexavalent Chrom

Fig. 10 Material OA database 'AD Sustainable & Healthy Materials_PUBLIC'

Fig. 11 Architects Declare member presents a catalogue with which they have started to line up various materials



knowledge among architects could be an additional layer. The aim is not only to have product specifications, but to use the database as an educational tool.³⁰⁶ This tool, which is not a design guide or research model, but rather a set of resources, mainly struggles with the differences between EU standards and other country specifications in relation to generic material. In one of the Architects Declare meetings, it was discussed whether it would be easier to create a standard version first. They realise the spread-sheet needs at least one or two benchmarks, which makes it hard for them to distinguish between materials that are “goodies” and “baddies” (Fig. 11).³⁰⁷

But what would the declarations look like? What about the criteria for selecting material, since they vary greatly depending on the project? It would also depend on the order of designing since everyone designs differently: do the architects first look at the chart or are they specifically searching for an alternative material in their design? Since architects are trained to have a strong connection with visualisation, another important question remains: how can the OA database be made visually attractive and accessible? Creating knowledge files on how to use and avoid toxic materials is an opportunity for staff to become more fluent in communicating with consultants and clients. On the one hand, hierarchies, labelling and (sub)categories help to get an overview of materials applied. On the other hand, benchmarking rationalises the resource and raises the question of what sort of filters are used to guide design decisions. In this context, I argue that to overcome that bias, it is highly relevant to introduce rather overlooked material literacy of individual craftspeople, such as model-makers, textile artists, scenographers, who contribute to the architectural design process their associated material empathy.

³⁰⁶ See https://docs.google.com/spreadsheets/d/1O7c7ZLmwMFL1pxLTMjvXVmj_OP8QsSNYuhmyC2x4Wp0/edit#gid=0 (accessed 9 March 2023).

³⁰⁷ Online meeting, 18 March 2021.

Architectural Projects in the Cultural Scene

As I followed Diana Dina's work, I researched in more detail several projects by HT, which Dina described as sensitive in their approach towards material. Due to time constraints in relation to other research activities, I could not go into all projects. My focus is on three main cultural projects. The three semi-structured conversations with architects Tom Gibson, Martin Lydon and Roger Watts were conducted online during the period of my practical secondment in spring 2021. The interviewees worked on performing arts refurbishment projects in Boston and London, where they came across the issue of materiality. I asked them about their individual projects but was also interested in their relationship towards theories dealing with materiality. The dialogues include phrases that appear to link to the body of literature that spins around New Materialism and related philosophies. The strategy of the semi-structured questions was to learn about their projects. I presented theories to see how they react and link them to their own practice. The architect's sympathy towards material appears through the conversation extracts. When the two perspectives (theory/practice) of material are not only juxtaposed but braided together, a different understanding of material literacy becomes evident. This is suggested as a way of making visible the tacit knowledge that interests me and its place in a "standardised" academic text.

Communicating Visual Cues

I'm sitting in my apartment in Leipzig when Tom Gibson, architect and associate at HT, joins me online from the UK.³⁰⁸ It is April 2021, and we are both still stuck within the constraints of the Covid-19 pandemic. Today I want to learn more about his current project, the American Repertory Theater (ART) in Boston, and his relationship to material. In 2017, HT won the competition to refurbish the ART, a 1960s Brutalist auditorium and performing arts building (Fig. 12).

³⁰⁸ Tom Gibson, Zoom interview, 27 April 2021.

Gibson shares his screen. He begins by showing me the floorplans of the project, supporting an expansion of ART's artistic vision and educational programming in partnership with Harvard University. Gibson zooms out and switches to Google Maps, showing me the surrounding urban context, which is part of Harvard's broader institutional master plan. The key goal is to deliver a regenerative architecture that should "not only [be] environmentally sensitive and responsive, but also socially responsive".³⁰⁹ HT's analysis and research phase involved working with the Harvard School of Public Health on a range of public health factors. Among other things, HT took a healthy material approach, working closely with Harvard's Office of Sustainability, acknowledged as "cutting-edge in terms of their approach on materials".³¹⁰ I'm curious if this approach was part of the project from the beginning or developed over the course of the project. Gibson explains that the ART and Harvard have been ambitious in setting targets for a range of overlapping issues such as "Sustainability & regenerative design", "Universal access" and finally "Public health".

Harvard's expertise and "understand[ing] of the composition of some of these products whether there is toxic chemicals or gas etc." has been enlightening.³¹¹ It injected a level of scientific scrutiny that I found refreshing. There are many overlaps with Nick Royce's internal research on low-carbon materials. HT considered both public health and embodied carbon in their initial material selection. Gibson describes this initial phase of material selection "as quite exciting".³¹² I become more curious as to whether he has heard of New Materialism or Actor-Network Theory. Royce answers with a shake of his head.³¹³ After I explain what those theories claim, I go on to ask if

³⁰⁹ Gibson, Zoom interview, 6:25.

³¹⁰ Gibson, Zoom interview, 7:45.

³¹¹ Gibson, Zoom interview, 14:10.

³¹² Gibson, Zoom interview, 15:50.

³¹³ A similar experience textile researcher Jessica Hemmings experienced, where she asked Lenor Antunes if she had read *Toward a Minor Architecture* (2020) when planning a performance in Amsterdam that Hemmings saw. Antunes had never heard of the book. See Jessica Hemmings, "Textual Agency: Pitfalls and Potentials", in *Design and Agency: Critical Perspectives on Identities, Histories, and Practices*, ed. John Potvin and Marie-Ève Marchand (London: Bloomsbury Visual Arts, 2020), 275.



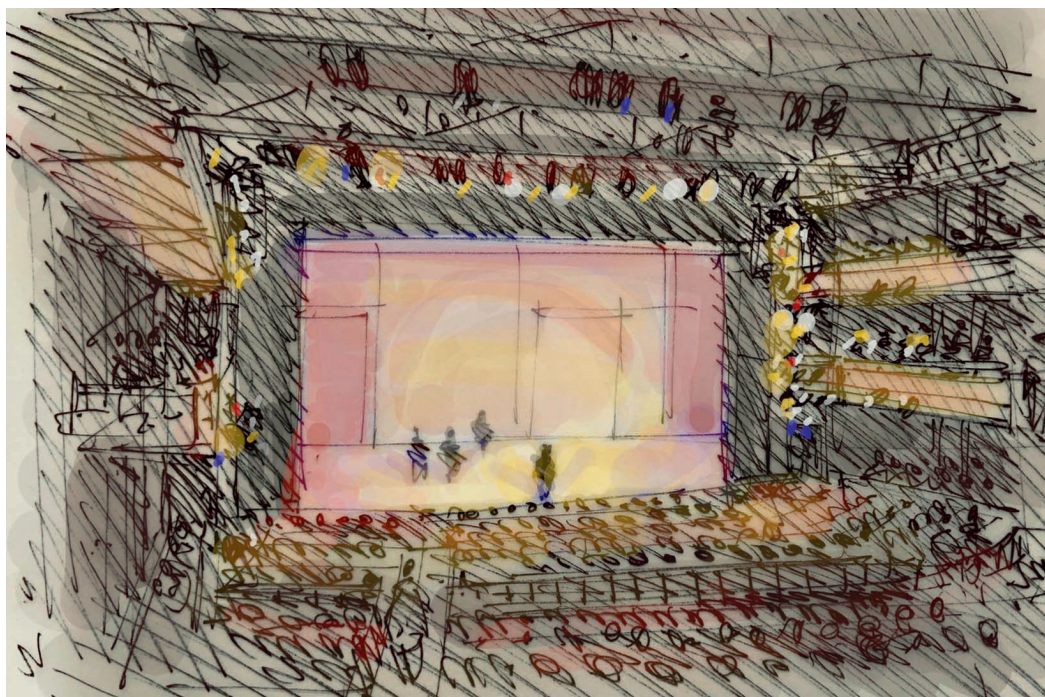
Fig. 12 American Repertory Theater in Boston

Fig. 13 Sketch of foyer



Methods in the Making

Fig. 14 Sketch of auditorium



he thinks that a flattening of hierarchy in the design process is something he experiences in practice. “I think it definitely does [relate to practice]”.³¹⁴ While saying this, Gibson switches back to the slide with the three guiding principles. Awareness of the need to explore low-carbon materials has changed HT’s design process, “switching to a focus of understanding embodied carbon of our projects in a much more sophisticated way.”³¹⁵

The material choice and process were influenced by previous projects, “understanding layers of history, choosing materials that are sensitive to existing fabric, but also being honest about and quite robust with materials and deliberately allowing them to age, weather and patinate, I guess. Enjoying that process and how that connects to the sort of human end user as well, I think is really embedded within the design practice and our values.”³¹⁶ I find it interesting that Gibson includes another key component in HT’s design process, which is the social aspect and their question of how they make material choices “warm and appealing [...] and being a bit rougher and rawer”.³¹⁷ Having the ‘material turn’ in mind, I provocatively ask Gibson if architects previously used to define form first and matter second. “I don’t think it’s a black and white. It’s kind of flipping the usual design process.”³¹⁸ He believes that discovering things triggers a reaction to found spaces that have informed the design process. Such feedbacks are concerned with “how [HT] can complement existing material and how that fundamentally affects experience of a space, and the acoustics and the thermal environment, whether it’s a welcoming space and light space or dark space, all that sort of stuff.”³¹⁹

This links to a semi-structured interview question I pose, in which I draw on Wittgenstein’s speech act theory from the early twentieth century, which states that speech is attached

³¹⁴ Gibson, Zoom interview, 18:00.

³¹⁵ Gibson, Zoom interview, 18:19.

³¹⁶ Gibson, Zoom interview, 18:44.

³¹⁷ Gibson, Zoom interview, 20:30.

³¹⁸ Gibson, Zoom interview, 22:15.

³¹⁹ Gibson, Zoom interview, 24:45.

to action, which changes and creates a new movement.³²⁰ Because of the pandemic, when architects can only see each other on the screen and can no longer work sensually with material, speech and language play an important role. I want to know if he has realised a changed approach in explaining thoughts in the ART project. What immediately comes to his mind are the “visual cues” to communicate ideas, which they did before lockdown, but rely on even more now.³²¹ Gibson says, “[t]his kind of needing to find visual material that then translates a multi-sensory experience, what we’re thinking in terms of sight, sound, smell and touch, it is really interesting. [...] It makes me wonder how much body language impacts the design process.”³²² He shows me some images of sketches and models and says that currently they cannot cluster around a model as they used to, which has been a crucial aspect of HT’s design process (Figs. 13–4).

This unanticipated circumstance has forced them to “develop new ways of working and communicating both internally within HT, but externally with clients and consultant teams.”³²³ Gibson is afraid of losing the personal coming together and the performative mode it includes “because the clients react so amazingly to physical models [...] very differently to the way they react to digital models.”³²⁴ Finally, I ask how his architectural training influenced his understanding of material. Gibson says he thought he would do a degree in sculpture, having studied fine arts for a year straight out of high school, which then led him to architecture. His first job was with a small architectural practice that was interested in craft and making. Reminiscing, Gibson thinks that both the mixing and multidisciplinary working processes in art, making and drawing were all fundamental to his understanding of material in architecture.

³²⁰ Wittgenstein states that “the term ‘*language-game*’ is meant to bring into prominence the fact that the *speaking* of language is part of an activity, or of a form of life.” See Ludwig Wittgenstein, *Philosophical Investigations*, trans. G.E.M. Anscombe (Oxford and Malden, MA: Blackwell Publishers, 1958), 11. Italics in original.

³²¹ Gibson, Zoom interview, 35:21.

³²² Gibson, Zoom interview, 35:39.

³²³ Gibson, Zoom interview, 39:35.

³²⁴ Gibson, Zoom interview, 39:39.

Developing Material Understanding

After the conversation with Tom Gibson in the morning, I have a dialogue with the architect Roger Watts, one of the directors of HT, in the afternoon of the same day.³²⁵

The reason I want to talk to him is about the refurbishment project of the Young Vic Theatre in London and how HT worked with materials on this project. Watts joins online from the UK and starts by giving me an insight into the architectural background story. The Young Vic is located in a quite prominent theatre street; very close to the Young Vic is the Old Vic, which was the National Theatre of England before the actual National Theatre was built. There used to be some shops on the site, but World War II left a hole on this street, which as an interim solution was used as a car park. Only a small building from the original terrace survived the bombing. Then, in the 1960s, when the theatre was thinking about new forms of relationships between actors and audience, the Young Vic came into play. Instead of demolishing the small building that was used as a butcher's shop, they kept it including its tiles and signs and used it as an entrance (Figs. 15–6).

There wasn't much money available, and the idea was to use the experiential theatre as a temporary site. In terms of materiality, this meant that materials were "very, very basic and very cheap and very direct, which fitted with the philosophy of the theatre of being direct and honest. [...] The architecture supported the philosophy of the artists."³²⁶ Forty years later in the early 2000s, the building was falling apart. The rather cheap materials were not meant to last for such a long period of time. As a result, a competition was held to regenerate the Young Vic, which HT entered and won with the idea of keeping the architecture "as a host for the visitors".³²⁷ HT wanted to keep most of the original materials such as the tiles from the original butcher's shop (Figs. 17–8). I wanted to know if their research into materials influenced the design process.

³²⁵ Roger Watts, Zoom interview, 27 April 2021.

³²⁶ Watts, Zoom interview, 2:08.

³²⁷ Watts, Zoom interview, 6:25.

Watts recalls that some of the team members did a “really nice photographic survey before the building came down.”³²⁸ In addition, the characteristics of the street, which is not a normal high street but has many individual and family shops, also played a role in the material research. They also thought about process and asked “[w]hat does material look like if you don’t finish it and keep it raw?”³²⁹ Watts reminisces on the different materials they were using at that time and concludes, “[i]t is not just about the material, but more about the kind of process.”³³⁰ This leads to the same question I asked Gibson during our conversation. I outline some ideas that are central in New Materialism and ask how those ideas appear to have an explanatory power in terms of a reflection about how HT works. Watts reiterates empathetically “[w]ell, it’s not just the material with its own integrity, I mean, it’s the way you then use it and its charm, and then the way that material then expresses the creativity of the process, and that’s what makes something beautiful.”³³¹ He grabs his felt mouse pad. Watts forms wavy shapes in front of the web camera explaining that felt lends itself very well to acoustics, and how they experimented with using the material at the Young Vic (Fig. 19).

“The way you just push it in. It does that and its sort of chaos in it. You can recognise in a detail or in a building, how much fun someone’s had doing it. You can just tell, okay? You can’t take it on, you can’t hide it. [...] It gives off sort of signals, subliminal signals about, you know, the intention of what you’re doing as a client, as a designer.”³³² I interrupt Watts briefly, because what he recounts so naturally is probably not natural for other architects or clients, to be so experimental in their choice of material. Watts throws the time factor into the mix. “It’s how you think of the new materials up against the old materials.

³²⁸ Watts, Zoom interview, 8:18.

³²⁹ Watts, Zoom interview, 9:22.

³³⁰ Watts, Zoom interview, 12:30.

³³¹ Watts, Zoom interview, 14:28.

³³² Watts, Zoom interview, 15:48.



Fig. 15 Young Vic Theatre after completion of rebuilding project, 2006

Fig. 16



Fig. 17 Existing tiles from the original butcher's shop



Fig. 18 Existing tiles from the original butcher's shop

Fig. 19 Watts forming waves with felt, 2021



The sort of kneejerk reaction that you are kind of taught almost as architects is that your stuff needs to stand out and be kind of obviously new.”³³³

I bring up the relationship between space, time and matter and how nature and culture interact and change over time. We agree that time can also be seen as matter. Watts links this to the idea of how chance plays a role. “It’s often the unexpected, the sort of accident, the chance, which gives something the particular sense of place.”³³⁴ He describes how sudden mistakes by builders on site can affect the whole design, because “those little imperfections kind of give off humanity.”³³⁵ Watts thinks of art and working with an artist “who can bring in some of that sideways stuff,”³³⁶ and continues, “the rigour of thinking is the thing that allows it to work” and adds another dimension to communication and control in architecture.³³⁷ HT has already worked with different artists, such as Antoni Malinowski for the Royal Court Theatre in London or Everyman Theatre in Liverpool. This experience has taught them to take the relationship between designers, clients and artists seriously. They “give each other space and trust” to create a narrative.³³⁸ “The trick is to leave it ambiguous for as long as possible, because that’s the brewing time.”³³⁹

This time and openness is not always possible due to various norms and constraints, but Watts thinks in terms of material choice “it is good to be pushed to be asked questions [...] and think harder.”³⁴⁰ He reflects on the way drawings are created and that the question of material is constantly working in the back of his mind. Watts argues that architects can react quite quickly to changes in material, but not to the form of the building. Again, time comes into play. It’s “the thing about brewing. Because

³³³ Watts, Zoom interview, 18:11.

³³⁴ Watts, Zoom interview, 24:50.

³³⁵ Watts, Zoom interview, 26:19.

³³⁶ Watts, Zoom interview, 26:59.

³³⁷ Watts, Zoom interview, 27:20.

³³⁸ Watts, Zoom interview, 28:27.

³³⁹ Watts, Zoom interview, 29:10.

³⁴⁰ Watts, Zoom interview, 33:07.

even if you don't think you think about materials, you really are. [...] You can't avoid it, because you're picturing it – the texture, the colour, the tactility and so on.”³⁴¹ Watts concludes that architects are “too focused on making images of things”,³⁴² especially with regard to technology, which produces amazingly real images of architecture and the materials used, “but it doesn't have any sense of the sound or the feel”.³⁴³

Seeing Through Layers of Paint

A month after my conversations with Tom Gibson and Roger Watts, I'm meeting with architect Martin Lydon, who has worked with HT for almost 16 years and became an associate in 2015.³⁴⁴ I first watched him a few weeks earlier, where he gave an online talk hosted by Dezeen Studio about the Grade II listed Battersea Arts Centre (BAC) built in 1893 in London. The building was formerly the Battersea Town Hall and was reopened as a council-run arts centre in the 1970s. As it was designed as a town hall rather than a performance centre, HT was approached in 2006. BAC did not aim to be a national institution but to merge young artists and talent within the community. Today I want to learn more about the project and the collaborative design process in which the architects and the client learned to define the scope of the undertaking. I remember Lydon talking in his online lecture about what they understood to be the role of each actor involved in an architectural project. After an initial collaboration that started back in 2006, BAC was due to be renovated. However, BAC did not want to close during the renovation and reopen with a completely new building and lost identity. This approach suggested a gradually phased renovation over many years. But overall, the creative collaboration to master planning the building, which concerned the strategic and creative design thinking, took place between 2006 and 2011.

³⁴¹ Watts, Zoom interview, 37:39.

³⁴² Watts, Zoom interview, 41:11.

³⁴³ Watts, Zoom interview, 41:28.

³⁴⁴ Martin Lydon, Zoom interview, 25 May 2021.

Lydon tells me that it was “quite a complicated sort of ‘cut and carve’ project into the heart of the building that ran from about 2012 until the end of 2015. Then towards the end of that project, March 2015, on a Friday afternoon, we suddenly got a phone call that the Grand Hall was on fire.”³⁴⁵ The fire had broken out in the roof of the Grand Hall, which was full of electrical infrastructure. Tragically, the fire burned for six hours. On Monday morning, all staff went to BAC to face their feelings and get a picture of the collapsed timber roof structure. The extent of the damage was made even clearer by looking at the picture of the drone image. The design process started with an overview of what survived, what remained and what was completely destroyed. Fortunately only the Grand Hall was destroyed (Fig. 20).

I remember Lydon talking about the power of the fire in his Dezeen presentation, and how it unexpectedly revealed incredible details of the ornamentation in the Grand Hall. The design process took shape, modelling the various options for the structure of the vault, but what did the process really look like? Before the big fire, HT didn’t even think about reimagining the space. Nor was it necessary, because at that point other issues of the building were more important, Lydon explains. When the fire broke out, however, it peeled away layers of paint and exposed ornaments on the ceiling, revealing the unexpected (Figs. 21–2).

An action by the architect followed the re-action of the material on the fire. Lydon describes it as a kind of X-ray that “revealed all the kind of layers of build-up and the repairs that had happened.”³⁴⁶ As a result, HT and BAC “look[ed] at it in a completely new light. [...] It was something we’d started exploring in the front of the building, which was questioning this.”³⁴⁷ Lydon suspects that there is “a sort of historic tendency that buildings always need to be kept clean and smooth. And

³⁴⁵ Lydon, Zoom interview, 5:00.

³⁴⁶ Lydon, Zoom interview, 10:08.

³⁴⁷ Lydon, Zoom interview, 10:16.

decoration has to be as perfect as possible. And enormous ornamentation needs to be heavily gilded or lacquered, you know, that this has just become part of our culture throughout history. Then, I suppose, modernism, sort of pushed everything back to the kind of plain, clean, white, straight kind of aesthetic.”³⁴⁸ The different layers showed the leftover sets, such as paint or wallpapers from previous theatre productions, and revealed how the spaces were used. People came not for the great architecture or the particular materiality, but for the events that took place there. This gave HT “more freedom and made it easier for the project stakeholders and the heritage groups that understand the slightly different approach that we wanted to take.”³⁴⁹

I wonder if the fire changed the awareness of the architecture and its material. Lydon agrees that the disaster affected the impression of the space. Their “initial gut reaction” was not to focus on the ceiling,³⁵⁰ but to follow the lines of the original roof and “keep the room totally open”.³⁵¹ They did not want to restore something that had been destroyed by fire. However, when they presented the idea of not building a vaulted ceiling in the Grand Hall and “the potential that could bring”, some people reacted quite critically and were “worried that it wasn’t going to feel like the Grand Hall again”.³⁵² This led HT to return to the importance of the ceiling and study the original ceiling. They “kick start[ed] the design process to a new ceiling”.³⁵³ Local communities and stakeholder groups were then invited to a public consultation workshop that took place in the room. People came to the space for the first time after the fire and were therefore “quite emotional”.³⁵⁴ This social gathering brought HT into a second process in which “iterative model-making using the laser cutter to test the pattern in different ways” convinced HT that building a new vaulted ceiling “was the right approach to take” (Figs. 23–4).³⁵⁵

³⁴⁸ Lydon, Zoom interview, 10:37.

³⁴⁹ Lydon, Zoom interview, 14:29.

³⁵⁰ Lydon, Zoom interview, 17:21.

³⁵¹ Lydon, Zoom interview, 17:07.

³⁵² Lydon, Zoom interview, 18:23–27.

³⁵³ Lydon, Zoom interview, 18:57.

³⁵⁴ Lydon, Zoom interview, 23:15.

³⁵⁵ Lydon, Zoom interview, 24:57–25:29.



Fig. 20 Grand Hall after great fire, 2015

Fig. 21 Layers of paint, 2015



Fig. 22





Fig. 23 Design process of the Grand Hall's ceiling

Methods i
ating

Fig. 24 Ceiling construction, 2018



With time playing a crucial role in the design process at various levels in this project, HT “learned to celebrate the moment and work within [the] current time because that is [their] moment of agency.”³⁵⁶ Building trust was key to the collaboration. It was about trust on the part of the theatre makers towards the designers, and on the part of HT towards the much larger group of stakeholders who had an impact on the final design of the grand hall (Fig. 25).

Lydon says, “I would call [these stakeholders] almost designers, not professional designers, and not people who had necessarily the same kind of architectural design training, but people who still had really strong views of the building and what they wanted to change or what they wanted it to be.”³⁵⁷ This trust building happened through spending “a lot of time of talking, thinking, modelling and drawing ... years, which in other projects you wouldn’t get the opportunity to spend that much time. [...] The big lesson of the project was designing the process for the project.”³⁵⁸ But the willingness to “listen for as long as it is necessary” was also key.³⁵⁹ The “hardest thing for an architect”, however, is to let go of control.³⁶⁰ This task requires letting other people take the lead, “people [who] have their own responsibility to feel they could also bring the project forward.”³⁶¹ When I ask what the difference is between control and care, Lydon replies that it may also have to do “with how [architects] are almost taught to think about design. [...] Architectural training, [...] is still very focused on individual design pursuit.”³⁶²

Finally, Lydon acknowledges that it is often difficult to come to a conclusion on co-design because of the many different opinions. After almost 15 years of working on the BAC, he notes that people “still expect [them] to make the decision, knowing that [they] are still ‘the’ Architect with

³⁵⁶ Lydon, Zoom interview, 34:38.

³⁵⁷ Lydon, Zoom interview, 37:55.

³⁵⁸ Lydon, Zoom interview, 41:36.

³⁵⁹ Lydon, Zoom interview, 43:10.

³⁶⁰ Lydon, Zoom interview, 43:20.

³⁶¹ Lydon, Zoom interview, 43:58.

³⁶² Lydon, Zoom interview, 46:19.



Fig. 25 Battersea Arts Centre after completion, 2019

a capital A [...] People always look up to the professional designer within the room and it is very hard to take off that suit or take off that hat and cut it up into lots of pieces and give it out to people.”³⁶³

³⁶³ Lydon, Zoom interview, 53:29.

UNFOLDING KNOWLEDGE IN THE MAKING

After the discussions with Haworth Tompkins actors, in the following I aim to make connections between the interviews and the overall observations about method.

Doubting Architectural Infrastructure

The normative cultures worked out by Diana Dina and Nick Royce, and the office's internal understanding of material articulated in the interviews by Tom Gibson, Roger Watts and Martin Lydon, tie in with the difficulties of bringing different needs and wants around material into line. These voices demonstrate one example of the problematics in relationality, namely that our differing perspectives generate highly divergent views of one shared situation. However, these conversations omit the effect of material on emotions, which may be experienced in practice, when physically engaging with material. This is certainly not only the architect's fault; how architects (have to) interact with material or how Dina (has to) reduce everything to a spreadsheet are part of the infrastructures in the building sector and emphasise the need for my research. In *Critical Care* (2019), Angelika Fitz and Elke Krasny draw attention to the need to rethink the relationship between architecture, urbanism and the planet. They call for an "architecture as critical care" and argue that "[n]ature no longer teaches the architect. In moving the art of building toward culture, the knowledge that dwelling is part of nature is left behind and erased."³⁶⁴ According to them, "local-planetary interconnectedness" is key to the ethics of care.³⁶⁵ With regards to my investigation of the influence of material in the architectural design process, Fitz and Krasny's interconnected understanding of "care, labor, ecology and economy in architecture and urbanism" is helpful in

³⁶⁴ Elke Krasny, "Architecture and Care", in *Critical Care. Architecture and Urbanism for a Broken Planet*, ed. Angelika Fitz and Elke Krasny (Vienna and Cambridge, MA: Architekturzentrum Wien and MIT Press, 2019), 35.

³⁶⁵ Angelika Fitz and Elke Krasny, "Introduction", in *Critical Care*, 14.

pointing out the urgency of remembering empathy and intimacy.³⁶⁶

But how could these two important caring aspects be achieved in architecture? Although material specifications and spreadsheets of material properties are needed for a “Caring Architecture” – as Joan Tronto phrases it – I claim that the sensitivity/tenderness resulting from material is an important factor that can be enriched through practice.³⁶⁷ According to geographer Harriet Hawkins, “[r]ather than offering access to the subjective aspects of life-worlds, creative practices are appreciated for opening us onto an epistemological stance based in the ongoing emergence of researcher and world.”³⁶⁸ I agree with Hawkins and refer to the epistemological argument starting from architectural model-making as an example for evoking a performative mode, which I explore in Act III. The fact that a physical model holds the potential to make people “react so amazingly to [it]”, as Gibson put it, makes me think about the process of creation.³⁶⁹ What knowledge sits behind the model-making process? How is this knowledge influenced by material?

There is a double assignment in my research: on the one hand, the aim is to uncover that there is a kind of barrier to rich discussions of material, on the other to highlight that there are already rich discussion and ways of working that we don’t necessarily fully count as part of the architectural design process. For instance, Lydon mentioned that material “revealed the unexpected” in the design process and described the architects’ reaction to the changed design. Watts told me similar things about the mistakes that happen on site and how this “gives something the particular sense of place”. This interaction with the body, machines and material itself requires a high level of trust otherwise it reveals failure. Failures that are most likely on the human

³⁶⁶ Fitz and Krasny, “Introduction”, 15.

³⁶⁷ Joan C. Tronto, “Caring Architecture”, in *Critical Care*, 26–32.

³⁶⁸ Harriet Hawkins, *Geography, Art, Research: Artistic Research in the GeoHumanities* (New York: Routledge, 2021), 9.

³⁶⁹ Gibson, Zoom interview, 39:39.

side. In *The Nature of the Book: Print and Knowledge in the Making* (1998), historian Adrian Johns investigates the different knowledges of different actors involved in bookmaking that, according to him, are all part of the end product. Johns's main argument, which is relevant for my endeavour, is his notion of trust-building. Following historian and sociologist Steven Shapin's identification of trust in the production of knowledge,³⁷⁰ Johns investigates "how readers decided what to believe".³⁷¹ He outlines that trust placed in books is why "the epistemological problems of reading [books] were, in practice, superable. And this is the key: such problems were soluble in practice."³⁷²

Trust among actors involved in practising enables a shared responsibility for the "critical care" of our planet and broadens horizons. According to geographer Jane M. Jacobs and Peter Merriman,

We might think immediately of two very potent kinds of architectural practitioners: the designer/architect and the occupant/user. But there are many other architectural practitioners – builders, demolishers, conservators, maintenance workers, DIY-ers, home-makers, cleaners, artists, vandals. [...] We might also think of other non-human architectural practitioners – pets, rodents, birds, insects, plants, moulds – who also inhabit and act with buildings in all manner of ways.³⁷³

In the case of 'practising architecture' – borrowing the term from Jacobs and Merriman – the question of how material understandings from different people engaging with material are made visible/ tangible/ sensational is not only about "material matter", but also about "human mattering," things such as "love, hate and indifference", as

³⁷⁰ Adrian Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago: University of Chicago Press, 1998), 31.; see also Johanna Drucker, *Graphesis: Visual Forms of Knowledge Production* (Cambridge, MA: Harvard University Press, 2014), 125–26.

³⁷¹ Johns, *The Nature of the Book*, 31.

³⁷² Johns, *The Nature of the Book*, 188.

³⁷³ Jane M. Jacobs and Peter Merriman, "Practising Architectures", *Social and Cultural Geography* 12, no. 3 (2011): 211.

well as affect.³⁷⁴ These are embedded in each individually engaged human body and are thus part of the architectural design process. However, Jacobs and Merriman signal that we should be aware of the “different kinds of embodied engagements with and sensory apprehensions of buildings”.³⁷⁵ In other words, the perception of the materiality of the building depends on individual multi-sensory encounters: the visual, haptic, acoustic, kinaesthetic, thermal and tonal attributes of each practice. The design process thus involves bodily experience, a learning process that involves (tacit) knowledge, in which the process differs slightly from one occurrence to the next. It is about gaining knowledge from processes that are never exactly alike. This knowledge performance can be addressed through reflexivity, which is “discussed as an attitude, an approach and a tool for more comprehensive reflection ‘on’ action”.³⁷⁶ Architectural practitioners learn how to navigate what the nature of tacit knowledge is. They learn how to deal with things taking other trajectories than expected. The learning process is performative in the sense that each iteration reacts to the diverse knowledges present. Each of the actors involved carries a form of knowledge that makes the act of designing much more complex and participatory than one may assume.

To bring this back to practice, in Gibson’s case for instance, the material choice is “quite exciting”, which, on the one hand, has to do with the visual and imaginative power that material evokes. On the other hand, the “fun” (Gibson), the “accident” (Watts), the “unexpected” (Lydon) linked to material is experienced precisely because their bodies are involved. This practising of architecture is what brings the building to life. Watts criticises the architects’ limitation to the visual. Lydon describes the emotional effect of the burnt materials on architects and stakeholders. The body of the one who engages with the material is thus an

³⁷⁴ Jacobs and Merriman, “Practising Architectures”, 212.

³⁷⁵ Jacobs and Merriman, “Practising Architectures”, 213.

³⁷⁶ Margitta Buchert, “Design Knowing on the Move”, in *The Tacit Dimension: Architecture Knowledge and Scientific Research*, ed. Lara Schrijver (Leuven: Leuven University Press, 2021), 91.

indispensable part of an epistemological manner of material understanding. The form a maker has in mind is not what makes the work, but an “engagement with materials” is what shapes both form and the maker’s understanding of “how things are made”.³⁷⁷ In *Making Anthropology, Archaeology, Art and Architecture* (2013), Ingold points out that “we *are* our bodies” and that “the body is also a thing”, which means that both have an equal influence on the relationship between things and matter, because “*people are things too*”.³⁷⁸ To simplify this, Ingold uses the example that the artist “thinks *from* materials” and the performer “thinks *from* the body”.³⁷⁹ I can no longer distinguish between human and thing because I am a thing. The flattening that Ingold proposes here, is very similar to Latour’s call to pay attention to the intertwined connection of human bodies and materials, in that it sheds light on a relationship/dependency that is crucial to understand when speaking with and from my body, and ‘knowing’ through ‘sensing’ while doing.³⁸⁰

There is equally valid information to be gleaned from other disciplines, because the issue of how material is understood and how trust can be created is not limited to just one discipline. According to Jacobs and Merriman, “architectural gatherings are more than visual. [...] Nowhere is the co-orchestration of material design and human emotion more evident than in the theatre.”³⁸¹ In Act IV, I use this invitation for interdisciplinarity to enter into a dialogue with performance and practice. In doing so, I continue to deploy the social science methods introduced to go beyond representational aspects of architecture and instead work with performative experiences of material in the performing arts.

³⁷⁷ Tim Ingold, *Making Anthropology, Archaeology, Art and Architecture* (London: Routledge, 2013), 22.

³⁷⁸ Ingold, *Making Anthropology*, 94. Italics in original.

³⁷⁹ Ingold, *Making Anthropology*, 94. Italics in original.

³⁸⁰ Latour, *Reassembling the Social*, 75.

³⁸¹ Jacobs and Merriman, “Practising Architectures”, 217.

Reflection on Methods

Based on ethnographic methods, Act II has presented and elaborated on what I understand by performative research. One way of constituting material understanding is through interdisciplinary work between architecture and anthropology, which allows the exploration of emotions and nuances in practice that develop through sensing material. According to Østern, Jusslin, Nødtvedt Knudsen, Maapalo and Bjørkøy, “[o]ntology and epistemology cannot be separated, and the same applies to ethics.”³⁸² What I am trying to say here is that there is a dual function of ethics in this research: one related to the ontology of material, and another that related to the epistemology that follows from material. From the beginning, my aim was to work with practitioners’ voices. I intended to give them a platform to be heard in theoretical discourse. One reason is that I wanted to make the reading also accessible for non-theorists. Having initially found it difficult to engage with theories as an architectural practitioner myself, I attempted to make theory more ‘practical’ and thus welcoming to people outside academia. It took multiple approaches to capture the context of interviewees and engage them in a theoretical discourse.

The practice-based discourse related to theory has shown the performative potential practitioners voices can have in illuminating pressing issues of practice in relation to materials. Specific findings are that architects’ focus on materials is often linked to the production of images or that there are actual relationships between what happens in practice and current debates in theory. Posing questions about theory clarified that if practitioners played a greater role in defining theories, theory would not only be more related to practice, but practice would also be able to highlight existing issues with the help of theoretical insights. These newfound perspectives were created through ethical modes of research. Drawing on Holmes and Marcus’s notion of “internarratives”, laying out

³⁸² Østern, Jusslin, Nødtvedt Knudsen, Maapalo and Bjørkøy, “A Performative Paradigm for Post-Qualitative Inquiry”, 7.

practitioners' knowledge alongside my own expertise and the theoretical discourse gives "technical knowledge" a "distinctive *social* character", thus revealing a "multi-sited staging of fieldwork".³⁸³ In other words, Diana Dina's, Nick Royce's, Roger Watts's, Tom Gibson's, and Martin Lydon's individual insights into their material understandings challenged my knowledge from theory. So, if we can know more than we can tell, a performative research approach has taught me a certain sensitivity to tacit knowledge. Yet, in academia, the written word remains the main means for engaging with knowledge. Therefore it seems crucial for my research that the practitioners and their embodied knowledge of material are not only presented, but present in the text. Act III therefore opens with a discussion on presence, presentation and representation of material in the practice of model-making by letting the voice of the model-maker Ellie Sampson speak.

³⁸³ Douglas R. Holmes and George E. Marcus, "Refunctioing Ethnography: The Challenge of an Anthropology of the Contemporary", in *The Sage Handbook of Qualitative Research*, ed. Norman K. Denzin and Yvonna S. Lincoln, (Thousand Oaks, London, New Delhi: Sage Publications, 2005), 1105. Italics in original.



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In their book *The Model as Performance: Staging Space in Theatre and Architecture* (2018), spatial theorist Thea Brejzek and architect, visual artist and designer Lawrence Wallen argue that models are “inherently performative and epistemic”.³⁸⁴ What is more, Brejzek and Wallen also argue that it is crucial to acknowledge “the agency of material and extend[s] this to an articulation of the agency of the model”.³⁸⁵ Taking into account the interrelation between model and material, I consider the model as an actor involved in the exploration of materials. The models and their hybrids presented in the following scenes are accompanied by classical terms from theatre, such as ‘stage’, ‘narrative’ or ‘performance’. I argue that physical models are similar to theatrical rehearsals: we trust them as sites of experiment, they are fun, challenging and stimulate our imagination. And just as rehearsals have different phases – rehearsal, main rehearsal, dress rehearsal, etc. – models also have different phases, or literal stages even that act in different roles – working model, concept model, presentation model, mock up, etc. The model is part of a sequence of moments of play in architecture, which involve intimacy, emotion and distance. The context in which the model is staged offers simultaneously a form of participation, which makes making a model as an act of engagement with materials very powerful.³⁸⁶

³⁸⁴ Thea Brejzek and Lawrence Wallen, *The Model as Performance: Staging Space in Theatre and Architecture* (London and New York: Bloomsbury, 2018), 1.

³⁸⁵ Brejzek and Wallen, *The Model as Performance*, 1–2.

³⁸⁶ Albena Yaneva, *Five Ways of Making Architecture Political: An Introduction to the Politics of Design Practice* (London and New York: Bloomsbury, 2017). In the introduction Yaneva responds to political philosopher Langdon Winner and his article “Do Artifacts Have Politics?” (1980) by arguing that architecture is not about embodying “racial politics” but about “what it is and how it performs politics in various situations” (6). Further on, Yaneva claims that “[political] can be seen as integral to many features of building, planning, construction and renovation processes; it emerges and can be witnessed as we trace the transformation of objects, sites, urban publics and the multiple realities of a city” (9). This view is useful to my research as it sheds light on “practicalities, materialities and events of buildings” by making use of ANT-informed ethnography in architectural research (11).

**PRESENCE, PRESENTATION AND
REPRESENTATION: BETWEEN MODEL-
MAKING AND MEDIATION OF MATERIALS IN
ARCHITECTURAL PRACTICE DURING COVID-19**

In the following, one specific piece of research is presented: an ethnographic study at the London-based architectural firm Haworth Tompkins (HT) in 2020 and 2021. Rather than focusing on a single architectural work and mapping all the actors, my strategy changed towards focusing instead on the trajectories of figures who traditionally would be thought of as having a peripheral impact on the design of architectural projects. During six months of observation, I studied two such subjects: on the one hand, a duo with the responsibility of increasing awareness of the sustainable use of materials for the practice; on the other hand, a model-maker who worked across architectural teams within the practice and who turned out to be the main source in conducting this study. Thus, the enquiry became more precisely attuned to the effects of specific forms of agency, where the study relates to two concerns, namely material literacy and how architecture as a field values the mediation of concepts.

The scene presented here builds upon the work of HT's in-house model-maker Ellie Sampson. According to architectural theorist Albena Yaneva's study of the Rotterdam-based architectural firm OMA, "social phenomena" that is the process of making, are given too little attention in architectural discourse.³⁸⁷ Yaneva advocates that this lack can be avoided if we look into the design process and see "from the inside out".³⁸⁸ Yaneva's notion of looking from the inside out is also applied in my research; in addition, the inclusion of observations of the model-maker herself leads to an ethnography that is not *of* but *with* her. Finally, with this study I hope to contribute to finding alternative research methods within the ongoing evolution of digitised working habits in both contemporary

³⁸⁷ Yaneva, *Made by the Office for Metropolitan Architecture*, 100.

³⁸⁸ Yaneva, *Made by the Office for Metropolitan Architecture*, 100.

architecture practice and research, situating making architectural models as an adventure.

Covid-19 Context

The physical space I was to visit was closed during the period of my investigation, in autumn 2020. I found the company improvising its way around the limitations this imposed. So did I. The schedule changed to a part-time remote ethnographic study starting in October 2020, which ended in March 2021. The focus was on Sampson from October to December 2020, and on Diana Dina and Nick Royce from January to March 2021 (see previous Act II). In total, I attended about 50 online conversations and gained insights in various projects such as Barking Industria, an industrial development project, The Lighthouse, a new multi-use building for worship and a community space, and last, but not least, Warburg Renaissance, a redevelopment of the Warburg Institute, which I mainly focus on in this scene.

The aim of the study was to understand the impact of these changed processes and dynamics in an architectural office in relation to new conceptualisations of material. In asking questions about the subject in the context of the Covid-19 pandemic, the question of the use of media and the reliance on mediation became central in the development of the thesis. The physical distance imposed by Covid-19 paradoxically created greater focus on all forms of knowledge, implicit or explicit – whether about materials, common knowledge or any notion of shared material literacy – that relied on some form of mediation. On the one hand, this scene is about finding a platform or environment in which to discuss the idea of material, on the other it is a speculation about the implications of that environment for how ideas developed while using it. In shifting my focus to this aspect, I hope to generate discussion around researching, observing and mediating materials while revising our understanding of what is possible as well as increasing material literacy – beyond Covid-19. To understand how the digital has become part of professional communication, design anthropologist Sarah

Pink describes digital ethnography not only as a research method, but also as a subfield in people's everyday life. Pink emphasises that due to an increase in the merging of everyday life and digital technology, it is important to do research "in a way that accounts for this".³⁸⁹ It is also imperative to acknowledge that this has led to the various types of participation, including blogging, commenting on social media, posting pictures, etc. The merging of everyday life and digitisation also means that we need to be even more aware of the value of engagement with materials in our daily routine of design processes. My job therefore is to provide a reflexive account of what I expected, what I did and how my expectations and actions provide material for further use.

Remote Workshops and the Introduction of 'Digital Mara'

The first part of my ethnographic study, starting in autumn 2020, dealt with how the model-maker Ellie Sampson works and the collaborative process around her work. To contextualise Sampson's role, one should imagine HT's workshop, which is located at the centre of the office and invites you to swing by, chat and point at models, materials and tools (Fig. 26). The workshop not only serves as a productive place but also generates a social, albeit dusty, environment for HT's staff. However, as the office was closed, Sampson did not at first use the workshop, but worked at her home in North London. Like many others, she was isolated from the lively area she was used to working in and forced to communicate her experiences with materials and models from a distance. By remotely observing advice/crit sessions, photos of processes and interviews with the model-maker, my ambition was to examine the (tacit) knowledge in model planning itself, including making drawings for the laser cutter, considering material thickness, mocking up 3D CAD models and logistics for use, storage and relocation. This turned into a

³⁸⁹ Sarah Pink, "Experience", in *Innovative Methods in Media and Communication Research*, ed. Sebastian Kubitschko and Anne Kaun (Cham: Springer Nature, 2016), 161.

three-folded operation. First, starting with the knowledge of Sampson's internal process and her craft world that is about the creation of drawings and mediations in the production of the model. Second, going further with Sampson's work in the operation within the practice as a whole and her contributions to the design team, such as thinking through the messy stages of design by talking to and interacting with Sampson on different levels. Third, considering how the expertise in HT's practice as a whole interacts with its wider environment.

In conversations with Sampson, things came into view unexpectedly through the changed conditions under which she was working. At home she tried to mimic the dynamics of the spatial centre she occupied in the office. The question was how to see all this from a distance. The initial idea of simulating a more active perspective was soon implemented as a fun operation called 'Digital Mara', which introduced 'vlogging' as a research method. Unable to travel to London, I arranged that a black iPad 7 with a high-impact polycarbonate shell slipcover was shipped via Norwegian post to Great Britain in September 2020. Although it might seem ironic to investigate material matters without being able to physically attend the scene of the action, this device provided some kind of material presence. Digital Mara was covered with a haptic material, had to be unpacked and adopted by whichever staff member was hosting it. Despite its inert quietness and its machine dumbness, it provided a fly-on-the-wall perspective that would have been impossible to acquire through physical presence. The technical device served as an experiment in research methods. Besides the stage reports and meetings, I joined Sampson for an extended session of three to four hours once a week, to get a hands-on perspective and watch how Sampson laser-cuts or assembles and glues pieces. These observation sessions were organised while we both worked on other stuff. It appeared to be very similar to a co-working space, only digital. Sound would be muted, so we could listen to music and if there were questions, we would raise a hand and interrupt each other.

Excerpts from Sensing as “Digital Mara”

23 October 2020

Today Ellie Sampson and I have the first trial run to set up Digital Mara. I sent the iPad off four weeks earlier, on 24 September. The parcel arrived in London a few weeks ago. We are both excited that the idea of vlogging is becoming a reality. Sampson unpacked the package that morning and set Digital Mara up right next to her workspace (Figs. 27–8). Now that I am on, we’re trying out different angles and seeing how I can best observe Sampson’s bodily work (Fig. 29). I am surprised by the perspective I get (Fig. 30). Usually when I attend a Zoom session I see faces, but this time I see an unfinished model, papers, cardboard, glue and hands working with it. I watch intently as the individual things relate through interacting with Sampson’s body and as I start to empathise with how it may feel. The adventure of model-making from afar has begun.

4 November 2020

It is a Wednesday morning when I join Sampson online. The office has partially reopened, with staff that due to different circumstances cannot work from home working in the office. One of them is Sampson. She is happy to be able to work in the workshop again. Similar to many of her colleagues, Sampson splits up her work between home and the office, depending on what stage she is at with working on the models or whether she has to do administrative stuff, such as ordering material or modelling in CAD. Today, however, is one of the days when she has to be present in the workshop. The reason is to train a new employee. While Sampson confidently explains the safety information around machines, the model-making area and the workshop in general to the new employee. I take a look around the workshop, at least as far as the angle of the iPad camera allows me to. It’s chaotic. I can hear machine noises and want to be there in person too. This is probably primarily due to my background in architectural education and strong interest in craft. I mainly miss the other sensorial experiences I know I would have encountered in the room itself. Behind that digital surface of a clear-glass LCD

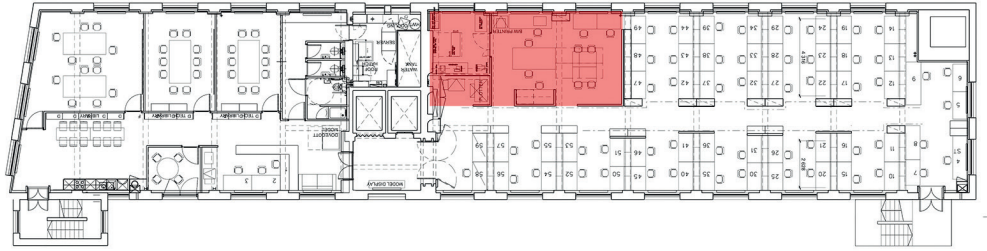
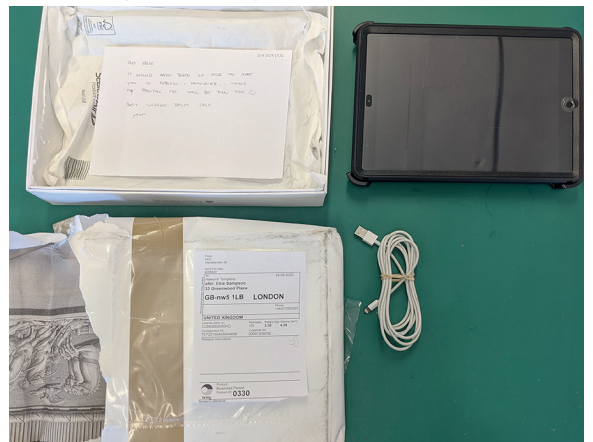


Fig. 26 Workshop area at Haworth Tompkins' office



Fig. 27 Sampson unpacking Digital Mara, 2020

Fig. 28 Digital Mara arrived safely at Haworth Tompkins' workshop





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Fig. 29 Digital Mara placed in front of the Warburg Renaissance Model

Fig. 30 Digital Mara looking at the Warburg Renaissance Model



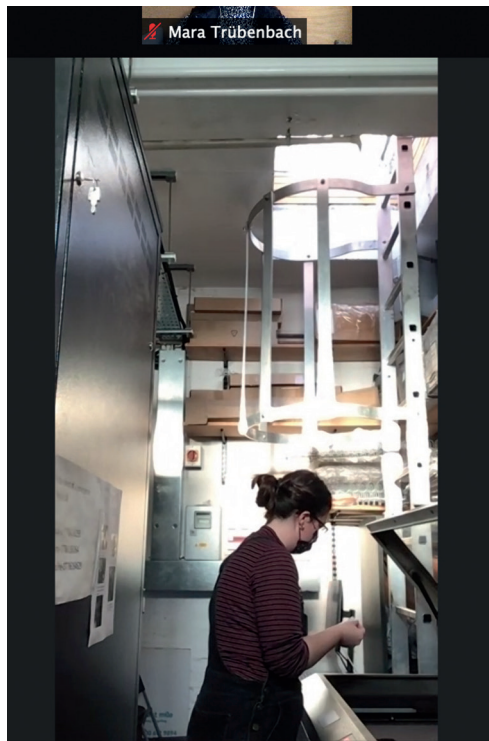
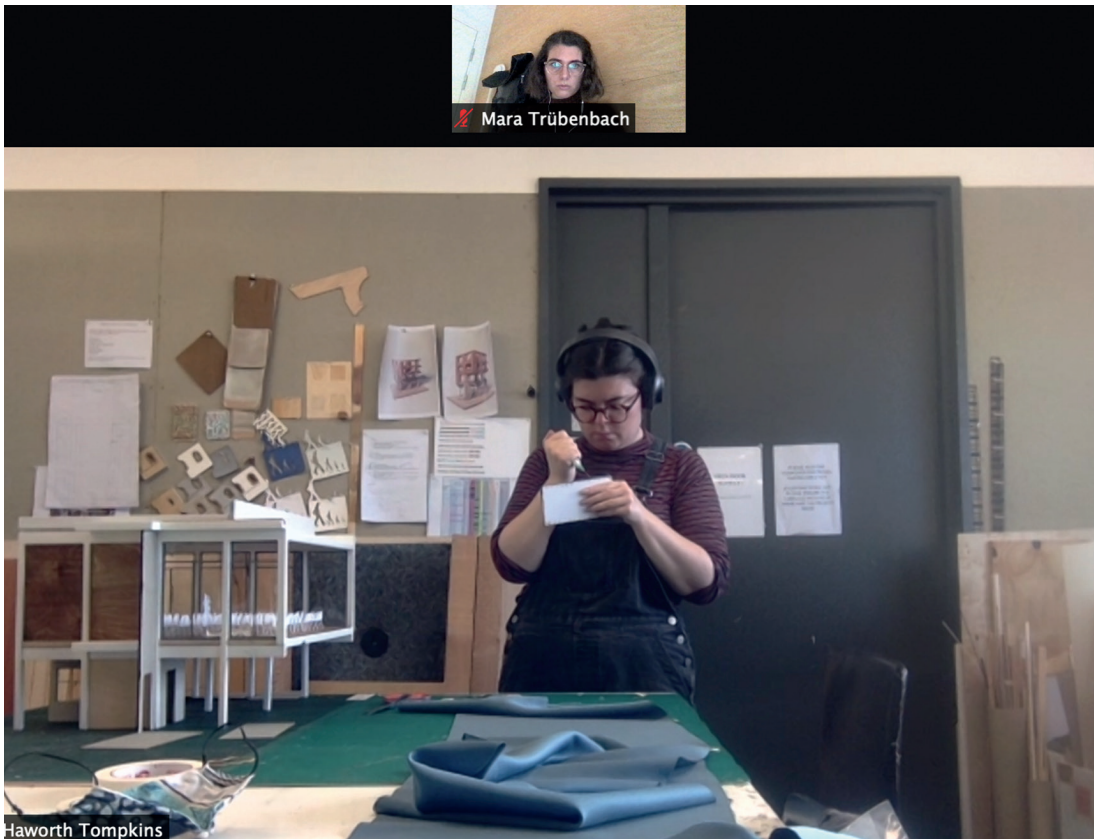


Fig. 31 Sampson laser cutting pieces for models

Fig. 32 Remote observation via Zoom



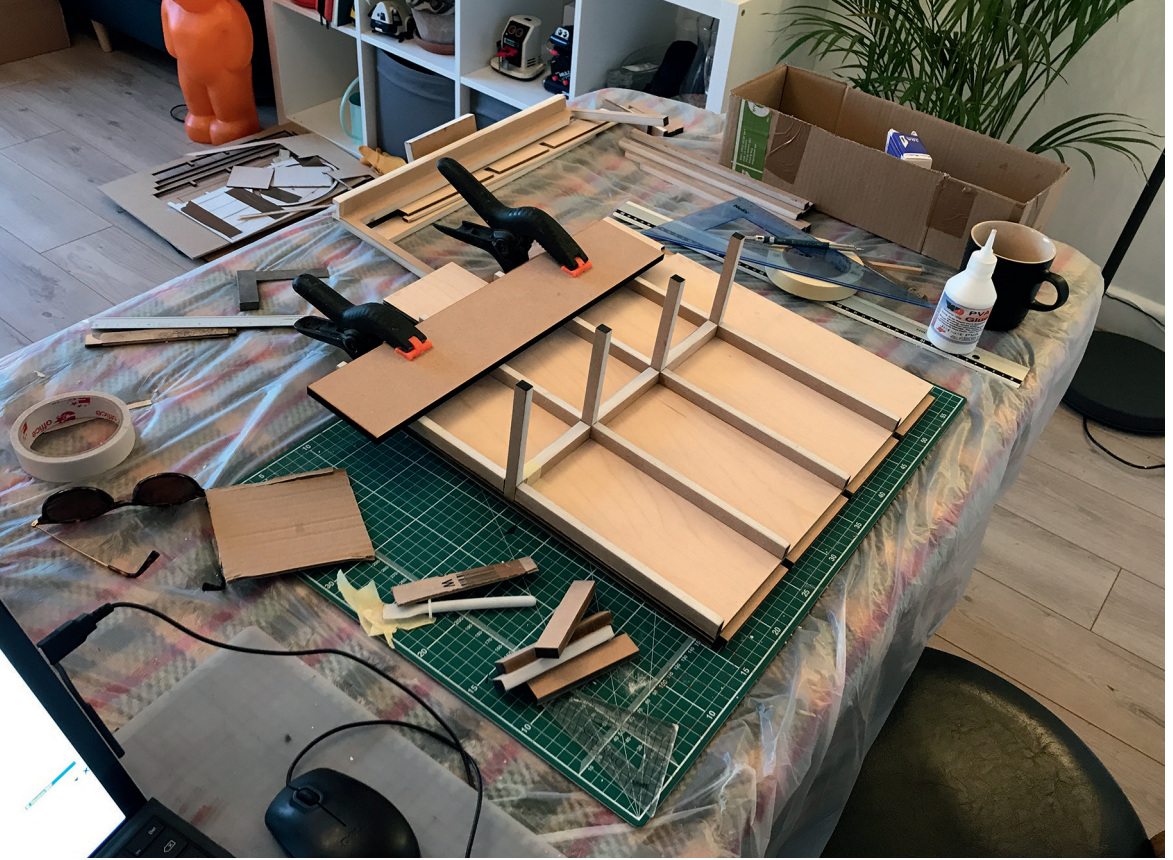


Fig. 33 Floor of reading room made at Sampson's home, 2020

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Fig. 34 Framework of reading room



screen, I can now only guess how materials smell, for example. This happens quite often. I hear Sampson milling, sanding, spraying or laser-cutting and I am not able to smell the freshly cut pieces (Fig. 31). If I hadn't experienced being in a workshop before, I wouldn't know what is missed in the sense of smelling material. After 20 minutes, the briefing is over. The new staff member has to sign a statement that she has taken part in the introductory course.

When I tune in again two hours later, Sampson is working on the main façade of the model for the Warburg Renaissance project, doing the finishing touches (Fig. 32). The redevelopment project transforms the Warburg Institute, a cultural library moved from Hamburg to London in 1933 and now located at Woburn Square in Bloomsbury. The Warburg Institute will have a courtyard extension, a new 140-seat lecture theatre, which Sampson has captured in a 1:20 scale model. Although Sampson's living room became temporarily HT's workshop, she could not finish the model. Some parts had to be re-done. Jokingly Sampson says she got used to the model "almost like a pet" that stayed at her place for a couple of months (Figs. 33–4).³⁹⁰

12 November 2020

I attend the bi-weekly online session with Sampson and one of the architects, who is working on the Warburg Renaissance project as one of the project architects, Elizabeth Flower, cannot join, since she is on maternity leave. The process of the paused model begins again by discussing the needs and wants of the architects. Based on a prepared document from Sampson on the presentation of material, they talk about which option they like best, whether the blinds need to be closed in the model or whether they should be open. From drawings, Sampson is not sure how blinds should be displayed in the model photos, because "you have [the blinds] sometimes open and sometimes not". Both decide to create two versions, in either case, Sampson has to iron the material a little. The emphasis is to be on the interior shots, through which

³⁹⁰ Ellie Sampson, Zoom dialogue, 4 November 2020.

the client can see the furniture and other things such as lighting. Sampson does her best to read the drawings but has difficulty with the main entrance. One of the architects tells Sampson to look at the latest pictures compared to the plans. They agree that Sampson should take some time to take photos of the final model to capture all the details and the light conditions of the miniature architecture.

13 November 2020

I tune in and Sampson tells me that the fabric for the blinds has arrived. She is not sure how to cut the fabric and starts working. I observe Sampson changes the knife blade before she cuts the new fabric. We talk about a textile designer's scissors, which is 'the' tool a textile designer would never let out of their hand, like a chef with their cutting knife. While we are talking, a colleague comes into the workshop area. He asks how things are going. The two chat a bit. Sampson gives tips on how different glues work. The colleague leaves and Sampson continues working on the blinds. After a while, Sampson says she uses the actual material – a double-layer fabric she ordered from the supplier – so as not to have to approximate the colour.

20 November 2020

When I join Sampson online, she is already preparing everything for the shoot of the Warburg model in one of HT's meeting rooms, where she has set up a temporary photo studio. The curtains are now the right size, but are bulky, so Sampson irons the backdrop so that there are no creases in the shoot that would otherwise have to be photoshopped out. As she pulls the blinds closed, she says it is very interesting to see the redevelopment, but also to learn about the whole story of the Warburg. Sampson refers to art historian Uwe Fleckner's lecture the other day, in which he had a very different perspective on the model than she did. She only knew the architect's drawings and CGI's, which she now takes as a reference for her shots. Sampson now also has plans in front of her for orientation. She begins placing furniture to literally set the scene for the new extension of the existing building, which takes almost an hour. Artificial lighting is set up, even though it

is a bright day, to get more light inside the model. Sampson takes a series of shots with her iPhone. She is quite pleased with the result. The photos are bright and therefore do not need much editing in Photoshop. Sampson mentions that the reason we don't really trust the quality of smartphone cameras is because we didn't grow up with them. In the end, however, they are sometimes even better than older SLR cameras. Sampson is pleased with the result, which is also because, she argues, the preparations and adjustments allowed this. That is exactly an articulation of the kind of material literacy that interests me and that I would not have encountered with such precision if Sampson had not been forced to capture the model digitally.

10 December 2020

It is afternoon when I meet Sampson through the digital screen in her living room. Since the first lockdown, her flat also has to serve as a workshop and occasional photo studio. Sampson shows me her material storage space and tells me that she used to take her private paper cutter with her into the office until HT finally got their own. Today Sampson is working on the 1:200 Barking model. She started modelling it two and half weeks ago in an on-and-off process, whenever there was an idle moment while she worked on the 1:20 Warburg model. I watch as she assembles orange paper. Sampson says it weighs 160 gsm, which I couldn't have told from just looking at it. Cut-off shapes are used to stick behind the façade, she explains, peeling off the adhesive strips as she goes. Sampson prefers to do the most complicated parts first. Throughout the assembly process, she compares her physical model with the 3D model she built in Rhino on her screen.³⁹¹ Sampson is waiting for quotes that will determine whether the newly designed building shall be built in paper or printed in 3D. One advantage of paper is that it is "thin material and much easier to indicate scale" than the cardboard commonly used

³⁹¹ Rhinoceros is a 3D computer graphics and computer-aided design (CAD) application software developed by Robert McNeel & Associates since 1980. The software is used in industries such as architecture, industrial design and product design etc.

in architectural model-making.³⁹² Especially on Instagram, Sampson must think carefully about how she wants to represent the scale, she says. Trial and error have helped her get better and overcome challenges.

17 December 2020

I'm late due to another online meeting I just had. When I arrive in Sampson's living room, she is taking photos of the Barking model (Fig. 35). The team decided to go with 3D printing after receiving quotes. The difficulty for Sampson was exporting the model from Revit and importing into Rhino without losing any information. The result is now a matte printed 3D model. Sampson doesn't want to use too much plastic, so (besides the cost) she modelled the site in paper and only the new architectural design was 3D printed. After Sampson has taken the pictures, she is not satisfied with the raw photos, but then edits them with Photoshop and shows me the results (Fig. 36). It is fascinating to see how Sampson manages to turn a picture taken in a makeshift studio – her dining table with a white bed sheet – into an atmospheric photo that reveals a certain understanding of material. On the one hand the understanding of the material used, on the other hand the building material that it is supposed to represent. The pictures will be used for the Stage 2 report. We talk about the different scales at the different stages. The closer the architects get to the final stages, the more detailed the scales and therefore the models have to be. The closer the scales, the trickier it becomes to represent material. A jump in scale from 1:250 to 1:200 is much more complicated than from 1:500 to 1:25. The latter being an aesthetic representation of a building in a sculptural way.

Beneath the Digital Surface of Materiality

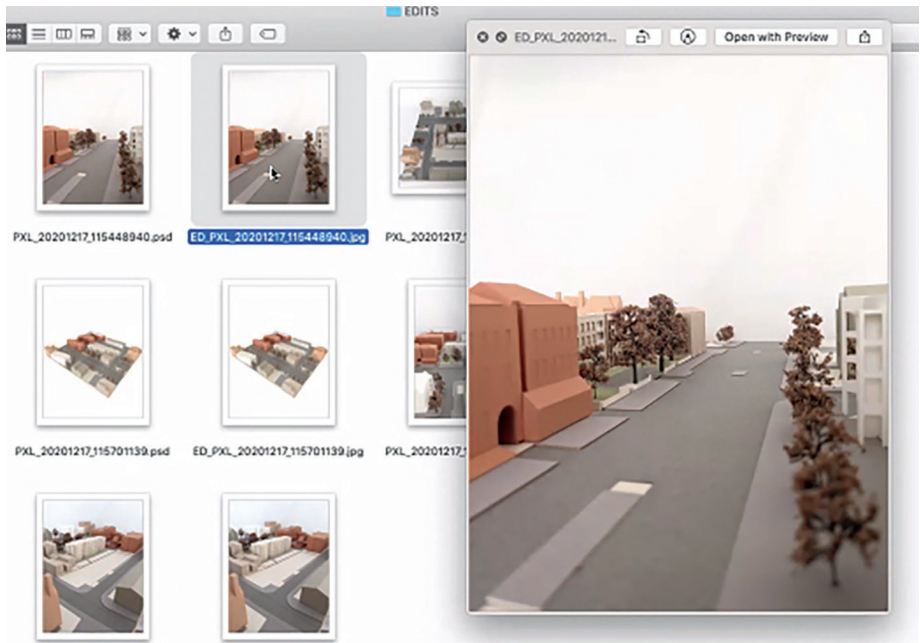
The memorable moments that are attached to different senses clearly highlight the difficulty of engagement in a digital study. Senses are part of an architect's knowledge, without even knowing so: architects are embodied

³⁹²Sampson, Zoom dialogue, 4 November 2020.



Fig. 35 Sampson's process of taking model shots

Fig. 36 Edited photos to show to clients and/or instagram followers



thinkers.³⁹³ The fact that the office had been closed for almost a year and was only starting to open again in stages in winter 2020, leaves the architects separated from hearing the machines or smelling the freshly cut material. They are cut off from the dusty environment that creates architecture. At the same time, Digital Mara provided a kind of filter that made these common areas of architectural experience and knowledge very present precisely through their absence. The Digital Mara device served as a representation of being on site. It raised awareness of the importance of “structures of feelings” embedded in architectural practice that inform the writing and editing process of oral history.³⁹⁴ I had a sense that, regardless of whether Ellie Sampson was taking pictures, working on machines or assembling parts, she took Digital Mara with her, allowing me a perspective of being part of almost the whole process. My perception was based on almost neutralised senses. Perhaps one sees more when not high on the smell of laser-cut paper. It leads to the methodological implication that certain limitations of sensation, of sensing, open possibilities in other directions for tacit knowledge related to material to be built or emerge.

The new circumstances in digital environments in the office have a continuing impact on the way Sampson works and communicates with her colleagues. This affects both the relationships between language and things, and the knowledge transfer with and through material.³⁹⁵ Sampson argues that

Coronavirus and people working from home has led to more formalisation of how the procedures of model-making work in the office. Because you have to be more prepared: not just prepared for what you are showing people, [but in terms of] samples, processes within the office, like making sure and checking with people that the laser-cutting is finalised before

³⁹³ Pallasmaa, *The Thinking Hand*, 87.

³⁹⁴ Janina Gosseye, Naomi Stead and Deborah Van der Plaats, *Speaking of Buildings: Oral History in Architectural Research* (New York: Princeton Architectural Press, 2019), 16.

³⁹⁵ Lehmann, “Objektstunden”, 189.

I cut it. Because they are not there to give me a kind of on-the-ground feedback. It has also formalised elements like ordering materials because it takes longer to have them delivered, sometimes they don't have certain things in stock, not all places are open all the time. Those practicalities have changed the process a lot more. So, I now collect shopping lists in a more thought-through way. I group projects to make sure that we have all the material ready for people. I think in general, [...] throughout my time as a model-maker at HT, it always helps to be more prepared, particularly with the project like the Warburg [...] Overall, I haven't noticed it being less efficient. I think, [...] for me anyway working in this way, has shown people the need for a bit more time to prepare [...] There have to be compromises. Normally, before lockdown, time was the compromise.³⁹⁶

These changed modes of practice, highlighted through a digital screen inserted between actors communicating within the practice also reveal other issues that lie beneath the surface of such interactions that are close to my empirical subject. One concerns precisely how architectural practice thinks about materials, materials choice, and the communication of these choices to clients and consultants before a building is constructed.

Mediating Material Literacy

Space and physical objects should not be seen as distinct as they interact with each other and influence perception.³⁹⁷ It becomes clear quickly that in the explanation of material, the use of accurate verbal language is a requirement to communicate specific features of physicality. Especially if the communication partner does not know the material, it is easy for aspects to get lost in translating physical experience. Furthermore, verbalisation shifts the discussion from the outside towards the inside. It emphasises the

³⁹⁶ Ellie Sampson, Zoom interview, 10 October 2020.

³⁹⁷ Maurice Merleau-Ponty, *The World of Perception*, trans. Oliver Davis (Oxford and New York: Routledge, 1948), 69–70.

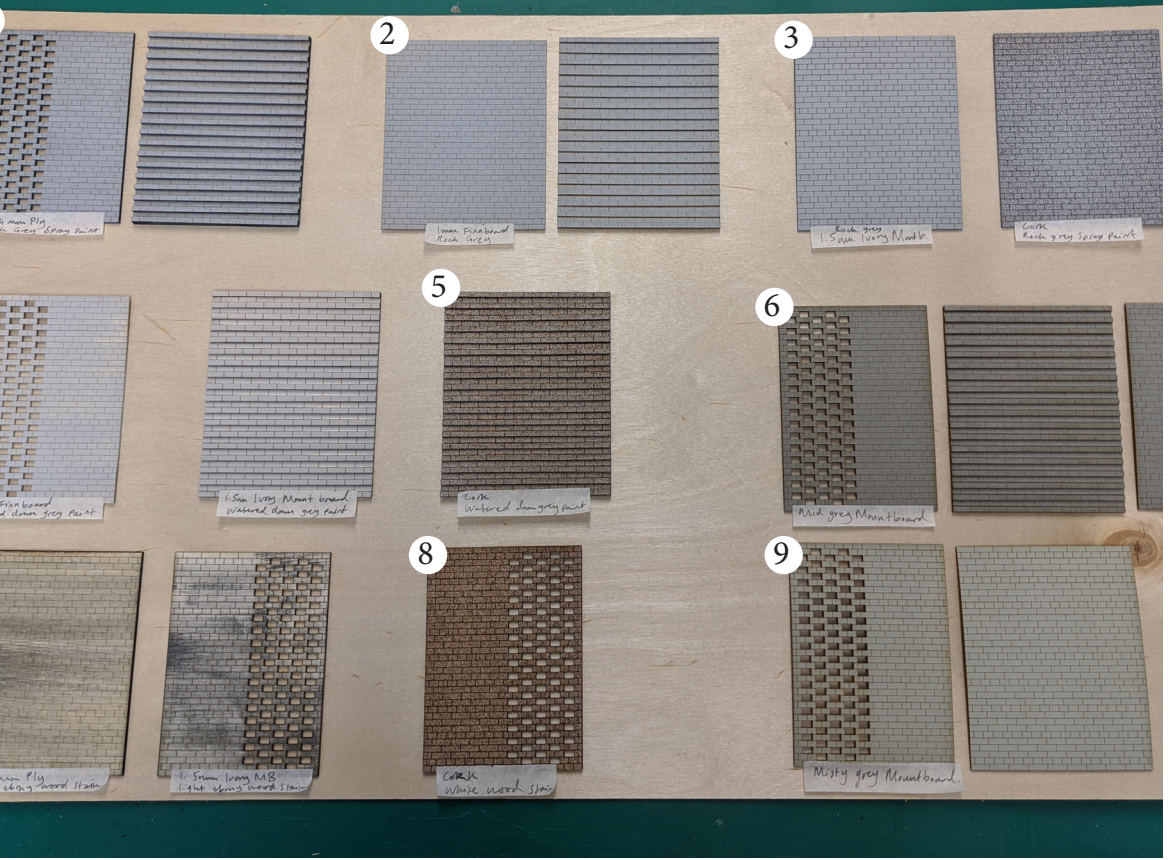
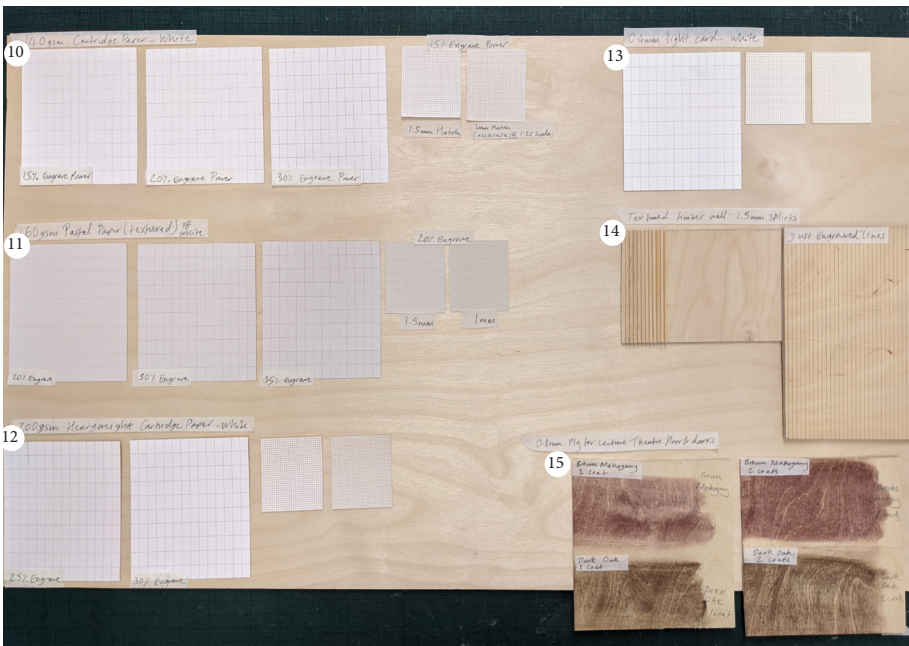


Fig. 37 Presentation slide that Sampson presented to her colleagues online

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Fig. 38



“emancipatory potential of discourse” that occurs when insider knowledge and outsider views meet.³⁹⁸ Ellie Sampson argues this perspective has increased her understanding of material a lot. Therefore she “need[s] to talk about [material] in a different way”.³⁹⁹ The study of authors and practitioners in architecture and design who interact with material is important for focusing not only on the materiality of an object, but also on the emotions evoked by feeling materials. In Sampson’s case, the study explores how this can also be done through digital means. The way in which Sampson’s disembodiment through mediated verbal articulation takes place, informs a specific material understanding. Sensory deprivation of touch or smell might increase the perception of loss around the issues of sensing material in a digital setting. The absence of certain senses forces Sampson and the team to be more specific in articulating material features in words or images to ironically evoke the missing sense elsewhere.

The importance of representation, reality and mediation of materials becomes even more crucial when architects talk to Sampson. They cannot decide about all materials conveyed by Sampson’s presentation slides online, because they don’t know what they look like in reality (Figs. 37–8). This highlights a lack of clarity on the part of architects when it comes to formulating architectural ideas. They are not able to express or articulate embodied consciousness.⁴⁰⁰ The implicit knowledge of Sampson and other actors involved comes into play and unveils the variety in material literacy in architecture. However, Sampson never makes actual buildings, but instead produces avatars. Such avatars should not be seen as second-class. They do have a capacity to speak, even envision, some material world in the object being made (Fig. 39). Models are not static, but performative. Flowers, project architect of the Warburg Renaissance project, said once in a session I joined “[w]hen we meet

³⁹⁸ Anne Kockelkorn, “Uncanny Theatre – A Postmodernist Housing Play in Paris’s Banlieues, 1972–1992”, in *Productive Universals Specific Situations*, ed. Anne Kockelkorn and Nina Zschocke (Berlin: Sternberg Press, 2019), 340.

³⁹⁹ Ellie Sampson, Zoom interview, 10 October 2020.

⁴⁰⁰ Pérez-Gómez, “Architecture as Embodied Knowledge”, 57.



Fig. 39 Pieces coming together in November 2020

Fig. 40 Final Warburg Renaissance Model



with the client, it would be nice to show pictures and also have a live action model via Zoom.”⁴⁰¹ Models generate a potential dialogue with the observer as participant and thus generate knowledge: it is a question of performativity and participation. Sampson sets the scene with detailed and well-crafted models by selectively choosing material, which I argue is due to her material literacy. Through trial and error, she has managed to develop an empathy for materials. Her practice gives meaning to material and invites it to participate (Fig. 40).

Another aspect that develops a picture of what models are doing for material literacy aims to represent material as realistically as possible to avoid having to Photoshop colour and lighting later, while still considering Photoshop as a tool for representation. The aim of making models is to generate images, as opposed to physical objects. In addition, there are discussions about what angle the photo will be taken from to ensure the model fits a certain perspective. This participatory method and the relationship between people and the artificial world considers the photograph as a “form of the question rather than a statement of apparent fact”.⁴⁰² Former CGIs made in Sketch-Up and digital plans serve both as reference and orientation to take shots from.⁴⁰³ Sampson once mentioned that she is not a professional photographer. It is noticeable, though, that a lot of time is spent on taking pictures of her models, either to present to clients and staff or to compare to older design versions (Fig. 41). There is arguably a typical order of building a model, taking pictures, and changing them in Photoshop afterwards. Sampson’s tacit knowledge of the model’s features probably helps her set the lighting when shooting. The images are also part of HT’s Instagram account (Fig. 42). This represents on the one hand Sampson’s process of work. On the other such images have a huge

⁴⁰¹ Online meeting, 30 October 2020.

⁴⁰² Craig Bremner and Mark Roxburgh, “A Photograph Is Evidence of Nothing but Itself”, in *The Routledge Companion to Design Research* (London and New York: Routledge, 2015), 209.

⁴⁰³ SketchUp is a 3D modelling program that can also produce CGI’s (computer-generated images). The design application is used in professions such as architecture, industrial design, video game, film and theatre.

impact on discussions around mediated material in the digital community. There is a lack of experiencing real life experiences nowadays, as we engage differently with the building or site than before social media. According to architectural theorists Farahani, Motamed and Ghadirinia, this gap needs to be acknowledged and critically reflected on that are mediated and, in some cases, manipulated through picture editing.⁴⁰⁴

Reflection

The normative cultures worked out by Diana Dina and Nick Royce as explained in the previous Act II, and the office's internal understanding of materials, tie in with the challenge of how material knowledge can be communicated digitally faced by Ellie Sampson when she was making the latest model for the Warburg Renaissance project just as lockdown started in March 2020. The digital study started as an experiment, giving an insight into positive facets and limitations within the method. These pro and con arguments were not immediately obvious. They were unpacked bit by bit. One of the main limitations identified was the informal conversations between Sampson, her team and I, which would probably have taken place during lunch breaks or door-to-door chats. Such informal conversations cannot be accounted for in the digital study. Of course, another very important aspect was the absence of sensory experience accompanied by the limited view of what was happening due to the narrow angle of the iPad camera. Despite all this, a great alternative window concerning my wider aim in the PhD project to explore how materials are conceptualised and generate emotions in architectural practice opened up. This would not have happened if there had not been the need for a digital interface and personal observations had been the focus instead. The digital interface allowed for observations that may have remained invisible otherwise, because they would not need to be mediated via the screen. Communication is not only a soft skill, alongside

⁴⁰⁴ Leila Mahmoudi Farahani, Bahareh Motamed and Maedeh Ghadirinia, "Investigating Heritage Sites through the Lens of Social Media", *Journal of Architecture and Urbanism* 42, no. 2 (2018): 200.



Fig. 41 Sampson's process of taking model shots

Fig. 42 Sampson's process of taking model shots shown at Haworth Tompkins' Instagram

Models as Actors and Stages

mediation, but becomes an instrument that was strongly developed, since online events are part of daily architectural practice. What kind of vocabulary is used not only sheds light on how language can become a transformational tool in design processes, but also makes one aware of the distinction between different understandings of material. Even though it takes more time to prepare the design and model process stages, consultations become more efficient through greater precision while discussing the design and explaining materials.

Through this case study, my research takes into account the environment surrounding material matters and the implications and agencies of material application. Doing ethnography also means not working in a linear way but collecting fragments without knowing whether any of these could be useful in the end. There are potential blind spots that cannot be captured through ethnography. The challenge for me was to lead you, the reader, to the heart of what I discovered, or think is important to share with you. My own situatedness as a researcher enmeshed with HT affects the nature of the findings/interpretation of the study. Because of having had architectural training and practice, being able to read architectural drawings, plans and scale models, I was aware of the general issues of communicating ideas. I could see the difficulties in translating what Sampson felt inside to an outsider. However, I fell into the same trap as other architects when it came to deciding, for example, what kind of material should be used for the model. Blinded by the look, the practicality of the materials properties took a back seat. They only became 'visible' when Sampson talked about the manufacturing while making.

My educational bias has shown that I am inclined towards the visual. I care less about how practical it is unless I practise myself. Above all, I have become aware that the needs of material cannot be addressed until materials are understood. This only seems possible when experienced through the process of making – whether doing it myself or brought to me through Sampson's material literacy. However, one aspect seems to be particularly striking: no

matter how well Sampson tries to make it clear digitally what the material looks like and what effect it has, architects only want to decide on material when they can physically touch it. They trust Sampson, but they want to be in control by entering in physical dialogue with materials themselves. This is another indication that material influences decision-making through its performative potential. The manifestation of material literacy is best shown when there is a certain amount of messiness. According to ethnographer and musician Wendy F. Hsu, “[i]n a digital production, decision-making often is focused on the objects with less attention on how meanings shift from one context to another.”⁴⁰⁵ This means for this thesis that the way material literacy can be taught to enrich collective knowledge requires an environment that allows for more emotive and empathetic action. Sampson was once asked by a colleague “[a]re you even part of this office?” when they were talking about the different teams within it.⁴⁰⁶ Such a provocation shows how important it is to see the work of craftspeople, as part of the architectural design process and not just as way stations towards a final result.

⁴⁰⁵ Wendy F. Hsu, “A Performative Digital Ethnography: Data, Design, and Speculation”, in *The Routledge Companion to Digital Ethnography* (New York: Routledge, 2017), 41.

⁴⁰⁶ Ellie Sampson, Zoom interview, 27 November 2020.

DISCOVERING A HISTORY: AN ESSAY ABOUT MODEL-MAKING

The following scene serves as a reflection on model-making and its documentation process. The model presented is a case study that follows the preceding remote study of the model-maker Ellie Sampson, who worked on the Warburg Renaissance project designed by Haworth Tompkins (HT). I observed the collaborative processes involved in producing this model, which included negotiations with the design team and interfaces with the client through extensive use of Zoom calls. Among other aspects, these circumstances brought to light that a common level of material literacy among the team members was supported through mediation. Sampson's understanding of material and how material is mediated expanded greatly during lockdown. She had to learn "to talk about it in a different way".⁴⁰⁷ The changed nature of her practice, where a digital screen was inserted among actors communicating within the practice, offered insights into the model-making process as a learning tool to not only gain greater material knowledge, but also to reflect on in the architectural design process.

Working remotely with Sampson has taken me this far in describing the role of a model-maker in contemporary practice, but there is another step that takes me into the realm of the learning process of model-makers that I would like to explore through a participatory element. The aspiration of this scene is to report as an individual, to present from a first-person perspective. I want to capture experiential knowledge to reflect on material literacy embedded in the embodied creative process. Maarit Mäkelä and Nithikul Nimkulrat argue that "documentation in the context of practice-led research functions as a conscious

⁴⁰⁷ Mara Trübenbach, "Presence, Presentation and Representation: Between Model-Making and Mediation of Material in Architectural Practice during Covid-19", in *CA²RE / CA²RE+ Hamburg: Conference for Artistic and Architectural Research – Book of Proceedings*, ed. Marta Fernández Guardado and Matthias Ballestrin (Hamburg: HafenCity Universität Hamburg, 2021), 296.

reflection on and in action”.⁴⁰⁸ Conducting a remote ethnographic study of a model-maker and then conducting my own hands-on investigation opened my eyes to and use of not only Sampson’s but also my own reflexive knowing, which I hope to unfold in what follows. It would not have felt right to write about model-making without having used my own hands, as “[m]odelling requires – in a sense, it is – following”.⁴⁰⁹ Initially I intended for the model I would build to reveal implicit knowledge about material literacy and the “intersection of the research on new materials and the extensive use of digital tools”.⁴¹⁰ However, through the case study, a new approach emerged to me, namely the interaction of a triple agency: first, entering the actual space of the case study I could draw on specific habits and rituals from Sampson’s mode of practising (re-enactment); second, through modelling, a different approach to the role and time of the Warburg story arose (haptic relation); and third, there seems to be a potential of a broader audience involved in the design and making process (complicity). I argue that these three observations that emerged out of the case study go beyond the so-called ‘material turn’.⁴¹¹ It enables the notion of ‘material dramaturgy’ in architecture by cooperating and reflecting on the embodied process of making an artefact. I consider the inter-relationalities of different agencies as crucial aspects to material literacy.

Context of the Study

One year after my remote ethnographic study of Ellie Sampson’s practice, I started my field work in the HT workshop in North London, where Sampson usually works, in September 2021. With some interruptions due to other work to be done, it took ten weeks from initial ideas to the completion of a model. Sampson and I had

⁴⁰⁸ Maarit Mäkelä and Nithikul Nimkulrat, “Documentation as a Practice-Led Research Tool for Reflection on Experiential Knowledge”, *FormAkademisk* 11, no. 2 (2018): 1.

⁴⁰⁹ Matthew C. Hunter, “Modeling: A Secret History of Following”, in *Design Technics: Archaeologies of Architectural Practice*, ed. Zeynep Celik Alexander and John May (Minneapolis: University of Minnesota Press, 2020), 62.

⁴¹⁰ Picon, *The Materiality of Architecture*, 18.

⁴¹¹ For a discussion see Bruno Latour, *Reassembling the Social*, 76; Daniel Miller, *Materiality* (Durham, NC: Duke University Press, 2005), 14.

participated in an earlier organised pedagogical setting that explored how architectural models worked, the potential they offered in developing architectural analysis and their material potential. This setting was provided by a seminar at the Oslo School of Architecture and Design, taking place in autumn 2020. To highlight the importance of the learning process in creating material literacy, I draw on observations and my participation in the elective course “Warburg Models”. Twelve students started researching the story of the Kulturwissenschaftliche Bibliothek Warburg (KBW) with the aim of curating an exhibition. The course explicitly explored “how continuity and memory were created through the Warburg Institute’s constant projects of architectural commissioning”.⁴¹² Implicitly it explored the interrelationship between model-making and material literacy through exchange among participants. Students would be paired up and select one architectural project of interest commissioned by the Warburg Institute. Within this framework I focused on the less well-known history of the transport of the KBW from Hamburg to London. The model related to the form of a particular ship, called *Hermia*, built in 1908 in Flensburg with a total length of 69 metres. It is represented at a set scale of 1:75 and finished according to a colour scheme that also related to the history of Warburg’s library. There has been little research on the ship and its displacement, which I hope to make more tangible by engaging with the modelling of the ship. “A model is a prop to a game of make-believe; it attains epistemic force and generates new insights only as its constraining directives are discovered and pursued”.⁴¹³ The conceptual model I create therefore also has a political function, simply by being a vivid model that is not commercialised but intends to tell a story.

Researching the Model

On an early Monday morning in June 2020, I take the train from Leipzig to Hamburg. In the afternoon, I arrive

⁴¹² Tim Ainsworth Anstey, “Moving Memory: The Buildings of the Warburg Institute”, *Kunst og Kultur* 103, no. 3 (2020): 172.

⁴¹³ Hunter, “Modeling: A Secret History of Following”, 61.

at my destination: the Kulturwissenschaftliche Bibliothek Warburg. The beautiful brick building at Heilwigstraße 116 is located in a posh residential neighbourhood in the north of Hamburg (Fig. 43). At the end of the private garden, the Alster river idyllically frames the property. Art historian Aby Warburg began collecting books in the late nineteenth century. His collection became a marvellous library that exists to this day. Hardly anyone would understand how the books were collected or the system according to which they are arranged on the bookshelves,⁴¹⁴ except for two main figures, Gertrud Bing, who was assistant librarian, and Fritz Saxl, who was appointed director of the KBW in 1929, after Warburg's death.⁴¹⁵ KBW was established as an institution in 1921, when growing rapidly, it needed accommodation for the books larger than Aby Warburg's private house could offer. After long discussions and thirteen drafts by commissioned architect Gerhard Langmaack, Warburg finally accepted the design.⁴¹⁶ The new building was completed in 1926. It was divided into four floors, each floor assigned to a major theme based on the following classification system: image (1st), orientation (2nd), word (3rd), action (4th).⁴¹⁷

It's a bright day. The red brick harmonises wonderfully with the blue sky in the background. The archivist greets me warmly at the front door and leads me through the library. The atmosphere of the historical building, which I had previously only experienced through the lens of digital media, is overwhelming. However, almost the entire library and its interior have been restored. If I remember correctly, only the safe door and some door handles are original.

⁴¹⁴ Claudia Wedepohl, "Mnemonics, Mneme and Mnemosyne. Abe Warburg's Theory of Memory", *Bruniana e Campanelliana* 20, no. 2 (2014): 398.

⁴¹⁵ Dorothea McEwan, *Fritz Saxl eine Biographie* (Vienna, Cologne, Weimar: Böhlau Verlag, 2012), 12.

⁴¹⁶ Tilman von Stockhausen, *Die Kulturwissenschaftliche Bibliothek Warburg: Architektur, Einrichtung und Organisation* (Munich and Hamburg: Dölling und Galitz, 1992), 68.

⁴¹⁷ Katia Mazzucco, "Images on the Move: Some Notes on the Bibliothek Warburg Bildersammlung (Hamburg) and the Warburg Institute Photographic Collection (London)", *Art Libraries Journal* 38, no. 4 (2013): 18.



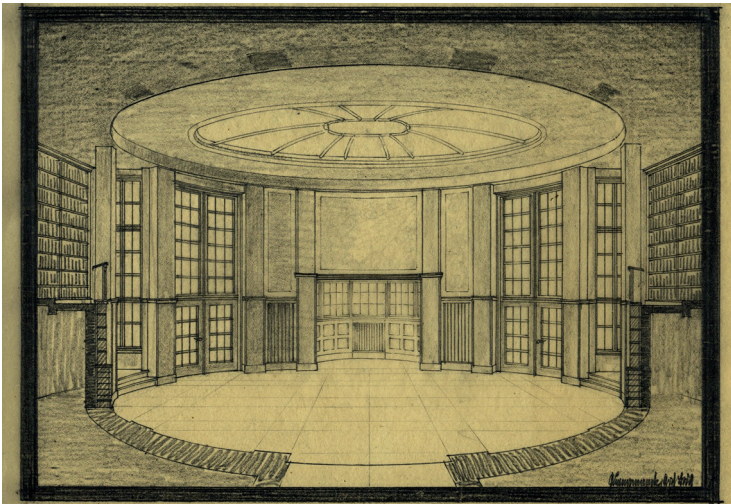
Fig. 43 KBW in Hamburg, 2020



Fig. 44 Warburg Institute at Woburn Square in London, 2018

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Fig. 45 Reading Room: design and perspective by Langmaack, 1925



When we reach the basement, I am introduced to my work area for the next two days. I begin by reviewing the first batch of archival material to study this historical place. The well-researched book *Die Kulturwissenschaftliche Bibliothek Warburg: Architektur, Einrichtung und Organisation* (1992) by Tilman von Stockhausen proves to be a perfect starting point for me to understand the complex relationships and goals that Warburg pursued, not only in Germany but also internationally. The exploration of the library's history continues as I photograph the building and its interiors. It is hard to imagine that the entire library – Warburg's lifework – including the furniture and metal shelving, had to be moved when Nazi Germany came to power in 1933.⁴¹⁸ Since Warburg had already died in 1929, he wasn't aware of the library's uncertain journey; Uncertain insofar that the organizer Gertrud Bing and Fritz Saxl would not know whether the steamer that would carry the books would safely reach the harbour of London. International relations with the United States and Great Britain made it possible to transport the library from Hamburg to London. Upon its arrival in London, there was a number of further moves before and after the World War II. Before being housed at Woburn Square in 1958, the Warburg Institute Library came to the Thames House, designed by Tecton in Westminster in 1934. In 1937, it moved to the Imperial Institute Buildings in Kensington, where it was housed until 1958.⁴¹⁹ Although never built as intended, the plans nonetheless shed light on the relationship between the two directors. Today, the Warburg Institute is still located at Woburn Square in Bloomsbury (Fig. 44). Since spring the 2022 the building is being renovated under the direction of HT.

On my second day, I walk north from the hotel to KBW. It is a great pleasure to read the papers of Warburg and his ambitious colleagues. I am fascinated by the structure of the library. Warburg's knowledge of the order of the books and his passion for finding relationships between nature, the cosmos and human beings are related to his strong

⁴¹⁸ Mazzucco, "Images on the Move", 21.

⁴¹⁹ Ainsworth Anstey, "Moving Memory", 174.

interest in astronomy. The KBW's counterpart is another scheme by architect Hans Loop. He converted a water tower into the Hamburg Planetarium. Warburg curated the opening exhibition. In 1930, just six months before Aby Warburg's death in 1929 the Planetarium was completed. Unfortunately, there is nothing to be found at KBW, but a tip from the KBW archivist takes me to the Hamburg Architekturarchiv.

The next morning, I visit the Hamburg Architekturarchiv in the heart of the Speicherstadt. Before I begin shifting through the archival material, the archivist informs me about the messy material from architect Langmaack. The Langmaack family dynasty of architects had passed the plans and drawings here and there. It was not uncommon to find a drawing from the KBW with completely different plans in the same folder. My attempt to find further correspondence between Warburg and Langmaack fails. However, there are impressive drawings of the oval for the famous reading room by the architect himself (Fig. 45). After taking pictures and scanning all relevant archival material, I take the train back home to Leipzig in the afternoon. The long history of the KWB fascinates me – especially the fact the Warburg Institute had to move overseas.

Researching the Space

It is a sunny Wednesday afternoon in North London in September 2021. I am on my way to the office at Holmes Road to meet one of HT's associate directors, Dan Tassell, who's one of the project architects of the Warburg Renaissance project. Elizabeth Flower, the other project architect, is on maternity leave, which is why I unfortunately can't meet her. The reason for my visit is linked to a ten-week stay to do archival research, build a model and experience HT's workshop. I aim to meet the staff in person, after getting to know them during my remote ethnography which first started in May 2020, and was then postponed to begin in September 2020, ending in March 2021. The office is on the ground floor of a new building in Kentish Town. The entrance is quite hidden, I

actually miss the door and have to go back again before I ring the bell. Tassel opens it. It is great to see the first HT face in person. After spending a lot of time on Zoom, I have almost forgotten what it feels like to meet people in real life. Tassel shows me around the office and introduces me to co-founder Graham Haworth, sustainability manager Diana Dina and another architect who worked on the Warburg project. Haworth and Dina are both in a Zoom meeting so we can't chat that long. After Tassel's office tour, we take a ten-minute walk to the other HT office. He tells me that the company has grown massively in recent years, especially during lockdown.

The office at Greenwood Place was HT's first office. It is upstairs, on the fifth floor, with a view across all of London. We take the lift. When the doors open, I first discover a plaster model by Ellie Sampson of which she once sent pictures. It feels good and weird at the same time to finally see one of the models in their real appearance. I can sense their scale, material and haptic qualities do affect my perception, although Sampson's mediation was on point. As we pass the entrance, we say hello to the secretary, and to Nick Royce, with whom I worked on the material excel sheet for a while. He is busy with another colleague though, so Tassel and I move on to the model area.

Exactly a year ago, I was introduced to the in-house model-maker Sampson. I remember when we came up with the idea of a more transportable device, the iPad called Digital Mara that I would send over to Sampson's workplace. The workshop looked huge. I could tell the sunlight was falling straight into the windows as I digitally accompanied Sampson to one of her assembly sessions for the Warburg model. Sampson says, "After 4 pm you basically can't see anything anymore because the sun shines directly in your eyes." As I stand on the top floor of an old five-storey industrial building, seeing London's spectacular skyline, I am overwhelmed by the space. Tassel says the workshop used to be messy, but Sampson brought some structure into it. Sampson laughs because she has just finished cleaning up the whole workshop area because of an important visit

tomorrow. Nevertheless, I can still sense the hands-on atmosphere. The smell of freshly cut wood, which I missed so much when I did the remote observation is no longer there today, but scraps of paper, cupboards and samples of various materials are scattered around the workshop. The tools hang neatly on the workshop wall and the laser cutter stands directly under the old industrial window, in which a small glass window has been replaced by an air escape for the saw (Fig. 46). Everything looked bigger on the screen. I am surprised how Sampson manages to produce different models at the same time in these rather small surroundings. She says that this is becoming an issue, as there are times when she works on up to four models at the same time. Each of them occupies space. This once again indicates her organisational skills, required to deal with the limited space available. She has to coordinate not only the models and their materials in time, but also make a guesstimate of the space required to store them.

Sampson's workshop will be my workspace from now on. The space serves almost as an object of research – aiming to build the ship model for the “Warburg Models” travelling exhibition within it. By making the ship model I re-enact particular movements of Sampson's work without meaning to. I can notice the workshop is indeed like Sampson said, “a hub within the studio that members of the team [can] stop by and comment on what is going on or make suggestions to both design or making technique”.⁴²⁰

Concept of the Model

As previously introduced, there are six buildings that were commissioned between 1923 and 1958 – a major change in this construction history was the move from Hamburg to London in 1933. In order to transport the entire library, it was necessary to plan how to (un)pack it and how to overcome the distance between two countries. While we know little about the transport, we do know that the steam

⁴²⁰ Excerpts from the written and spoken conversation “Sculptural Puzzle: A Conversation About Model-Making and Material Literacy in Architecture” (2021) between Ellie Sampson and Mara Trübenbach can be found in full in the appendix.



Fig. 46 Haworth Tompkins' workshop, 2021

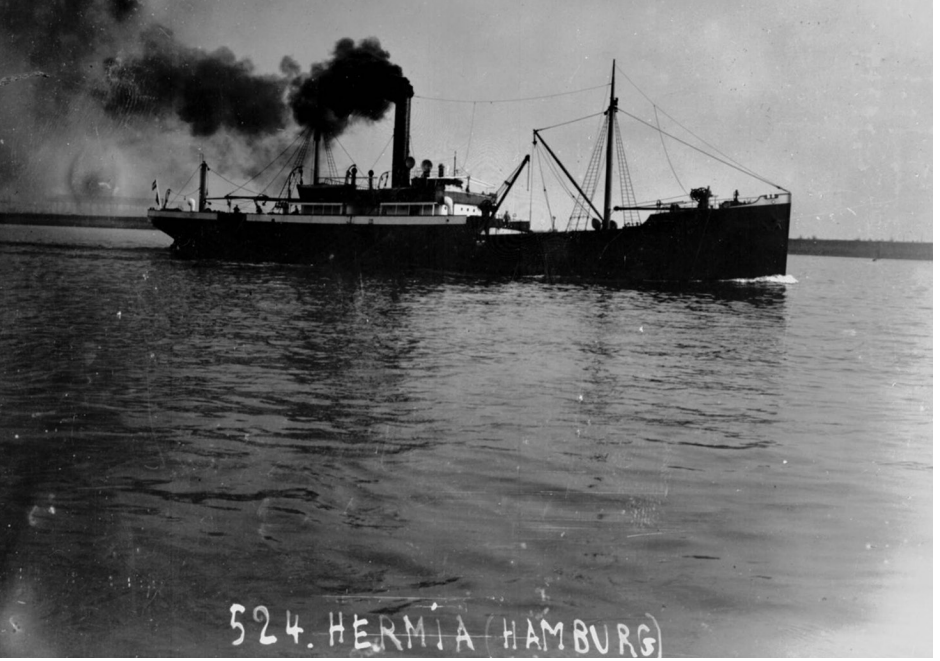


Fig. 47 Hermia



Fig. 48 Plaster process of the ship model, 2021

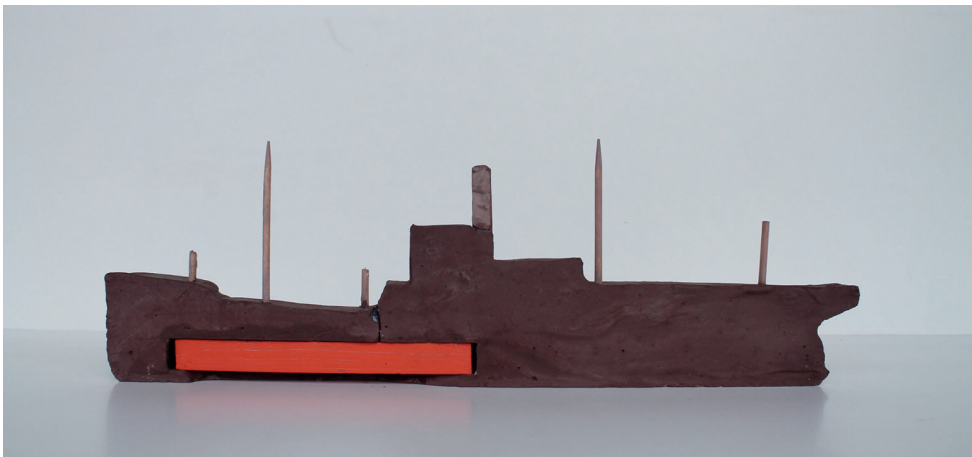


Fig. 49 Working model of the ship

cargo ship SS *Hermia*, a Hamburg-London Line ship of the Flensburger Schiffsbau-Gesellschaft, launched in 1910, transported Warburg's library, including furniture, from Hamburg to London by way of two voyages in December 1933.⁴²¹ At the time, the ship was owned by HAPAG. It was bought in 1934 by Adolph Kirsten & Co., which had operated the HH-LDN line from 1910 until 1928. In 1940, *Hermia* became a hospital ship for the German Navy, was renamed *Adriana*, and sunk by a British air mine on the Elbe river near Flensburg in December of that year.⁴²²

Since there is a lack of research material, we know that we don't know much. However, the period of temporary spatiality of the move is the only certainty that we have, which I try to insert first into an abstract section ship model, to build a 1:75 model afterwards. The half-section through the ship allows a glimpse into the hold in which the library was transported. The section model hopes to capture the crossover situation that occurs primarily when I look at archival images of *Hermia* and its steam as motif for motion (Fig. 47). I create a vehicle for the library and build on my embodied knowledge gained from making an abstract working model out of plaster. I continue with a more detailed model made of MDF.

Warburg's books were on the move, just as I am now on the move as model-maker. I experiment with the process of making plaster and casting for the working model. It was built in spring 2021. The impulse of performativity and chronology emerges from wet to dry, from malleability to stasis, from positive to negative and vice versa (Fig. 48). The two selected colours, NCS 6502-R (brown) and 0560-Y80R (orange), derive from the spine colour codes for letters H ("Political History") and I ("Middle Ages I") in the 1934 Warburg catalogue system.⁴²³ The malleability of the brown-pigmented plaster ship allows me to model

⁴²¹ WIA, GC, 1933, 'Telegram from KBW to Fritz Saxl, 7 December 1933', General Correspondence, The Warburg Institute Archive.

⁴²² Arnold Kuldias, *Die Geschichte der Hapag-Schiffe. Band 3:1914-1932* (Bremen: Hauschild, 2009), 196.

⁴²³ Stockhausen, *Die Kulturwissenschaftliche Bibliothek Warburg*, 77.

it abstractly, leaving it in a form of almost unfulfilled execution. These haptic traces testify to the moment of leaving the material in its state of creation. This sensational experience is literally cut through by the making of a section model, creating a certain strangeness. The literal material passage of time can be very sensual. However, the analytical sharpness of the orange-coloured cube embodies temporary spatiality and architectural perfection. The contrast of increasing the accuracy of the shape creates a sense of hierarchy (Fig. 49). According to Adamson, we are not taught in colour per se, “though there are many classes teaching students how to manipulate color to advantage”.⁴²⁴ Similar to the other six models, the colour orange is a landmark. The highlighted colour enters into dialogue. It is in harmony with the other colourful miniaturised buildings (Fig. 50).

The haptic qualities of the ship are undoubtedly informed by its shape. The more the model gains precision, the more important the form becomes. The model cannot be portrayed as exactly true to life. It’s a shape in flux with a safe space: the hold. With this information, I begin to experiment with the shape and the possibilities of the technology of laser cutting. Based on topography and in relation to the wave moments, the layering of a solid body made of MDF and the precise cutting of the transport boxes tell a story of restlessness. The model defines the shipping containers, which are based on the modular container system developed in the 1930s. They are here presented with a level of uncertainty through the use of fragile paper. Much like the library itself, the orange containers are not fixed, but are placed inside the ship, temporarily stored, yet standardised (freight) offers some sense of security. In order to capture the altered status of the boxes not on a communicative level but on a physical level, the boxes are given numerals and letters derived from Saxl’s telegram, which Bing sent to London when Hermia sailed (Fig. 51). The typography of the lettering is based on the original graphic from 1933. It reflects the technical part of the moving and the interim storage (Fig. 52).

⁴²⁴ Glenn Adamson, *Thinking Through Craft* (London and New York: Bloomsbury, 2013), 1.



Fig. 50 Exhibition Warburg Models at Guttormsgaard arkiv in Blaker, 2021

Models as Actors and Stages

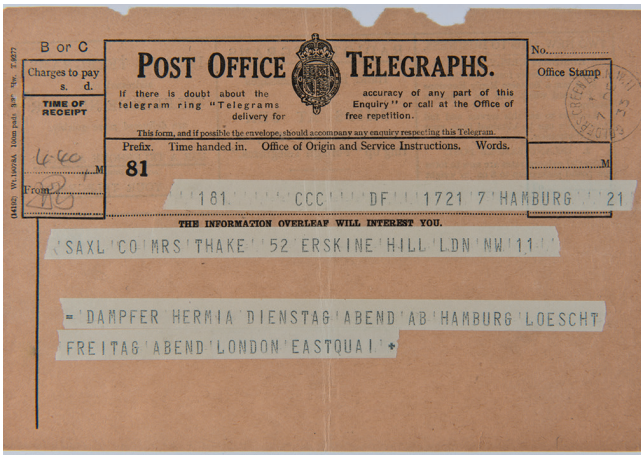


Fig. 51 Telegram from KBW to Fritz Saxl, 7 Dec 1933

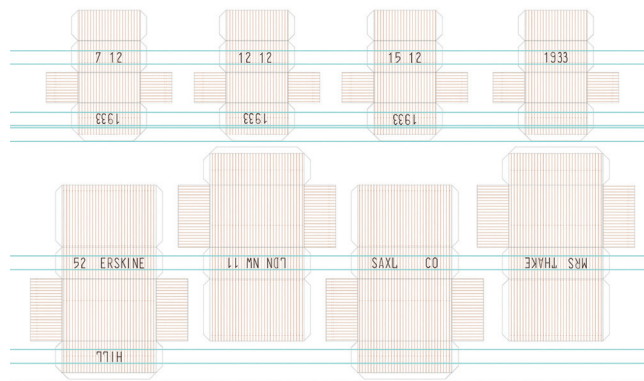


Fig. 52 Drawings for miniature containers

Making Of

In his essay *Unpacking My Library: A Talk about Book Collecting* (1931), Walter Benjamin talks, among other things, about library classification systems and quotes Anatole France: “The only exact knowledge there is [...] is the knowledge of the date of publication and the format of books.”⁴²⁵ At first glance, this seems to have rather little to do with modelling. However, I contend that the “exact knowledge” a modeller begins with is not the date of publication or the format of books, but the purpose the model serves, hence its abstraction. Referring to sociologist Richard Sennett’s notion of craft in *The Craftsman* (2008), architectural theorist Lara Schrijver suggests that “craft is based on an idea of expertise combined with (reflective) practice”.⁴²⁶ In other words, the reflexive aspect of the making process of the ship model is my learning process of gaining material literacy.

Before I begin modelling the final ship model, I create a mood board on the image sharing platform Pinterest where I collect inspirations that match my aim of arriving at the abstraction of the working model. This set of examples was crucial when I spoke to Ellie Sampson about possible ways of transforming the initial idea to an artefact. To clarify the importance of abstraction in terms of aesthetics and surface in architecture, Giuliana Bruno brings into play the term ‘empathy’, which “can be fully understood as a projection [...] that informs a contemporary form of ‘art architecture’”.⁴²⁷ To achieve a high level of abstraction, the context must first be understood as a whole: “the separation of body and reflexive consciousness represents an abstraction that is always experienced as a unity in

⁴²⁵ Walter Benjamin, “Unpacking My Library: A Talk about Book Collecting”, in *Unpacking My Library: Architects and Their Books*, ed. Jo Steffens (Princeton: Yale University Press, 2009 [1931]), 3.

⁴²⁶ Lara Schrijver, “Architecture: Projective, Critical or Craft?”, *Architecture in the Age of Empire, 11th International Bauhaus Colloquium Weimar* (Weimar: Bauhaus-University Weimar, 2011), 364.

⁴²⁷ Giuliana Bruno, *Surface: Matters of Aesthetics, Materiality, and Media* (Chicago: University of Chicago Press, 2014), 195.

the originally goal-oriented action and the successful coordination of movements that attends it.”⁴²⁸

The first step is to roughly model the ship in 3D to get an understanding of the model, and most importantly, to draw the plans. This is done simultaneously. The act creates a feedback loop between 3D and 2D and provides an understanding. The plans I received from the archive in Flensburg are from 1908. Unfortunately, they do not show *Hermia*, but drawings from the same series produced in the early twentieth century (Fig. 53). I begin to reconstruct *Hermia* by focusing on the long section, which is not present on the plans (Figs. 54–7). In the process, many questions arise, such as: how do I model the curve or what does the ship look like from the inside? I also familiarise myself with the vocabulary around a ship – the stem, back, etc. After five days, the plans are ready, although not for the final exhibition, where they should conform to the same drawing style as the other six blueprints. On the sixth and seventh day, I simplify the shape and divide it into layers (Figs. 58–9). This is done first in 2D. It forces me to think about the material, its thickness (2 mm), the numbers of layers I need, what the model shop provides. Then I have to adapt the layers to the size of the laser cutter (800 x 450 mm) (Fig. 60). I divide it into three parts, arrange the parts on it and edit the files for the laser cutter. Now I know how many MDF boards I need and can order material. I have trouble getting the material in time, because the model shop has run out. Fortunately, in the afternoon I get word that they can deliver the next day. To determine the right size joints to glue the three-part layers, to see if the MDF needs to be spray-painted brown, and whether I use poly filler, I laser cut a sample from a scrap from HT’s workshop. From this stage on, the actual making process is documented by time-lapse videos, to make the craft of the ship model-making visible, and to allow me future reflection time.

⁴²⁸ Jens Loenhoff, “Tacit Knowledge: Shared and Embodied”, in *Revealing Tacit Knowledge. Embodiment and Explication*, ed. Frank Adloff, Katharina Grund and David Kaldewey (Bielefeld: Transcript Verlag, 2015), 31.

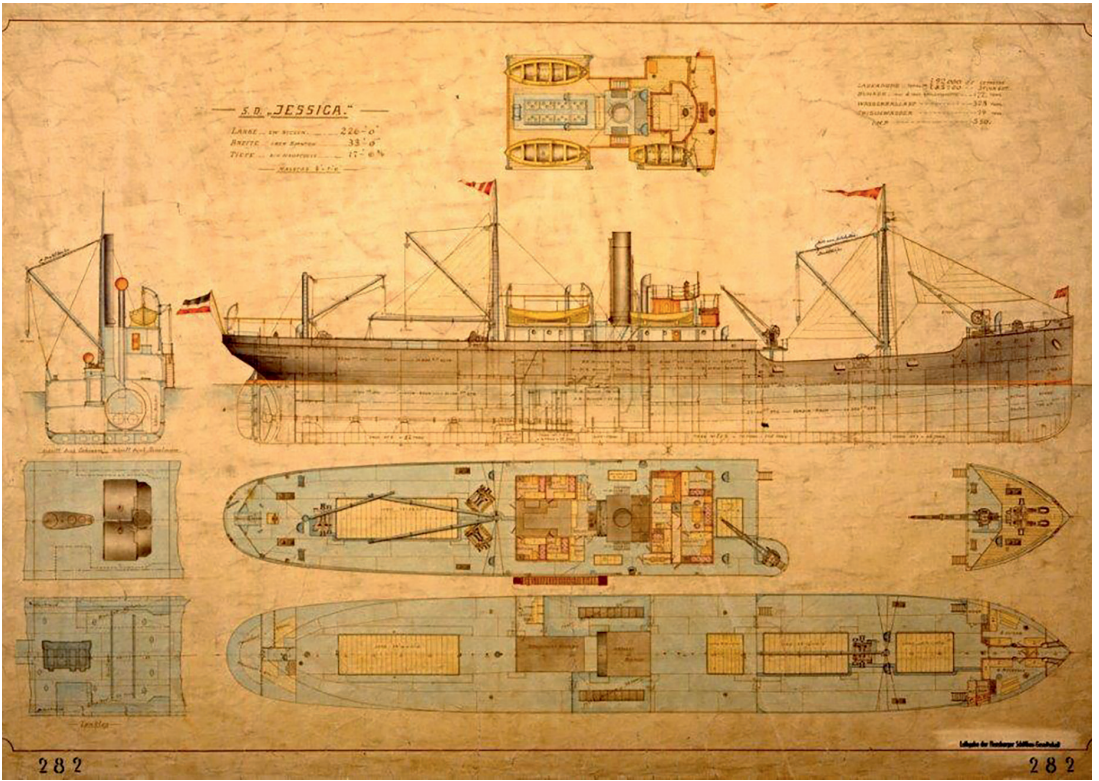


Fig. 53 Drawings of ship Jessica

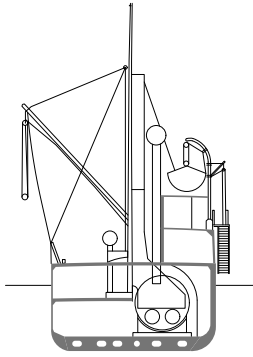


Fig. 57 Cross section

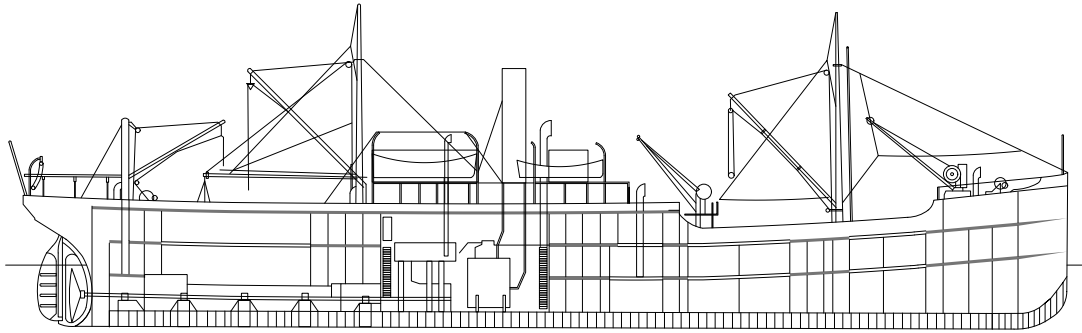


Fig. 56 Long section

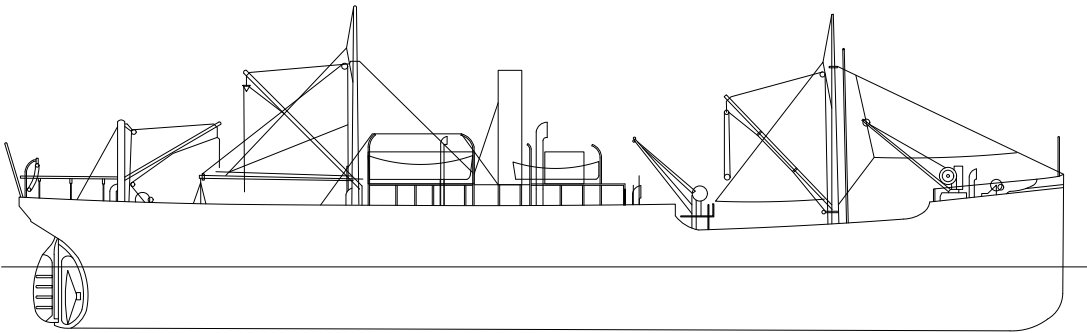
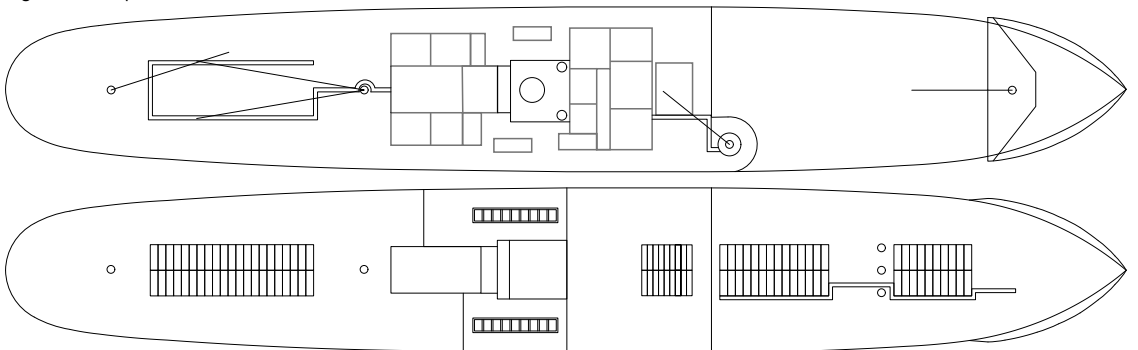


Fig. 55 Elevation

Fig. 54 Floor plans



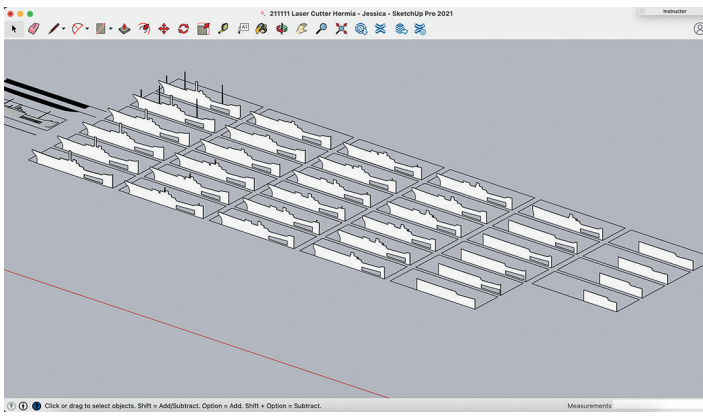


Fig. 58 3D layers

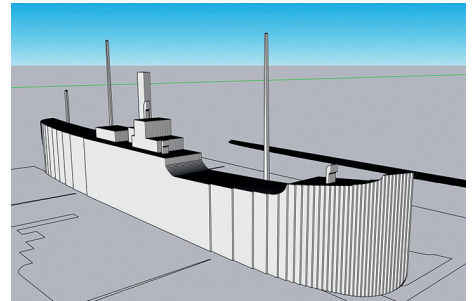


Fig. 59 3D model

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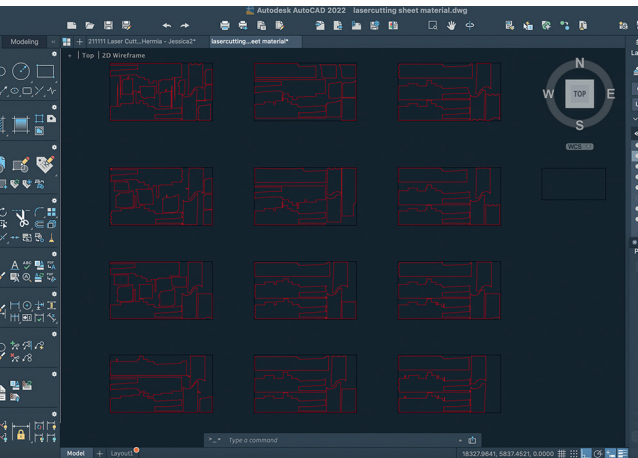
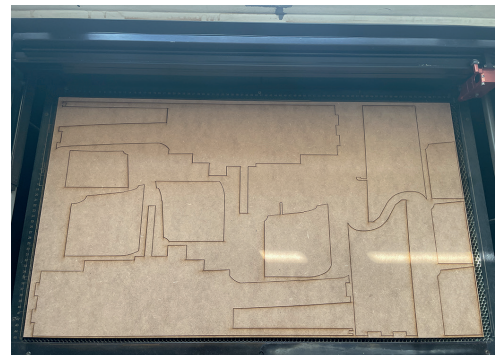


Fig. 60 Laser cut drawing

Fig. 61 MDF laser cut



The material arrives in the late morning of the tenth day so that I can laser and assemble the whole ship: 89 pieces in total (Figs. 61–2; Video 1). On day eleven, I start gluing the parts step by step and notice a material reaction problem. The MDF layers start to bend due to the humidity of the glue I apply to each layer. By pressing the glued pieces against the workbench, using clamps, and letting them dry for 48 hours, I manage to control the material (Figs. 63–4). According to Camilla Groth, Maarit Mäkelä and Pirita Seitamaa-Hakkarainen our body is “in contact with a material that bends to our will, but the material also has its own will; thus, there is a struggle between our will and the material.”⁴²⁹ The final back panel and top layer are applied. No sanding is necessary, but in some places I have to use a brown pencil to cover unsightly transitions. The final layer of a large sheet of brown paper to cover the joints on the section side is the last step. This will happen after I have modelled the miniature freight.

I make the drawings of the containers, that is, the typography of the telegram and the outlines of the cubes. Then I make a test print on white paper to see the scale of the letters. I doublecheck the thickness of the vertical grid of lines associated with the industrial background. After some adjustments on the twelfth day of work, I print on the thick orange paper, which has a soft texture and that I chose based on Sampson’s advice. Her expertise ranges across any kind of paper, so I trust her material literacy.⁴³⁰ The cutting and gluing process follows. While the miniature cubes dry, I trace the outline of the ship on the large brown sheet of paper. After three attempts, I decide on the second attempt, which proves to be the most accurate. I tape small pieces of double-sided tape (Sampson advised to use small strips rather than larger ones) to the section model and carefully tape the large sheet from the centre out to the left and right on the solid model. After twelve days of working in machine mode, the model is officially done.

⁴²⁹ Camilla Groth, Maarit Mäkelä and Pirita Seitamaa-Hakkarainen, “Making Sense: What Can We Learn from Experts of Tactile Knowledge?”, *FormAkademisk – Forskningstidsskrift for Design Og Designdidaktikk* 6, no. 2 (2013): 8.

⁴³⁰ Groth, Mäkelä and Seitamaa-Hakkarainen, “Making Sense”, 10.

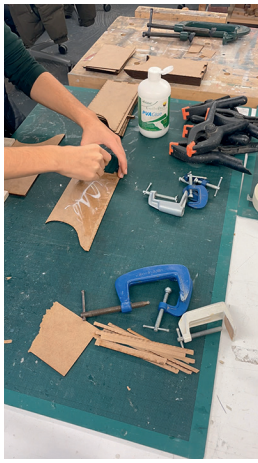
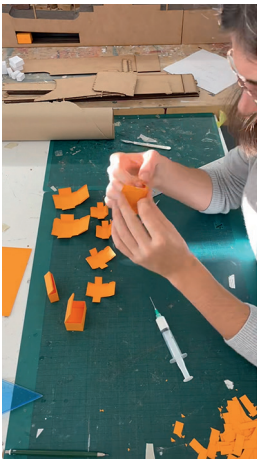


Fig. 62 Assembling 89 pieces, 2021

Video 1

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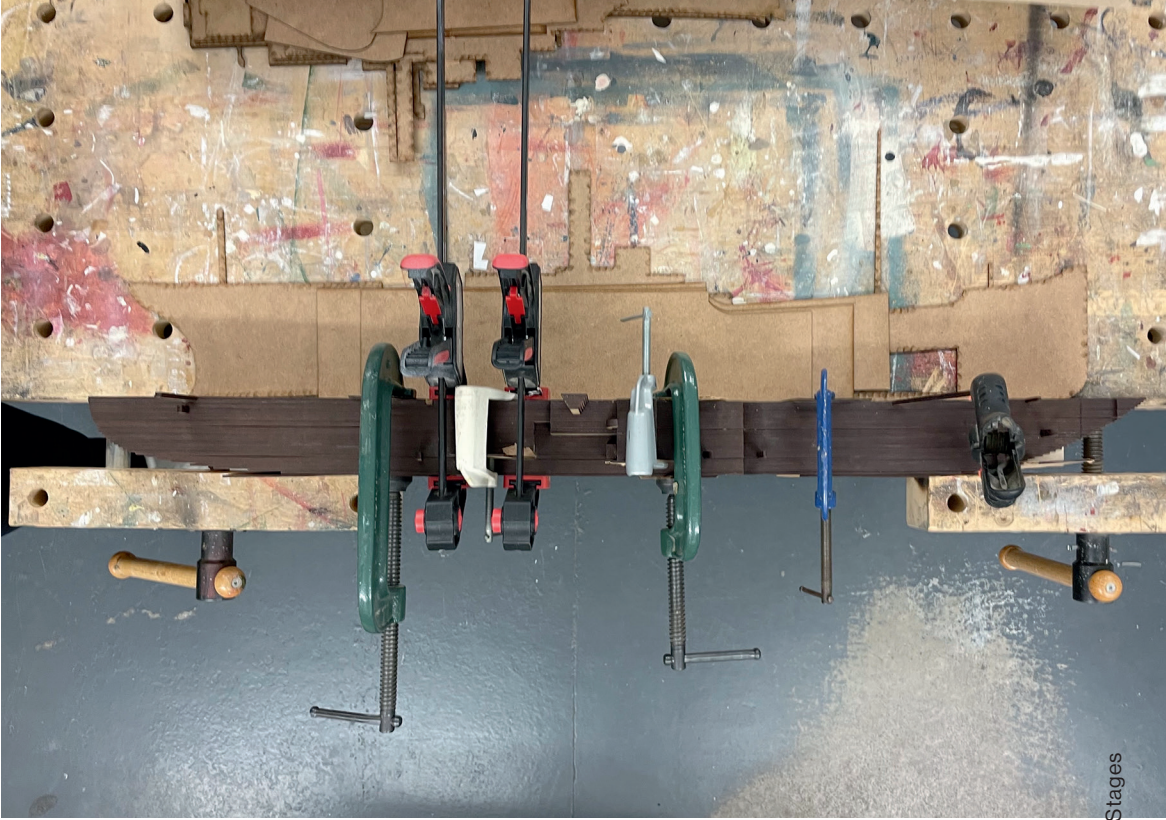


Fig. 63 Ship model fixed with clamps

Fig. 64 Passage of front and back panel



On day thirteen, I photograph the model from all perspectives (Figs. 65–70; Video 2–3). It is a sunny day, so I have to close the curtains to get a more diffuse artificial light (Fig. 71). Then I lightly edit the light and background in Photoshop. In the afternoon, I build a transport box to carry the ship from the workshop to the Warburg Institute the next morning. After cleaning up the workshop area, I carry the fixed model to my home, which is only a five-minute walk away. The next day I take a taxi. Due to a tube strike and a typical rainy day in London, the streets are packed. The twenty-minute journey turns into forty-five minutes. The almost one-metre-long model sits on my lap in the back seat (Fig. 72). This transport of the model could be seen as a small re-enactment of the actual move of KBW from Hamburg to a new home in London. The taxi stops in front of the Warburg Institute. Since the library is not open yet, an employee who is just entering the building kindly lets me in when he sees me with the huge transport box. I take the lift that stops on the fourth floor, get out, turn left, and follow the corridor to the end. I knock the door. The director opens. Until I know more about the travelling exhibition and seeing the other six models is on hold because of Covid-19, I will put my model on the bookshelf in the director's office (Fig. 73).⁴³¹ Then, I leave the building and walk back to the office to say goodbye to the team on my last day in London.

⁴³¹ This was the status as of November 2021, after which I brought the model back to the HT office by taxi in June 2022, I then picked up the model and brought it back to the continent, taking the Eurostar in March 2023 to store it temporarily at my parents' place in Cologne until its exhibition in Zurich in June 2023 as part of the final TACK conference on the topic of tacit knowledge. The model is now stored in Leipzig. It will meet the other six miniature buildings in Hamburg at the KBW in November 2023, then travel to the Architectural Association School of Architecture in London in December 2023/early January 2024.



Fig. 65 Close up of layered MDF plates

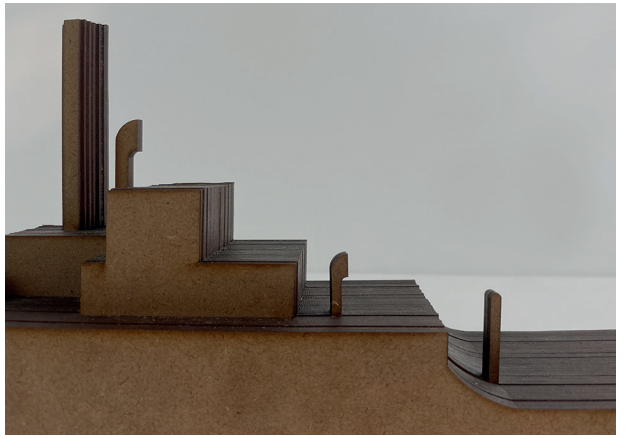


Fig. 66 Close up of deck



Video 2

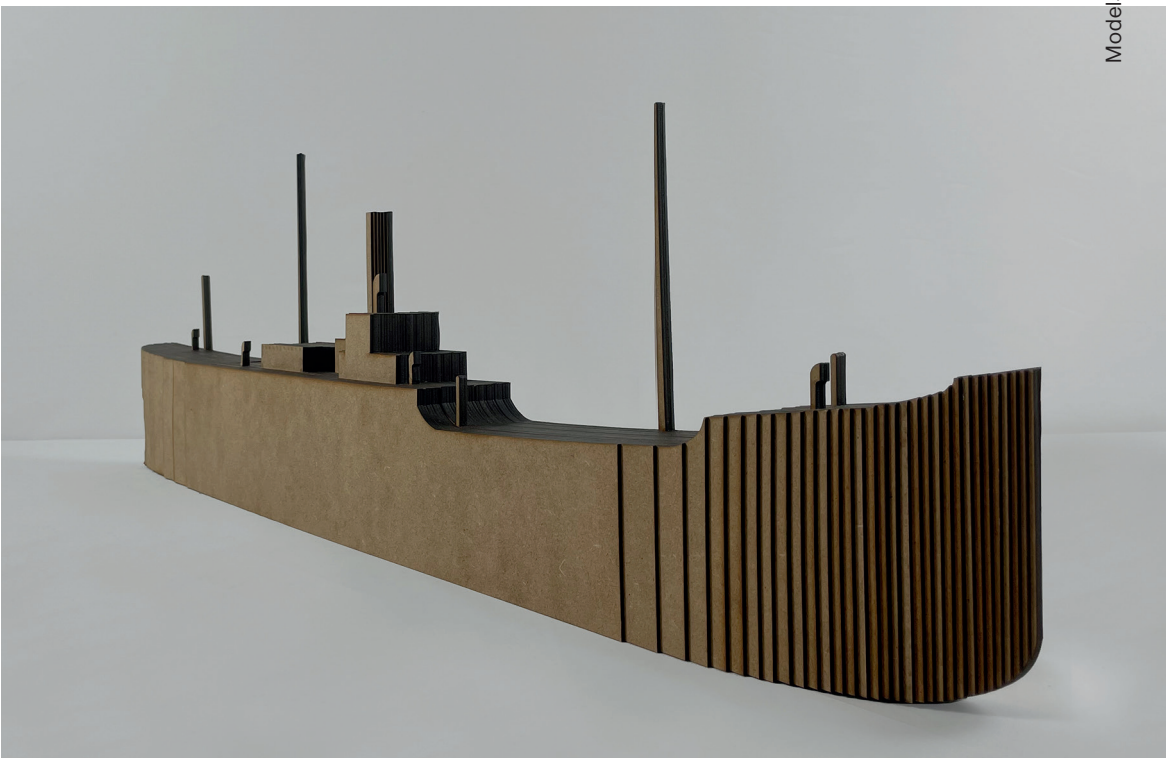


Fig. 67 Front view

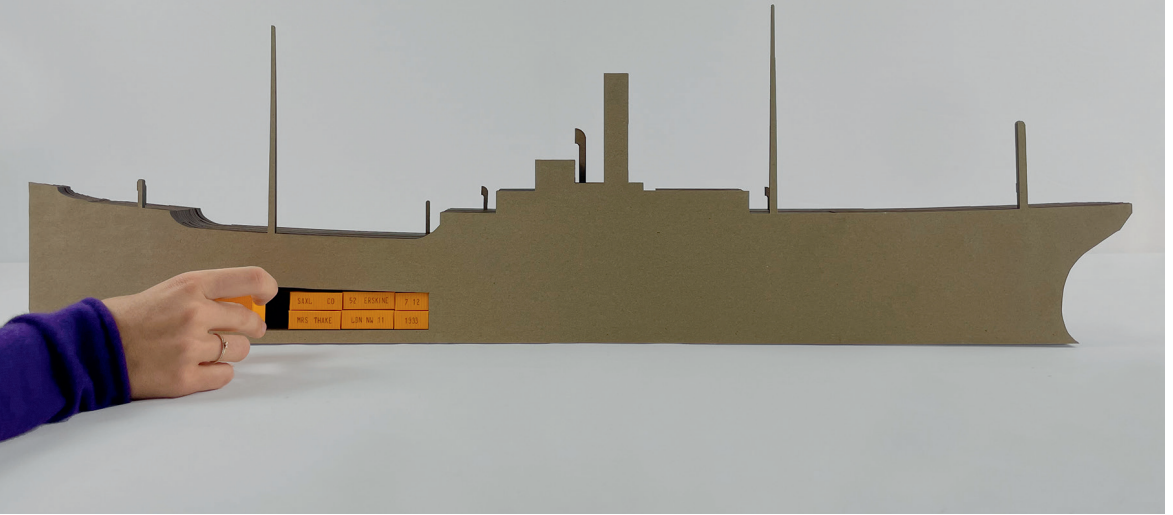


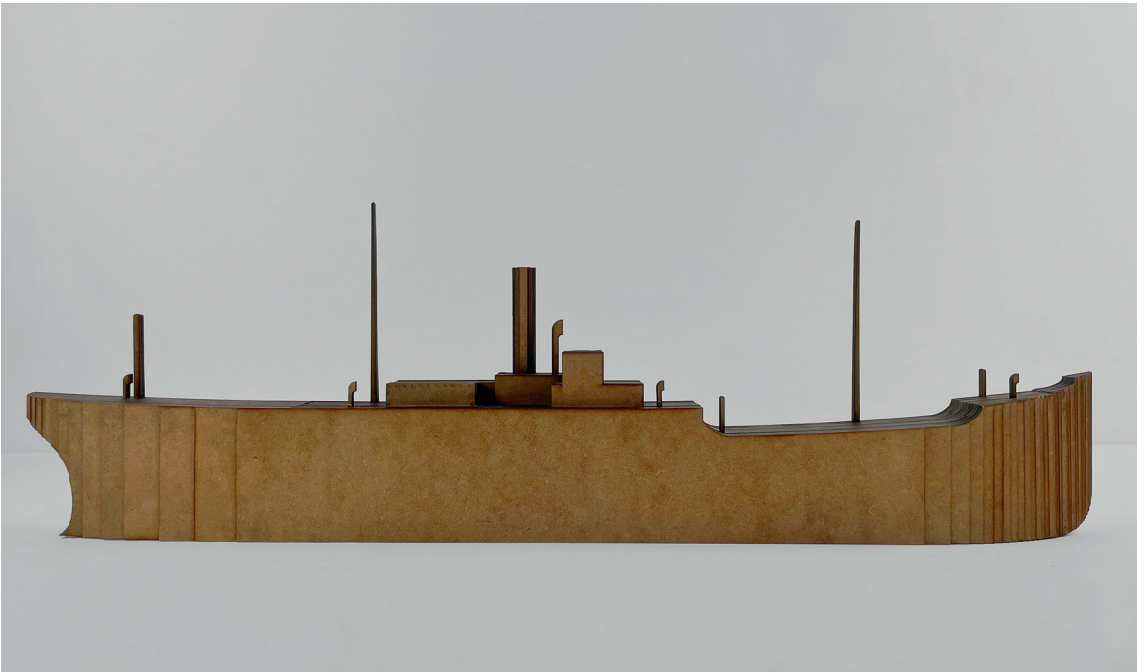
Fig. 68 Section view



Video 3

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Fig. 69 Front view



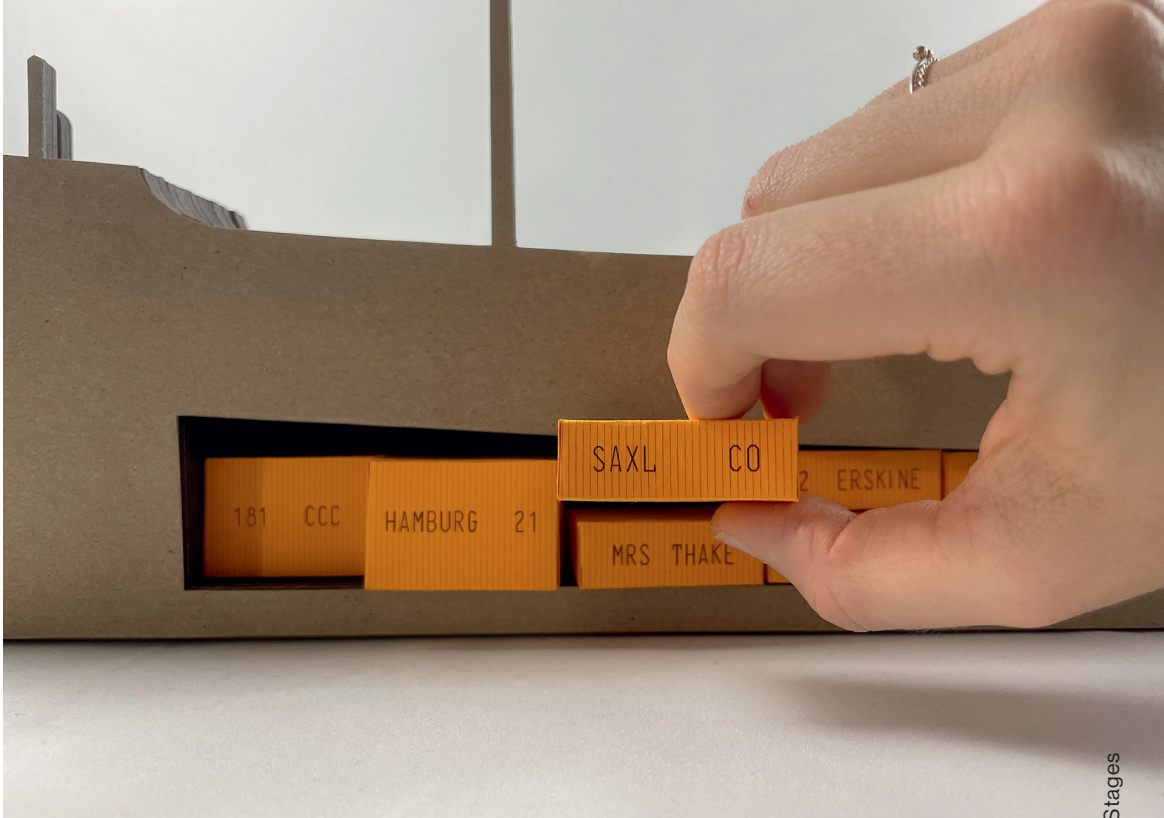


Fig. 70 Final 1:75 ship containers

Fig. 71 Taking pictures of the model at Haworth Tompkins' meeting room





Fig. 72 Transporting the ship model from the workshop to the Warburg Institute

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Fig. 73 The ship model at the Warburg Institute, 2021



Complicity

The definitions of a model and an object are increasingly vanishing in contemporary architectural practice. Models are no more defined of “something else, instead the models become that ‘something else’ themselves”, argues architect Pippo Ciorra.⁴³² Having said that, it confirms my observation that ‘making’ models is not only about understanding the material, but more importantly, about also the shared experiences and responsibilities of the actors involved. I try to map my ‘personal advisory board’ as well as other relations such as emotions and ‘passion’ that helped me throughout the making process.⁴³³ However, I am afraid I cannot include all voices, simply because some influences remain implicit. I would not call the following a tracing of the ‘most important’ influencers, but I would say that they largely inspired me within the creative design process: Dag Erik Elgin, artist, who offered a philosophical/artistic perspective; Ellie Sampson, model-maker, who provided material knowledge and model skills; a close friend, a landscape architect, who helped with the storytelling/defining the narrative; and my dad, an architect, who aided with construction and emotional support. Each of them had a different function with respect to the issues raised. According to Wenger, who wrote *Communities of Practice: Learning, Meaning and Identity* (1998) there is a correlation between the concept of identity (presence of oneself) and community (urban environment).⁴³⁴ If we put the initially introduced performative nature of modelling and the “social theory of learning” next to each other, the relationship between ‘action’ and ‘belonging’ becomes apparent. As discussed in scene 4 in Act I, the cultural theorist Gesa Ziemer introduced the term ‘complicity’ (*Komplizenschaft* in German) in relation to collectives not in crime but in art, science and economy.⁴³⁵ Complicity is something that is conspiratorial and emotional; it allows

⁴³² Pippo Ciorra, “Architectural Catwalks”, in *Modelling Time: The Permanent Collection 1925-2014*, ed. Mari Lending and Mari Hvattum (Oslo: Torpedo Press, 2014), 163.

⁴³³ Johns, *The Nature of the Book*, 42.

⁴³⁴ Wenger, *Communities of Practice*, 145.

⁴³⁵ Ziemer, *Komplizenschaft*, 11.

changes of role and function within a team and is based on commitment, passion, trust and last but not least, shared responsibility. Following a discussion with Elgin, I realised that the moment of existence and the ‘tipping point’ of not being safely located are reflected in the proportions of the model. The fragile length of the ship is not supported by a structure. We discussed that it reflects the uncertain moment not only in the transportation of KBW, but also the political circumstances of the time (Figs. 74–5). In 1943, philosopher Hannah Arendt described the state of migration as follows: “Our identity is changed so frequently that nobody can find out who we actually are”.⁴³⁶ It is the idea of change and the fact of constant departure that I want to experience through the material. The process of model-making is not about faithful representation, but about creating a vehicle for the library, which was transported from the port city Hamburg to the British capital.

How could I use a model to understand the realities of the archival material? How does a model become performative? This question bothered me during the whole process of making a model of the Warburg ship. When actors play, the costume (material) supports them to get into their role. When you see an artefact in a museum, you would probably feel differently if you were able to touch, wear, smell – sense – it, using the artefact in what it was made for. According to dancer Card “[r]eenactors use their bodies in this way. They perform the past by relating their bodies to past activities and engaging with material culture – buildings, weapons, furniture, clothing, books on etiquette, recipes, descriptions of practices, and lists of purchases.”⁴³⁷ The performative potential of a model comes to the fore in a layered way. Building on the scale of materiality and the scale of form, the model participates in a performative act. The complexity of performative capacities has the ability not only to construct realities, but also to

⁴³⁶ Hannah Arendt, “We Refugees”, in *The Jewish Writings: Hannah Arendt*, ed. Ron H. Feldman and Jerome Kohn (New York: Schocken Books, 2007 [1943]), 270.

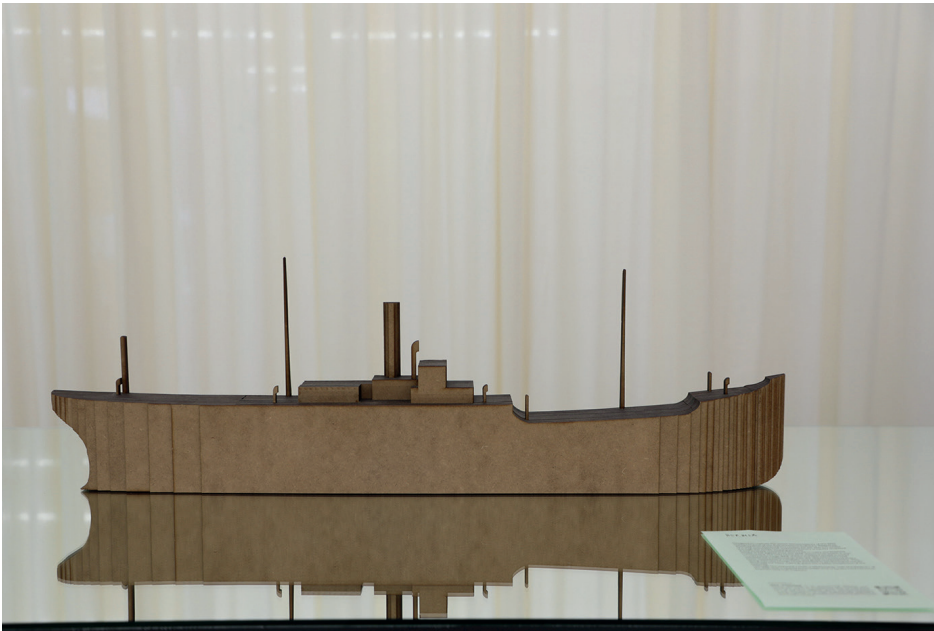
⁴³⁷ Amanda Card, “Body and Embodiment”, in *The Routledge Handbook of Reenactment Studies: Key Terms in the Field*, ed. Vanessa Agnew, Jonathan Lamb and Julianne Tomann (London: Taylor and Francis, 2019), 30.



Fig. 74 Mirroring of containers

Models as Actors and Stages

Fig. 75 Ship model mirrored



shed light on what kind of history is being produced and presented through the re-enactment of archival material.⁴³⁸ Do I look up or down on a model? Or do I even enter it? The intertextual relationship between seeing and speaking places the model in a discursive context that provokes model taxonomies.

While sculptors' models were increasingly being seen as valuable traces of artistic invention, scientific and mechanical models were regarded not as significant representations in their own right but instead as evidence of those scientific and mechanical innovations for which they served merely as surrogates. It is this distinction that has perhaps led to our seeing these various categories of 3D models so differently.⁴³⁹

The performative nature of models and materials transforms architecture. It provokes a narrative about how architecture not only presents itself, but also reveals the embodied knowledge that is captured in the making process.⁴⁴⁰ This makes me think of two things: firstly, me patiently gluing the different layers of the model ship together and the MDF bending in response to my actions. The process of model-making is not (yet) seen as a performance in its own right, but rather as a means to an end. I don't want to push the idea of considering every architectural practice as a sequence of performances, but I see the potential to include and celebrate the imagination activated within a performance in the making process. According to art historian Matthew Hunter, "modelling has been viewed as a site of mediating action".⁴⁴¹ In his essay "Modelling:

⁴³⁸ Elizabeth Haines, "Archive", in *The Routledge Handbook of Reenactment Studies: Key Terms in the Field*, ed. Vanessa Agnew, Jonathan Lamb and Julianne Tomann (London: Taylor and Francis, 2019), 11.

⁴³⁹ Malcolm Baker, "Representing Invention, Viewing Models", in *Models: The Third Dimension of Science*, ed. Soraya de Chadarevian and Nick Hopwood (Red Wood City: Stanford University Press, 2004), 39.

⁴⁴⁰ See also recent work on the architecture model: Matthew Wells and Matthew Mindrup, "The Architectural Model as Tool, Medium and Agent of Change", *Architectural Theory Review* 24, no. 3 (2021): 221–23; Olivia Horsfall Turner, Simona Valeriani, Matthew Wells, Teresa Frankhänel, (ed.), *An Alphabet of Architectural Models* (London: Merrell Publishers, 2021).

⁴⁴¹ Hunter, "Modeling: A Secret History of Following", 46.

A Secret History of Following” in *Design Technics* (2020) he argues that different design techniques enable the writing of new architectural history. Furthermore, he claims there is a crucial relation between modelling and literary fiction. The creation of myth seems valuable to explore further. In his article “Natural-Born Cyborgs?”, archaeologist Michael Herdick argues that “Myths tell how technical creativity was brought from the divine sphere to humans.”⁴⁴² When I (un)fold the boxes, it seems as if I build a haptic relationship with the boxes and their history. This links to the idea of experimental archaeology that focuses specifically on practical know-how and craft skills. Herdick further argues that “[m]odern research has confirmed and strongly emphasized the importance of the technical creativity of human evolution, which is especially evident in the use of tools and the construction of industrial sites. However, our knowledge of the non-codified technical experience of prehistory is rudimentary at best.”⁴⁴³ The hands-on approach applied in making the miniature containers, contributes to my ‘thinking through the hand’ advocated by sociologist Sennett (2008), architect Pallasmaa (2009) and anthropologist Ingold (2013).⁴⁴⁴ This approach is equated with layering: it is not only a chronology captured in embodied knowledge but also a “self-referential product of network behavior.”⁴⁴⁵ According to Ingold, “[w]hat matters, in the archaeology of perdurance is not the determination of dates but the ability to follow things through in their temporal trajectories from past to present”, a strategy which can also be of great help for an architecture of inquiry.⁴⁴⁶

A learning process unfolds. Tacit knowledge emerges as

⁴⁴² Michael Herdick, “Natural-Born Cyborgs? Die Experimentelle Archäologie und das Bild des Menschen”, in *Archäologentage Otzenhausen, Band 1, Archäologie in Der Großregion*, ed. Michael Koch (Nonnweiler: Europäische Akademie Otzenhausen gGmbH, 2015), 314.

⁴⁴³ Herdick, “Natural-Born Cyborgs?”, 314.

⁴⁴⁴ See, for instance, Richard Sennett, *The Craftsmen*; Pallasmaa, *The Thinking Hand*; Ingold, *Making: Anthropology, Archaeology, Art and Architecture*.

⁴⁴⁵ Orit Halpern, “Repeating: Cybernetic Intelligence”, in *Design Technics. Archaeologies of Architectural Practice*, ed. Zeynep Celik Alexander and John May (Minneapolis: University of Minnesota Press, 2020), 191.

⁴⁴⁶ Ingold, *Making*, 82.

soon as I practice and thereby gain embodied knowledge. According to architect Fran Edgerley, part of the William Turner Prize-winning architectural collective Assemble, it was essential to make and do and thereby learn, as this has evolved their practice. The making increased their understanding of how things are made and shaped, and their potential.⁴⁴⁷ The practice-based approach of the model was my insights gained from working with the materials and building myself. There was a key moment for me at the very end of the whole making process, when I had to carry the model from A to B. It was heavy but felt different than the weight of the plain MDF sheets back in the model shop, even though it weighed exactly the same. On the one hand, it was simply the physical size and delicacy. It was easier to carry a model than a set of 800 x 450mm MDF sheets. On the other hand, it was the fact that I had a relationship with it because I had touched each layer, assembled it thoughtfully, glued it, and finished it. All of that work, and the effort I put into the drawing to enable an accurate laser-cut, made me realise the cultivation of a certain level of awareness when doing it yourself. I built on a relationship through the material to the model with all my senses. Bauhaus weaver Otti Berger argues:

[H]ere you can say with the painter Klee, 'intuition is always best.' For one must listen to the secrets of the stuff, to the sound of material, and not only comprehend it intellectually but also feel it subconsciously. One knows that the essence of silk is warmth, that the quality of artificial silk is coldness, and distinguishes between the roughness of hemp that of wool.⁴⁴⁸

I understand the physical model as also a model of ideas. The sensual experience supports my memory work and goes beyond things I don't know until I practise them. Therefore, when I present the model, it is important to show it along with the development of the model with time-

⁴⁴⁷ Regina Bittner and Renée Padt, *Handwerk wird Modern. Vom Herstellen am Bauhaus* (Bielefeld and Berlin: Kerber Verlag, 2017), 219.

⁴⁴⁸ Berger, "Stoffe im Raum", 288.

lapse videos in the final documentation. This method of communicating the process could give the audience access to the history by relating to the work and the effort that has gone into the sealed box of a finished model.⁴⁴⁹

While I was taking pictures and putting different combinations in the ship's hold, I came up with the idea of a modular box system. It feels like re-enacting not only Sampson's day-to-day operations, but specifically the telling of the ship's story. The engagement with the containers is also an engagement with history. It makes me wonder if history can be written differently when scholars use their entire body and engage with material as a method. Philosopher Jane Bennett argues that the actant, as defined by Bruno Latour,⁴⁵⁰ "can do things, has sufficient coherence to make a difference, produce effects, alter the course of events."⁴⁵¹ The notion of actant is important to this study, as it derives from the assumption that the encounter of human and material is performative, which may have an effect on the architectural design process and its design techniques, and provide a different understanding towards both an architectural project (competition, commission, etc.) and history. "The essence of a performance or event lies in the reproductions that give it an afterlife".⁴⁵² If the building industry wants to be responsible and has to deal more and more with refurbishments, existing buildings and cultural heritage, this seems to be more important than ever.

The journey of my practice-based research ended when I brought the ship model home in March 2023. I took the Eurostar from London to Brussels, changed trains in Cologne and finally arrived in Leipzig. Transporting the

⁴⁴⁹ Dag Erik Elgin and Gariele Knapstein, "Museum Reinventions. Part One", in *Dag Erik Elgin. Mirror falling from the Wall* (Tone Hansen, Ghent: Snoeck), 181–82.

⁴⁵⁰ Latour claims that Actor-Network-Theory sheds light on the "nature of societies" by situating the notion of actor and using the term actant to describe the intertwined events between human and non-human. (369) See Bruno Latour, "On actor-network theory: A few clarifications plus more than a few complications", *Soziale Welt*, Vol. 47 (1996): 369–81.

⁴⁵¹ Bennett, *Vibrant Matter*, viii.

⁴⁵² Sven Lütticken, "An Area in which to Reenact", in *Life, Once More: Forms of Reenactment in Contemporary Art*, ed. Sven Lütticken (Rotterdam: Witte de With, 2005), 24.

miniature Hermia, however, proved to be more complicated than I thought. Hermia once took Warburg's library across the sea to the UK, while I did the same. I brought little Hermia and her packed library in tiny paper containers back but rather than across the water, I travelled under water to the EU, where I also had to declare the purpose for bringing the model to the EU at customs (Fig. 76). It is somewhat ironic that bringing the ship model across the UK-EU border was almost more of a challenge than exploring physical materials and their effects through digital mediation.

I am learning as I go – Benjamin's description of the way he explored cities when looking for books sums up the model-making process that I experienced:

I have made my most memorable purchases on trips, as a transient. Property and possession belong to the tactical sphere. Collectors are people with a tactical instinct; their experience teaches that when they capture a strange city, the smallest antique shop can be a fortress, the most remote stationery store a key position. How many cities have revealed themselves to me in the marches I undertook in the pursuit of books!⁴⁵³

In contrast to observing Sampson remotely, making a model myself changed my perception of the materials' own will. Making adjusted the dialogue that material and practitioner enter into once they engage with each other. It is the encounters, decision-making and discussions to be had that inform a material literacy and create a 'material dramaturgy'.

⁴⁵³ Benjamin, "Unpacking My Library: A Talk about Book Collecting", 5.



Fig. 76 Miniature Hermia clearing UK's security before travelling with Eurostar to the EU

ADVENTURES OF MODEL-MAKING

My scepticism about the digital mediation of materials understanding was proven wrong. Even if the decision of which material to use was still partly decided through a haptic experience, the process confirmed that associations, imagination and memories are additional agents in generating material literacy. With the knowledge she has developed over the years, Ellie Sampson has illustrated very clearly how she has not only understood the material, but also recognises when the material is shaped/treated against its will. Here it is crucial to highlight that Sampson is open to her emotions evoked by the material. Sampson can therefore better interpret material needs. If architects trust Sampson's mediation via the digital, her material literacy is the basis for the architect's material empathy. The story that Sampson tells is especially credible if it is provided with a certain arc of suspense that manages to create an adventure of her sensing while doing, meaning Sampson giving an account of her making process while engaged in it. The haptic effect provided thus isn't based on the sense of touch, for instance, but on the imagination. This, I argue, can mainly happen when material itself begins to speak and thus creates its own dramaturgy. By 'beginning to speak itself' I mean that it is only through Sampson's material literacy that the properties of the material are literally brought to the surface. Sampson's story succeeds in creating a material empathy, i.e., tension through the associations, imagination and memories in the viewer/architect. However, what needs to be pointed out is that each of them (me included) had already physically experienced different materials. Architects thus could connect certain memories of haptic to the digitally based experience, where the social effect of sharing the experience of interacting with the physical model/material was different.

The mediation of materials that I experienced via the screen was in some ways different from the haptic experience I had during my time in the workshop. This is partly

because my senses were limited to sight when on screen. I had to trust the maker (Sampson) of the model/material collage I was shown on screen. Material empathy was less about the material itself. It was more about the emotions evoked by Sampson's mediation. If the mediation was not only visually appealing but pointed out different material properties, I was better able to appreciate material's likely reaction and thus more able to understand its properties. On the other hand, it is because I could not perceive what was going on around the making process – the difference in the messiness of the scene, which I could not experience through Digital Mara's screen and which Sampson said was essential to the making process. It is something else to experience the effects – the trails of dust – of the process of making. The consequences of this are, on the one hand, the removal/disposal of the traces in an almost ritual act, and on the other hand, understanding necessarily that there are remnants. This awareness contributes to an understanding of material that does not contribute to mediation. Like a sewing pattern and its fabric remnants, the fine particles that settle on the cut wood (and my lungs) during sawing, the cut remnants of laser-cut cardboard or the glue residue on my finger are important components that not only witness but complement the haptic experience, which does not occur in the digital.

According to Albena Yaneva, “[t]here is no powerful creator, ‘an architect’, but rather care, scruple, cautiousness, attention, contemplation, and hesitation.”⁴⁵⁴ I follow Yaneva, in that in my view there is no single actor, but rather a condition, or set of conditions and a sequence of dialogues between materials and humans that all contribute as actors through the performative potential of the object being made, including architectural models. As in the performance studies Fischer-Lichte highlighted, performativity is a newly established fact attached to an

⁴⁵⁴ Albena Yaneva, “Missed Magic: Models and the Contagious Togetherness of Making Architecture”, *e-flux Architecture*, 13 September 2022, <https://www.e-flux.com/architecture/on-models/489649/missed-magic-models-and-the-contagious-togetherness-of-making-architecture/> (accessed 15 September 2022).

experience, which, in the context of model-making can include the smell of an MDF sheet after being cut with a laser, or the difficulty of not leaving glue residue on cardboard. This constructed reality, generated through gesture and movements, pays attention to what is essential for empathetic architecture – namely, what evokes emotions and memories.⁴⁵⁵ Of this “network of attachments”, Yaneva states that “[t]hese attachments are revealing for understanding what things make us do. Attachments direct our attention to what makes us active, to our affections, our likings, but also our concerns and worries.”⁴⁵⁶ This raises the question of whether the designer makes the model, or the model makes the designer, or whether the cook makes the soup or the soup makes the cook. The model-maker is the result of the experiences that go with model-making – the smell of the laser-cut MDF or the left glue, not only on the cardboard but also on my fingertips. However, what I missed in the remote observations compared to model-making on site was the emotional examination of such networks of attachment, which I believe can be made more explicit in artistic fields that are particularly concerned with the evocation of emotions to transfer knowledge. I will consider such contexts in the following Act IV.

⁴⁵⁵ Christina E. Mediastika, “Understanding empathic architecture”, *Journal of Architecture and Urbanism* 40, no. 1 (2016): 1.

⁴⁵⁶ Yaneva, “Missed Magic”.

IV

ACT IV

Textiles are the most intimate materials, as they cover our largest organ – the skin – forming a second skin. According to cultural theorist and author Peter Stallybrass, “[t]he magic of cloth, [he] came to believe, is that it receives us: receives our smells, our sweat, our shape even.”⁴⁵⁷ Because of our bodily effects on textiles, the care of textiles is crucial. Having mentioned affective perceptions previously in Act III, in Act IV I focus more on the emotional effect in my examples. This means that I speak/feel the softness, the tenderness that I think material brings with it. I look at how emotions – and through that, materials – affect the creative process.

⁴⁵⁷ Peter Stallybrass, “Won Worlds Clothes, Mourning, and the Life of Things”, *The Yale Review* 81, no. 2 (1993): 36.

1

EMOTIONS THROUGH NARRATION

In autumn 2022, I took the opportunity to meet four creative practitioners in person and talk to them about material. They come from three artistic disciplines: visual art, the performing arts and fashion design. The reason for distinguishing between these three examples is that I wanted to learn how they engage with, speak about/with and understand materials in different ways that recognise the agency of materials. I selected the artist Judith Raum because of her research and approach to re-staging material to learn through material understandings in history. The fashion designer and textile artist Alexandra Börner and the dancer and choreographer Cindy Hammer are practitioners whose approach illustrates the interdependence between body and material and the performative potential that material holds. Last, but not least, with the scenographer and theatre maker Jozef Wouters I explore the visual perception and the collective knowledge of material. My findings highlight their main shared characteristic in regards the analytical framework I set up: emotions generated by material and how this could be useful in architecture practice.

The Operation

All interviewees were emotive when talking about their work and how they deal with material. Although I cannot quote in words what I felt/sensed during these interviews, I am trying to write about nuanced vibrations: communication through body language, tone of voice and chemistry. My personal account, however, cannot be fully written because it was experienced and embodied. What I will do instead is lay down an auto-ethnographic account of my situated knowledge. The aim is to introduce records that would otherwise remain outside architectural research and to make those accessible to others. In short, I am interested in the methods other practitioners use when they work and interact with humans and materials. By starting to look at

their experiences, I realised that those methods are real but not easy to communicate. However, since it seems almost impossible in academia to capture more of the emotions and tensions that emerge from these conversations, among other things, I instead attempt to outline a means of communicating some of these aspects. I propose the way we construct what we deem to be ‘knowledge’ becomes much more sensitive to the feelings of humans and materials involved. The contribution to new knowledge of material resides in the extended record generated by the methods used here.

The following subjective, narrative reflections on the three examples and my impression of ‘being there’ are intended to set the scene, to draw the reader in and to support the theoretical connections I subsequently establish. According to Rendell, the “critical attitude” towards her profession in art and architecture stems from the fluid positions the researcher takes in thought processes in relation to the physical, ideological, private and public.⁴⁵⁸ Inspired by Rendell’s approach of ‘site-writing’, where the critic is situated between objects, spaces and ideas and the practice of writing itself, my writing process involved three different stages: introduction or setting the scene, a reflexive text, followed by making theoretical connections with existing literature. This three-fold operation underlines my ambiguous position as a researcher and reflexive practitioner in architecture. I want to underline that with this text I do not seek to convey the negative associations and gendered implications associated with the term ‘emotional’ in the contemporary context; rather, I argue that being emotional is a form of being active and is necessary to recognise that action related to material is a form of re-action.⁴⁵⁹ Through this foray into creative professions other than architecture, I intend to gain new insights into how material can be understood and communicated in order to apply such understandings to the architectural design

⁴⁵⁸ Jane Rendell, *Site-Writing: The Architecture of Art Criticism* (London and New York: I.B.Tauris, 2010), 2.

⁴⁵⁹ Sara Ahmed, “Introduction: Feel Your Way”, in *The Cultural Politics of Emotion: Second Edition* (Edinburgh: Edinburgh University Press, 2014), 4.

process. How might architecture communicate differently if it involved other actors in the decision-making process? Who or what would be perceived to be the decision-maker if architects departed from their Anthropocentric perspective? Is there perhaps no determined 'actor' at all, but a chain of relationships that goes beyond the traditional human-centred epistemology?

**INSTALLATION *TEXTILE TERRITORIES* BY
JUDITH RAUM AT THE BAUHAUS DESSAU:
RE-STAGING OF MATERIAL**

In November 2022, Judith Raum introduces her lecture performance *Fabrics in Revolt: Anni and the Feline* at the temporary Bauhaus archive in Berlin with Peruvian lace doilies that depict feline creatures. Raum then explains how textiles have shaped architecture during the Bauhaus era and beyond. There is something in what she says that is difficult to comprehend nowadays. When restoration work on architecture occurs today, there are often no textiles to be seen afterwards, because the function of the textiles in architectural spaces are infrequently taken into account in the restoration. Raum's aim is to shed light on the different functions a textile, especially the Gittertulle (lattice tulles) produced by the weaving workshop at the Bauhaus from 1933, can have. She highlights the knowledge that the textile contains. Her approach is very much about how the gaze behaves in these highly transparent fabrics. Raum explains that the fabrics can appear sometimes opaque, then highly transparent, depending on the position of the impact of the light on the fabric. The gaze is politically charged in the context, because 1933 was the year the collection was created. The Bauhaus fabrics are characterised by consistently experimental choices of materials and structures. To ensure that the audience and Raum have a common ground to work with, she has brought a suitcase with pink and white ropes as well as a few meters of lattice tulles with her.⁴⁶⁰

Raum stops speaking and begins to unpack the vintage suitcase. A voiceover, Raum's own recorded voice, begins to read out her text while the image slide show continues. White rope drags along the floor, I hear the material. The

⁴⁶⁰ When Raum reviewed this text in June 2023, she added a remark that the lattice tulles are still produced with the same technology as in the past. However, according to Raum, today there is only one company in Europe, while there were almost a hundred back then.

rope is stretched along a horizontal line in front of the audience, accompanied by vertical lines (Fig. 77). Ropes are attached to each other with pins, symbolising a reweaving of a special fabric by Otti Berger, whose production method is explained by the voiceover in the background. Raum starts to weave a blown-up mesh of crossing threads – the rudimentary basic structure of fabrics – in front of the audience, showing the basic principle of weaving.

Now Raum tells us that the Bauhaus weavers acquired knowledge through exchanges among themselves. She also highlights that they liked using very shiny yarns at the school's workshop, including artificial silk made from spruce, which is similar to today's viscose. The more information the audience receives, the more the visual presentation slides are filtered through a slowly growing oversized structure of white and pink ropes, to which a finishing layer of a translucent and iridescent fabric is added (Fig. 78). Raum reveals that former Bauhaus director Walter Gropius and his wife Ise Gropius used a fishnet as a bathroom curtain in their house in the US. Its structure is reminiscent of an enlargement of the lattice tulle from the collection of woven Bauhaus curtains and lattice tulles. The enlargement could be interpreted as a quote to remind us of the importance of textiles in architecture (Fig. 79). Which is exactly what Raum has done with her thoughts spread out and woven before us. In her performative talk, the various approaches steer us towards different points of attention. The awareness of these different methods and the understanding they each generate is crucial to an overall sense of what materials can do.

Judith Raum About Material Agency

Before seeing the performance lecture, I meet Judith Raum on a sunny Wednesday afternoon in October 2022. I turn into a street with typical old building façades and an avenue of trees in Berlin Mitte and ring the bell with the surname Raum. When I arrive on the fifth floor, Raum opens the door for me. I take a seat at the kitchen table and look at the blue sky over Berlin. The reason for my presence is Judith's

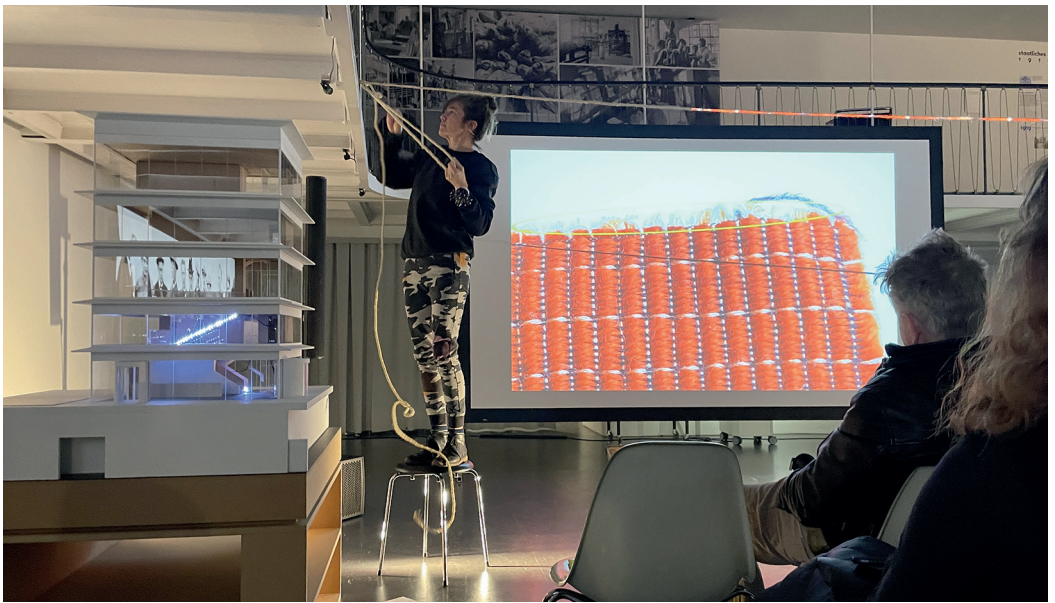


Fig. 77 Raum doing her lecture performance at temporary Bauhaus Archive in Berlin, 2022

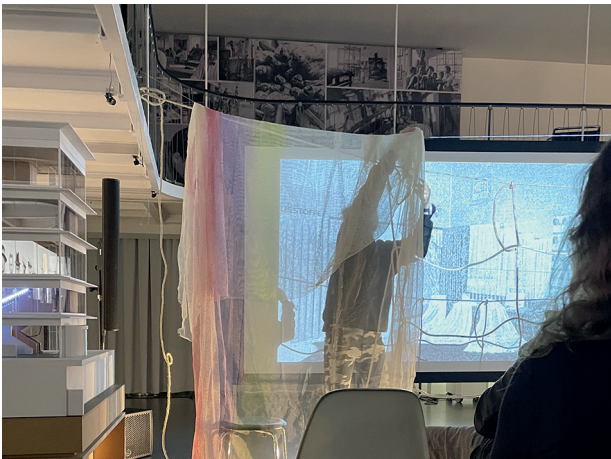


Fig. 78 Raum adding a partially painted lattice tulle

Fig. 79 Stage after lecture performance



research on the textile workshop at the Bauhaus. I want to find out what Raum knows about material and how her artistic approach helps her when she undertakes her archival research.

In the course of the conversation, Raum says that her sensorium is activated differently depending on the stage she is at in her research. She is looking for something very specific, for instance, when her research is well advanced. However, when Raum began research for the art installation *Textile Territories* (2021) for the Bauhaus Dessau foundation, she was at an earlier stage. Conspicuousness from the outside impinged on her perception. The art installation dealt with the Bauhaus weaver Otti Berger (1889–1944), who is less well-known than her colleagues Anni Albers or Gunta Stölzl (Fig. 80). When Raum began her research in 2017, the Bauhaus Archive in Berlin was about to close because it was to undergo renovations from 2018 and for the building of an extension. These circumstances impeded access to larger textile works, larger than just the small samples stored in folders. The fact that Raum is trained as a painter and worked for years in painting restoration enables a close look at the nature and quality of material and colour, although “at the first glance the coloured surfaces appear monochrome.”⁴⁶¹ When the archive allowed, Raum touched the textiles, which enhanced the optical/visual experience. She remembers fabrics that felt quite different from what she would have expected the material to feel like: “These moments of surprise and the complexity of sensory impressions are the real attraction of engaging with the material.”⁴⁶² At a later stage of her research, when Raum had seen all the existing samples of Berger’s work in the world, she demonstrated her knowledge of the material by comparing her understanding of the function of the pieces of fabric in the archive with the accomplished weaver Katja Stelz – whether the fabric was used as a room divider or a curtain, for example. In fact, Raum and Stelz ask themselves the same question, namely:

⁴⁶¹ Judith Raum, interview, 12 October 2022.

⁴⁶² Raum, interview, 12 October 2022.

“What is the fabric doing in the room?”⁴⁶³ They recognise very subtle aspects of the material itself.

When I ask Raum if material evokes memories, she immediately answers with “yes, absolutely”. She begins to explain that material conjures memories of all kinds of materiality in her, “that is, the texture of the material that I have already experienced in other contexts.”⁴⁶⁴ As she talks about the high quality of materials from the 1930s, I note the vocabulary she uses. It is so familiar to Raum but foreign to my ears and training as an architect. The associations are many: Raum compares one textile to the “fur of a white goat”.⁴⁶⁵ She really tries to make herself aware each time that she is dealing with a piece of fabric that it was made in the early 1930s, where in her opinion the textiles look like contemporary fabrics: “I feel that they are so up to date in their material composition, that is, as abstract pieces, colour and matter. I don’t necessarily see the 1930s in them.”⁴⁶⁶ However, there are moments, albeit rare, when Raum associates the textiles with fabrics made by her now very old grandparents, who had such textiles in their house.

When Raum walked through the installation *Textile Territories*, shown at the Bauhaus building in Dessau in 2021, there were so many different perspectives and contacts with the material that the textile “became conspicuous in all its facets and opened up and exposed itself”.⁴⁶⁷ The convergence of impressions was overwhelming for Raum. When she was planning the exhibition, she hadn’t thought that material could be that performative (Figs. 81–2). She says that “there was something dramaturgical about the different facets of the material”.⁴⁶⁸ She felt that such poignant realisations revealed by the material also needed to be captured in images for documentation and advertisement. Though

⁴⁶³ Raum, interview, 12 October 2022.

⁴⁶⁴ Raum, interview, 12 October 2022.

⁴⁶⁵ Raum, interview, 12 October 2022.

⁴⁶⁶ Raum, interview, 12 October 2022.

⁴⁶⁷ Raum, interview, 12 October 2022.

⁴⁶⁸ Raum, interview, 12 October 2022.



Fig. 80 Installation view *Textile Territories* at Bauhaus Dessau Foundation, 2021



Fig. 81 Painted lattice tulle, installation detail

Fig. 82





Fig. 83

Fig. 84



Raum finds that the photographs taken in this exhibition did not capture the moment of experience at all (Figs. 83–4). This is one reason why she places a lot of emphasis on mediating the textiles in the space in her forthcoming publication on Berger (due in 2024), so that the reader can get a sense of what the textiles actually looked like and were made for. Photographer Uta Neumann experimented a lot with lightning to make visible special effects that the material brings with it. Together with the weaver Stelz and the photographer, Raum discussed how to shed light on aspects of the fabrics on their (photographic) journeys into the different archives. This highlighted that exhibition photographers are less familiar with woven materials. They often struggle to capture the specific details of textiles, what kind of lightning to use to bring out surface texture, what to add to the textile to show scale, or to include parts of the human body in close ups.

In her current work for her monograph about Berger, Raum analyses the historical context of Berger’s fabrics stored in archives: “What were colleagues doing at the time? What were the trends in architecture and the fashions that existed in the interior design and around the new building that I can read about in magazines publications?”⁴⁶⁹ The tricky thing about the publications of the time is especially understanding the specific nature of the textiles captured in black and white images, which are blurry because fabrics were only shown in the background of the pieces of furniture in the room. Other challenges are the inaccurate or missing descriptions with the photographs. It seems almost impossible not only to understand the material without seeing it in real life and to translate and communicate the material understanding Raum has acquired. Raum says that she struggles with the fact that she has no witness of that period. I would argue that she turns the fabric itself into her witness (Figs. 85–7): “You enter an unknown space. So, what I have for sure in most cases are the textiles, the fragments by Berger. They have a specific material quality that I find so fascinating, that sometimes they really give

⁴⁶⁹ Raum, interview, 12 October 2022.

me goosebumps.”⁴⁷⁰

The political circumstances of the 1930s led Berger to flee Germany for London in 1937, where other Bauhäusler had already migrated. However, due to Berger’s deafness she struggled to learn English and find a job in the UK. She left London to return to her sick mother in her home country Yugoslavia. Berger’s sudden death in Auschwitz in 1944 left a large gap of unknown (textile) territories. Her work was left behind without any notes. Even her partner, the architect Ludwig Hilbesheimer, did not or was not able to add information.⁴⁷¹ The work ended up dispersed across different archives, spread around the world. There is no clear information about where the textiles came from or what they were made for. They are often mislabelled. The samples are generally all put together without clear categorisation to working period or defined use. Knowing that the fabric is labelled with an incorrect description, one has to learn to read / listen to / feel the textile. Raum explains that she and Stelz therefore entered the archive. They let the material have an effect on them, looking at it from different perspectives (Figs. 88–9). Light plays a crucial part in their forensic investigation. Together with an analysis of the construction and comparison with other Berger samples, it is the basis for the discussion about the effect of the material.

Raum admits that she has become much slower in her artistic research after she started this project in winter 2016, simply because her material awareness is much greater. She is more sensitive to what is at stake than before. Since Berger does not really appear in design history, Raum wants to give Berger a voice and present clarification of the significance of Berger’s work beyond the Bauhaus era. In a fictional text presented as part of a lecture performance, Berger is given the opportunity to explain her work, as if looking back. Raum chooses this method to make the work more personal and passionate because she feels that

⁴⁷⁰ Raum, interview, 12 October 2022; See also Susan Schuppli, *Material Witness: Media, Forensics, Evidence* (Cambridge, MA: MIT Press, 2020), 10.

⁴⁷¹ Raum, interview, 12 October 2022.

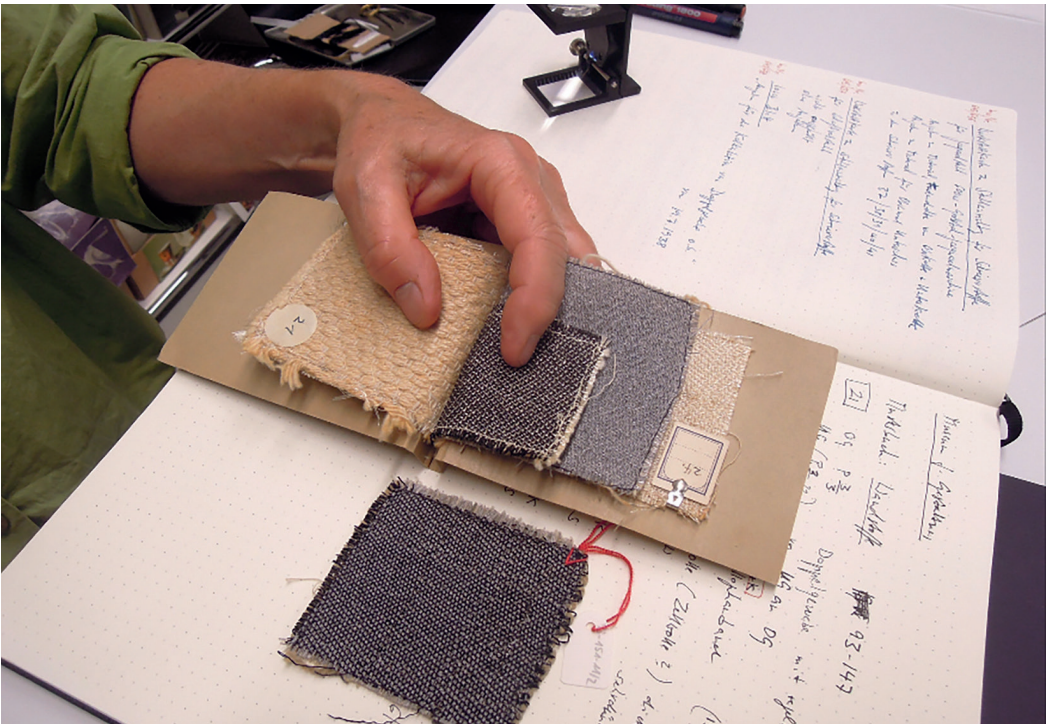


Fig. 85 Analysing samples for wall fabrics

ACT IV

Fig. 86 Sample for a wall fabric

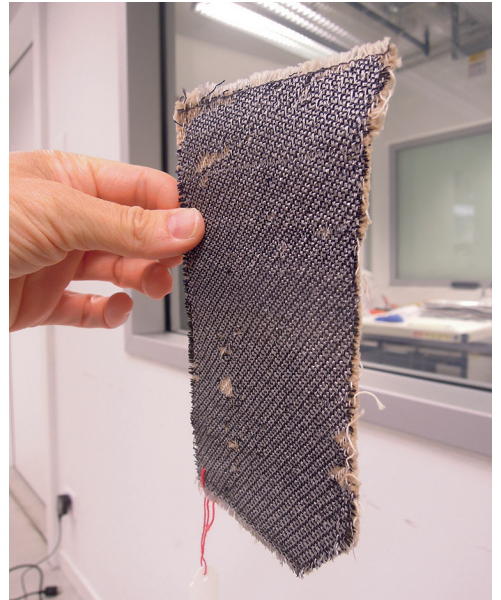


Fig. 87 Comparing samples for curtain fabrics

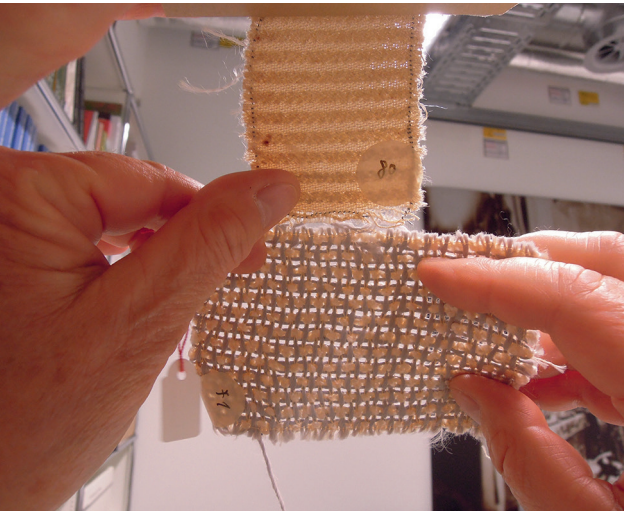
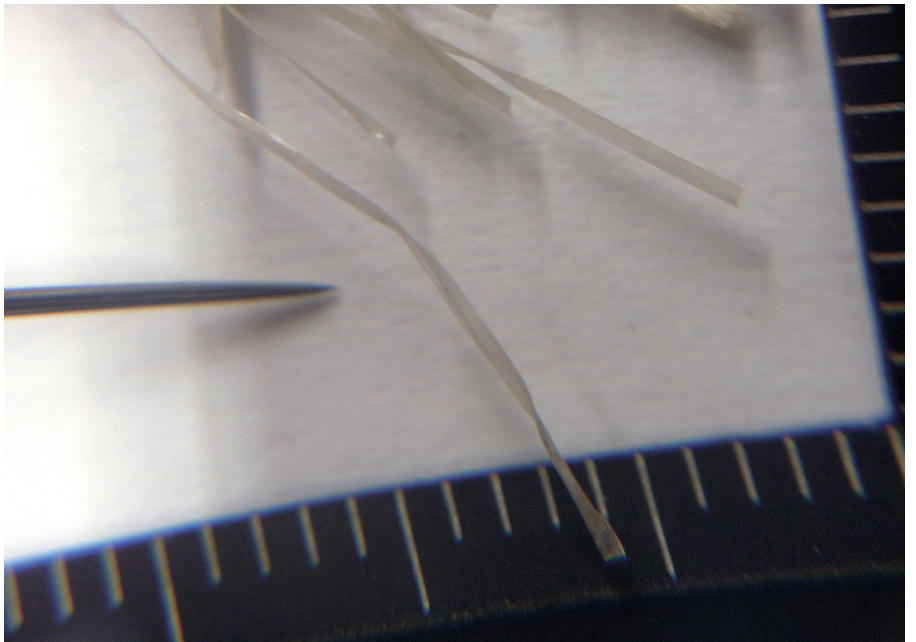




Fig. 88 Raum and Stelz analysing an original curtain fabric by Ottilie Berger

Fig. 89 Close up of ribbon material derived from cellulose



“this builds something emotional, which ultimately makes it more accessible to people who get into the work and listen.”⁴⁷²

This brings me to Raum’s material knowledge, which grows every time she comes across a new sample. Since Raum does not weave herself, but commissions Stelz to weave Berger’s textile anew, a high level of understanding and trust is required when it comes to the examination of the samples. How does Raum transfer her understanding to Stelz who then weaves the cohesive textile at the end? Raum says she wants to be part of the whole process, even if she does not make the piece herself. This intense commitment between Raum, the researcher, and Stelz, the weaver – who recreates Berger’s work – has already led to the separation from a previous weaver. The “dilemma or balancing act” of weaving anew is the fact that contemporary materials do not have the same structure and/or quality as those in the 1930s.⁴⁷³ This means that in the processes of re-creation, it very often comes down to a tricky decision-making process: “If there is a yarn that has exactly the same shade but is slightly thicker, will we take this yarn, or not? If there is not exactly the same shade, we take one that has a slight reddish or greenish hue. Do we necessarily want the same sheen or, if it is not available in silk, do we take it in polyester or not?” There is something that goes beyond the purely material criteria – such as colour, thickness, flexibility, etc. – namely the ‘aura’ of the textile,⁴⁷⁴ which Raum tries to explain in words: “So actually, everything is right, actually it is the fabric. And yet it’s not, it doesn’t breathe at all.”⁴⁷⁵

⁴⁷² Raum, interview, 12 October 2022.

⁴⁷³ Raum, interview, 12 October 2022.

⁴⁷⁴ Through the possibility of technical reproduction emerging in the 1930s, Walter Benjamin discusses the concept of the aura of the original artwork. In his view, the aura is not only bound to ‘here and now’, but also to its context of history. “Space and time” are the decisive factors here that the viewer must engage with in order to experience aura (21). See Walter Benjamin, “The Work of Art in the Age of Mechanical Reproduction”, in *Illuminations*, ed. Hannah Arendt, trans. Harry Zohn (New York: Schocken Books, 1969 [1935]), 1–26.

⁴⁷⁵ Raum, interview, 12 October 2022.

Through Raum's careful examination of the archival material and her position as more of an outsider than part of the actual making process, she helps make good on any final mismatch. Both, Stelz and Raum, try to experiment with the textile they have available now, to invent, or artificially bring the original material to life. These processes are very intense. Their collaboration is time-intensive. Raum tells me that she calls the newly created textiles *Neu-Webung* (new-weaving) because a reweaving or reconstruction is supposed to have the same parameters as those of the originals in the 1930s. When I ask her if she would call the process a re-enactment, she corrects me and replies that she is indeed "re-staging" in her installation.⁴⁷⁶ Berger's sample begins to 'be' in the space that is, the sensorial experience of encountering the large-scale, subtle and complex textiles: "These are shocking encounters. One is really not used to this. We are surrounded by such flat materiality."⁴⁷⁷ Raum explains such experimental moments are best mediated through storytelling. The combination of image, voice and sculptural actions with material in the installation creates a tension that would not be there if Raum only used an art installation as a medium. That is why she pushes these three methods in her lecture performance. Through the engagement with the actual material in space, the rustling of the material on the floor or when Raum works with it, the images and the voiceover narration, a haptic sense of Berger's textiles is created: "Actually, a lot of things come together in experiencing."⁴⁷⁸

Conclusion

To conclude this scene, it is worth noting that the time demanded by the textiles requires patience from Judith Raum as well as her colleagues. The expectations Raum brings with her before she physically engages with any piece of fabric in the archive often lead to unexpected effects. The surprises that come out of her embodied knowledge are key to her learning process, trust and

⁴⁷⁶ Raum, interview, 12 October 2022.

⁴⁷⁷ Raum, interview, 12 October 2022.

⁴⁷⁸ Raum, interview, 12 October 2022.

understanding of the textiles, and are difficult to transfer to others. They illustrate the influence that the material has on the progress of the work of Raum as researcher. To make her emotions and memories generated by the textiles accessible to others, Raum uses fiction and imagination in her lecture performances. In this way, she tries to transform her material understanding into collective knowledge.

**DANCE PERFORMANCE *MIND THE RAGE* BY GO
PLASTIC COMPANY AT THE LOFFT LEIPZIG:
PERFORMANCE OF MATERIAL**

The first run-through rehearsal begins. The audience stands outside the theatre. Usually, you go into the foyer of the theatre building and wait for the show to begin. But this time it is different. A woman enters the outdoor space. She gives an introduction to what this evening is about: anger. She goes on to explain that one does not go to a performance to understand, but to feel. Ironically, I want to understand how to feel. Members of the audience follow the instruction; each of them now makes a fist for a couple of seconds: first in the air; then against their own body and finally against a surface around them. As I too follow, I choose the floor beneath me and notice the effect the surface has on my body. Unlike the fist in the air or against my body, there is something that reacts to the pressure I exert. This even enhances my resistance. The surface, which is asphalt, feels cold and stings the lower palm of my hand. What is left when I let go of the fist is gravel and dirt on my skin, which I gently wipe off. But there is something else: anger coming from the hands across the arms near my chest that was not there before. I experience firsthand how my body movements/gestures in exchange with material, awakens my emotion. It is a gentle anger, an anger that reminds me of how it feels to be angry.

We enter the building. As we see four dancers moving, breathing and being restless, we are told that we always have two images in front of us in our minds: one that we see and one that evokes associations and memories, if not ours, then someone else's, which we can be sensitive towards by empathising.

This is an excerpt of field notes that I took during a rehearsal of the performance *Mind the Rage* by Go Plastic Company. The development of the production was partly followed by me between spring and autumn 2022 and when it premiered at the Lofft Theatre (Leipzig) in November 2022. The following material reflects on my observations of an artistic collective of eight people from different creative professional backgrounds who experiment with contemporary dance, cinema and fashion design. Turning to the study of performance to understand material's agency in disciplines outside of architecture, I consider how methods incorporated into performance studies could be applied in architecture. Once the performance is brought onto the stage (whatever that may be), a certain distance is created from their audience, whose members are situated on the outside of the making process, removed from the inside and the action of embodiment. The artist, however, reveals their most intimate inside to the outside, which in this case is mediated through textiles. On the one hand material performs, while on the other it functions as costume and set design. There is a collective understanding of material agency in the production of the performance, which I explore from three perspectives: first, there is the textile artist's knowledge of the planning/design of the costumes and set; then there is the dancers' experience of what it feels like to perform in the given materials; and in-between those are my observations, while being among in the audience, of the effect material has visually and aurally on me as a spectator.

Material Stations

In late March 2022, a friendly face opens the door for me at the Lofft Theatre, located in the building complex of the former cotton-spinning mill in western Leipzig. I meet fashion designer and textile artist Alexandra Börner, who is part of the artistic collective Go Plastic Company. Börner told me a few weeks earlier about how she is exploring material in an interdisciplinary context. Unlike in architecture, performance is a crucial part of the curriculum in the study of fashion. Here, students



Fig. 90 Material Stations on theatre stage, 2022

Textiles and Material Agency

Fig. 91 Hammer moves with tight green overall at a rehearsal



learn how textile responds to (non-)human encounters. Fashion designers are often sensitised to the properties of material and how material can be performative. This is an approach I am eager to explore. To do so, I accompany three of the Go Plastic Company group – Cindy Hammer, a contemporary dancer and choreographer, Susan Schubert, a dance educator, and Börner, a fashion designer and textile artist – for two afternoons. They are rehearsing for their current project *Mind the Rage*, which is about ‘anger’. After spending a year doing research on the topic, they are now experimenting with how to embody and express anger through their use of bodies and materials. The focus is on the properties of different materials and how material determines the movement of the body.

Börner has various pieces of clothing and objects scattered around the performance space (Fig. 90). The dancer chooses a material. She begins to experiment with it. It is very stimulating to see how her body interacts with the material. Depending on her movement, it looks like a symbiosis of movement, material and body. Hammer comments that it is a feedback loop between the passive and active guidance of material and body. My eyes follow the retractability of the different textiles in relation to her movement. Depending on what material Hammer is wearing and how she moves, the music is turned on or off, as in some cases the material responds to Hammer’s particular movement with sound. The sound generated through interaction with the material begins to dominate the stage.

In the centre of the room is a full body suit made of neon green mesh with light metal threads hanging from it. Hammer puts it on and searches for suitable music. As the dancer moves her body, she experiments with the metal threads, which gently touch the floor, creating a scratching sound (Fig. 91). Börner asks Hammer to play with the threads and, in reference to the theme of anger, to pull them tighter. The neon fabric responds by tearing. However, it is interesting to note that the material does not always react in the same way: sometimes you can see that the dancer needs all her strength to strip off the metal threads, you can even

distinguish a trembling of her muscles. After Hammer is done with her performance, we reflect on what we saw and, more importantly, what feelings were awakened. Börner says that every time the metal thread broke off, her anger rose. All the work she had put into making these clothes was destroyed. Even though she had given Hammer explicit permission to interact with the different textiles. The surface of the material conveys Börner's labour, which I become much more aware of as the dancer's body interacts with the body and textile.

They move on to the next material in the set-up of 'material stations'. There is one bunch of distorted, oversized stuffed animals with long tentacles, *Toi Toys* that Börner designed a few years ago. Hammer has one of the giant toys around her neck. She begins to slowly move her body in waves. It looks as if the dancer, the toy and the fabric are one. As Schubert begins to put one toy after another on Hammer as she dances, the image of unity transforms (Fig. 92; Video 4). It now looks as if Hammer is rather wearing the toys, and instead of being toys, the objects become additional surfaces on her skin. At one point, the dancer's head is covered by the mass of toys. Her extremities and the tentacles of the toys become one again. Following this, Hammer describes that it felt warm to wear the material, but that it was not as heavy as she had imagined. The surface was smooth. She felt the effect of layering. This layering was also evident in the complexity of body parts and body levels Hammer was working with.

The last 'material station' contains a large man's suit in black. The suit maintains the shape of a body because Börner previously treated the textile with glue (Fig. 93). The suit looks a bit eerie with its empty body taking up space. The dancer puts on the suit. The sound of the stiff textile is very present. Börner decides to turn off the music. She wants to listen to the sound of the material while Cindy dances. Her dance style now is very different from the previous one, when covered in the toys. The movements are not fluid but rather jerky, adapting to the character of the material (Fig. 94). A piercing noise becomes louder and



Fig. 92 Dancers experimenting with *Toi Toys* and Börner records movements



Video 4

ACT IV

Video 5



Fig. 93 Stiff suit during rehearsal



Fig. 94 Hammer moving to music in stiff suit

more aggressive as Hammer speeds up her movements (Video 5). It is inspiring to see that no words are needed as the body moves to follow the dialogue between the dancer and the material. The locomotive system of the body and the language of the material combined are sufficient to express material communication.

Perspective of a Fashion Designer and Textile Artist

I sit in Alexandra Börner's studio in Leipzig and am surrounded by sewing machines, mannequins and textiles (Fig. 95). Fashion designers are taught to create mood boards around a certain topic, for the theme of a lion for instance, Börner explains. With the lion in mind, she starts to collect everything that somehow has to do with the idea of a lion. She then creates chains of associations. Börner continues, and while she lists her associations – ranging from orange-red as a colour to the cigarette pack that fell out of her father's pocket during a fight — she chooses not only objects but also situations that are associated with a certain feeling. The object that is associated with that certain moment is the starting point for telling a story. Börner defines herself as a storyteller who creates conception of human beings by piecing together memories and impressions like a collage. Where in the architectural process do I find a similar interest in association and memory?

The material that Börner then chooses depends on what it reveals in her body. The moment when Börner touches a piece of textile and tries to discover and work out the meaning of the material is something very intimate. She only listens to herself (her own body). Once the material conjures the feeling she is looking for, it becomes integrated in the piece: for her project *Toi Toys*, for instance, she was looking for something that makes her sad. I ask her if she learned this 'listening' to material at university. Börner suggests that trust with the material was built during her studies. She learned to establish self-confidence and to dare to seek solitude with herself and the fabric. For her, trust comes as soon as she has created something three-



Fig. 95 Börner's atelier

ACT IV



Fig. 96 Plastic container filled with glue to dunk suit

Fig. 97 Stiff suits for dancers installed for the performance *Mind the Rage*



dimensional, when she manages to make an object out of a two-dimensional fabric that holds on to the body. A whole new world opens up to me as Börner tells me that in the first year of her studies, she participated in an anatomy course. The fashion students were taught which muscle does what, which bones we have, simply because this is the framework fashion designers have to build on. Börner emphasises that it is necessary to know how a body and its locomotive system function in order to understand that everything is arranged on top of each another. If she knows how the body works, for instance, that the crotch is wider when sitting than when standing, she can draw conclusions for garment design from this. Solely through bodily experience Börner can determine which material fits or just doesn't; or vice versa, she can challenge bodies by using materials that counteract the given bodily circumstances.

In the course of our conversation, she explains there is a tendency among fashion students nowadays to talk a lot more about gender, body shapes, new physical worlds and how we feel in our bodies. However, while they may talk more about the body, they no longer interact with it. Börner observes that at the beginning of most fashion students' studies "they just choose a mannequin that looks good but does not represent the diversity of bodies".⁴⁷⁹ During her fashion studies, Börner had to choose a real human model that would accompany her until the end of her studies. As a result, a relationship involving many emotions was formed. Her fashion work emerged from that. The wearer implicitly co-designed the fashion, or as Börner sums up, "you're not alone as designer."⁴⁸⁰ This observation continues when Börner talks about a particular scene in which the dancer moves in the performance (*Mind the Rage*) and the costume (*Toi Toys*) falls off and is put on again by another dancer. Through this repetition, new forms keep emerging. Börner believes that the person wearing the clothes is the actual designer and that she is only there to offer textiles. In other words, the body's movements constantly create new forms:

⁴⁷⁹ Alexandra Börner, interview, 13 October 2022.

⁴⁸⁰ Börner, interview, 13 October 2022.

“This interplay of movement, body and material reveals the design in the end.”⁴⁸¹

There are different ways in which material reacts to the body, one of which is through sounds. The costume of the black static suit embodies this brilliantly. Börner took men’s suits and put them in a tub filled with water and glue (Fig. 96). This process needed a few hours so that the fibres of the cotton could soak it all in. After that, the cotton was stiff, felt like paper and made a similar sound (Fig. 97). When I ask Börner about her authority over material, she tells me that she intuitively follows the textile, the main actor in the moment. Everything she adds to the fabric – glue, for instance, or polystyrene balls to create a form and make it heavier – is a means to an end. This tacit knowledge of material is protected by two actors – her and the material. This knowledge is hardly communicable to others, which is why Börner is thinking more and more about revealing the process of making her costumes and visual art. She is not interested in making a piece of art out of a recorded video, but in capturing the process of making. The journey is its own reward and meaningful to all artists, Börner says.

When working together in the Go Plastic Company, before the costumes and stage design are ready, Börner doesn’t have to explain to the others how the material will look or behave. She says the material already does that, there’s no need for her as a translator: “For some reason the material manages to do it without me having to speak, for the others to pick out the right light.”⁴⁸²

This brings me to the notion of the performative potential of material, which is also taken up by Börner when she talks about the dancers and choreographer. There are moments where the choreographer says, “Yes, that looks good, one more time,”⁴⁸³ but repetition doesn’t work. This is simply because the material also directs the movement, whether the dancer wants it or not. The material sets the scene by

⁴⁸¹ Börner, interview, 13 October 2022.

⁴⁸² Börner, interview, 13 October 2022.

⁴⁸³ Börner, interview, 13 October 2022.

already bringing a specific quality of movement with it. Just as the dancers help to shape the costume, the material helps to shape the dance. Again, it is the co-existence of the movement, body and material that ultimately creates the performance: “That’s why it’s very difficult for me to exist as a costume designer in the company. Because that’s not true. You can call me a choreographer in exactly the same way, but you can also say, Alex, please leave, because actually the costume does everything. You don’t need me anymore. I created [the costumes] at that moment, but then they work by themselves.”⁴⁸⁴

Perspective of a Dancer and Choreographer

When dancer and choreographer Cindy Hammer develops a composition, she tries to involve material as early as possible in the process. She believes that “it is not about the search for a product, but about the engagement that implicitly produces knowledge over the years.”⁴⁸⁵ From the beginning, trust in the process is central. Before physically engaging with material, however, the dancer needs an idea of what it may feel like to dance with it. There are three modes: first, initial contact, which raises questions like “What does it do to me? How does it feel on my skin? What kind of intrinsic movement does it have?”; the second is from a distance, when Hammer sleeps on it one or two nights. She immerses herself in her body archive and asks herself, “What are exciting movement sketches I could combine with it?”⁴⁸⁶; finally, there are materials that exist in the imagination and influence Hammer when she designs movement systems. Such materiality can be a certain texture, a haptic size or volume, which have a great impact.

⁴⁸⁴ Börner, interview, 13 October 2022.

⁴⁸⁵ Cindy Hammer, interview, 7 December 2022.

⁴⁸⁶ The term ‘body archive’ derives from dance studies, influenced by Michel Foucault’s *Archaeology of Knowledge and the Discourse on Language* trans. A.M. Sheridan Smith (New York: Pantheon Books, 1972), 128–29. See also Inge Baxmann, “The Body as Archive: On the Difficult Relationship between Movement and History”, in *Knowledge in Motion: Perspectives of Artistic and Scientific Research in Dance*, ed. Sabine Gehm, Pirkko Husemann and Katharina von Wilcke (Bielefeld: Transcript Verlag, 2007), 207–18; A. Lepecki, “The Body as Archive: Will to Re-Enact and the Afterlives of Dances”, *Dance Research Journal* 41, no. 2 (2010): 28–48.

It is precisely this surprise of diving from imagination into reality and seeing what the material generates that Hammer describes as a “joy of play”. In her opinion, the most beautiful thing about the material encounter is the discovery.

Hammer speaks of “certain associative strands of thought” that are openly shared with the other company members and that move them forward in the process of creation.⁴⁸⁷ “On the one hand the material pushes you a bit, but on the other hand, it also kind of encourages you to say things a bit earlier, when you don’t feel it’s formulated yet. [...] That’s actually quite a supportive process for the decision-making, whether you’re ultimately for or against it.”⁴⁸⁸ These sharing sessions are key to the learning and creative process. Hammer describes that materials are not only performative when they come into contact with a human body, but they themselves are performers. Materials are activated by the interaction between human and material. “It’s like an encounter.”⁴⁸⁹ Bringing this encounter to the stage or into a video/image is hard work and requires a lot of translation. Hammer mentions a coloured sponge they chose together with Alexandra Börner, which they associate with anger (Fig. 98). There was a moment when Hammer had to exert a lot of physical strength to squeeze the soaked sponges and recognised only a light patina (Video 6). This was emblematic of the emotion of anger that the choreography was about: “You work on things [in daily life] and it’s partly so invisible or at least only partly visible, and there were attempts to dye these sponges with less physical force, so without the complete physical effort, and it didn’t have the same effect and that was very revealing.”⁴⁹⁰

The interaction with material has many layers of storytelling, which need different ways to communicate the agency of material. Hammer explains that having a visual language is very important for this transition, but working

⁴⁸⁷ Hammer, interview, 7 December 2022.

⁴⁸⁸ Hammer, interview, 7 December 2022.

⁴⁸⁹ Hammer, interview, 7 December 2022.

⁴⁹⁰ Hammer, interview, 7 December 2022.



Fig. 98 *Mind the Rage* tour poster

with imagination is even more important. Dancers are used to working with imagination. For Hammer it is fascinating how imagination somehow merges with the material. For this to happen, it is important to imagine things, which work through emotions and memories anchored within them.

Time plays a crucial role in the discovery of material agency. The preliminary stages of research, experimentation with material and the exchange of ideas all take time. Above all, openness in this process of experimentation is productive. Hammer takes minutes of the intermediate steps during rehearsals so as not to lose track of the feelings and movements associated with them – in short, the story that the dancer is going through. Such protocols are the basis for rehearsals with dancers Hammer teaches choreography to. Rehearsal days are there for literally rehearsing, trying out, experimenting. It is a combination that can create “magical images” that in turn touch the audience, which also happens through evoking memories and associations.⁴⁹¹ If such moments don’t happen, the material is taken out but kept for another possible project, through which “[t]he word ‘sustainability’, which has in the meantime become quite a loaded word, gets another level here.”⁴⁹² Over the years of collaboration, the process of creating pieces has been an eye opener. The original image the dancer, costume- and set designer have before they come together and work with the material has become much more flexible. Hammer trusts the process and the impulses stimulated by the material encounters to allow preconceived ideas to evolve into a piece.

Conclusion

In conclusion, for both Alexandra Börner and Cindy Hammer the performative potential of the material that evokes emotions plays an important role in acknowledging the agency of materials. However, before any interaction takes place, imagining what it might feel like to sense

⁴⁹¹ Hammer, interview, 7 December 2022.

⁴⁹² Hammer, interview, 7 December 2022.

material is crucial to allow for surprises that can take Börner and Hammer's design process in other directions than initially expected. On the other hand, the coexistence of bodies, materials and movement shapes their understanding of material. The trust in the intuition of the makers grows through their experience with material within the creative process over time.

**PLAY *INFINI 1-18* BY JOZEF WOUTERS
AT THE VOLKSTHEATER WIEN:
PERCEPTION OF MATERIAL**

I leaf through the thick booklet of the Wiener Festwochen. One piece immediately catches my attention. My eyes stare at magnified layers of textile on the stage. The picture is without people (Fig. 99). I take a closer look. As far as I can tell, the textiles fill the stage. The tranquillity of these layers impresses me and prompts me to read the title, INFINI 1–18. The director of this piece is scenographer Jozef Wouters. Upon further reading, I learn that “infini” is French and describes a painted scene that unfolds the space from a central perspective. It aims to go beyond the theatre and its set to stimulate the audience’s imagination. The approach of this piece is in my opinion a brilliant example of how material is a natural actor in an architectural environment. The booklet states, “Drawing on concepts by contemporary theatre makers, [Wouters] has been creating an ever-expanding collection of infinis at his workshop since 2016: diverse contributions to his quest for stage landscapes that are of relevance to us today.”⁴⁹³ For the Wiener Festwochen, scenographer Jozef Wouters had invited choreographer Amanda Piña to complete the 17 visual stories that already existed. The show lasts three and a half hours. I am curious what stories a play can tell in nearly four hours without human actors (Video 7).

Reflection on the Play *INFINI 1–18*

When I arrive at the Volkstheater in Vienna in early June 2022, I am told by the staff to enter the performance through the back entrance instead of the main one: “You

⁴⁹³ Wiener Festwochen, *Programmbuch* (Wien: Österreichische Post AG, 2022), 66.



Fig. 99 Layers of Infinis



Video 7

Fig. 100 *INFINI #6* by Sis Matthé



leave the building, turn right, go straight to the *Wurstelstand* [sausage stand] and turn right again right after that. There you will see the stage entrance.” Here we are. I have never consciously seen the Volkstheater from the back, let alone entered from the stage to take a seat in the auditorium. It is a completely new experience. A staircase leads directly to the aisles. While most of the audience is already seated, I stand on the stage and look up. What I see is the gigantic stage machinery with poles, lights and pulley constructions. After a few minutes, I exit the stage via one of the two small staircases on the side. I take a seat in row 15. It’s free seating and not a full house. Most people are seated in the stalls, the main seating area, others are spread out in the first circle. The lights are dimmed. The show begins.

Jozef Wouters takes the microphone. He is not on the stage, but in front of it, at eye level with the audience, next to an overhead projector. A small transportable screen is situated on the stage, which is not that big. As Wouters begins his performance with an introduction to the site and architecture of the Volkstheater, his colleague shows pictures on the overhead projector. He speaks in English, with subtitles in German above of the stage. Wouters tells us that the show is a play of different artists responding to *Infini*. The audience is invited to change seats, stretch their legs and stroll around after each scene to experience the building from different angles. I can feel this dynamic of theatrical experience is rather untypical for the audience, me included.

After the prologue, the first scene, titled *INFINI #3 Seldom Real* by musician Michiel Soete, begins. There is an atmospheric light show with fog, both dancing to electronic music, presenting a very aesthetic moving image that I start to fill with association and memories. Within the piece is a scene with a large curtain of beige fabric. It reminds me of sand. I give my attention to the material. The music stops playing. All I can hear is the huge layer of fabric slowly moving upwards. The material is heavy. The sound it makes could be associated with a sandstorm. The way the material is staged it is able to tell a story, to evoke emotions and

memories. The material becomes a memory itself. *INFINI #3* ends, the lights slowly come on and the audience is quiet but clearly excited.

I decide not to change seats after the first scene because I want to keep this perspective for a bit longer. Apparently, most of the audience thinks the same, or is still too shy to change seats or stand up and maybe change their eye level in relation to what happens on stage. The lights dim. A series of different *Infinis* follows. I briefly describe a few that are most relevant to my research.

INFINI #6, by the artist and author Sis Matthé, is different from the first shown. In the background, containers painted with a central perspective stand at a harbour scene by Thierry Bosquet, printed on large pieces of textiles. When the scene begins, a voice can be heard off-stage. The voice narrates Matthé's first-person perspective and reflects on the process of creating the set. It is the port of Antwerp. The bulky containers on the soft fabric float as if weightless in the air. As the journey of the design process is recounted, the set looks almost surreal – a fragile textile is the last thing I associate with heavy shipping containers. The vulnerable textile containers do not change their position throughout the scene, which makes it possible to easily follow the story told off-stage.

The lights come back on, illuminating the auditorium where people begin to move. I still remain seated. Wouters comes back in front of the stage again. He introduces the next scene, while the technicians reassemble and mount material on stage (Fig. 100). The next *Infini* is about the idea of collective reading. The variety of associations that arise from the same text. Wouters explains that collective reading is more difficult than one might think because readers read at different paces.

What can be seen in *INFINI #8* is a large-scale papyrus scroll printed with a text by writer and architect Wim Cuyvers, translated into German by Lotte Hammond. As the scroll slowly moves upwards, individual pairs of eyes read.

erotic. Next morning I was at the Sagrada Familia by the time it opened. I strolled around the perpetual building site. I looked at drawings and maquettes exhibited there. I climbed up into one of the towers, higher and higher, I stood there looking through one of the openings in the building and I saw the building and the city through that unusual hole in one of the walls of the building and suddenly I had goosebumps from head to toe, they came in waves, it was the same sensation as at the Acropolis. And again it lasted a long time, difficult to say how long. It only went away when I turned round, when I left. I couldn't contemplate an experiment: would the feeling come back if I returned to the place with that view? What came over me did not lend itself to trying to find out if the current would be restored if I put the plug back into the socket. In the days that followed I visited Gaudí's other buildings in Barcelona. They did nothing for me.

One Sunday morning in the autumn of 1983 I had taken the metro to the North of Manhattan. I was wearing a bright red jogging suit. The air was fresh, almost chilly, but it was sunny.

A very fine mist hung over the city, but it was not a difficult

Mies van der Rohe. I had already seen the building a couple of times during my long stay in Manhattan. I had looked at it carefully. I seated myself on a little stone wall a long way from the building, close to the Avenue, just on the square that belongs with the building. There was nobody in the building or on the square. I sat with my head on my hands folded over my knees.

... I sat on the stone floor of the

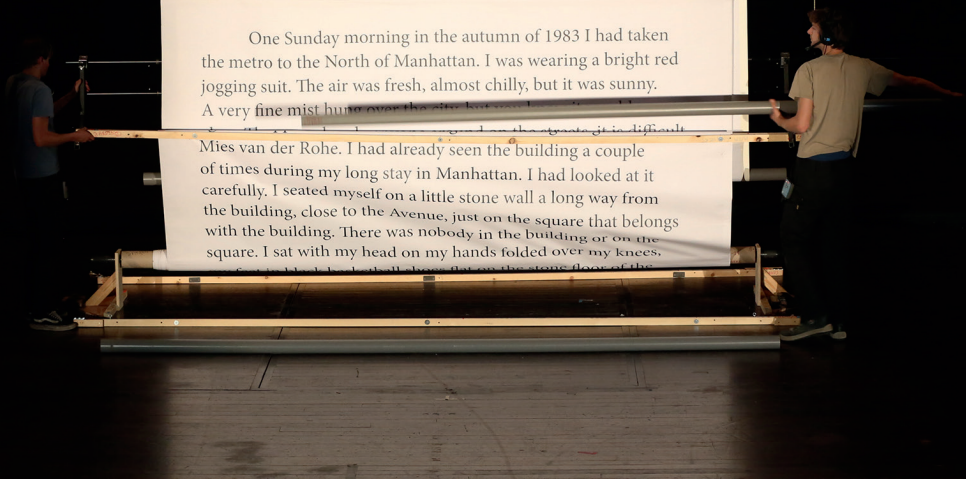


Fig. 101 *INFINI #8* by Wim Cuyvers

Fig. 102 *INFINI #15* by Benny Claessens

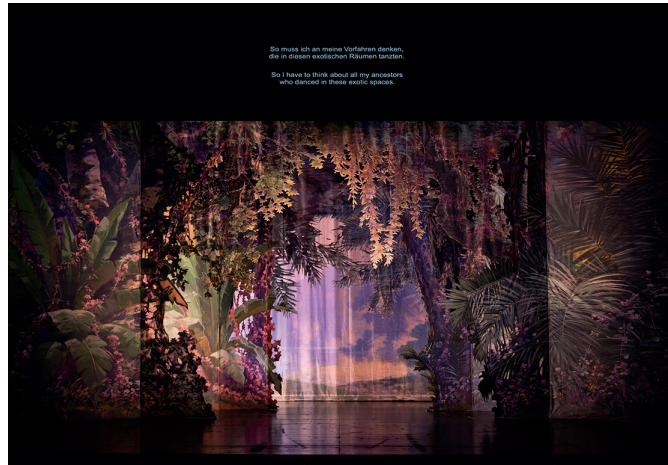


Fig. 103 *INFINI #18* by Amanda Piña

No sound or music can be heard. The only thing that can be heard is independent laughter, the timing of which depends on the reading speed of each reader. Everyone gets to the entertaining parts of the text differently. The reading lasts almost twenty minutes. The most fascinating thing for me is the variety of memories that collide in the silent theatre. Each reader associates different memories with what they are reading. Each creates their own individual scenery. The papyrus scroll helps not only awaken emotions, but also provides space for imagination. As the technicians change the text to keep the reading flowing, I watch them carefully touching the material so as not to damage it (Fig. 101). This requires a high level of trust on the part of the artist in the team performing their work.

After enjoying the direct view of the stage, I move to the gallery. The change of position and therefore perspective, draws the attention to the eye of the spectator. I realise that I am not only looking at the stage, but at the whole room and the audience. The lights are turned off again.

INFINI #15, by actor and director Benny Claessens, shows two huge photos of bays printed on two large fabrics. Underneath the two large-scale format photographs are two boxes (Fig. 102). While the bar with the two textiles slowly goes down, two technicians, hiding behind the textiles, very slowly put the large photos inside the boxes. In the background you can hear Irma Thomas singing from the record *Time Is On My Side* (1964). One could associate the song with being on holiday, or with other any good memories that tend to disappear with time.

INFINI #18: Pres 22 Fries Aziatiek is the latest *Infini*, designed by artist Amanda Piña especially for the Volkstheater (Fig. 103). It consists of colourfully designed layers of flowers and plants that originally formed the décor of Albert Dubosq's *Foret asiatique* (1921) for the Stadschouwburg Kortrijk. The music of Léo Delibe's *Duo des fleurs of Lakmé* (1883) plays in the background.

INFINI #16 is by choreographer, dancer and writer Bryana Fritz. This is the only piece in which the creator of the scene is involved on stage during the show. Fritz introduces her work by explaining what the term “introduce” means, to lead into. That’s exactly what the audience does, we follow Fritz inside. When she was commissioned to think about landscape during the pandemic, she couldn’t leave her house to discover a landscape. Fritz’s tools, a MacBook and OS X, facilitated not only a mediation of her landscape, but also an escape from longing. The screen recordings projected onto the big screen are guided by her hand following the trackpad (Fig. 104).

INFINI #5 by Rimah Jabr shows endless colonnades of palm trees (Fig. 105). The central perspective, achieved by thirteen sheets of paper laid one behind the other, is impressive. Jabr’s voice can be heard off stage, reading out a letter she sent to Wouters in which she discusses the background to the design of her *Infini*: “The idea I have in mind is not about being stuck in one place or one memory or one period; it is, for me, about being stuck in life, in a life that was chosen for you ever since you were born. So it is about the hope of finding the exit that you might find in this tunnel.”⁴⁹⁴ After a while, the thirteen layers leave the stage one after the other. An empty stage remains (Fig. 106).

INFINI #4: Annex by choreographer, dancer and curator Michiel Vandavelde begins with the idea of sitting in a rocket and launching into space. You lose track of it when the back door on stage disappears. Everything falls into complete darkness, even the emergency exit signs are hidden. A very special atmosphere is created. The audience listens to only one voice reading a text based on essays by Franco Berardi, Jean-Luc Godard, Hito Steyerl, Eduardo Viveiros de Castro and Michiel Vandavelde. One quote, by filmmaker and writer Hito Steyerl sticks in my mind: “Falling is relational – if there is nothing to fall toward, you

⁴⁹⁴ Rimah Jabr, “INFINI #5”, in *INFINI 1-15*, ed. Jeroen Peeters and Jozef Wouters (Amsterdam: De Nieuwe Toneelbibliotheek, 2017), 107.

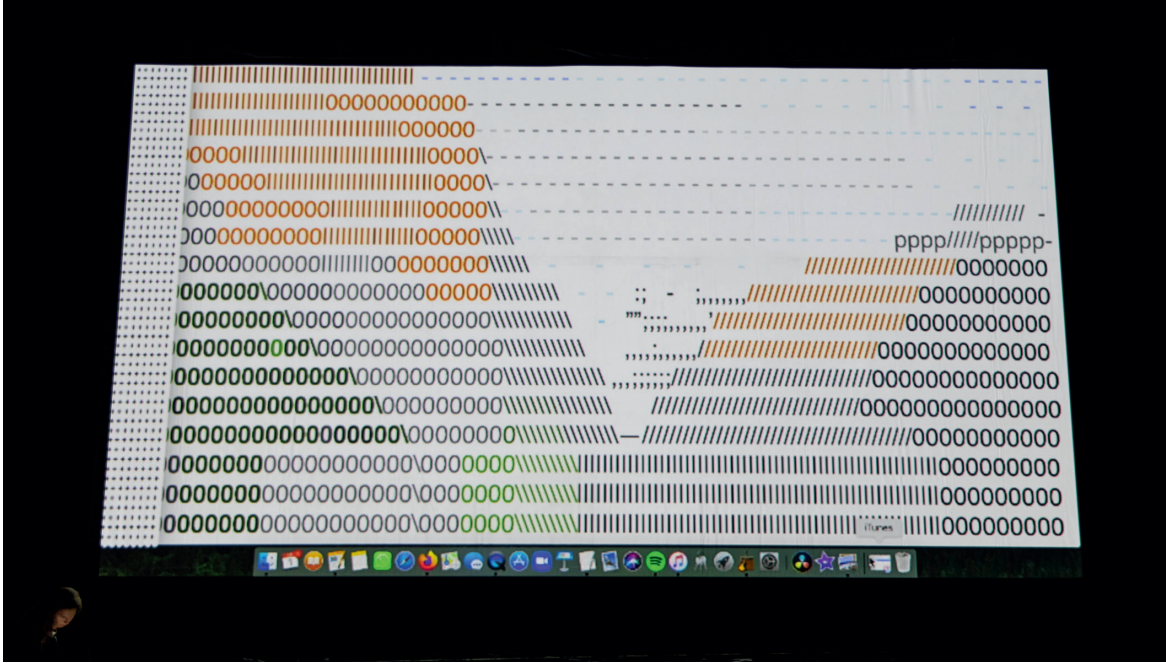


Fig. 104 *INFINI #16* by Bryana Fritz

Fig. 105 *INFINI #5* by Rimah Jabr

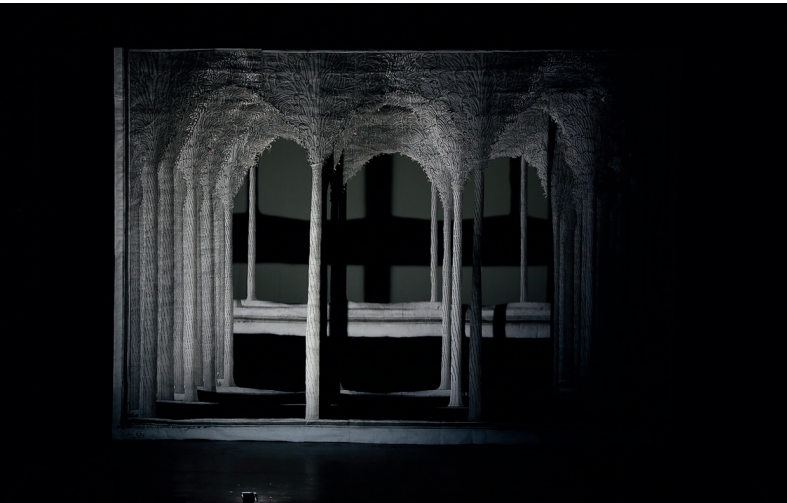
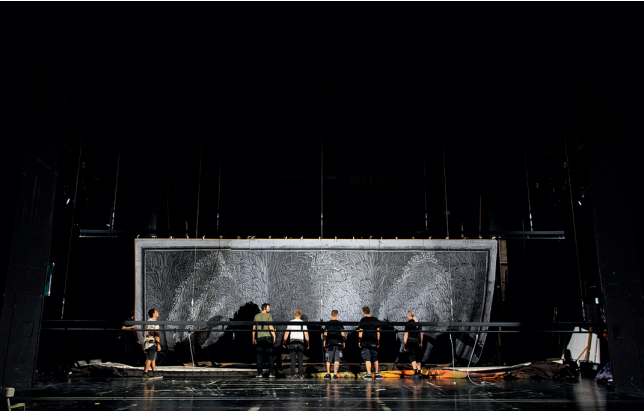


Fig. 106 Technicians dismantling *INFINI #5*



may not even be aware that you're falling."⁴⁹⁵ This seems to be key to my research.

INFINI 1–18 touches upon the different views, shared memories and collective knowledge that emerges from the series of *Infinis*. While there are no actors in the traditional sense, the technicians play a big role in interacting with the material the audience gets to see. In *INFINI 1–18*, the artists entrust their work not only to the technical team, carried out by strangers, but also to the material, which reacts to the action of the technicians. The audience sees a collection of eighteen small visual/spatial/aural essays, all of which are the result of different layers of combinations of human and material. The stories are told through the visual engagement with material, the complexity of which I would like to get to the bottom of. There is something in that it can only happen live, in an atmosphere created by the emotions of the actors on stage and the audience in the space. How does the material on stage carry and convey what the audience receives and sends back? What do we associate with material? How do we define relationality? Can we understand material without directly touching it? Can unexpected extensions of the material world be embedded in a digital and visual world? Assuming material is in the realm of the visual – is this realm different from the haptic? What could this mean for architecture?

Decoratelier as a Site of Material Agency

It's been six months after I watched *INFINI 1–18*. I'm on a train whose final stop is Bruxelles Midi, which is also my final destination. The journey takes me to Jozef Wouters' creative hub, called Decoratelier, which he founded. It is located in an old factory building in Molenbeek, on the outskirts of Brussels (Figs. 107–8). I ring the bell and meet three men hanging out on a platform made of metal scaffolding painted in turquoise and various types of wood. They say that Wouters must be somewhere upstairs. As I climb the steep industrial staircase, he comes to meet me,

⁴⁹⁵ Hito Steyerl, "In Free Fall: A Thought Experiment on Vertical Perspective", *e-flux Journal* 24, (April 2011): 1.

we return across the courtyard past his three colleagues, who are still chatting. We stop at one of the seating areas of the metal construction outdoors (Figs. 109–10; Video 8).

Wouters starts by telling me that his architectural, performative or collaborative practice begins by going into a space, spending time there, literally sitting down on a chair and “sitting with” the building, waiting for the building to ask questions. He goes on to describe: “there’s this thing of what does the building want? What is already there, what has been decided before me?” This process of sitting, waiting and asking questions throws one back to the previous use of the building. It can reveal desires of people from the past. It is a kind of “archaeology of desire”, not only of the building/space, but also of one’s own: “what is lovely about taking time for that is that through learning this desire of the building, you are of course learning about your own desire. [...] through learning to be in a given space in a given context, I learn about my own needs and my own desire.”⁴⁹⁶

For his project *INFINI* (2016) Wouters researched the building in which he wanted to project the piece, i.e., the history of scenography and the history of the people who created spaces in these buildings. Wouters expands the notion of desire and adds the term ‘phantasm’ “as a sort of intensified desire to this that has to do with dreams and obsessions and fiction.”⁴⁹⁷ As Wouters sat in the building, he thought about the phantasm of institutions projected upon young people. “What would it mean to use the building for what is needed or for what is built? And from that you start realising, hey but we are all decors. They have all this machinery, they renovate it, they keep it exactly the way it was built. [...] Where are the decors? It’s almost as if you build a slide projector, but you don’t have the slides. [...] I think that was a really triggering question, like what would be a collection of scenographies for this building today?”⁴⁹⁸

⁴⁹⁶ Jozef Wouters, interview, 27 October 2022.

⁴⁹⁷ Wouters, interview, 27 October 2022.

⁴⁹⁸ Wouters, interview, 27 October 2022.



Fig. 107 Main entrance of Decoratelier in Moolenbeek, 2022

Fig. 108 Sign outside the building:
'THE UNBUILT SCHOOL OF ARCHITECTURE'



Fig. 109 Transportable wooden stage construction by Decoratelier at its courtyard





Fig. 110



Video 8

Fig. 112 Wood workshop of Decoratelier



Fig. 111 Making of *INFINI #18* by Amanda Piña

This was the reason for Wouters to invite different artists to ask them what scenographies they wanted to make. It was also essential for *INFINI* that they all worked in the studio (Fig. 111), the so-called Decoratelier (Dutch for design workshop), “to reduce the distance between them and the materiality of [the building] to an absolute minimum. [...] It really became the central place for the making of the piece.”⁴⁹⁹ While Wouters describes how they collaborated, he explains how materiality influences decision-making:

to stand around a scale model or to test out a reality and to adapt it while speaking, to arrive to a way of building, in a way showing how the material choices express, where the emphasis lies. What is important and what is not, is something you can express in your choice of material and where you put your budget. [...] and I think for me, the essence of my work as a scenographer is to become better and better in expressing the way the emphasis lies.⁵⁰⁰

Furthermore, Wouters emphasises the equality of human and non-human stakeholders in the process of making, in order to “find ways in which the space can come about as a conversation not as the consequence of a conversation”.⁵⁰¹ In other words, one has to listen to the desires of the actors involved.

It is not so much about what you want, as what the piece of wood wants. And just like with the building [...] really focusing on what does this piece of wood want will help you to know what you want. I’m saying this really not philosophically, it’s literally when you are holding a metal piece of scaffolding and you are pushing into a corner and the corner wants something else. It will tell you whether you really want it to be there, because then you need to go get the circular saw, you start getting your metal, then you get the metal from standard size to a specific size, which means it

⁴⁹⁹ Wouters, interview, 27 October 2022.

⁵⁰⁰ Wouters, interview, 27 October 2022.

⁵⁰¹ Wouters, interview, 27 October 2022.

will always more be this [...] So that's you. And then the metal asks you: Do you really want it? Do you really want to cut me out of this shape I was made in? In order for your wants, in this space to hurt? Or would you say, let's follow this space and put it away and think again, because the space clearly doesn't want us.⁵⁰²

As we speak, sounds can be heard in the background. They are milling wood in the workshop (Fig. 112). Wouters explains that there is a rule at Decoratelier: if someone is using material that generates a lot of noise, everyone has to listen – because that happens sometimes when humans and materials interact. It can be loud. I am curious if the material evokes memories or emotions as he practices. His answer is clear, as he says that his knowledge of material does not develop from an aesthetical point of view, but clearly through the development of a material language, “like a gardener in the garden, in the sense that I learn from the garden. Like I build and I build stuff constantly. And then by looking at the stuff that you build and then seeing how people use it, you learn just like a gardener learns from his plant. Hey, there's a plant growing there, but not there. What about this corner that works not in there. And then you try to understand: maybe it's with the sun or it's like people don't walk here [...] [t]he beauty for me lies within the ability in which the constructions and the work manages to be precise about this desire.”⁵⁰³

For Wouters, thinking in space is a story of needs, of desires that want to be seen, because even though it may not be the best idea, he has to satisfy that need. That's why he doesn't like architectural firms that have to have an idea:

first, they don't know if they are going to win the competition. So, their ideas are already hypothetical and then it takes so long and they need to somehow be like stubborn monks to keep the essence of their idea through this long march to the institutions and

⁵⁰² Wouters, interview, 27 October 2022.

⁵⁰³ Wouters, interview, 27 October 2022.

through direct regulation. [...] The whole development of material knowledge and material language comes from that to find a way in which space can appear and disappear faster and in which I don't have to justify too much desires for space.⁵⁰⁴

The making process that Wouters describes does not only sound exciting, but also a lot of fun. Wouters explains putting “a whole layer of sculpting” on each object he makes to literally shape its haptic nature.⁵⁰⁵ He sums up that he is getting more and more interested in weaving and comparing it to his work. Before I leave, Wouters invites me to take a look around the whole building, including the workshop and the scaffolding tribune, adding “I’m convinced the space tells all of what I said.”⁵⁰⁶

Conclusion

The space in which Jozef Wouters works adds a layer to the relations built with material. Shared memories linked to material create a collective knowledge. Wouters’s views on the desires of materials embrace the desire for a language that is understood by the maker and the material alike. He speaks for the conscious engagement with material, which opens up new perspectives. Views not only on how to think with material, but especially how material itself influences the process of design.

⁵⁰⁴ Wouters, interview, 27 October 2022.

⁵⁰⁵ Wouters, interview, 27 October 2022.

⁵⁰⁶ Wouters, interview, 27 October 2022.

DISCUSSION: PRESENCE, CO-PRESENCE AND CARE

The interviews presented here began in environments that are very familiar and comfortable to the volunteers. These were either their workshop, studio or home. As I asked questions about their practices and memories, the conversations became more physical. They began to use their bodies to explain how a particular material feels, such as touching a surface with their hand or indicating the feel of an object by gesturing in the air. In my experience, when the interviewees felt understood by me in what they were saying and trusted my lens as a researcher, they opened-up. They would describe their observations and experiences increasingly evocatively. Their gestures and shifts in tone of voice allowed me to sense very personal and familiar experiences, which I cannot reproduce in written or spoken words, nor in images. However, this sensed ‘something’ is hugely important in conveying their understanding of and feeling for material, which goes against conventional scientific modes of enquiry and presents me with a challenge in terms of articulating the findings of my research.

Consequently, the three examples show the performative potential of textiles to evoke emotions. The fabric could therefore be positioned as dramaturgical means that reduces the distance between the creator and spectator. In all three, there seems to be a need on the part of the creator to make accessible or intelligible what the experience and its associated feelings reveal for others. This integral translational aspect does not rely on practitioners sitting down for hours in the library, instead they deal with the intuitive need for their interaction with material, which requires a similar amount of time. The term ‘translation’ is not necessarily the right description, but it approximates the state of practitioners’ learning through trusting what their interaction with material generates. This balancing act between different types of practice, in which some

are more attuned with material agency than others, offers examples of trust in the evocation of emotions through various forms of narration. That is exactly what current architectural practice, which is heavily reliant on digitally drawing and modelling in BIM and CAD, struggles to put into words, as it is not directly informed by material. The transition between body, material and text is, at best, shown in performance/theatre productions that are able to build something emotive through the interconnection of these elements. My proposition is that direct sensory engagement between actors, the stage-set and costumes that facilitate the communication of material insights in the performing arts could offer something to architectural design processes. This approach is rather different from the one commonly engaged with in architecture, which although it aims to translate an experience – a designed sense of space – tends to distance itself from the subjectivity of the designer. This is especially common in a world that increasingly communicates through the literally flat materiality of the digital and pays less attention to the physical. While digital tools hold enormous potential, a rebalancing of what has been lost is now necessary.

We know that no human or non-human entity moves and feels in the same way, which makes their individual gestures unique. According to choreographic sculptor Katja Heitmann, whose visual-choreographic work focuses on people's habits, "[i]n our society, we are trying to capture humanity in data. But we are losing something this way."⁵⁰⁷ Instead of observing from a distance as a researcher, in my research I consciously sought dialogue with four practitioners around questions relating to their feelings and knowledge to find out what is worth recognising from their material understanding and my reflexive observations. When articulating their reflections, I was impressed by the softness and care shown when they talked about material knowledge in relation to their practices. Talking

⁵⁰⁷ Zoey Poll, "Turning the Gestures of Everyday Life Into Art", *The New York Times*, 2022, 21 November 2022, available at <https://www.nytimes.com/2022/11/21/arts/dance/gesture-archive-art.html?referringSource=articleShare> (accessed 21 November 2022).

to them underlined that emotions play a crucial role in making understandings of material more relational. I was particularly surprised by the empathy shown to material desires when they listen to what the material wants rather than what they want – allowing themselves to fantasise, to let their imagination be guided by intuition rather than reason.

Lack of Control

The creative practitioners I selected and spoke to have in common is a high degree of self-reflexivity. They have a particular angle on material agency that they bring in to embrace material empathy. Such practitioners I engaged with find it less difficult to talk about feelings or express emotional memories in relation to a particular subject than people in my experience in the field of architecture. What I have specifically encountered in my own practice, which has been confirmed in my interviews and conversations, is that architects often speak in approximations (kind of, sort of, somehow, someway) and although they do so in a personal way (we wanted, we did, we have), they do so without revealing what they themselves really felt or feel. In my view this reveals what they are after. They may want to avoid presenting their work as if filled with uncertainty. Like Wittgenstein's well-known ending of his work *Tractatus Logico-Philosophicus* (1922), in which he states “[w]hat can be said at all can be said clearly; and whereof one cannot speak, thereof one must be silent.”⁵⁰⁸ Instead of admitting that they are initially guided by intuition in the design process, it seems that place of silence, architects find their way around uncertainty by presenting their working process through an overview, a structure, a plan, through which they coordinate their project. As a result, there is a distinct lack of emotional discussion, and of a distinct lack of softness.

Theatre, on the other hand, is about movement in time and space in a specific relationship between actors and

⁵⁰⁸ Ludwig Wittgenstein, *A pocketbook English edition of: Tractatus Logico Philosophicus*, trans. C.K. Ogden ([no place]: Pattern Books, 2021 [1921]), xxxii.

spectators, with emotions as objects of representation, mediation and intention of effect.⁵⁰⁹ Following Maaike Bleeker, the notion of audience is a construction rather than a natural result, where she argues that “[t]heatre does not discipline its audiences; it does not turn people into disembodied subjects ‘just looking’. Rather, it presents its audience with an address that resonates with the implications of already internalized modes of looking.”⁵¹⁰ It is important to acknowledge this internal struggle between knowing and representing to understand why communication within architectural studios leads to misunderstandings when it comes to communicating knowledge about material to colleagues and people outside the office. Bleeker further suggests that “[i]f we want to understand the implications of such representations, we have to take into account the desires, presuppositions and anxieties invested in them.”⁵¹¹ Conversely, it would be significant for architectural studios to learn what their audience’s expectations are by portraying such hopes through the inclusion of feelings.

There is a need in architecture to reconfigure who and what the production process includes. If we assume that an audience is a construct and combine this with the difficulty of articulating the intimate experience of material, what crystallises is the challenge of how architects position themselves between making things, engaging audiences and being an audience. According to Garry Stevens, founder of the Key Centre for Architectural Sociology,

to think of architecture as a “profession” is to gloss over its relationships with other elements of society, and especially to discount the importance of its mechanisms of reproduction, that is, the education

⁵⁰⁹ Andreas Kotte, “Theaterbegriffe”, in *Metzler Lexikon Theatertheorie*, ed. Erika Fischer-Lichte, Doris Kolesch and Matthias Warstat (Stuttgart and Weimar: Verlag J.B. Metzler, 2014), 361–68; Doris Kolesch, “Gefühl”, in *Metzler Lexikon Theatertheorie*, ed. Erika Fischer-Lichte, Doris Kolesch and Matthias Warstat (Stuttgart and Weimar: Verlag J.B. Metzler, 2014), 123–28.

⁵¹⁰ Maaike Bleeker, *Visuality in the Theatre: The Locus of Looking* (Hampshire and New York: Palgrave Macmillan, 2008), 166.

⁵¹¹ Bleeker, *Visuality in the Theatre*, 181.

system. A preoccupation with the body of practitioners relegates other social actors of importance to architecture to marginal positions, when they are better thought of as constituting a system in which practitioners are but one component.⁵¹²

A distance between the ‘creators’ and people who have not been engaged in the process of making remains. Because the audience was not involved in the making process, a distance between makers and materiality is perceived from the outside. My proposition is that an understanding of the performativity of material can emerge through an exploration of emotions and feelings between the maker and the viewer from the inside.

Matter of Trust

An open attitude, based on experiential engagement with material, which all four artistic practitioners take as their starting point, is crucial to integrating the impact of material. Theatre directors Anne Bogart and Tina Landau argue that “[w]hen we know what a door is and what it can do, we limit both ourselves and the possibilities of the door. When we are open to its *size* and *texture* and *shape*, a door can become anything and everything.”⁵¹³ Conversely, if architects were to trust material and its performative potential in design processes, they would no longer start from the premise of what architects want to hear but would be open to the unexpected. They would allow themselves to be surprised. The different examples outlined here describe the surprising effects that materials can have. As Judith Raum noted, “these moments of surprises and the complexity of sensory impressions are the real attraction of engaging with material.”⁵¹⁴

⁵¹² Garry Stevens, *The Favoured Circle: The Social Foundations of Architectural Distinction* (Cambridge, MA: MIT Press, 1998), 30–31.

⁵¹³ Anne Bogart and Tina Landau, *The Viewpoint Book: A Practical Guide to Viewpoints and Composition* (New York: Theatre Communication Group, 2005), 59. Italics in original.

⁵¹⁴ Raum, interview, 12 October 2022.

Jozef Wouters criticises architects who “keep the essence of their idea through this long march” without being flexible in the process of *making* architecture.⁵¹⁵ The consequence of this attitude is that the real is no longer a staging of the real from a human-centred point of view. The audience can discover things themselves directed by materials. This shift in participation and observation would assign the audience a certain level of co-authorship of what is effectively experienced.⁵¹⁶ Philosopher Roland Barthes explored notions of authorship in depth across a range of essays. He distinguished between ‘readerly’ and ‘writerly’ writing, where a readerly text is a text easy to understand, like a classical novel, while a writerly text requires a greater effort on the part of the reader, but also attributes a greater role for them in the production of meaning. According to Barthes “the goal [...] is to make the reader no longer a consumer, but a producer of the text.”⁵¹⁷ He argues that:

[e]very literary description is a view [...] the writer, through this initial rite, first transforms the “real” into a depicted (framed) object [...] realism [...] consists not in copying the real but in copying a (depicted) copy of the real: this famous *reality*, as though suffering from a fearfulness which keeps it from being touched directly, is set farther away, postponed, or at least captured through the pictorial matrix in which it has been steeped before being put into words: code upon code, known as realism.⁵¹⁸

If we follow Barthes’s proposition, it is necessary to start from the idea of co-presence, which goes beyond human performers. Co-presence allows for a flexible relationship between actors and spectators. In doing so, I do not want to romanticise the processes of making architecture but would like to suggest the need for an awareness of the

⁵¹⁵ Wouters, interview, 27 October 2022.

⁵¹⁶ The concept of collaborative authorship already exists in early Romanticism, around 1800. Friedrich Schlegel and others advocate an intellectual exchange between authors and thinkers.

⁵¹⁷ Roland Barthes, *S/Z*, trans. Richard Miller (Oxford: Blackwell Publishing Ltd, 1990 [1973]), 4.

⁵¹⁸ Barthes, *S/Z*, 44–45. Italics in original.

co-existence of humans and material. This means that in the context of my research, precisely because of the digital everyday life of architects, what we perceive as real emerges through interaction between humans and materials. This is not something that pre-exists, which brings it close to Barad's notion of entanglement and intra-action.⁵¹⁹

Judith Raum's and Cindy Hammer's understanding of time has changed since they started working with textiles, offering a crucial insight that suggests we need to take materials more seriously. There is an enormous importance to taking time, really listening to material and seeing what happens when architects work against/with the materials' 'will'. This approach of "vital materialism" in New Materialism distinguishes itself from nonmodern Animism or the Romantic philosophy for nature in so far as it argues that "vitality emerges from within and between matter."⁵²⁰ The awareness of the performative potential of material currently holds lessons for architects that are under-recognised. Architectural studios could benefit from considering the material agency of voices outside of architecture. Voices that could be found in theatre and performance, for instance.

Trust in material is recognisable in the work of all three examples discussed in this Act IV. As Raum examines material in her work *Textile Territories* to arrive at greater knowledge of a single person, Bauhaus weaver Otti Berger, the trust Raum places in material and the decisions she makes in relation to it are revealing. Without her trust in the textiles, Raum would not progress at all in her research. Her artistic approach shows the potential that is situated in intuitive action and particularly the important role that material plays in this. According to artist and researcher Susan Schuppli, "Material Witnesses are nonhuman entities and machinic ecologies that archive their complex interactions with the world, producing

⁵¹⁹ Barad, *Meeting the Universe Halfway*, iv.

⁵²⁰ Devyn Remme, "Vitalism", 2017, available at <https://newmaterialism.eu/almanac/v/vitalism.html> (accessed 21 December 2022). See also: Bennett, *Vibrant Matter*; Braidotti, *The Posthuman*.

ontological transformations and informatic dispositions that can be forensically decoded and reassembled back into a history.⁵²¹ In Raum's case, the Bauhaus samples stored in international archives and their physical dissection (when possible) are key to accessing material knowledge of the late Berger. The research, which included new weaving by a contemporary weaver, forms an interconnection between technical know-how and intuition. The process of physically researching is simultaneously a process of "creating archives" and *activating* the archive.⁵²² An example of this is Alexandra Börner's description of the chains of association. The assembling of human ideas contributes to the creative process of an object that forms the starting point of a story. The material is indispensable here, because it is the first thing that comes into contact with the inner imagination and brings out feelings. It starts to *make* sense. These "cognitive experiences are stored in movements, gestures, and rhythm" and are one more reason to be aware of how we perceive knowledge to reside and to integrate it into cultures of knowledge.⁵²³

When I watch the performance *Mind the Rage* by Go Plastic, I see movements that were created under the influence of material, among other things. Certain feelings of the dancers and costume designer are also expressed to me, which have clearly emerged under the influence of their engagement with material. The interpretation of exactly what feelings are evoked in me is a matter of subjectivity. What seems important is the fact though that through their conscious interaction with material I encounter the empathy of the artists' material knowledge and their associated feelings. I gain an insight into knowledge that cannot be put into words. This knowledge is embedded in the *relation* between humans and materials. Returning to Rose, Basdas and Degen's critique that feelings are not sufficiently explored because Actor-Network theorists mostly stop at acknowledging emotions, I argue that this generated tacit knowledge can only be brought to light by attempting

⁵²¹ Schuppli, *Material Witness*, 3.

⁵²² Haines, "Archive", 12. Italics in original.

⁵²³ Baxmann, "The Body as Archive", 207.

to convey the intimate relationship through feelings. Therefore, a knowledge gap emerges between sensing and speaking/writing that seems only possible to overcome by giving sensing equivalent value as speaking/writing.

Walking Zoos

When I speak of ‘something’, I use my body while speaking to articulate my embodied experience and knowledge of this ‘thing’. The human body is made up of chemical elements, such as hydrogen, oxygen, carbon and nitrogen. A chemical reaction is the process by which chemical compounds give rise to other chemical compounds, as the atoms of the reactants form other bonds and release energy, which is the crux of making these bonds visible so that they play a role in knowledge building: new properties emerge. At the same time, humans could be described as a ‘walking zoo’ of different microorganisms that transform *in* and *with* them. Just as chemical elements and microorganisms react to each other, when humans interact with material, a reaction happens too. Collectively, the three examples outlined in this act highlight the impact material has on the creative decision-making process in different contexts.

My proposition is to take into account material and its effect on human bodies to show how this introduces new ways of knowing, as Byrana Fritz did in her *INFINI #16*, by following her thinking process when she designed her scenery. Not only visual or haptic effects, but also audible ones affect the human body. The sound of crackling or grinding material, for instance, immediately awakens a particular feeling. Similar to Jozef Wouters’s ‘sit-wait-listen’ method used in the buildings he occupies, I argue that the actual act of sensing while doing is a decisive factor for the development of material empathy.⁵²⁴ Crucially, I am aware of the moment when I actively engage with material. According to feminist writer Sara Ahmed, “the object is not what simply causes the feeling, even if we attribute the object as its cause. The object is understood retrospectively

⁵²⁴ Wouters, interview, 27 October 2022.

as the cause of the feeling.”⁵²⁵ This means that humans’ inner sensibility adds ‘something’ – which one could call personality – to the object/design one is dealing with. This in turn means that the inside of our body forms a basis for storytelling, which is experienced through our multisensory experience. That is perhaps similar to when a speaker reads an audio book aloud and through characterisation makes the story they read come alive. It is through the speaker’s own imagination and the tone of voice they use, and through how that is interpreted by the listener, that they are invited to imagine too. The occupation with material can evoke intimate feelings in us. “We are moved by things. And in being moved, we make things.”⁵²⁶

Ahmed wrote in the “Happy Object”, a well-known article in which she excoriates New Materialism for its anti-constructivism that routinely “theoretical gestures” rather than critically and discursively engages.⁵²⁷ Her critique makes it seem all the more important to not necessarily convey our bodily experiences in words or pictures, but to find other ways of conveying them, in which feelings also expand the notion of how knowledge can emerge. Live performances with material in architectural studios could offer ways of working with “what built space suggest[s] [and] other ways of being *in* and *with* space.”⁵²⁸ The disclosure of the personal process that the audience experiences in their own bodies as soon as they are included as an active part in the story can therefore play an important role – not only in conveying knowledge about material, but also in understanding different (cultural) values *through* emotions and imagination associated with them. The subjective is thus extremely important in making the sensory knowledge tangible for others. Sensing allows material to *form* our second skin that we can care for.

⁵²⁵ Ahmed, “Happy Object”, 40.

⁵²⁶ Ahmed, “Happy Object”, 33.

⁵²⁷ Sara Ahmed, “Open Forum Imaginary Prohibitions: Some Preliminary Remarks on the Founding Gestures of the ‘New Materialism’”, *European Journal of Women’s Studies* 15, no. 1 (2008): 24.

⁵²⁸ Beth Weinstein, “Bringing Performance into Architectural Pedagogy”, in *Performing Architectures: Projects, Practices, Pedagogies*, ed. Andrew Filmer and Juliet Rufford (London and New York: Bloomsbury, 2018), 188.

Through different methods of inviting the audience to be an active part of the thinking process, a blurring of the traditionally assumed separation between actor and audience takes place. The journey from inside the mind of the maker to a sort of sharing with more than one other, which I have tried to outline in the three examples in this act, shifts our perception of body and material as separate entities into a social event that occurs between them through the effects of material interaction. Judith Raum's material understanding of historical Bauhaus textiles is an example, which she gained through the process of new-weaving. In her lecture performance, Raum shares her experience with the fabrics by telling a story and performing with the material in front of the audience. The intimate feeling around the understanding of material seems very difficult to convey to others beyond one's own experienced reality. The extension of the human body outwards could be seen as a form of interaction that invites softness. One possibility would be to allow more openness to feelings and introduce a form of discourse that encompasses what is experienced. Revealing this social aspect through other forms of articulation around processes of making plays a crucial role in transmitting knowledge and the latent agency of materials.

The "listening environment" this creates comes down to offering clearly communicated attention.⁵²⁹ The challenge is to learn about how to generate such an environment. According to Stephen Bottoms, the learning takes place "in the process of living with [the environments], and it is thus important for agencies not to assume ignorance on the part of those they communicate with."⁵³⁰ In other words, a real change in thinking can happen when space is given to the process. This would be a space where different understandings of forms of engagement can emerge. This does imply that there is a need to develop strategies that make it easier to connect with the inner in order to better translate to the outer layer of our experience.

⁵²⁹ Heddon, "The cultivation of entangled Listening", 35.

⁵³⁰ Stephen Bottoms, "The Agency of Environment: Artificial Hells and Multi-Story Water", in *Performance and Participation: Practices, Audiences, Politics*, ed. Anna Harpin and Helen Nicholson (London: Palgrave, 2017), 176.

Mock-up Models and Rehearsals

Jozef Wouters reflects on his *INFINI I–18* in an interview with set and costume designer Nina von Mechow, in which he states, “[s]ome used the technicians as performers. Some, like Amanda Piña [...] used light. But most, and this is interesting, use language. Very few artists who contributed to *INFINI* seem to trust the image without language. That’s remarkable, and I think it says something about the times we live in.”⁵³¹ Wouters’s observation echoes what Karen Barad argues in *Meeting the Universe Halfway* (2007) when she writes about the power of language and argues that “the only thing that doesn’t seem to matter anymore is matter.”⁵³² The unforgettable sound of the man’s black suit in the production *Mind the Rage* overwhelmed me in two ways: first, because of how the dancer’s body was distracted by the stiff material on her skin; and second, by how the material became the co-performer. The rehearsal was a trial run, with humans and material performing. It felt like being in a 1:1 model.⁵³³ According to art historian Annabel Jane Wharton, the only thing a model needs, is a referent.⁵³⁴ Physical models in architecture are like rehearsals, where architects trust them to experiment and enjoy breaking out of pre-set norms. Models stimulate their imagination. The model-maker Ellie Sampson I shadowed (see Act III), mentioned that her model-building process follows a specific sequence. Her body performs a choreography that she once practised.

The reason why I prioritise experiential perceptions in this Act IV over materials’ aesthetic issues of mediation, presentation or representation is my profound curiosity in the potential recognition of emotion through matter. Painter, sculptor and installation artist Paul Thek replied to Gene Swenson in 1966 that “[i]t delighted me that bodies could be used to decorate a room, like flowers. We accept

⁵³¹ Nina von Mechow, “Mein Stück reizt die Theatermaschine aus”, *Falter* 18a, no. 22 (2022): 19.

⁵³² Barad, *Meeting the Universe Halfway*, 132.

⁵³³ Weinstein, “Bringing Performance into Architectural Pedagogy”, 187.

⁵³⁴ Annabel Jane Wharton, “Am I good?”, “Are You a Model” – Conference TU Darmstadt, 2 November 2022.

our thing-ness intellectually, but the emotional acceptance of it can be a joy.⁵³⁵ Rather than suggesting that material misbehaves, I argue that material exposes human failures. In the performing arts, actors fall into a vacuum when the rehearsals are over and the premiere takes place a few weeks later. Consequently the emotional relation to the creative process is interrupted. A similar emotional discrepancy exists in architecture, when the model-maker has finished a model after painstaking mental and physical labour and the model is passed on to the client. They rarely interact with it again. These abrupt endings require a kind of un-sentimental or rational mindset to suppress emotions or feelings associated with the model, and not carry such feelings into the next project.

Although architecture does not have a comparable ‘stage’ and tools that contribute to the *mise en scène* and evocation of emotions in the spectator, in my view there are enough possibilities to create material encounters. Therefore I propose a dramaturgical use of materials. This theatrical connection can help mediate what is embedded in the material and what it evokes in us, reconfiguring what and who are included in production processes. I suggest that material empathy can be a possible guide to our internal processing, linking emotions and choices in the development of and leading to a more relational design. Such inclusion would destabilise the notion of authorship by highlighting the co-agency of material, calling for understandings of co-authorships.

The example of Judith Raum and weaver Katja Stelz lending authority to 1930s textiles demonstrates that reliance on material also allows us to gain new insights into material literacy in contemporary contexts. Similarly, the way Jozef Wouters opens up a platform of discussion for different artists through the process of making unfolds understandings of materials for the viewer. Furthermore, Alexandra Börner and Cindy Hammer’s collaborative work processes with material and their openness to what the

⁵³⁵ Lange-Berndt, "Introduction", 123.

end result may be, can be an inspiration for architecture to incorporate the agency of materials. The softness that shines through in the material literacy of each interviewee opens up alternative ways of thinking about how we can be more empathetic towards materials. This in turn, can reveal their impact in the design process, which responds to my initial question whether there is a chain of relationships rather than a set of individual actors.

In the present Act IV, I focused on the agency of material and the co-presence of human and materials in the process of making. I looked at several practices that are not formally situated in the field of architecture but have ways of working that I feel have something to offer the field. Looking at disciplines other than architecture I hoped to understand the potential of the use of material in their practices. This has allowed me to foreground voices of practitioners currently not dominant in the architectural field. Such power dynamics show different sets of expertise and perspectives on the use of material. Themes of hypermobility, migration and displacement that are part of two of the three case studies, raise the question of whether material can focus on the trajectories traditionally thought to have only a peripheral impact on the design of the work, “draw[ing] [...] attention to several other such parallel phenomena, such as plays that cannot be performed and architecture whose sole beauty lies in the blueprint.”⁵³⁶

⁵³⁶ Gaurav Monga, “Marionette”, *Fanzine*, February 14, 2018, <http://thefanzine.com/marionette/> (accessed 4 July 2022).

V

ACT V

On Empathy and Trust
in the Architectural Design Process

1

**SCULPTURAL PUZZLES:
A DIALOGUE ABOUT MODEL-MAKING,
RITUALS AND MATERIAL LITERACY IN THE
ARCHITECTURAL DESIGN PROCESS**

Based on the five months of ethnographic study conducted through an iPad I sent to Haworth Tompkins's workshop during the lockdown instigated by the global Covid-19 pandemic (scene 1 in Act III), and the two months of practice-based study in 2021 (scene 2 in Act III), this text aims to shed light on various aspects of model-making as well as new understandings surrounding material literacy in the digital age.

At the start of the study, spring 2020, I was confined to my apartment in Leipzig. Sampson had been forced to move Haworth Tompkins' (HT) entire model-making activities into her two-room flat in North London. Later, when I started observing her, she was allowed a small amount of physical interaction, but I still had to participate at a distance, this time from Oslo. Digital Mara functioned like a kind of NASA Mars probe but was controlled by a very informal set of vocal exchanges between Sampson and myself, through which I was able to explore the (tacit) knowledge in model-making beyond planning. As shown in Act II, the combination of this strange and constant digital observation, with the sometimes intense at other times sporadic or even silent exchanges that accompanied it, as well as my own reflections that steered both processes, amounted to a form of ethnographic enquiry early in the research.

In Act II, I further introduced the practice of HT who are co-founders of the Architects Declare, a network of "architectural practices committed to addressing the climate and biodiversity emergency."⁵³⁷ In addition to their focus on the use of sustainable material in architectural design,

⁵³⁷ Architects Declare, "About Us".

HT's ethos is strongly aligned with architecture's social and environmental responsibilities. In order to comply with the ambitious targets this requires, Sampson's role as the in-house model-maker is crucial. Her work jumps between internal design processes, discussing the needs and wants of architects, as well as logistical needs that at first glance seem to take place in the background. Sampson records her work stages in photographs. The documentation was done not only for HT project teams, but also for clients and wider audiences on social media. This aspect of the model-maker's activities developed significantly during the pandemic. The pandemic caused Sampson to change how she worked or at least change how she recorded how she worked. What Digital Mara observed was thus not a "typical" work routine at HT, but a process of improvisation that has shaped new rituals for us both.

What follows is a reconstruction of the holistic aspect of that interaction, produced as an e-Mail/Zoom conversation, in which Sampson and I reflect on central aspects that became significant through our extended period of our respective experiences of isolation. While acknowledging the interviewer/interviewee dynamic in this text, my approach focuses on its performative aspect, reinforced by different kinds of knowledge that are embedded, embodied,⁵³⁸ situated,⁵³⁹ enacted, and that have been characterised as "collective tacit".⁵⁴⁰ The piece was written in two parts; the first in early 2021, the second in early 2022 based on follow-up video exchange to recall and build on themes that emerged.

Inspired by art critic Martin Gayford and painter David Hockney's *A History of Pictures: From the Cave to the Computer Screen* (2016) and the objective of getting inside the heads of art practitioners, the conversation between Sampson and I aims to find a productive interface between

⁵³⁸ Pérez-Gómez, "Architecture as Embodied Knowledge", 57–58.

⁵³⁹ Donna Haraway, "Situated Knowledges", 590.

⁵⁴⁰ Collins, *Tacit and Explicit Knowledge*, 3.

theory and practice.⁵⁴¹ The juxtaposition is also informed by the work of social theorist Brian Massumi on affect theory. In *Politics of Affect* (2015), he points out the “life-forming journey” of “thinking through”, which he believes has a political dimension and should be incorporated into the practice of writing and reading.⁵⁴² Massumi uses interviews to invite readers to take this journey with him, hoping that the “dialogic format renders the ins and out of affect more immediately accessible than the academic format.”⁵⁴³ In the case of my research, the ins and outs emphasise the performative process of knowing. They show the powerful way in which knowledge emerges or becomes manifest. The knowledge in the conversation is part generated through improvisation. In the process of writing, editing and revision, knowledge is made manifest and therefore accessible. The dialogue format is intended to allow the reader to “hear” the articulation of knowledge through words. In the following I lifted out key parts that I found most useful to highlight the impact of digitalisation on material literacy. The complete edited conversation can be found in the appendix.

⁵⁴¹ David Hockney and Martin Gayford, *A History of Pictures. From the Cave to the Computer Screen* (London: Thames & Hudson, 2016), 8.

⁵⁴² Brian Massumi, *Politics of Affect* (Cambridge: Polity Press, 2015), viii–ix.

⁵⁴³ Massumi, *Politics of Affect*, vii.

Dialogue Excerpts

Ellie Sampson The current physical distance from the various teams I work with has had a big impact on the model-making process, but it hasn't been wholly negative or overly rigid – it has simply changed the rhythm of the conversations surrounding a proposed model. When we first went into lockdown and I had to form a satellite workshop away from our main office, I was worried that it might not work at all. I thought the fact that I was making things in my flat and that we could no longer huddle around a model-making space, pointing at, picking up, testing and sketching on the models we were collaborating on, would make my job extremely difficult. Not just for me trying to grasp the intricacies of each design proposal I was portraying, but also for the team. An inability to play around with the models themselves throughout the making process and to change elements as we went along, goes against many architects' hands-on design impulses.

Pre-lockdown, the model-making area really felt like a hub within the studio where members of the team – or anyone really! – could stop by and comment on what was going on or make suggestions to both design or making technique. Depending on the stage of the design, it provided a chance for the team to get the design out of the computer and see the details and forms being manipulated in the real world. This is the sort of 'control' I was referring to that architects enjoy – understandably so! It's fun! The chance to see if elements of their designs work in the real world, outside the sense of weightlessness you can sometimes feel in the CAD world. When you start making a model, this miniature version of your design

has to respond to real lighting conditions, or with larger scale models, it comes up against construction constraints. Making a model of a proposal gives the design some real-life weight and substance. [...]

Mara Trübenbach I was impressed by your involvement in different projects and especially the collaborative processes. As a model-maker, you are an inevitable junction before a project takes the next exit left or right. Architects not only need to become more precise about their design ideas, but also understand crucial issues such as the impact of natural lighting, aspects that your models are able to reveal or convey. I especially enjoyed the long sessions, when we were both simultaneously working on our own stuff – as if we were in a digital co-working space. It gave a fantastic opportunity to get a sense of your model-making process. Yet, that kind of informality and spontaneous interaction is almost impossible to achieve in Zoom meetings. Especially in regards of materiality, where architects would usually engage physically, hands-on enjoyably controlling material as your phrase it. This kind of limited perspective through your spreadsheets, snapshots of material samples for presentations, or, last, but not least, your verbal communication makes people aware of the lack of sensory experiences. It also seems as if your role as model-maker is taken more seriously in the current context of a pandemic. [...]

ES Yes, getting my head around the scope and detail of a project and how to most effectively translate that into the chosen materials is the most challenging part for me. However, as I have settled into this role of model-maker, I have found this process one of the most fulfilling stages of my role, as that's

the bit that encourages the most discussion with a team. I really appreciated what you said then about the decision to make a model highlight “an inevitable junction before a project takes the next exit left or right”.

At first, I felt a sense of pressure to know as much as possible about a project before model briefings and discussions started – I didn’t want to seem uninformed, and I wanted teams to trust my vision for the model at that key junction. Yet now I feel more confident, whether it is about advising on making processes, suitable timings or whether a material or scale will capture the level of detail they are looking for. In a way, my position as an outsider to the team, not knowing as much about the individual projects is a benefit, not the hindrance I feared. The team and I can concentrate on the information that best supports the views, details, strategy or materials within the proposal that the model seeks to represent. For a 1:50 model of a scheme in Cambridge I needed to absorb a lot of information quickly and unpick a dense layering of existing and proposed information. The scheme includes the heavy stone envelope of a church, updated circulation within existing Georgian townhouses and the insertion of proposed entrances and communal spaces among this layered restoration of existing built fabric. For this, the team had to trust my understanding of the scheme and I needed to trust their detailed stage-4 drawings. It felt like making the model was a dry run for constructing the proposal itself. I had to read the drawings as an instruction pack in the same way a contractor would, which made it incredibly satisfying when the end result came together. Having a good number and range of previous projects like this under my belt helps a lot of course. Now I can draw on more experience and use in-house

examples of theatre models, paper maquettes or 1:1 timber mock-ups as references to help navigate that crucial ‘junction’ you mentioned within a project.

MT Oddly though, that trust still seems to be an underestimated value in the design process. The architectural theorist Albena Yaneva conducted an ethnographic study of the Rotterdam-based architectural firm OMA to reconstruct how design is implicitly experienced and enhanced.⁵⁴⁴ By elaborating on the reuse of both material and immaterial sources, Yaneva captured the motion of the design process that takes place within the office and that you describe as well. She demonstrated that design and design techniques are based on everyday routines and that “design never starts from scratch.”⁵⁴⁵ However, what I think Yaneva is missing is the sense of trust-building that you describe, one’s role in the collaboration, and, of course, one’s trust in oneself. In order to enter into a collaboration, a high degree of trust is needed. This sense of security that comes when you know you can trust your counterpart in their area of responsibility is necessary to move the design forward. But trust is also critical in more non-explicit ways. Remember our conversation about your posts on Instagram about model-making and how the most popular images included both the work in progress and your hands touching the models (Fig. 113). I don’t think that’s a coincidence. When people see your hand, they feel more connected to your model, simply because of the fact that someone – you – made the model, is holding it and cares about it. People can better identify with hands touching material than relate to a model standing on its own (Fig. 114). Empathy increases, and with that

⁵⁴⁴ Yaneva, *Made by the Office for Metropolitan Architecture*, 99.

⁵⁴⁵ Yaneva, *Made by the Office for Metropolitan Architecture*, 103.



Fig. 113 Family Home in Herefordshire, post on Instagram 30 June 2020

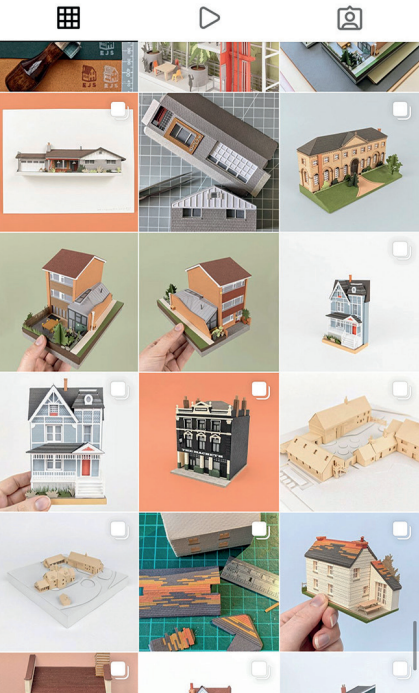


Fig. 114 Sampson's main Instagram page

Fig. 115 Sampson's mother working from home (left) and textile designs (right)



confidence and openness. People start to ask questions about how the model was made, etc. If trust is part of the environment of learning, and of material literacy, the hands in the image contribute to building that condition. They inject tactile experience and awaken a recollection of experience gained, of past encounters. Do you think architecture could learn from crafts people how they engage and speak *with* material? [...]

ES I believe witnessing my mum's approach and process as a textile designer revealed how collected material could be curated, tested and shaped to produce a finalised design. Mum worked from home and my sister and I felt free to wander into her studio space – it was hard to avoid when we were very young as her 'workspace' was the kitchen table! (Fig. 115). She had to produce lots of designs quickly, all different from one another and she paints, prints, stamps and cuts into both paper and fabric to create each one. This layering of fabrics, bleach, photocopies, sketches and even leaves and ferns – which we all collected from the local park – came together to form a final design. Logistics are also involved in how she has to plan out each design to be drawn in repeatedly, so each arrangement of shapes can be tiled to form a seamless pattern. This repeat can then be scaled up or down to fit on endless reams of fabric for furniture, or shrunk, chopped up and printed onto napkins. This sense that disparate elements were layered together to create a tangible end product was very influential on me, as was the immediacy of the tactical dimension of the process: everything was handled, something that doesn't often happen in projects that are realised remotely or are at larger scale. Needless to say, architectural designs have to be broken down into numerous forms and surfaces in order to be understood,

translated into appropriate materials and then brought together to create a holistic model. But mostly that immediate connection between the designer – or the person that uses the assembly later – and the handling of materials is absent. This condition I think affects architecture a lot. A greater sense of handling would be good.

Growing up and being interested in what mum did as a designer made me feel that the curtain was lifted on the instinctive and messy stage of a design project – I saw the importance of a workspace to test ideas and gather the sketches and ephemera that collect throughout a creative endeavour. I enjoyed what you said about working alongside one another, using the iPad, creating a form of “digital co-working space”. It makes me wonder if this sudden switch to virtual workspace will ever edge closer to a studio environment. Maybe the idea that was raised early on, of me wearing a GoPro camera to show you the detail of my working routine, would have showed more of the messy side of model-making – the trial and error involved when piecing everything together.

MT Of course, you wearing a GoPro camera might have given me your perspective more exactly. However, I did not want to simulate you, but collaborate with you and I think that worked out pretty well. I certainly missed the messy stage of the design project, but our conversations have become of greater importance. Reflecting on your instinctive actions is one way of uncovering tacit knowledge, which I hoped to understand through talking to you. And even now, while we reflect, I learn about your sense of observation and sensitivity in everyday life anchored in your craft. It reminds me of a PhD thesis by textile artist Solveig Goett, which touches

upon the loss of material literacy if we do not interact with materials. Goett looks at textiles not as supportive surfaces but as active agents, “everyday textiles in [...] life”.⁵⁴⁶ Therefore, she introduces “concepts of wonder”, concepts beyond boundaries. I think, this also links to your description, where “layering of fabrics [...] came together to form a final design”. One could maybe conceptualise this in terms of the *Wunderkammer* – or cabinet of curiosity. Textile design captures embodied memories, housing them together through a collection of material artefacts that are involved in producing the design – an approach that we struggle to learn in architecture. Architects tend to think of material in terms of creating space, rather than as the basis for socially collected memory structures. [...]

Note for the reader: The conversation was paused and continued one year later in early 2022

MT We paused our conversation, and reading back over it, and having ended up with the idea of the *Wunderkammer*, I realise that thinking about your models at the office and the incredibly beautiful miniature house models that you do alongside your work at Haworth Tompkins, I have to add something about ideas of *Theatrum Mundi*. The two concepts are related of course. The associative *Wunderkammer* was the ancestor of the early scientific theatre of the world – the device that somehow gave a cosmological sense of understanding and orientation through collections of objects – captured in selected materials, shaped by often unknown makers. Perhaps this metaphor offers something of what

⁵⁴⁶ Solveigh Goett, “Linking Threads of Experience and Lines of Thought: Everyday Textiles in the Narration of the self”, PhD thesis, London: University of East London, 2010, 14.

I felt with the spectator view I had on screen during our digital co-working sessions. Digital Mara became a kind of *Theatrum Mundi* device for Haworth Tompkins's practise, but also for the wider and universal issues with which they and other architectural firms engage.

When I built the ship model *Hermia* as part of AHO's "Warburg Models" course at Haworth Tompkins' office, sitting next to you, this aspect of the research project changed slightly.⁵⁴⁷ I recorded myself as I made the model – Digital Mara started to observe me – partly to remember and reflect on each step, but also to unfold the process of what I did throughout the day. Because during the process I don't think about the spectacle of what I am doing, but rather focus on the projective acts involved – problems of construction, detail, accuracy, etc. What's that like for you? Do you reflect on the models you make and these process related issues as you work? This data obtained through this process also made a kind of theatre, although this time I was involved as a player.

ES When it's busy, I actually don't have much time to reflect on the models I've made. That only really happens when I need to gather information for a presentation, or when I'm telling other people about models we've done in the past, for instance, when we approach new teams. I am often like "Oh, we did this model. And here are the images we have from it, etc." But it's a tricky thing. When you go quickly from model to model, you have to be kind of unsentimental, which is quite weird, because you just have to pass the model on to someone else – the design team, a client – let it be used, understand how it's going to be used, and you have to move on. But it's something I've tried to get better at, especially because

⁵⁴⁷ The course explicitly explored the idea of memory creation through architectural commissions of the Warburg. Implicitly it explored the interrelationship between model-making and material literacy through exchange among participants (see also scene 2 in Act III).

our communication manager in the office often asks if we have process photos, or if we have something that we can talk about from the workshop, what's happening in the workshop, that kind of thing. Like a communal activity, I guess, around the workshop in particular, which seems to have this theatre-like role. And there is a demand to turn that into a little *Theatrum Mundi*.

MT It's funny you mention the soft skill of being unsentimental. I had a similar experience with the ship model and me transporting it to its final destination. You do care about the model, and as you say, you need to let it go to produce the next, although you built up a relationship with it through the material while making. The 'communal activity' you speak of has a performative potential to create an emotional connection and enable easier storytelling, which is what I experienced when I presented the work to colleagues by showing footage of time-lapse videos. These videos are stimulating as the spectators get a sense of involvement through the observation of the actual making process, I assume.

ES Recently, in my own personal work, I was asked by an app design company to do a model for them. They asked for a real-time video of me making it, which I was really nervous about, because I feel like everyone has their own personal making routine. And you want to do it unself-consciously, you want to just get lost in making it – or for me go into 'robot mode'. I felt the pressure of stylising how my making process looks and not interrupting the momentum to get up and make a cup of tea. The client wanted a real-time video of me assembling the final pieces. But they wanted it in a very particular way. They asked for it to

be from a flat, lay perspective, which is very popular and considered an Instagram-friendly format. They wanted it to be landscape but with the possibility of being portrait for a phone. I was quite overwhelmed by it.

Obviously, I was up for the challenge, but it was quite a formal setup. I had to buy a new tripod, which had a really long boom arm to be able to look down on my work. I had to be self-aware about how I was placing my hands, because normally I have pieces close to my body or face (Fig. 116). They wanted me to have my hands down, and constantly 'in shot' (Fig. 117). It was a very prescriptive and choreographed video, which was so unlike my usual making pattern (Video 9). I, of course, have an order in which I do things essential for the model, but not for how it looks from a specific aerial view. It didn't have that collaborative feel that was achieved when we were discussing my process with your digital self. One thing I noticed after assembling, was that my hands were stone cold, because clearly, I was quite tense or holding my hands proffered away from my body. And that never happens to me normally – when I'm making something my hands are really warm because I'm always moving them in what feels a natural way.

MT It sounds like you were less naturally connected to your work and the material than usual as your head spun around. I guess, the result was definitely very accurate, but the relationship you built must have felt different to other models, no? [...] When you recorded yourself, your movements were inauthentic, and no longer followed your own intuitive 'choreography' – the principle that your body taught you once and that you have implicitly been listening to ever since. I'm curious to learn if your perception of the working process has



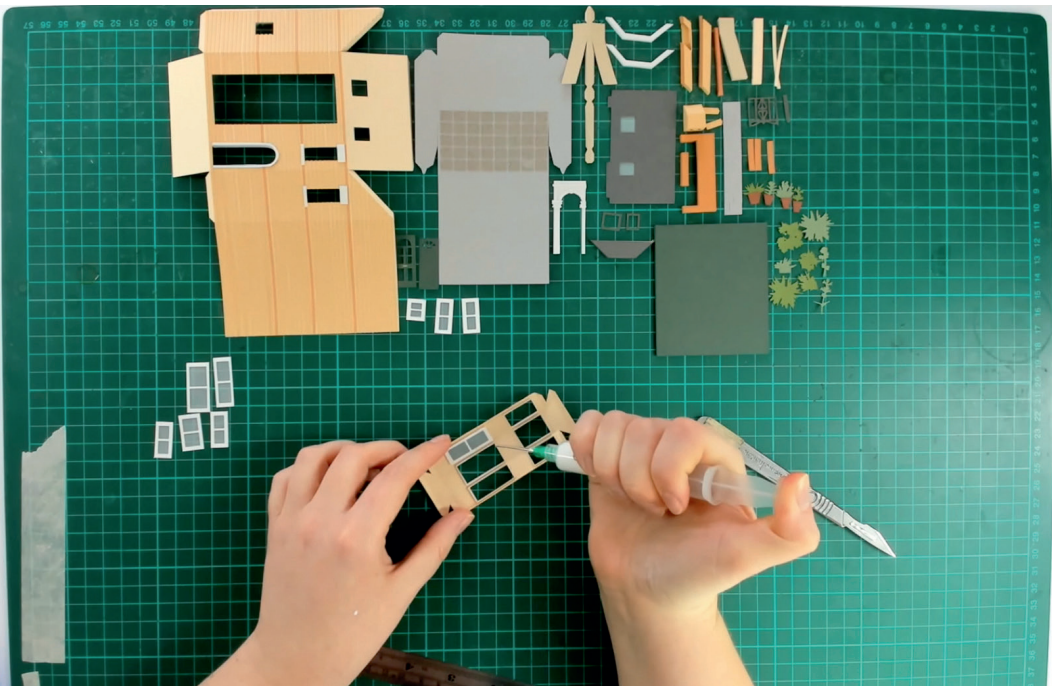
Video 9



Fig. 116 Sampson assembling pieces

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Fig. 117 Sampson's set up of top view recording



changed in relation to your recordings. It would be interesting to know whether your reflection on your work habits offers insights into your rituals. Because normally you don't think about what you're doing, you just do it. It's also a thing of trust to show these ways of working, isn't it? [...]

ES I feel that in the last ten years or so, everyone has become very involved in food and food preparation. How you make something, where it's grown, what the origins of the techniques or ingredients are. I think people find a real comfort in watching videos of chefs, home cooks, food preparation of any kind. But it's always more than that. I wonder if it has roots in things like religion. Something that's ritualistic and a shared experience, something that's passed from person to person. And I think it's funny because it used to be that people had family recipes, family secrets. Now with the culture of TV chefs and cooking programmes those 'secrets' can be broadcast far and wide. Does this sharing culture apply to all elements of art and design, too? If you show off all your secrets, do you dilute some of the mystery and craft behind your work? [...]

Reflection

These dialogue excerpts have described model-maker Ellie Sampson's, my own as well as various scholars' engagement with material in the realm of digitisation, prompted by the expedient way in which we tried to overcome the risk of physical proximity imposed by the Covid-19 pandemic through distancing. The conversational exchange is a format that has allowed us both useful reflections on the knowledge gained. By reflecting upon interactions with material in a conversation, Sampson and I not only got to know each other's positions but realised that the impact of increased digital communication on the understanding of material and the potential to connect haptic sensations with visual impressions we encounter in our daily lives deserves to be explored more deeply. In our experiment, the digital became integral to generating a sense of haptic materiality. The related emotions evoked by hands-on work in the "instinctive and messy stage of a design project" contribute to the material literacy that can be revealed in the design process when makers talk about their relationships with the objects they make.⁵⁴⁸

The process of revealing also says something about the relationship between the digital and the haptic. The interaction between material and the digital can work if the observer can follow the maker step by step. Because a haptic experience is not possible in the digital, it is even more important to create empathy towards the material through imagination, provoked by a combination of visual and verbal articulation. This is what Sampson tried to capture for the app designer through the bird's eye view of her hands while she does the modelling. The interesting thing here, however, is that Sampson herself, loses her self-conscious awareness of the material by no longer working undisturbed. Her attention is no longer purely on the material, but on representing the process and therefore she gets "cold" hands. The viewer, however, does not perceive her cold hands, and here the danger arises that the aim of

⁵⁴⁸ Ellie Sampson, e-mail exchange "conversation essay" 2021.

representation of a process takes over – through which the importance and nature of her usual sensing literally recedes into the background. The performative aspect that the material provoked through human interaction can be captured if the sensation of the “cold” hands is talked about. If that doesn’t happen, the focus remains on the human act and material’s co-agency is ignored.

Sampson’s discussion about having to “stage” her process for an app designer and my experience as Digital Mara, when I looked via the screen at her and had a particular perspective on the landscape of actors involved, shared many similarities with my experience as a viewer of Jozef Wouters’s three-and-a-half-hour-long theatre play *INFINI 1-18* (described in scene 4 in Act IV). I refer to these moments as a kind of *Theatrum Mundi* – a miniature mechanical theatre that I observed through the lens of an iPad, including the transformation of the scenery from being 3D into 2D. According to the craft historian Glenn Adamson, “[i]t would be a mistake to believe that material intelligence is only applied through tactility, via making or touching.”⁵⁴⁹ After conducting this research, my practice as an architectural scholar has changed because I have understood that it is not only hands-on engagement with material that teaches material literacy, but digital mediation also offers ways to develop material literacy. Sampson, her team, and I had to learn this very quickly during the Covid-19 restrictions. In our shared experience, the digital became, counter-intuitively, intimately related to embodied experiences and bodily memories. These circumstances forced us to get to the core of what is seen, and how that in turn relates to how things are articulated alongside mediation. This “new collage of communication”, as Sampson calls it, has great potential to accompany, rather than replace, architects’ current work habits.

As the conversation with Sampson shows, (social) media has already become part of the design process, making it necessary to find alternative ways to represent material and

⁵⁴⁹ Adamson, *Fewer, Better Things*, 113.

connect new (digital) events with past (haptic) experiences. The use of work-in-progress videos and images is one way to enter this still rather uncharted research territory. According to Mark Foster Gage, “[t]he truth is, an emphasis on [digital technology] narratives shift architecture from a discipline of the physical to a discipline of the verbal.”⁵⁵⁰ Having a narrator (material) tell a story (through personal experiences, work-in-progress) is a powerful way to combine the physical and verbal to communicate material literacy in architecture. Sampson’s own observations of her mother, a textile designer, in action and how that has informed her approach shows a potential for others, including architects, to learn how to deal with material through embodied memories.

The ambition of my study is to acknowledge material as a way to trace tacit knowledge, while it also serves as a kind of representation of individual and collective knowledge, forcing us to consider digital and embodied characteristics. Sampson once said her work is like a sculptural puzzle, in how all these different shapes come together to form a shape, to sculpt them. It is precisely this kind of knowledge that contributes to making this sculptural shape accessible to the viewer/audience. To return to some of the discussion rehearsed in Act IV, this is similar to what Wouters describes as layers of sculpting when he speaks about shaping haptic material. Wouters explained putting “a whole layer of sculpting” on each object he makes to shape its feel.⁵⁵¹ The written and spoken conversation between Sampson and myself provided an example of how trust in material can be generated through a digital discussion about material processes. Emerging from the digital, the process of mediation itself serves as a key tool to reveal and generate material literacy, not by following the shaping of the object per se, but the process of *making* of an object guided by material empathy.⁵⁵²

⁵⁵⁰ Mark Foster Gage, “Architecture: Digital Speculation and Physical Practice”, in *Postdigital Artisans: Craftsmanship with a New Aesthetic in Fashion, Art, Design and Architecture*, Jonathan Openshaw (Amsterdam: Frame Publishers, 2015), 243.

⁵⁵¹ Wouters, interview, 27 October 2022.

⁵⁵² Adamson, *Thinking Through Craft*, 3.

CONCLUSION: UNFOLDING KNOWING THROUGH SENSING IN THE ARCHITECTURAL DISCOURSE

This concluding scene summarises the key research findings in relation to my aims and research questions. The following also reviews the limitations of my project and proposes opportunities for future research.

What Was Done

I approached the main research question of the thesis – “How can material empathy contribute to the design process?” – by relating the topic to philosophical approaches, such as Actor-Network-Theory and New Materialism. The misunderstandings of spoken/visual language around how to convey experiences related to materials in architectural practice (Act I + Act II: Theory + Method) provided the basis for exploring the activity of model-making inside an architectural office (Act III: Ethnography + Own Practice), and the understanding of material in different disciplines outside of architecture (Act IV: Observations + Discussion). The impetus for these scenes is the search for different ways of understanding material to learn how material empathy can contribute to the design process. After conducting a remote ethnographic study through which materials were approached less representationally and more so event-based, the importance of relationality came to the fore.⁵⁵³ The observations of the making processes of the various practitioners in this thesis have demonstrated that knowledge embedded in materials is used in the field of architecture, and other fields, that can be more easily accessed through sensing and trusting material. Working with material, engaging or entering into dialogue with it is a learning experience that can lead to material literacy.

⁵⁵³ Vannini, *Non-Representational Methodologies*, 8.

The focus of my enquiry was particularly on feelings, emotion and affects, generated by engagement with material. I dealt with the interconnection between ‘knowing’ and ‘sensing’, which is hard to articulate. The aim of this thesis has been to introduce, describe and reflect on the triad of material literacy, material empathy and material dramaturgy. As explored through the research methods employed, these concepts are interrelated and have no hierarchy as such. To capture the variety of research methods, which were selected because of their attentiveness to material, I tried to find ways to convey sensory experiences not only in spoken word and text but also visually and aurally via photograph and video. These accompanying (moving) images are as essential a part as my practical work of model-making.

In Act I and Act II, I introduce the terms ‘empathy’ and ‘dramaturgy’ and outline how material empathy and material dramaturgy can contribute to a greater understanding of material and help define what I mean by ‘material literacy’, which I explore in Act III and Act IV through observations and my own direct engagement with material. My intention has been to show that the performing arts deal with material in different ways than architectural practices. They deploy the performative potential of materials that architecture could learn from. Act IV highlights that exploring emotions attached to material may make it easier to impart knowledge, allowing insights about the internal experience of the making process. Being open to surprises when collaborating with materials in particular has shown that it can encourage greater flexibility in subsequent work processes. While I highlight the apparent loss of material literacy because of the increase of digital ways of working in architecture, in my research, the digital is not seen as an enemy. Following Jonathan Openshaw, “digital technology is just a new tool to shape and explore the material world around us.”⁵⁵⁴ The digital offers a complementary mode of engagement to material and craft knowledge, provided that the performative potential of materials and their messy possibilities are recognised.

⁵⁵⁴ Openshaw, *Postdigital Artisans*, 272.

Non-verbal articulation is embraced as another form of mediation.

The research I have conducted is multifaceted. I have focused not only on the contemporary practice of architecture, but also on other fields in which engagement with material is an integral element of practice. To explore what constitutes material empathy, I observed different people working with materials in different contexts, using different approaches. This reciprocal process of observing what another is sensing and considering how to articulate and convey that was an opportunity I had not and may not have thought if I had not observed the decisions of the model-maker remotely.

In parallel, I read literature around material, including work by key thinkers such as Glenn Adamson, Karen Barad, Bruno Latour, Tim Ingold, Ann-Sophie Lehmann, Antoine Picon, Rebecca Schneider and Katie Lloyd Thomas – to consider the gap between written understandings of material and understandings derived from working directly physically with material, proposing a shift from writing ‘about’ to writing ‘with’, actively advocating to allow material to guide decision-making processes. The types of existing scholarship I read were concerned with material as traces of relationships between humans and non-humans. I considered how to articulate these relationships. Coming out of this process, this thesis is intentionally fragmentary, as it on the one hand demonstrates the complexity of understanding material, and on the other hand explores different ways in which we can arrive at (tacit or implicit) knowledge.

The Triad of Material Literacy/Empathy/Dramaturgy

Literacy is primarily associated with reading and writing, while haptic knowledge is considered a secondary form of knowledge/expertise. I approach the connotation of bodily awareness and knowledge through the senses by way of the concept of ‘material literacy’. The intention of establishing a level of material literacy that others can relate

requires me to understand how engagement with materials can be encouraged and the effects they have on humans. I refer to Ann-Sophie Lehmann, who suggests that material literacy is not merely an individual experience but a form of bilateral learning from other people who also engage with materials.

In Act I, I add to Lehmann's definition of 'material literacy' the connotation of 'material empathy'. Here I focus on the exploration of emotions, arguing that empathy is an in-between state between knowing and literacy. It is reliant on sensing. In Act III, I provide an example of an architect who is presented with materials chosen by the model-maker, not only based on their visual impressions, but also on her experience of sensing materials. When Ellie Sampson, the model-maker, had to mediate materials digitally the architects had difficulties in making a selection without being able to physically engage with them. In Act IV, I explore exactly this discomfort in the performing arts, where the approach of four creative practitioners I met is to not control materials. Practitioners – such as scenographers, textile artists, costume designers, performers – thus learn to open up and trust materials for their affects.

My research suggests a sensitive engagement with materials. What I mean by sensitive is to allow for situations in which emotions can be evoked by material, through which designers become more aware and consequently empathetic to the needs and pushback of material. Ideally this sensitivity operates inclusively: on the one hand, it should not disregard nuanced feelings evoked through memories, associations and imagination among humans. On the other hand, material empathy may shed light on voices of practitioners of the 'powerful counter' in the making process in architecture that engage with materials on a daily basis that architects can learn from.⁵⁵⁵ Material empathy involves not only being able to 'listen' to materials, but also understanding how materials can actively influence decision-making. By allowing materials

⁵⁵⁵ Awan, Schneider and Till, *Spatial Agency*, 27.

to contribute to or adjust the process of design, architects lose dominance over their initial design.

This brings me to another component of material literacy, which I call ‘material dramaturgy’. The concept means a weaving together of the different agencies of protagonists (humans and material), conflict (lack of material literacy among humans), message (understanding through material empathy). Successful material dramaturgy deliberately tries to awaken emotions in the audience to create an empathetic effect. If we agree that material empathy plays a vital part in defining material literacy, then *empathetic* material literacy has the potential to let architects become more attuned to materials as part of the design process. Materials do have something to teach us, beyond us being attuned. In the new weaving of well-made Bauhaus textiles, for instance, artist Judith Raum did not fight against the material she worked with but responded to it. Similarly, Cindy Hammer’s movement sequences co-evolve with the fabrics she wears.

Value of Material Empathy

To explore the value of material empathy I look at performance practices to explore other ways of accommodating the relation between humans and materials than those currently found in architectural production. I want to show the potential performative approaches can bring to architecture. In-depth analysis and engagement with the work of various practitioners – Alexandra Börner, Cindy Hammer, Judith Raum, Ellie Sampson and Jozef Wouters – and the insights that came from this engagement confirm that material also generates knowledge. There are valuable details and insights that foreground the importance of an experiential (dusty) engagement with materials to gain material empathy. By elucidating this importance, the discussion in Act IV offers an implicit critique of the conditions of distance, objectification and control in more positivist forms of research and practice.

Summary:

What does material empathy offer architecture discourse in general?

The thesis suggests that material empathy developed by architects can enhance their decision-making. Material literacy held by practitioners who engage with materials (also outside of architecture) has the potential to challenge and change the status quo in architectural production by opening up perspectives on the emotions evoked by material in the architectural design process. In Act I, I argue that if architectural production focused more on examining the experience of the architect's body and their sensing in relation to materials, reality would have to be rethought, meaning that being an architect would promote knowledge derived from sensing. The key findings of my research apply ideas from Actor-Network-Theory and New Materialism by pointing at a possible meta-language that includes articulations by humans but heavily influenced by non-human actors. The trails of such a material meta-language can be generated by emotions, memories and intuitive feelings that are almost untranslatable.

I have demonstrated how one can break out of one's own discipline to find new ways to more effectively present findings from research/practice. Overall, I suggest a re-evaluation of the conventions in the discipline of architecture. I suggest that the production of new knowledge and dissemination of information can be considered differently. It could be approached through ways of working that break down long-established hierarchies. A crucial part of the performative account that I put forward in all acts is the embrace of what happens in non-hierarchical spaces and in absences and the gaps in-between. I emphasise that the process of making allows insights in different understandings of material and hierarchies in decision-making processes. In addition, I suggest the inclusion of a feedback loop between digital tools and tacit knowledge gained through bodily engagement with material. This can be done by recognising the performative potential of material, like in the example

with Sampson when she photographs her differently processed material samples and shows them digitally to the architectural team. Sampson's display of her process of treating the material and her mode of presentation with a personal note prove to be crucial to generate material empathy within the team. My research encourages the use of our ability to feel by collaborating with other disciplines that, I posit, are more accustomed to using and articulating feelings, such as the performing arts.

What does material empathy offer architecture education?

In a keynote lecture in 2022, Tim Ingold observed that people are bound together because each voice is different, referring to the Latin meaning of *community*, "to give together".⁵⁵⁶ This acknowledges that in every situation, context and field, there are multiple authors, not just a single voice, where what matters is a result or conclusion that makes sense. Paying attention to differences and learning to respond to them is critical to acquiring a certain level of responsiveness, to be able to take "response-ability".⁵⁵⁷ Similar to literacy associated with reading and writing, an understanding of material exists as individual as actor's interpretations of a role, which is shaped by human and non-human encounters. The challenge is how to teach the performative potential of material and how to improve skills and ways to integrate material literacy into our daily routines in practice in the architecture education system, which was one of the challenges that my research aims to address. Practical applications for the findings of this research could be workshops for creative communication, experiments with re-enactments in pedagogy or practice, and performance lectures as a means of communication in pedagogy.

⁵⁵⁶ Tim Ingold, "Reason and Response-Ability: Art, Craft and Design as Ways of Education", Keynote lecture at "Kunsthåndværk i en digital tid" on 20 January 2022, available at <https://formkraft.dk/en/theme/craft-in-a-digital-age/> (accessed 23 January 2022).

⁵⁵⁷ Ingold, "Reason and Response-Ability".

Awareness of material empathy provides an interdisciplinary framework for architectural education insofar as it involves sensory engagement with materiality. The fact that Börner talks about fashion students attending an anatomy course in their first year of study, for instance, to understand how the body works is not insignificant. She observes that students nowadays tend to talk about the body but fail to interact with it, preferring the mannequin that looks good to the diversity of bodies. This teaches architectural education that the direct use of the body of students in relation to material is crucial to understanding material and forming knowledge. Many architects have been trained to become individualists who master their design process primarily through the analysis of visual representations, but less so through experimentation with material. While material experimentation occurs in the first years of training, it tends to be de-prioritised as study progresses. The same happens to consideration of the effects of material on human bodies. My argument is that learning through practice teaches that the body is part of the foundations of material literacy. Therefore our empathy towards materials are crucial to the generation and use of knowledge around material in architecture.

According to Schrijver, there is a need “to recalibrate our own ideas in response to the changes in the world around us.”⁵⁵⁸ The way architecture is being taught and exploring these aspects can help create a new ‘real world’ that is no longer so different from the ‘bubble’ of architectural schools. A completely different application process could, for example, allow quite different educational profiles to enter the study of architecture, welcoming and supporting them. We could advocate that architects attend performance classes. Architecture should recognise that a much broader set of sensitivities is relevant to the profession. If architectural education started recruiting different sets of people, with different knowledge bases and sensitivities, the pattern of who studies architecture may shift. Moreover, architectural students could be trained to develop a solid

⁵⁵⁸ Schrijver, “Architecture: Projective, Critical or Craft?”, 358.

sense of how to *make* sense and build trust in material. My thesis therefore suggests opening up to greater diversity of practitioners in architectural education as part of a broader understanding of knowledge and the different ways in which professionals can manifest sensing.

What does material empathy offer architecture practice?

I do not claim there is a general lack of material priorities in every architectural studio; there are certainly examples of studios in which material priorities are foregrounded. The London-based not-for-profit organisation Material Cultures, for example, brings together design, research and action towards a post-carbon built environment.⁵⁵⁹ The focus of Material Cultures is on bio-based materials and how to transform the ways in which the building industry operates. But such material awareness appears rare in mainstream architectural practices. Another insightful moment that has lessons for architectural practice was the encounter with Wouters's Decoratelier rules, in which loud noises are situated as important parts of the creative process. This accommodation of these aspects as integral rather than suppressed and silenced as external, is also relevant for architectural studios and the potential of the inclusion of a "dusty" area.

In Act I and Act II, I shed light on the many misunderstandings in the translation of experience with materials through text, spoken words, blueprints and models in architecture, which I claim tend to be among the key reasons for frustrations in the architecture studio. If there is no opportunity to experiment with material, the relationship with material and some level of material literacy are lost. To avoid this disconnect, I suggest developing a much more multifaceted understanding of materials. This awareness of the range of characteristics and potential roles of material can, I argue, contribute to a powerful counter voice in the architectural design process. The consideration of emotions in relation to material is an important factor in the

⁵⁵⁹ See <https://materialcultures.org> (accessed 5 June 2023).

architectural design process, which I argue can bring new insights to how architects deal with material. To counter the apparent contradiction between European and North American dramaturgy and the New Materialist approach explored in my research, I introduce New Dramaturgy (Act I), which is based on the understanding that there is no ‘essence’ only relation. Reality is not a given but depends on the way how things “are placed, shaped and designed in relation to each other”.⁵⁶⁰

The place of the thesis in architectural theory discourse?

I take an interdisciplinary view of the importance of acknowledging, understanding and engaging with materials in the architectural design process. The aim in my research was to weave together architectural theory and practices with theories and practices from the fields of theatre and performance. I intended to confront academic rules of engagement and expectations. Rendell points to how questions of interdisciplinarity are deeply emotional and this is key here. According to her, such engagements involve coming up against invested positions, requiring us to replace what we know for what one does not know.⁵⁶¹ Interdisciplinarity involves surrendering one’s specialism. In this research, I took the chance to operate at the edge of my discipline, architecture, in order to expand practitioners’ and theorists’ ideas of what architecture is and should be. To challenge the extractive processes both environmentally and socially that architecture contributes to, I question the way we do things and the words we give to the things we do. I introduce new terms borrowed from performance studies in order to elucidate aspects that I claim are currently missing from architectural theory. These terms attempt to challenge more techno-managerial and positivist models of architectural practice and research by insisting on relational, subjective and emotional aspects, as well as the liveliness and agency of materials.

⁵⁶⁰ Eeg-Tverbakk, “Dramaturgies of Reality”, 2.

⁵⁶¹ Rendell, *Site-Writing*, 172.

I argue that performance studies have much to offer in this regard in terms of encouraging awareness of the imagination, of the senses and of the production of affect. I suggest stepping back from the focus on the individual, and the illusion of singular human agency. Architectural theory should address other crafts and art forms with an awareness that they may have something to offer towards the development of the architectural profession. Valuing crafts people's working methods and their material literacy can contribute to an expanded architectural theory and practice. The notion of co-authorship as shown in Act IV is crucial to the embrace of material empathy. I have demonstrated that there is a lot of relevant work in which to ground my advocacy for the development of material empathy. I propose the spirit of interdisciplinarity as hugely productive to the whole architectural design process.

Research limitations

The limitation of this thesis is the current focus on model-making as the main means of evidencing the importance of material literacy and locus of material empathy in architectural studios. Although model-making material does not appear in the final form of architectural projects, its use still allows the generation of knowledge that is worth articulating in the design process. Model-making material is not identical to the materials used in the built environment, in the real world, but that does not mean that working with model materials does not yield useful information. However, the model-maker is only one possible example of a specific practitioner who contributes to the overall process of development, and certainly not the only one. In future research, other modes of working in the architectural studio could be equally explored and potentially relevant for rethinking the role of material in the architectural design process.

In addition, historical cases could also be explored to gain an overview of what they have to offer in terms of new perspective on architectural history. Time constraints during my research prevented deeper observations of the

performing arts examples. However, I was fortunate to be able to interview highly self-reflexive and eloquent practitioners. Another aspect deserving expansion is the notion of ‘audience’ in the context of architectural practice.

In this thesis, I do not address the political dimension of this work, which overlaps with the general critique of New Materialism. Critics claim New Materialism is fundamentally apolitical, while at the same time claiming to provide a basic precondition for addressing central challenges – such as the climate crisis – facing society today. However, I see trust and empathy as a social-political tool that has implications for creative practices and a broader reflection on and engagement with the ways in which these creative practices critically intervene in our understanding of the world.

Broader impact

This study responds to sustainability issues by shedding light on the building of trust when engaging with materials. For instance, when I show that Börner and Wouters explain the time one needs to build a relationship to the material, or when Sampson relies on drawings from architects and their trust in her skills to understand the scheme without many words. The difficulty of articulating in words, using language, to communicate what can be understood by working with material and what the effects are on the human body sits at the heart of my enquiry. In times of increasing digitisation, material can often no longer be exclusively engaged with physically. In this study, new ways of mediating our engagement with material have made the performative potential of material visible. The study demonstrated how material literacy can be conveyed beyond words and texts, applying the concept of material dramaturgy. What is more, in the process of research it has become clear that digital means of mediation counter-intuitively can allow emotions evoked by material to become accessible too. Such different means of knowledge transfer challenge the perceived hierarchical relationship between materials, which is of great importance for an

expanded understanding of human agency, underlining that decision-making processes are not determined by humans alone.

Materials have the power to form networks. They hold memories and evoke emotions – good and bad. Therefore, if we don't acknowledge that the indeterminate generates traces, we risk losing existing knowledge that we often draw on implicitly. Paying attention to the effect of materials on emotions can impact action, which can contribute to make humans work more sensitively towards greater sustainability. In short, material can teach us how to live *with* and *through* our senses. My thesis suggests that expanding on material empathy in the architectural design process can celebrate tenderness: materials are relational and so is the architectural design process.

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Appendix

**SCULPTURAL PUZZLES:
A DIALOGUE ABOUT MODEL-MAKING,
RITUALS AND MATERIAL LITERACY IN THE
ARCHITECTURAL DESIGN PROCESS**

This conversation between model-maker Ellie Sampson and I developed in e-mail exchanges 2021 and in Zoom call in early 2022. The following dialogue is unedited and shows in full our loose thoughts spinning around model-making in the context of digitalisation.

Mara Trübenbach When I started shadowing you in September 2020, the first thing that came up in our meetings was the issue of gathering knowledge around a new project. I remember the moment when you initially pointed out that you don't have a very holistic knowledge of inbound/new projects, and that your knowledge is situated differently; you would only get from people involved what you need to know i.e., basic knowledge, not necessarily more. It became apparent fairly quickly that your work affects the design process of a new scheme by breaking down the communication chain between the executive design team into what to be identified as particular moments or sequences of decision-making. It seems that an initial practice for architects is to verbalise their design to you before the actual design process takes a step forward. To minimise the loss of information during the translation of the design idea towards precise models you set up a request form. Not only does this help structure basics such as material preferences or the model styles, the form also leads to discussions about different options. It feels as if these innocent-looking spreadsheets have become even more crucial during the pandemic. You once said that architects want to be in control of things. In what ways does this have an impact on your collaborative work?

Ellie Sampson **The current physical distance from the various teams I work with has had a big impact on the model-making process, but it hasn't been wholly negative or overly rigid – it has simply changed**

the rhythm of the conversations surrounding a proposed model. When we first went into lockdown and I had to form a satellite workshop away from our main office, I was worried that it might not work at all. I thought the fact that I was making things in my flat and that we could no longer huddle around a model-making space, pointing at, picking up, testing and sketching on the models we were collaborating on, would make my job extremely difficult. Not just for me trying to grasp the intricacies of each design proposal I was portraying, but also for the team. An inability to play around with the models themselves throughout the making process and to change elements as we went along, goes against many architects' hands-on design impulses.

Pre-lockdown, the model-making area really felt like a hub within the studio where members of the team – or anyone really! – could stop by and comment on what was going on or make suggestions to both design or making technique. Depending on the stage of the design, it provided a chance for the team to get the design out of the computer and see the details and forms being manipulated in the real world. This is the sort of 'control' I was referring to that architects enjoy – understandably so! It's fun! The chance to see if elements of their designs work in the real world, outside the sense of weightlessness you can sometimes feel in the CAD world. When you start making a model, this miniature version of your design has to respond to real lighting conditions, or with larger scale models, it comes up against construction constraints. Making a model of a proposal gives the design some real-life weight and substance.

MT The 'fun control' acts like a performance between architects, models and their responsiveness to the 'real world' through materiality. Architects interact with surfaces, light, scale, etc., as if the engagement (mental and physical) with material triggers an identification with the design, almost like actors wearing costumes to better empathise with the desired character. When architects are aware of

the involvement of materials as active agents, there is tremendous potential to engage in respectful dialogue, especially in light of climate change and diminishing resources. But do we need the physical encounter to get an inter-relational connection to material? Are there other ways forward? What do you think has changed or been missed in the communication of the design process during the pandemic?

ES I was pleasantly surprised that the tendency to gather around and comment on models has continued in some form within our virtual office set up. Although the team can't have the same tangible experience with the models themselves, the conversations and rhythm of the conversations feel familiar. The questions and comments are batted around mainly in the planning phase of the models and this feels as if the space between us all closes a bit – we are all on the same page hashing out the particulars of how a project is represented, in some ways, as usual. Sketches, mark-ups of the CAD 'model of a model' I produce in 3D modelling software, doodles over Google Earth screenshots, quick unpolished model photos, photos of the piecing together process, video calls with paper samples. These moments of lockdown modelmaking have built a new collage of communication, which enriches the making process. I sense that even highlighting any design challenges or site constraints in anticipation of the model coming into being, aids the design discussions. I find that people are more precise about conveying information to me, because it is structured in an email or on Microsoft teams –we aren't just chatting about it in person over a cup of tea, which I DO miss a lot. Similarly, you and I have had to be quite structured with how we set up your view into our workshop. Do you feel you have got a good sense of how our model-making process works whilst joining our zoom meetings and through your incarnation as *Digital Mara*? Do you think it's possible to be informal and loose in this collaborative process – especially whilst we still need to work within the structure of zoom calls and navigate individual working routines?

MT Well, as your work habitat has had to change, my research was also forced to re-calibrate once again, adapting it to current circumstances and deferred projects the dissertation should have been involved in. There was a discussion with my supervisor, Prof. Tim Anstey, about how I could be brought into HT's office and interact with you as if I were there. The initial undefined idea of simulating a fly-on-the-wall-view was soon implemented exactly as a fun digital transfer, the *Digital Mara*, using an errant iPad. This operation functioned almost like 'vlogging' and opened an unknown/ a new territory of getting ethnographic insights. In 2016, design anthropologist Sarah Pink emphasized the function of digital ethnography as a research method, as the digital has become part of people's everyday lives. She asserts that ethnographic methods must expand and evolve simultaneously with the digital environment. Pink decentralizes the "digital" and opens up an understanding of "how the digital has become part of the world in which we live and research." So, *in short*, yes, I believe I got a good insight into your model-making process, mostly because your habits had to adapt, too. However, when you were paper-cutting, milling or laser-cutting, I did miss the smell of freshly cut wood a lot!

ES I'm glad you felt, to some degree, a part of the workshop environment! One outcome I wasn't expecting with your presence as 'Digital Mara' is how I would more frequently analyse my making process and how it would appear to an outside eye. We said from the beginning of our Zoom meetings that we wanted it to feel relatively unstructured; I would leave the iPad on and if you had questions about a technique or a specific stage of the process, we would discuss what I was doing. Through our discussions alongside my work, I became more aware of the order I plan or construct things. I noticed the choreography of my work. Especially if a task is repetitive, I tend to go into what I refer to as 'robot mode' – I work with an aura of mindful mindlessness. As I was working more independently during lockdown and there was more precise and sometimes limited contact time with other teams, I think your presence gave a sense of group work.

We discussed the materials being used and why, whether it was for surface quality, texture or due to the logistics of the project – making a model lighter for instance. I was surprised that the digital ‘vlogging’ experience, as you referred to it, gave a profound sense of collaboration in what is essentially an intangible experience – at first, I was worried it’d make me self-conscious about my making technique!”

MT I was impressed by your involvement in different projects and especially the collaborative processes. As a model-maker, you are an inevitable junction before a project takes the next exit left or right. Architects not only need to become more precise about their design ideas, but also understand crucial issues such as the impact of natural lighting, aspects that your models are able to reveal or convey. I especially enjoyed the long sessions, when we were both simultaneously working on our own stuff – as if we were in a digital co-working space. It gave a fantastic opportunity to get a sense of your model-making process. Yet, that kind of informality and spontaneous interaction is almost impossible to achieve in Zoom meetings. Especially in regards of materiality, where architects would usually engage physically, hands-on enjoyably controlling material as your phrase it. This kind of limited perspective through your spreadsheets, snapshots of material samples for presentations, or, last, but not least, your verbal communication makes people aware of the lack of sensory experiences. It also seems as if your role as model-maker is taken more seriously in the current context of a pandemic. We’ve come to realise the detachment of our bodies in the digital world, a loss that makes contact with that world of the senses even more crucial. For me, this relates Merleau-Ponty’s assertion that we need to ‘rediscover’ the perceived world in relation to modern art and philosophy.¹ He claims that there are multiple types of sensation associated with different qualities and places. In order to understand the relationality

¹ Maurice Merleau-Ponty, *The World of Perception* (Oxford and New York: Routledge, 1948), 60.

of these different experiences, we should be aware of our senses, because according to him, it is the role of the senses to implicitly support the connection between different events. Seventy years later, the perception of materiality has been influenced by scrolling through various social media timelines without ever seeing, touching or smelling their contents in real life. People still (mis)judge.

ES Yes, getting my head around the scope and detail of a project and how to most effectively translate that into the chosen materials is the most challenging part for me. However, as I have settled into this role of model-maker, I have found this process one of the most fulfilling stages of my role, as that's the bit that encourages the most discussion with a team. I really appreciated what you said then about the decision to make a model highlight "an inevitable junction before a project takes the next exit left or right".

At first, I felt a sense of pressure to know as much as possible about a project before model briefings and discussions started – I didn't want to seem uninformed, and I wanted teams to trust my vision for the model at that key junction. Yet now I feel more confident, whether it is about advising on making processes, suitable timings or whether a material or scale will capture the level of detail they are looking for. In a way, my position as an outsider to the team, not knowing as much about the individual projects is a benefit, not the hindrance I feared. The team and I can concentrate on the information that best supports the views, details, strategy or materials within the proposal that the model seeks to represent. For a 1:50 model of a scheme in Cambridge I needed to absorb a lot of information quickly and unpick a dense layering of existing and proposed information. The scheme includes the heavy stone envelope of a church, updated circulation within existing Georgian townhouses and the insertion of proposed entrances and communal spaces among this layered restoration of existing built fabric. For this, the team had to trust my understanding of the scheme and

I needed to trust their detailed stage-4 drawings. It felt like making the model was a dry run for constructing the proposal itself. I had to read the drawings as an instruction pack in the same way a contractor would, which made it incredibly satisfying when the end result came together. Having a good number and range of previous projects like this under my belt helps a lot of course. Now I can draw on more experience and use in-house examples of theatre models, paper maquettes or 1:1 timber mock-ups as references to help navigate that crucial ‘junction’ you mentioned within a project.

MT Oddly though, that trust still seems to be an underestimated value in the design process. The architectural theorist Albena Yaneva conducted an ethnographic study of the Rotterdam-based architectural firm OMA to reconstruct how design is implicitly experienced and enhanced.² By elaborating on the reuse of both material and immaterial sources, Yaneva captured the motion of the design process that takes place within the office and that you describe as well. She demonstrated that design and design techniques are based on everyday routines and that “design never starts from scratch.”³ However, what I think Yaneva is missing is the sense of trust-building that you describe, one’s role in the collaboration, and, of course, one’s trust in oneself. In order to enter into a collaboration, a high degree of trust is needed. This sense of security that comes when you know you can trust your counterpart in their area of responsibility is necessary to move the design forward. But trust is also critical in more non-explicit ways. Remember our conversation about your posts on Instagram about model-making and how the most popular images included both the work in progress and your hands touching the models. I don’t think that’s a coincidence. When people see your hand, they feel more connected to your model, simply because of the fact that someone

² Albena Yaneva, *Made by the Office for Metropolitan Architecture* (Rotterdam: 010 Publisher, 2009), 99.

³ Yaneva, *Made by the Office for Metropolitan Architecture*, 103.

– you – made the model, is holding it and cares about it. People can better identify with hands touching material than relate to a model standing on its own. Empathy increases, and with that confidence and openness. People start to ask questions about how the model was made, etc. If trust is part of the environment of learning, and of material literacy, the hands in the image contribute to building that condition. They inject tactile experience and awaken a recollection of experience gained, of past encounters. Do you think architecture could learn from crafts people how they engage and speak with material?

ES I think the way I use Instagram as a photo roll to document models as I make them, alongside the polished end result, is a sort of replacement for the peek into other people's process you get when working in a studio environment. I started using Instagram to document my models after I left university and my friends and I no longer shared our work with each other in the studio. I don't think Instagram is a perfect sharing space for artists and designers, not by a long shot with all the algorithm business and advertisements, but I think it's good that they have stopped showing numbers of 'likes' etc. I found this distracting really, the best bit is the sense of community and discussion about preferred toolkits, inspiration, technique and artistic process. Perhaps the ease of scrolling through a news feed of fellow makers and illustrators provides the informality missing from an online co-working environment. Maybe the 'everyday' format of Instagram, dropping in on your image feed whilst making a cup of tea, gives it the potential to be a more relaxed digital space to share a creative process. Also, it's funny what you said earlier about the viewers' inability to handle and touch a model or material when it is being 'digitally mediated' – of course this lack of touch and smell with a model photo is a given. But, the way I, as the uploader of an image, have so much control over the lighting, sharpness and focus of a model photo means I can emphasise things like the paper's texture and the play of light. It means the most asked question I receive in comments and messages is 'what is that textured paper you use?' or 'is that dimpled paper

just plain cartridge paper?’. I guess how the images are communicated and my innate focus on paper as a material means that the questions are so specific and focused on the textural quality.

MT Indeed, model-making and your “innate focus” plays a crucial role in embodying knowledge about material and, as you described it, curating it as well. For me, your model preparation opened up an unexpected and sealed box. I want to refer here to media theorist Sarah Sharma. She argues that the politics of time and space and “power-chronography” serve as materialist approach to communication.⁴ Media theory, she argues, lacks recognition of time as an independent quantity that is linked “too closely with the logic of the market”. Sharma claims that new media-technologies are implicit and thus offer ways to describe the missing interrelationships between time and space. I suspect that not only ordering material and making CAD drawings, but also your day-by-day growth of knowledge about the structure, touches on Sharma’s approach. Getting your head around a project without knowing many details is a skill that requires a lot of intellectual perceptiveness in terms of translating into material. I’d be curious to hear what you learned from your mother’s perspective of a textile designer.

ES **I believe witnessing my mum’s approach and process as a textile designer revealed how collected material could be curated, tested and shaped to produce a finalised design. Mum worked from home and my sister and I felt free to wander into her studio space – it was hard to avoid when we were very young as her ‘workspace’ was the kitchen table! She had to produce lots of designs quickly, all different from one another and she paints, prints, stamps and cuts into both paper and fabric to create each one. This layering of fabrics, bleach, photocopies, sketches and even leaves and ferns – which we all collected from the local park –**

⁴ Sarah Sharma, “It changes space and time! Introducing power-chronography”, in *Communication Matters. Materialist Approaches to Media Mobility and Networks*, ed. Packer, Jeremy, and Stephen B. Crofts Wiley (London: Routledge, 2012), 72.

came together to form a final design. Logistics are also involved in how she has to plan out each design to be drawn in repeatedly, so each arrangement of shapes can be tiled to form a seamless pattern. This repeat can then be scaled up or down to fit on endless reams of fabric for furniture, or shrunk, chopped up and printed onto napkins. This sense that disparate elements were layered together to create a tangible end product was very influential on me, as was the immediacy of the tactical dimension of the process: everything was handled, something that doesn't often happen in projects that are realised remotely or are at larger scale. Needless to say, architectural designs have to be broken down into numerous forms and surfaces in order to be understood, translated into appropriate materials and then brought together to create a holistic model. But mostly that immediate connection between the designer – or the person that uses the assembly later – and the handling of materials is absent. This condition I think affects architecture a lot. A greater sense of handling would be good.

Growing up and being interested in what mum did as a designer made me feel that the curtain was lifted on the instinctive and messy stage of a design project – I saw the importance of a workspace to test ideas and gather the sketches and ephemera that collect throughout a creative endeavour. I enjoyed what you said about working alongside one another, using the iPad, creating a form of “digital co-working space”. It makes me wonder if this sudden switch to virtual workspace will ever edge closer to a studio environment. Maybe the idea that was raised early on, of me wearing a GoPro camera to show you the detail of my working routine, would have showed more of the messy side of model-making – the trial and error involved when piecing everything together.

MT Of course, you wearing a GoPro camera might have given me your perspective more exactly. However, I did not want to simulate you, but collaborate with

you and I think that worked out pretty well. I certainly missed the messy stage of the design project, but our conversations have become of greater importance. Reflecting on your instinctive actions is one way of uncovering tacit knowledge, which I hoped to understand through talking to you. And even now, while we reflect, I learn about your sense of observation and sensitivity in everyday life anchored in your craft. It reminds me of a PhD thesis by textile artist Solveig Goett, which touches upon the loss of material literacy if we do not interact with materials. Goett looks at textiles not as supportive surfaces but as active agents, “everyday textiles in [...] life”.⁵ Therefore, she introduces “concepts of wonder”, concepts beyond boundaries. I think, this also links to your description, where “layering of fabrics [...] came together to form a final design”. One could maybe conceptualise this in terms of the *Wunderkammer* – or cabinet of curiosity. Textile design captures embodied memories, housing them together through a collection of material artefacts that are involved in producing the design – an approach that we struggle to learn in architecture. Architects tend to think of material in terms of creating space, rather than as the basis for socially collected memory structures.

ES One of the reasons I applied for HT initially was due to the importance they placed on this “collected structure of memories”. How the spaces in their buildings responded to our collective understanding of architectural typologies and often subverted these pre-conceived ideas. I applied as a Part 1 [RIBA pathways (3 parts) to qualify as an architect] in 2015, because one of my favourite buildings in London, both then and now, is the Young Vic – not just because it has a fantastic bar. To me, it felt a bit like a curiosity cabinet when I first visited it. The materials used were unexpected, from the mirrored tiles on the ceiling of the entrance hall, to the chipboard in the

⁵ Solveigh Goett, “Linking Threads of Experience and Lines of Thought: Everyday Textiles in the Narration of the self”, PhD thesis (London: University of East London, 2010), 14.

toilets. The materials used were tactile and have a sense of familiarity, but they were used in an unexpected setting – a theatre. Growing up in London, the (for me) occasional trip to the theatre meant visiting a grand, columned building with velvet-lined staircases, brass handrails, gilded ceiling details and a fixed procession of spaces from box-office to bar. This expectation of a specific theatre typology made visiting the Young Vic a really memorable experience. The happy clashing of materials, spaces and the familiarity of certain surfaces in unexpected places made the architecture feel somehow more permeable and immersive.

MT It’s insightful how you describe the linking connection of atmosphere, material, and architecture ending up in unforgettable memories. Although I visited the Young Vic Theatre only after knowing that HT was responsible for the refurbishment, meaning I didn’t have an objective view on the architecture, I enjoyed the rather undone look of the building. While watching the play *Hamlet*, directed by Greg Hersov, I recognized the “beautiful proportions of the space” that Roger Watts, director of HT and project architect of your favourite architecture in London the ‘Young Vic’, mentioned when I talked to him.⁶ The architecture doesn’t push itself into the foreground when you watch a performance but rather puts on the role of a supporter or as Roger said a “host” – for both the show and visitors. However, I am wondering how this set of emotional and historical attachments to material still impact the way we see and understand staged events. Roger explained the budget of the competition was extremely tiny and the design was much more in the spirit of the “edgy stuff” and related to the younger audience that would visit Young Vic. This feeling I got immediately, after I entered the space, and of course its lovely bar. HT used found materials and left with the rawness, keeping even the scrapped tiles. The atmosphere was to be an experiment: “That’s what materials do, don’t they?” And the collaboration with the artist Clem Crosby and his painted series of monochrome panels for the new auditorium façade

⁶Roger Watts, Zoom interview, 27 April 2021.

that is made of aluminium mesh, adds not only a new hand-made surface, but also another tacit layer of material literacy. According to Roger, “it’s about dealing with creativity,” when he described the refurbished project and the way HT uses and treats material. It picks up the spirit of things to link to the memories of the existing building and creates a sort of narrative. It’s a story, which you as model-maker have to tell and (re)present through models.

ES What’s great for me, as a model-maker at HT, is that making models of proposals has been intrinsic to HTs process from the beginning. I have a whole catalogue of model-making methods and precedents to draw on when discussing how to best represent a surface at scale. Last year, just before going into lockdown, I put together a digital archive of all the models we have physically in the studio or photos of on our server. This included digging out photos of a few models made throughout the design process for the Young Vic and I saw how they represented these unusual surfaces. In one model they used photos and collage to quickly give an idea of the surfaces of the space. It was great to see the initial experimentation taking place within a model and not just in/on CAD visuals. Then I realised CAD visuals were probably still not that common when the proposal was being designed, and definitely not nearly as atmospheric as they are now.

As HT uses a range of bespoke materials or often works with distinctive existing building fabrics (the burnt walls of the Battersea Arts Centre’s Grand Hall springs to mind here!), this means a model-maker is often challenged with how to best represent the material qualities in miniature. An understanding of a design’s narrative or history often drives the design ethos within the practice and it’s an ongoing challenge to bring a sense of these narratives into the models too. Do we want to be realistic? Give a sense of a surface’s texture? Suggest a specific timber tone? Or focus on form and structure, stripping a model of material detail entirely? Having so many models around the studio and photos of them now in my database has really allowed me to draw from a rich material palette of representation. I

can see what has and hasn't worked for models in the past, communicate these ideas to the team I'm working with and then carry on adding to this library of references.

Note for the reader: The conversation was paused and continued one year later in early 2022.

MT We paused our conversation, and reading back over it, and having ended up with the idea of the *Wunderkammer*, I realise that thinking about your models at the office and the incredibly beautiful miniature house models that you do alongside your work at Haworth Tompkins, I have to add something about ideas of *Theatrum Mundi*. The two concepts are related of course. The associative *Wunderkammer* was the ancestor of the early scientific theatre of the world – the device that somehow gave a cosmological sense of understanding and orientation through collections of objects – captured in selected materials, shaped by often unknown makers. Perhaps this metaphor offers something of what I felt with the spectator view I had on screen during our digital co-working sessions. Digital Mara became a kind of *Theatrum Mundi* device for Haworth Tompkins's practise, but also for the wider and universal issues with which they and other architectural firms engage.

When I built the ship model *Hermia* as part of AHO's "Warburg Models" course at Haworth Tompkins' office, sitting next to you, this aspect of the research project changed slightly.⁷ I recorded myself as I made the model – Digital Mara started to observe me – partly to remember and reflect on each step, but also to unfold the process of what I did throughout the day. Because during the process I don't think about the spectacle of what I am doing, but rather focus on the projective acts involved – problems of construction, detail, accuracy,

⁷ The course explicitly explored the idea of memory creation through architectural commissions of the Warburg. Implicitly it explored the interrelationship between model-making and material literacy through exchange among participants (see also scene 2 in Act III).

etc. What's that like for you? Do you reflect on the models you make and these process related issues as you work? This data obtained through this process also made a kind of theatre, although this time I was involved as a player.

ES When it's busy, I actually don't have much time to reflect on the models I've made. That only really happens when I need to gather information for a presentation, or when I'm telling other people about models we've done in the past, for instance, when we approach new teams. I am often like "Oh, we did this model. And here are the images we have from it, etc." But it's a tricky thing. When you go quickly from model to model, you have to be kind of unsentimental, which is quite weird, because you just have to pass the model on to someone else – the design team, a client – let it be used, understand how it's going to be used, and you have to move on. But it's something I've tried to get better at, especially because our communication manager in the office often asks if we have process photos, or if we have something that we can talk about from the workshop, what's happening in the workshop, that kind of thing. Like a communal activity, I guess, around the workshop in particular, which seems to have this theatre-like role. And there is a demand to turn that into a little *Theatrum Mundi*.

MT It's funny you mention the soft skill of being unsentimental. I had a similar experience with the ship model and me transporting it to its final destination. You do care about the model, and as you say, you need to let it go to produce the next, although you built up a relationship with it through the material while making. The 'communal activity' you speak of has a performative potential to create an emotional connection and enable easier storytelling, which is what I experienced when I presented the work to colleagues by showing footage of time-lapse videos. These videos are stimulating as the spectators get a sense of involvement through the observation of the actual making process, I assume.

ES Recently, in my own personal work, I was asked by an app design company to do a model for them. They asked for a real-time video of me making it, which I was really nervous about, because I feel like everyone has their own personal making routine. And you want to do it unself-consciously, you want to just get lost in making it – or for me go into ‘robot mode’. I felt the pressure of stylising how my making process looks and not interrupting the momentum to get up and make a cup of tea. The client wanted a real-time video of me assembling the final pieces. But they wanted it in a very particular way. They asked for it to be from a flat, lay perspective, which is very popular and considered an Instagram-friendly format. They wanted it to be landscape but with the possibility of being portrait for a phone. I was quite overwhelmed by it.

Obviously, I was up for the challenge, but it was quite a formal setup. I had to buy a new tripod, which had a really long boom arm to be able to look down on my work. I had to be self-aware about how I was placing my hands, because normally I have pieces close to my body or face. They wanted me to have my hands down, and constantly ‘in shot’. It was a very prescriptive and choreographed video, which was so unlike my usual making pattern. I, of course, have an order in which I do things essential for the model, but not for how it looks from a specific aerial view. It didn’t have that collaborative feel that was achieved when we were discussing my process with your digital self. One thing I noticed after assembling, was that my hands were stone cold, because clearly, I was quite tense or holding my hands proffered away from my body. And that never happens to me normally – when I’m making something my hands are really warm because I’m always moving them in what feels a natural way.

MT It sounds like you were less naturally connected to your work and the material than usual as your head spun around. I guess, the result was definitely very accurate, but the relationship you built must have felt

different to other models, no? I recently built a daybed while listening to an audiobook about Maria Montessori's unpublished lecture series. While I was using my hands to build a wooden beam structure one early morning, I heard Maria Montessori writing in her lecture in the early twentieth century about how she had been studying children for over thirty years and that she found that children understand form by using their bodies.⁸ Of course, this observation is over hundred years old, but still this is exactly what happened to me while building the structure. My personal material literacy grew through moments of failure – moments when I was not patient enough or realised that some wooden pieces I had bought were not quite flat and they had to be carefully adjusted accordingly. We can be educated by the material if we just listen to it and connect it to our body, like we did as children. According to Montessori, this controlled movement then becomes a series of movements – an exercise that becomes a principle. I'm mentioning Montessori, because **when you recorded yourself, your movements were inauthentic, and no longer followed your own intuitive 'choreography' – the principle that your body taught you once and that you have implicitly been listening to ever since. I'm curious to learn if your perception of the working process has changed in relation to your recordings. It would be interesting to know whether your reflection on your work habits offers insights into your rituals. Because normally you don't think about what you're doing, you just do it. It's also a thing of trust to show these ways of working, isn't it?**

ES Yes, when I was asked to video myself for this work, which was much more ambitious than my usual work, I was so much more self-aware. I was talking to someone not long ago about their love of meditation. And I felt I couldn't relate because I'd feel self-conscious. But then I thought maybe making models, is my own form of meditation, because often I feel my mind just goes blank. And all I'm doing is fold, glue, bend, etc. As I said before

⁸Maria Montessori, *Maria Montessori spricht zu Eltern. Elf Beiträge von Maria Montessori über eine veränderte Sicht auf das Kind* (Freiburg: Verlag Herder, 2019).

it's as if I follow my own choreography, my own routine, I am practicing my own form of meditation. Therefore, videoing this practice or routine felt strange. I also had to explain to the client that if I did a video of me making the whole model it would take about a day and you'd have literally 12 hours of footage. There is this real market for seeing 'making of' or 'work in progress' videos and the client asked me if I have TikTok? Which I don't. As an artist or designer, I think there's a part of you that doesn't want to reveal every stage of your process. It's also quite a personal and intimate thing. When they said like, we want you to get TikTok and show your process off, I felt, I don't want to reveal everything. I didn't think you'd ask, for example, an oil painter to show every single bit of their process, no?

MT It's currently a trend to do so, even in academia – especially in ethnographic studies or by diving into auto-ethnography. I think it has to do with people's curiosity to understand how the actual craft/gesture/movement came to be. The trend is more and more toward awareness and consciousness of pretty much everything, from slow food to regional production to handicraft. People are focussing on the intermediate steps, the process, and then talking about it. I recently had a conversation with a curator of a permanent collection, and she said that the method of capturing every single step within a process of our daily lives has become such a big deal. It also has to do with social media, because we've started sharing what we are eating and are now in the loop of reels and Insta-stories, so it is no longer in a photo anymore, but in moving images. It doesn't matter if it's personal or professional feeds, as there is no clear distinction between the two on social media. I also believe that there is a longing for empathy and relationality with the final product that can perhaps only be achieved by unfolding each part of the work. Of course, it might be interesting for someone else to see, for instance, how the curator collects archival material and how she moves around her workspace and things like that, but she said, "Where are we going with this? If we explain everything in such detail?" Is that then the content or the

result? What is actually the content? The captured process or the mediated object?

ES I feel that in the last ten years or so, everyone has become very involved in food and food preparation. How you make something, where it's grown, what the origins of the techniques or ingredients are. I think people find a real comfort in watching videos of chefs, home cooks, food preparation of any kind. But it's always more than that. I wonder if it has roots in things like religion. Something that's ritualistic and a shared experience, something that's passed from person to person. And I think it's funny because it used to be that people had family recipes, family secrets. Now with the culture of TV chefs and cooking programmes those 'secrets' can be broadcast far and wide. Does this sharing culture apply to all elements of art and design, too? If you show off all your secrets, do you dilute some of the mystery and craft behind your work? For instance, in the era of Turner and Constable, part of the skillset as artists were the recipes for their paints that were unique to them. And they would never reveal them because it's how they could achieve a signature colour or texture or tone. Looking at that photo of my mom working that sits above my desk, she was asked by a company to show her process. She has this very particular material she prints with that she's pretty sure nobody else uses. And so, when she was showing her process on this video, she made this box, that hides what she actually prints with. And I just found that so funny, because I sometimes think when people ask me "What glue do you use? What paper do you use?" If I show everything that I use, can someone just make exactly my models and exactly the style that makes them mine? And obviously, it's maybe not as simple as that, because it's also the way I plan models. But in talking about self-reflection on work – when I'm exposing my process – are you expected to expose everything that gives your work a signature style?

MT Yes, it's about authorship and blurring the lines – putting all your secrets on display. That also creates a

kind of myth. You inflate things that are perhaps not so important for your own work, but that trigger spectators. There is this velvet curtain that creates an excitement of what might happen next when it drops, and the light is shed on what to (re-)present. What is happening backstage may be a collection of history combined with a set of tactile memories. At least this was how I experienced it during making the ship model and the experience of enacting your daily movements in the workshop. Spinning this further, the assemblage of crafts people's memories is one possible approach to the past that brings the story of material back into life. Thinking here of archaeology and the craft skills needed. And in your case, as a model-maker, I am not quite sure whether there has to be a certain 'truth' or truthfulness in representing material, but there is a transparency of your material knowledge.

ES Exactly. 100%. Talking about self-reflection of work. I again, only really analyse my process when students ask me questions, because students are in that process of partially recreating, partially designing. At university, you are obviously dipping your toe in a wide pool of references and ideas, not copying them, but you often replicate a certain style and then make your own imprint on it. And so, when students ask me questions, they're often very specific questions, because they are in the midst of trying to figure out a unique design methodology. I think the most common questions I'm asked are, 'what CAD program do you use?' Or 'What glue do you use?' I don't mind answering these questions, of course, but I try and emphasize that any PVA or any CAD programme will be fine, it's a mixture of finding your style, adding your own personal flair and practicing.

MT It's also about admiration. I think social media has encouraged that a lot. It's really about marketing, isn't it? You wouldn't really record yourself while you're doing this for no purpose, would you? You were saying that you also do it to archive your work and to have a timeline through Instagram, kind of a resource. But of course, that's also how the market works. It's a fine line between showing

and communicating material, your own process, craft and knowledge – and, last but not least, selling. It’s the same thing in academia: many scholars are now trying to return to ethnography after its peak in the 1970s and expand it into auto-ethnography, especially in design-driven research. I’m not saying that I’m exempting myself. On the contrary, I count myself among them. But it’s important to be aware of it.

ES When I first started making the models, I wasn’t a model-maker. I was just doing them for fun or practicing a process for myself. I made a few pieces and then I gave them to my mum or my aunty. But as soon as I started posting them online, people asked “what are you doing? Are you selling these? Is this a project at work?” They wanted to know exactly why I was doing them. “Do you do this now? Is this your job?” It was as if the purpose behind these creations had to be structures and specific. If you’re not selling these, what are you doing?

MT I don’t think there’s anything wrong with selling what your passion is. I am just wondering now, because I was doing this self-reflection on the ship model and then after talking to the curator, I was like, “Why are we actually recording everything nowadays?” We’re pursuing something that’s actually so obvious. Of course, I am interested in my research in tacit knowledge embedded in these natural habits. Your notion of a cataloguing model-making methods and precedents, makes me think of the misbelief of association of archives with the past, the contemporary architectural practice and the practice of writing the history of archives. The Norwegian architectural historian Mari Lending talked once about “archives as a mindset”, in reference to the French philosopher Jacques Derrida and his book *Mal d’Archive: Une Impression Freudienne*.⁹ You basically give your digital archive a voice to speak in prospective designs when thinking of representation of material.

⁹ Mari Lending, “Voices from the Archives”, lecture at the elective Master course ‘Warburg Models’ at the Oslo School of Architecture and Design on 2 March 2021.

ES I'm just thinking with your process of making the ship model HERMIA, you also want to know how you did something, you want to remember it, you want to look back at it, you want to reference it, obviously, you're also researching. So, it's part of your methodology and your research process. But even if you weren't, writing about or exhibiting what you did, would you have still recorded it? Would it have been a wasted opportunity to record something that isn't part of your usual or everyday work routine? I had to make this presentation for International Women's Day. I kind of wanted to show this idea that although I started as a trained architect, I always sort of knew I'd go into models. And so therefore I looked through lots of photos: from my art foundation or my A level work through to university. And I was amazed at how I recorded everything then. I forgot that I took photos every single day of what I was doing, and not for the process. I didn't have Instagram then I wasn't showing it on social media. It was clearly just for me, but it was very rigorous, which I found surprising.

MT I think, proud also comes to play here. When I think back to my student days, I took photos because you didn't want to lose anything. You knew it could be a valuable argument to defend your work. And also, a professor asked to capture your process in a semester portfolio. But most of all, it was something that made me proud and that I would share with others. And to look back on what I did last term, also to learn from it – especially construction detail drawings (not drawn in CAD but by hand). I do remember this in my first year, where I had to design a terrace house first and then a wooden house in the following semester. It was such an overwhelming task but I learned a lot from it as I compared detail drawings, checked out norms that were obviously different to a building made of a wood construction than of brick walls, and models that represented not only the two different types of buildings but also scale and materials varied. The output is neither the model nor the drawing, which represent the acquired (tacit) knowledge, but the process of making, collaborating, etc.

ES It's interesting when you immerse yourself in art or design, often then, you end up with a physical drawing or physical model, you end up with evidence of your skill in making it or what you intended to achieve. The whole point is that what you produce *is* your evidence of your hard work. But that's why I was surprised by the rigor in which I recorded my pre-university creative process, because it was maybe it was also something I was learning from. Maybe I was doing things I hadn't done before. So, I wanted to remember how I did it. But thinking about my mum's work. She's been designing textiles for about 30-40 years, and she has to make sure every single design is different (to ensure she doesn't get copyright infringement on a different, previously sold, piece). And I was trying to imagine how to make 40 years' worth of completely different designs. My mum takes photos of every single one almost like material mugshots. Sometimes when she's designing a new piece and asks herself 'have I done this before?' She checks her material mugshots, which she has all lined up next to her. Perhaps her mind will regurgitate something it seen before. But that's what I find fascinating about her work that I never had to think about making something so different. You have the same tools, the same flat surface, the same format, often the same size. It must be familiar but different. I find it fascinating.

MT Yes, indeed inspiring. Architects also compare their designs with earlier designs, but not to avoid copying them, but to learn from them, as you pointed out already. They don't file patent applications to make sure no one else copies their design. This may also be due to the different amount of time it takes to complete an architectural project, right? The whole process of textile design is – and has to be – completed much faster than a building. Even if you were able to design a series of buildings at the same time, you would never achieve the variety that textile designers achieve with their patterns over the course of their work. Although you say you don't need to think about a repetitive pattern design per se, you still think about what worked best in the past to convey a particular material, and how the material responds and cooperates to your crafting. This

has a lot to do with your experiences and personal context that create your understanding of materials, which I gained insight into as I observed you from afar as Digital Mara and modelled on site – next to you at HT’s workshop.

It’s been a real pleasure to learn about your rituals and memories around model-making. The depth of collective knowledge was revealed by following the initially undefined idea of simulating a fly-on-the-wall view. This fun digital transfer/mediation process functioned almost like ‘vlogging’ and opened a new territory gaining insights. I believe I gained a good overview into your model-making process, mostly because your habits had to adapt, too. In 2016, design anthropologist Sarah Pink highlighted the function of digital ethnography as a research method, as the digital has become part of people’s everyday lives. She asserts that ethnographic methods must expand and evolve in sync with the digital environment. Pink decentralises the ‘digital’ and opens up an understanding of “how the digital has become part of the world in which we live and research.”¹⁰ However, when you were paper or laser-cutting or milling, I did miss the smell of freshly cut wood a lot.

¹⁰ Sarah Pink, “Experience”, in *Innovative Methods in Media and Communication Research*, ed. Sebastian Kubitschko and Anne Kaun (Berlin: Springer Nature, 2016), 165.

