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**Responsible Architecture:
Relational Approaches to Sustainable
Behavior in Design**

Vol.1

PhD Dissertation

By Ricelli Laplace

Aarhus School of Architecture

**Responsible Architecture:
Relational Approaches to Sustainable Behavior in Design**

PhD Dissertation (monograph) submitted in partial fulfillment of the requirement of the degree of Doctor of Philosophy by:

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Volume 1 of 2

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Project Description

The project entitled ‘Responsible Architecture: Relational Approaches to Sustainable Behavior in Design’ is a practice-based research project that strives to develop a critical framework for the integration of relational approaches to promote sustainable behavior in architectural practice and learning. It investigates the relationship between sustainable practices in architecture and the prevailing architectural perspectives (its worldviews, values, and practices), and it evaluates the necessary transformation these need to undergo in response to our time’s increasing environmental and social challenges.

Drawing from a multidisciplinary approach supplied by environmental psychology, environmental education, critical environmental studies, and participatory design, the project delineates responsibility as a critical framework and a relational tool. This framework and tools aim to facilitate the development of strategies for architects to incorporate sustainable behavior in design projects. A distinct attribute of Responsible Architecture (RA) is its acknowledgment of the root of sustainable behavior being intertwined with an architect’s emotional ability to handle the numerous psychological and social challenges in the pursuit to practice sustainability. This ability can be enriched by working on and achieving emotional attunement in our practice, such as aligning our worldviews and values with our professional practices. Thus, building on a critical framework, the project also proposes relational tools designed to assist architects in cultivating this emotional capacity.

The perspective proposed here is elaborated and cultivated through diverse experimental engagements, such as interviews with professionals in the field of architectural sustainability, participatory design workshops within the architectural studio, and research within post-graduate architectural education settings. These experimental engagements yielded insights into the construction of the RA critical framework and strategies that might challenge and modify current architectural practice and education.

By broadening the dimensions of responsibility within architecture to include a critical and relational practice, this study doesn’t provide a final answer to RA. Instead, it prompts all current and future architects to become active and conscious of their individual and collective responsibilities in practicing architecture that is more responsive to the environmental and social challenges of our time.

Projektbeskrivelse

Dette projekt med titlen 'Responsible Architecture: Relationelle Tilgange til Bæredygtig Adfærd i og gennem Design' er et praksisbaseret forskningsprojekt, som udvikler en kritisk ramme for integration af relationelle tilgange til at fremme bæredygtig adfærd i arkitektonisk praksis og læring. Projektet undersøger forholdet mellem bæredygtige praksisser inden for arkitektur og de fremherskende arkitektoniske perspektiver - verdensbilleder, værdier og praksisser - og evaluerer den nødvendige transformation, som disse skal gennemgå for at forblive relevante for vor tids stigende miljømæssige og sociale udfordringer.

Gennem en multidisciplinær tilgang med udgangspunkt i miljøpsykologi, miljøuddannelse, kritiske miljøstudier og Participatory Design afgrænser projektet ansvarlighed/responsibility som en kritisk rammeforståelse og et sæt af relationelle værktøjer med sigte på at lette udviklingen af strategier for arkitekter til at inkorporere bæredygtig adfærd i deres designprojekter. En vigtig egenskab ved Responsible Architecture (RA) er dens anerkendelse af, at roden til bæredygtig adfærd er flettet sammen med en arkitekts følelsesmæssige evne til at håndtere de psykologiske og sociale udfordringer som udspringer af jagten på at praktisere bæredygtighed. Denne evne kan styrkes ved at opnå følelsesmæssig afstemning mellem verdenssyn og værdier på den ene siden, og professionel praksis på den anden. Ud fra en kritisk ramme præsenterer projektet også relationelle værktøjer designet til at hjælpe arkitekter med at oparbejde denne følelsesmæssige kapacitet og afstemning.

Projektet udforsker og uddyber dette perspektiv gennem en række eksperimentelle tilgange: Interviews med fagfolk inden for arkitektonisk bæredygtighed, Participatory Design-workshops i arkitektstudiet og forskning inden for postgraduate arkitektoniske uddannelsesmiljøer. Disse eksperimentelle tilgange gav indsigt i konstruktionen af den RA-kritiske ramme og strategier, der kan udfordre og ændre den nuværende arkitektoniske praksis og uddannelse.

Projektets overordnede formål med at udvide dimensionerne af ansvar inden for arkitektur til at omfatte en kritisk og relationel praksis, er at tilskynde nuværende og fremtidige arkitekter til at blive aktive og bevidste om deres individuelle og kollektive ansvar, og til at praktisere arkitektur, som er mere lydhør over for vor tids store miljømæssige og sociale udfordringer.



Picture from the Xcinema event. Model making process with local materials. Image courtesy by Useful Art for Communities (UAC).

1. INTRODUCTION



1.1 INTRODUCTION

The rapid degradation of the environment and escalating concerns about climate change, and increasing social inequality have brought ethical challenges to the forefront, compelling every industry, including architecture, to rethink its practices. But traditional architectural models, primarily profit-driven, often emphasize aesthetic design and immediate financial gain over environmental considerations, thus contributing to the depletion of natural resources and exacerbating the environmental crisis. Moreover, terms such as “sustainability” and “green design” have been widely circulated and often misused in recent years, becoming buzzwords more associated with marketing strategies and greenwashing than genuine environmental concerns. This superficial engagement lacks a critical practice - an ongoing, critical self-examination and learning process to adapt and improve our every design choice.

In the pursue of such critical practice, this dissertation introduces Responsible Architecture (RA) as a critical framework and as a relational tool to promote sustainable behavior in architecture. Arguing that sustainable behavior is highly influenced by elements that cannot be tackled with technological solutions alone, this dissertation will address sustainable behavior concerning the concept of responsibility¹, highlighting the roles of worldviews and values², and the psycho-social dimensions³ for sustainable behavior. In this dissertation, responsibility is explored as (response-ability). Where responses are cultivated by the worldviews and values of a responsible architectural practice, and ability is cultivated by the architect’s emotional capacity to respond to current psycho-social complex sustainability issues facing the architectural practice (figure 1).

Furthermore, as this dissertation proposes a responsible architectural practice, it reflects on the intersection between individual and collective responsibility related to sustainable behavior practices. Therefore, responsibility in architecture is influenced by the individual architect’s aspects and also social aspects from a cultural architecture practice to which that individual belongs, and also accounts for the individual’s and collective ability and difficulties for action taking.

1 Lařna Droz, *The Concept of Milieu in Environmental Ethics: Individual Responsibility within an Interconnected World* (Milton Park, Abingdon, Oxon New York, NY: Routledge, 2022).

2 Steve Schein, *A New Psychology for Sustainability Leadership: The Hidden Power of Ecological Worldviews* (Sheffield: Greenleaf Publishing, 2015).

3 Renee Lertzman, *Environmental Melancholia: Psychoanalytic Dimensions of Engagement* (London: Routledge, 2017).

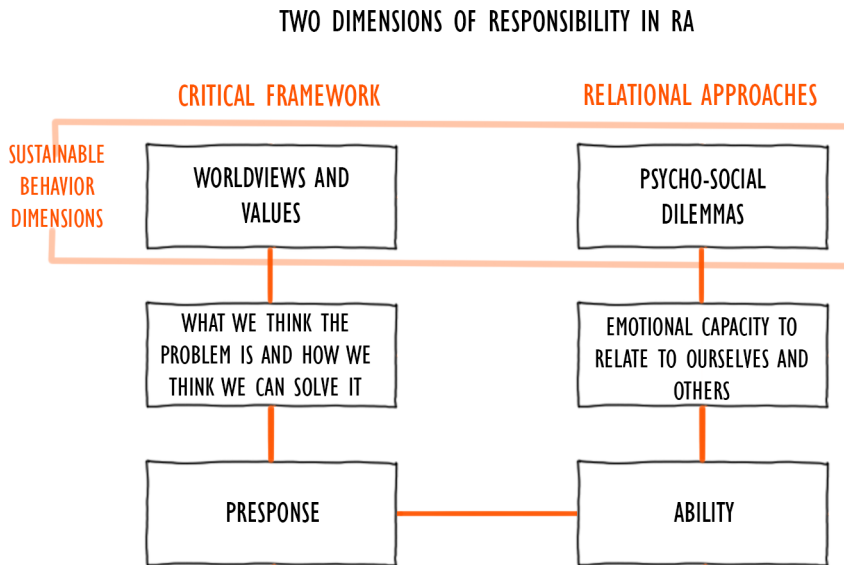


Figure 1: RA research framework.

Therefore, by exploring responsibility in architecture, this dissertation proposes to create a culture that is constantly engaging and responding to the changing environmental and social challenges in our profession. This ongoing critical reflection is a way for architects to think about our relationship with the environment, root a conception of sustainability, anchor an account of responsibility, and help us direct our shared actions to tackle sustainability challenges. Reflecting on webs of worldviews, values, and projects in the field of architecture, or what we might call our present ‘architectural milieu’ offers a space to connect issues of the architect’s responsibility to practice responsible architecture within the context of environmental and social challenges we currently face.

While this research advocates for a more responsible culture in architecture, it does not advocate for a one-and-only way to approach RA. Recognizing the pluralism of worldviews and practices from diverse architectural milieus, advocating for one unique system of universal environmental ethics would be ‘an imperialistic and problematic endeavor.’ Furthermore, in the paradigm of engaged scholarship, I recognize that as a researcher, I bring my own values into the project and continue to develop my personal worldview

in relation to the new knowledge⁴. Therefore, this dissertation recognizes that responsibility in architecture can be evaluated differently by different people, and tries to address issues without imposing a universal practice or worldview onto others. Droz warns that ‘intervening in another milieu requires as much as possible trust and a certain extent of consensus building with the members of this milieu’⁵. Therefore, as a researcher, it was important to negotiate and find a balance between differences in milieus (such as differences between Brazilian and Danish architectural practice and worldviews), but it was also important to search for things that can be common grounds on how to practice RA, in order for the research to reveal better practices for the architectural field.

This dissertation examines multiple aspects of RA in diverse experiments (interview with architectural professionals, participatory design workshops, and educational courses) and examines diverse uses of RA as a critical framework and relational tool to help build a common ground for responsible sustainable behavior practices. Specifically, it suggests how RA analyses of psycho-social dilemmas architects face can illuminate the challenges of the dominant architecture culture and propose relational approaches to deal with these challenges. The relational approaches proposed will elucidate how emotional attunement can help people to address responsibility regarding individuals and collectives that depends on their situation and capacity, avoiding resentment and building a solid foundation for taking shared actions⁶. Therefore, this dissertation proposes relational methods (the how) to deal with sustainable behavior dilemmas in architecture as a tentative direction for individual and common actions to practice sustainability (the what), and discusses individual and collective responsibilities within the profession (the who).

1.2 The relationship between architecture and human behavior

Tracing an intellectual history of architecture at the intersection of human behavior takes us back to ancient civilizations, where builders incorporated environmental design principles to create functional, pleasurable spaces that were important elements for human survival⁷. However, the systematic study of the relationship between architecture and human behavior began to emerge as a field of research only in the 1960s and 70s, influenced by emerging studies in environmental psychology and phenomenology. Since then, scholars from diverse fields ranging from psychology, sociology, anthropol-

4 Ergene, Seray, Subhabrata Bobby Banerjee, and Andrew J. Hoffman. “(Un) sustainability and organization studies: Towards a radical engagement.” *Organization Studies* 42, no. 8 (2021): 1319-1335.

5 Droz, *The Concept of Milieu in Environmental Ethics*, 177.

6 Droz, 163.

7 Grant Hildebrand, *Origins of Architectural Pleasure* (Berkeley: University of California Press, 1999).

ogy, and neuroscience, have engaged in studies to understand better how architectural design influences human perception, cognition, emotions, and behavior.

Research in the field of environmental psychology has revealed that architectural design elements, such as spatial layout, lighting, color, and materials, can significantly impact human emotions, cognition, and behavior. For example, studies have shown that well-designed, aesthetically pleasing spaces with natural light and open layouts can enhance mood, productivity, and social interaction, while poorly designed spaces with cramped layouts and inadequate lighting can lead to stress, discomfort, and reduced cognitive performance⁸. Additionally, research has demonstrated that architectural features such as wayfinding cues, access to nature, and the presence of social spaces can influence aspects of human behavior, including navigation, preference for certain areas, and social interaction patterns⁹. Overall, scientific studies since the 1960s have established that architecture plays a crucial role in shaping human behavior and well-being, emphasizing the importance of thoughtful design in creating spaces that promote positive human experiences.

Influenced by the post-war social and environmental movements of the 60s and 70s, architects have also explored how the physical environment impacts human behavior by bridging social sciences and environmental studies with architecture. Architects and designers of this period, such as Jan Gehl¹⁰, Jane Jacobs¹¹, and Victor Papanek¹² spearheaded an architectural movement through their human-centric and sustainable design, where the people's needs, behaviors, and well-being were prioritized alongside environmental impacts in architectural decision-making. Their work broadened the scope of architectural practice and theory to encompass fields such as sociology and psychology, thereby contributing to the establishment of a multidisciplinary approach, highlighting not only the technical and technological facets of the profession but also taking into consideration the historical, contextual, cultural, political, and environmental repercussions of architectural and design practices.

8 Dak Kopec, *Environmental Psychology for Design*, Third edition (New York: Fairchild Books, An imprint of Bloomsbury Publishing Inc, 2018).

9 Robb Mitchell and Thomas Olsson, 'Barriers for Bridging Interpersonal Gaps: Three Inspirational Design Patterns for Increasing Collocated Social Interaction', in *Proceedings of the 8th International Conference on Communities and Technologies (C&T '17: Communities and Technologies 2017*, Troyes France: ACM, 2017), 2–11.

10 Jan Gehl, *Cities for People* (Washington, DC: Island Press, 2010).

11 Jane Jacobs, *The Death and Life of Great American Cities*, Vintage Books ed (New York: Vintage Books, 1992).

12 Victor Papanek, *Design for the Real World: Human Ecology and Social Change*, 2nd ed (London: Thames & Hudson, 2011).

However, in subsequent decades, with the rise of cold-war-related conservative policies, technological advancement, and consumerism, in contrast to this accumulated knowledge, the mainstream architectural and design culture started to focus more on technology, following the demands of a profit-oriented economy¹³. Yet, as climate change and environmental issues become more pressing in the field, there's been a renewed focus on these topics, especially when talking about sustainability. Practices that mix several disciplines and focus on sustainability, such as participatory design or alternative building solutions such as Earthships or adobe, have been around for quite a while. Though they've mostly been on the outskirts of architectural practice and discussion, they're now becoming more common in mainstream conversations about sustainability in architecture. In general, architects are once again seeing the importance of how human behavior plays a key role in creating sustainable and healthy spaces, bringing principles such as passive design, adaptive reuse, and social sustainability into their work.

1.3 Sustainable behavior in architecture

Within the current climate crisis, the architectural profession faces several challenges in addressing sustainability in the construction field. In 2020, buildings in the EU were responsible for 40% of total energy consumption and 36% of greenhouse gas emissions, including impacts from construction, usage, renovation, and demolition.¹⁴ Between 1970 and 2010, building GHG emissions more than doubled¹⁵, and some predictions expect that buildings' energy consumption will increase from 75% to 150% by 2050¹⁶. Unfortunately, energy consumption for the construction of new buildings is just the tip of the iceberg, and the architectural profession has been complicit to the current economic model championed by elites in the private sector that puts profit over people and environments' gentrification, exploitative labor practices, unsustainable use of natural resources, deforestation, and carbon emissions are just a few examples of the impacts of unsustainable architecture practice. While environmental impacts disproportionately affect low-income countries and communities that may lack the means to adapt to changing environments¹⁷, ultimately, we are all impacted by the threats to social

13 Thomas Fisher, 'Architects Behaving Badly: Ignoring Environmental Behavior Research', *Harvard Design Magazine* 21 1 (2004): 1–3.

14 'In Focus: Energy Efficiency in Buildings' (European Commission, 17 February 2020), https://commission.europa.eu/news/focus-energy-efficiency-buildings-2020-02-17_en.

15 R. K. Pachauri, Leo Mayer, and Intergovernmental Panel on Climate Change, eds., *Climate Change 2014: Synthesis Report* (Geneva, Switzerland: Intergovernmental Panel on Climate Change, 2015).

16 Elena Bernardi et al., 'An Analysis of the Most Adopted Rating Systems for Assessing the Environmental Impact of Buildings', *Sustainability* 9, no. 7 (13 July 2017): 1226.

17 Susan L. Cutter, 'Race, Class and Environmental Justice', *Progress in Human Geography* 19, no. 1 (March 1995): 111–22.

cohesion, erosion of communities, increased inequality, and environmental degradation caused by these unsustainable practices.

With the growing recognition of the enormous impacts on social and environmental issues, the word sustainability is now part of the mainstream discourse of architectural practice. While articulating a concern for sustainability becomes a baseline for some architects and the business strategy of architectural offices, unfortunately, there is a considerable gap between what architects preach and their practice. This sustainable behavior 'gap' is not exclusive to architecture and has been extensively explored in various fields, from behavioral economics to education, psychology, sociology, and design. Studies on sustainable behavior have been growing as researchers continue to try to predict what is needed to engage people to behave more sustainably¹⁸. With the exception of studies in architectural phenomenology, there is very little scholarship that combines architectural theories and environment-behavior research¹⁹.

A literature review on the field of design for sustainable behavior (DfSB)²⁰ will be explored in chapter 2 and will elucidate the impacts design can have on sustainable behavior. Most studies in this field focus on shaping people's behavior by targeting their consumption and other end results of using services or products²¹. Although DfSB mainly focuses on product design, it has greatly influenced recent studies on sustainable behavior and architecture, mainly focusing on the behavior mediated by technology, computer-human interaction, and persuasive technology. Some examples are the focus on smart cities²², energy consumption and efficiency²³, automation, and sensor-tracking systems.²⁴

18 Sörqvist, Patrik. "Grand challenges in environmental psychology." *Frontiers in Psychology* (2016): 583.

19 Dayaratne, Ranjith. "Creating Places through Architecture: Can environment-behaviour research help?" *Asian Journal of Behavioural Studies* 1, no. 2 (2016): 1-12.

20 Kristina Niedderer et al., 'Design for Behaviour Change as a Driver for Sustainable Innovation: Challenges and Opportunities for Implementation in the Private and Public Sectors', *International Journal of Design* 10, no. 2 (2016): 67-85.

21 Niedderer, Kristina, Stephen Clune, and Geke Ludden, eds. *Design for Behaviour Change: Theories and practices of designing for change*. Routledge, 2017.

22 Khansari, Nasrin, Ali Mostashari, and Mo Mansouri. "Impacting sustainable behavior and planning in smart city." *International journal of sustainable land Use and Urban planning* 1, no. 2 (2014).

23 R. S. Brewer, G. E. Lee and P. M. Johnson, "The Kukui Cup: A Dorm Energy Competition Focused on Sustainable Behavior Change and Energy Literacy," 2011 44th Hawaii International Conference on System Sciences, 2011, pp. 1-10, doi: 10.1109/HICSS.2011.422.

24 Jahn, Marco, Tobias Schwartz, Jonathan Simon, and Marc Jentsch. "Energypulse: tracking sustainable behavior in office environments." In *Proceedings of the 2nd International Conference on Energy-Efficient Computing and Networking*, pp. 87-96. 2011.

But these technological approaches aim not necessarily to design something with users to facilitate their behavior but to design behavior itself²⁵. This study will argue that most of these practices are problematic because they are based on a dominant technological worldview where people are seen as users/consumers and designers as decision-makers who determine which behavior should change and how. While it is important that design is mediated by specialists, when the power of decision-making and people's autonomy is in the hands of technology and the designer alone, it raises issues related to ethics and paternalistic worldviews²⁶ and possible issues of technocracy²⁷. Similar to green-washing, we risk 'sustainable behavior washing', addressing only superficial and temporary issues of behavior change. Therefore, we must move beyond solutions that only focus on tech fixes mediated by products to investigate relational practices that can engage people in a way that it impacts their worldviews, values, and emotional states to create long-lasting effects.

Furthermore, dominant technological approaches to sustainable behavior in design focus on 'barriers' to behavior change. "Barriers" is a common term used in the field of behavioral economics, that is related to a positivist epistemological cost-benefit economic paradigm, that sees behavior from a narrow focus as a positivistic, rational, measurable, and controllable factor²⁸. Highly influenced by this understanding of behavior, when architects do engage with sustainable behavior studies, they do so from a narrow perspective that ignores how other fields from the social sciences engage with sustainable behavior. Focusing only on technological approaches raises ethical concerns since it may reinforce an incomplete understanding of human behavior.

In contrast, this research engages with sustainable behavior from a relational approach, where knowledge is built upon collaborative social approaches, conversations, learning experiments, and emotional attunement between people. This approach is founded on a responsibility to nurture the well-being of humans and more-than-human worlds, by cultivating people's capacity to deal with behavioral dilemmas to practice responsible architecture. Arguing that sustainable behavior is highly influenced by elements that cannot be tackled with technological solutions alone, this dissertation will address sustainable behavior concerning the three following aspects: the concept of responsibility, the role of worldviews and values, and psycho-social dimensions of sustainability in architecture.

25 Tromp, Nynke, and Paul Hekkert. "Designing behaviour." In *Design and Anthropology*, pp. 209-222. Routledge, 2016.

26 Mitchell, Gregory. "Libertarian paternalism is an oxymoron." *Nw. UL Rev.* 99 (2004): 1245.

27 David Olsson, 'From Technocracy to Democracy: Ways to Promote Democratic Engagement for Just Climate Change Adaptation and Resilience Building', *Sustainability* 14, no. 3 (January 2022): 1433.

28 Lertzman, *Environmental Melancholia*, 20.

Building upon sustainable behavior theory of diverse fields, this dissertation will connect these three aspects of sustainable behavior by using a praxis approach to connect theory and practical applications of behavior change. Praxis can be roughly understood as the connecting of learning to real-life situations, where theory becomes practice and practice informs theory. As defined by Paulo Freire,²⁹ praxis is “reflection and action directed at the structures to be transformed”, focusing on critical thinking, critical awareness of our own condition, and struggle for liberation. It can also be understood as an ethical, self-aware, responsive, and accountable action³⁰, the process by which a theory, lesson, or skill is enacted, embodied, or realized. In this view, the heart of all learning lies in the way we process experience, with critical reflection of our experience. Praxis is usually understood in learning as a cycle that has several components starting from people’s own experience, critical reflection (experience in terms of previous experiences) about these experiences, and action-taking. This becomes a concrete experience that can be used for reflection³¹ on further action and so on. The important thing is that it implies a process that is not focused only on practical experience or theoretical knowledge but on the act of using theory and previous life experiences to engage, apply, test, and practice ideas.

1.4 The relationship between sustainable behavior and responsibility

Under the umbrella term of ‘sustainable architecture,’ a dizzying array of practices have been developed to address environmental issues in architecture. Examples include eco architecture, green architecture, bioclimatic architecture, ecological architecture, among many others³². While these terms emphasize diverse approaches to sustainability, there has been a lot of misuse of sustainable architecture terms, where greenwashed, superficial, and misleading marketing strategies feed mistrust and actually harm people’s trust in sustainability.³³ Terms under sustainable architecture become buzzwords emptied of meaning or too broad to be useful for practice. Responding to this situation, practitioners have sought out other terms in the hopes of pushing the field in a more precise direction, re-signifying and refocusing our efforts. The 2014’s European Council of Architecture document ‘The role of the architectural profession in delivering responsible design,’ for example, articulated a need to specify the practice in response to the problem

29 Freire, Paulo. *Pedagogy of the oppressed*. Bloomsbury publishing USA, 2018.

30 White, Jennifer. “Knowing, doing and being in context: A praxis-oriented approach to child and youth care.” In *Child & Youth Care Forum*, vol. 36, no. 5, pp. 225-244. Springer US, 2007.

31 Kelly, Curtis. “David Kolb, the theory of experiential learning and ESL.” *The Internet TESL Journal* 3, no. 9 (1997): 1-5.

32 Elizabeth Donovan, ‘An Evolution of Sustainable Aesthetics’, *Design to Thrive*, 2017, 208–15.

33 Magali A. Delmas and Vanessa Cuerel Burbano, ‘The Drivers of Greenwashing’, *California Management Review* 54, no. 1 (October 2011): 64–87.

that ‘Sustainability’ is often seen as a long-term objective, the targets of which are difficult to achieve within one’s lifetime. As a result it has remained a somewhat intangible term that means different things to different people.³⁴ They emphasize that the term ‘responsible’ is not widely used in architecture, and while its meaning is still unfolding, it can be a new direction to help refocus sustainable practices in the field.

This dissertation argues that the concept of responsibility is crucial in tackling environmental issues by showing how it can be a helpful tool to promote or hinder sustainable behavior. For example, the “triangle of inaction” is a concept that describes how responsibility for environmental issues can be shifted and diffused among three groups: governments, businesses, and individuals. Each group can shift responsibility to the other two, creating a cycle of blame and inaction. This cycle can lead to a dilution of responsibility and a failure to address environmental problems (figure 2).

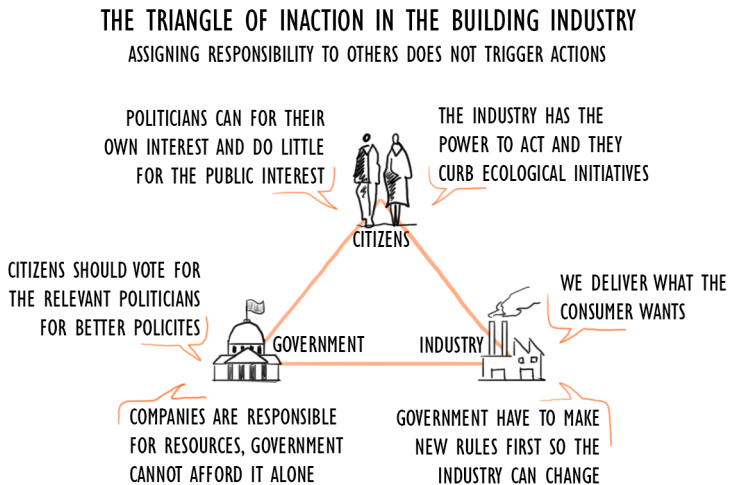


Figure 2: The triangle of inaction in the architectural field. Adapted from Pierre Peyretou’s ‘Triangle of climate inaction,’ 2020.

Dilution of responsibility happens when responsibility is diluted in the masses, and no individual or small group of individuals can be identified as responsible for environmental problems. Dilution of responsibility has also been used on purpose to dilute and make invisible the real perpetrators and those who should be held accountable³⁵. The dilution of responsibility also gives spaces for omission and diversion. This is especially

34 Architects’ Council of Europe, ‘The Role of the Architectural Profession in Delivering Responsible Design’ (Architects’ Council of Europe, 2014).

35 Droz, The Concept of Milieu in Environmental Ethics, 136.

important to consider when it comes to environmental issues because not doing something can have the same negative impact as actively doing something harmful³⁶.

The curiosity to explore the term responsibility in this dissertation comes from a need to develop new perspectives in sustainable architecture that can lead us in a better and more precise direction to practice sustainable behavior, re-signifying and refocusing our efforts. In this sense, this study will focus on further developing the concept of responsible architecture, and will propose how responsible architecture can help us address sustainability challenges in our practice and encourage sustainable behavior.

The word ‘responsible’ originates from the Latin verb *respondere*, which refers to a capacity to respond. In this dissertation, responsibility is explored as cultivating an architect’s ability to respond (response-ability) to current complex sustainability issues facing the architectural practice. This ability to respond will be explored according to the psycho-social aspects of sustainable behavior that will be explored in the literature review, and responsibility will be framed in two main parts: response and ability.

The first part deals with the worldview behind the ‘response.’ When responding to something, one brings their own values, ethics, and understanding about what is important and what should be prioritized. By exploring the architect’s individual worldview and the worldview of a collective practice (country, school, cultural background), the second part of responsibility explored in this dissertation is about ‘ability.’ Ability is related to the capacity to have sustainable behavioral responses to environmental challenges. When responding to something, one brings their capacity, their difficulties, and dilemmas to practice a certain behavior. This can be individual ability and difficulties, but it can also represent collective ability or difficulty for action taking. This dissertation argues that responsible architecture is better practiced when there is an alignment between the response and the ability of an individual or collective to meaningfully address issues of environmental ethics and sustainability in their practice, where relational approaches to architecture can help people to cultivate the emotional capacity to better align their worldview, values and their psycho-social dimensions of their profession.

1.5 Responsible Architecture as a critical framework

Although the term ‘responsible architecture’ outlined in this dissertation maps a new vision for the field of architecture, it is not necessarily a new concept. Many noteworthy practitioners of architecture and design have questioned issues of responsibility that are important to highlight, especially those related to ethics in the profession. Austrian-born

36 Droz, 181.

American designer and educator, Victor Papanek's (1923-1998), was a strong advocate of the socially and ecologically responsible impacts of design for human ecology and the environment. His book *Design for the Real world*³⁷ from 1971 is an attempt outline his views on the social and moral responsibility of the designer and their position in a profit-oriented society. Importantly, it posits that designer's responsibility should not be related only to how products are received in the marketplace and invite us to reflect on how design impacts broader environmental and social issues: "social and moral judgment must be brought into play long before he begins to design, since he has to make a judgment, an a priori judgment at that, as to whether the products he is asked to design or redesign merit his attention at all. In other words, will his design be on the side of the social good or not."³⁸

In Papanek's view, designers share responsibility not only for the products they create, but also for how their design can have harmful environmental impacts, emphasizing the importance of analyzing the past as well as possible future consequences of designs, particularly because the design can have the power to shape human products, environments and by extension humans themselves.³⁹ If designers can have this critical approach in their profession, they can develop what Papanek calls 'responsible creative abilities' that are necessary to create better design responses to environmental issues, and if not, by choosing not to get involved, designers will be throwing away this important ability⁴⁰. The environmental philosopher Layne Droz proposes that, not acting or diverging responsibility is as harmful as doing direct harm because 'when it comes to environmental problems, we need to treat omissions symmetrically to actions, as omissions can have consequences to the same extent that actions do.'⁴¹

Papanek also acknowledges that responsible creative abilities are influenced by the values of the design profession, which has been conditioned to certain values of a market-oriented, profit-directed system that makes this difficult to practice responsibly. He notices that this issue permeates diverse economic systems, —private capitalist, state socialist, and mixed economies— and that are built on the assumption that we must buy more, consume more, waste more, and throw away more. He uses the term 'Kleenex culture' to refer to how the design profession has been spreading a consumerist behavior, leading to a general 'disposable mindset', where not only products are disposable, but also relationships between people and cultures, where countries and entire subconti-

37 Papanek, *Design for the Real World*.

38 Papanek, 55.

39 Papanek, 102.

40 Papanek, 56.

41 Droz, *The Concept of Milieu in Environmental Ethics*, 181.

nents are disposable like ‘Kleenex’. By designing things to be discarded, we show insufficient care in design, and things such as environmental harm, safety factors, or worker and users’ alienation are seen as unimportant⁴².

Papanek recognizes that a radical departure from a design culture with such manipulated values is difficult to achieve, but nevertheless, if design wants to be ecologically responsible and socially responsive, it must be revolutionary and radical in the truest sense, and, therefore, must question a design profession culture based on gross national product and consumerism.⁴³ Regarding architecture, he specifically mentions that the study, research, and practice of design and planning as socially and morally responsible activities has rarely been attempted⁴⁴, and that it is important to think about an architectural culture that could be established to help the profession move towards that. Although Papanek was exposing issues of design ethics and responsibility in the 70s, his ideas resonate with Fisher’s recent architectural critiques, where he argues that environmental psychology reveals how the architectural profession has been too compliant in accommodating the private sector’s rush to maximize profits and the public sectors to minimize spending to the detriment of human well-being and environmental degradation⁴⁵.

Although little has seemed to change since Papanek’s book, many new practices have emerged that take a more critical, ethical, and responsible approach to design and architecture. The debates such as design as activism⁴⁶, ethics of aesthetics⁴⁷, ethics of care⁴⁸, feminist practices directed towards ecological well-being⁴⁹, and the special agency proj-

42 Papanek, *Design for the Real World*, 87.

43 Papanek, 252, 346.

44 Papanek, 343.

45 Thomas Fisher, ‘Architects Behaving Badly: Ignoring Environmental Behavior Research’, *Harvard Design Magazine* 21 1 (2004): 1–3.

46 Bryan Bell and Katie Wakeford, eds., *Expanding Architecture: Design as Activism* (New York: Metropolis Books, 2008); Craig L Wilkins and Dan Pitera, *Activist Architecture* (Detroit: Detroit Collaborative Design Center, University of Detroit Mercy School of Architecture, 2015); Architecture for Humanity (Organization), ed., *Design like You Give a Damn: Architectural Responses to Humanitarian Crises* (New York, NY: Metropolis Books, 2006); Alastair Fuad-Luke, *Design Activism: Beautiful Strangeness for a Sustainable World* (London ; Sterling, VA: Earthscan,

47 Félix Guattari, *Chaosmosis: An Ethico-Aesthetic Paradigm* (Bloomington: Indiana University Press, 1995).

48 Angelika Fitz, Elke Krasny, and Architektur Zentrum Wien, eds., *Critical Care: Architecture and Urbanism for a Broken Planet* (Vienna [Austria] : Cambridge, MA: Architekturzentrum Wien ; MIT Press, 2019). ; María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds*, *Posthumanities* 41 (Minneapolis: University of Minnesota Press, 2017).

49 Some examples of these practices can be MATRIX, MUF, Mycket Collective, Arkilab and others.

ect⁵⁰ are just a few examples of emerging fields that show concern about these topics. Although not yet mainstream, these fields have promoted research and practices that can contribute to the discussion of responsibility and promote a new and needed architectural culture. A common view between these fields, is that sustainability is intersectional, lying on the relationship between social and environmental issues.

Aligned with this position, a core insight that comes out of RA is that sustainable behavior is a result of people's emotional capacity to deal with several intersecting psycho-social challenges people face to practice sustainable architecture, across diverse contexts and individual experiences. As an framework, RA views elements of worldviews, values, emotional capacity, ethics, responsibility power relations, and social structures -among others- as interrelated and mutually shaping one another. Therefore, RA is a way of understanding the complexity of sustainable behavior in architecture and is a theoretical tool that uses relational approaches to engage people's emotional capacity to help them better deal with the psycho-social challenges to practice sustainable architecture.

1.5.1 Towards a collective responsible architectural culture (milieu)

When searching for a responsible architectural culture, it is crucial to discuss the importance of collective worldviews and collective actions to sustainable behavior. Recognizing that we live in a globalized, complex, and interconnected world, where the relationship between communities distant from each other is no longer optional, and issues of environmental ethics surpass spatial and temporal reach⁵¹, therefore RA in this dissertation is also concerned with finding common ground for architects to deal with ethical issues related to the environment and sustainability, proposing that the architectural field develops a common responsible world view.

In her book *The Concept of Milieu in Environmental Ethics*⁵² Droz introduces the concept of milieu⁵³ to describe how we behave and perceive our surroundings as a web of culturally, historically, and geographically situated meanings, values, and projects. She argues that this milieu is what connects us as individuals with our communities, past and future history, and the natural world, providing us with a common ground for global environmental ethics. Milieus are not fixed, resulting from a globally interconnected

50 <https://www.spatialagency.net/about/>

51 Droz, *The Concept of Milieu in Environmental Ethics*, 156.

52 Droz, *The Concept of Milieu in Environmental Ethics*.

53 According to Merriam-Webster dictionary, the word milieu comes from old French mi ("middle") and lieu ("place"). Generally, it refers to people, physical and social conditions and events that composes an environment in which someone acts or lives. It can also be understood as the surrounding culture to which an individual belongs.

web of relationships and dynamic networks, they undergo continuous change and are influenced by phenomenological agents, historical processes, interactions between generations, people, more-than-human⁵⁴ beings, and the natural environment⁵⁵. Droz argues “...the fact that our actions can be interpreted in ways different from what we intended to do and the fact that they are importantly guided and limited by the social structure we are living in entail that moral responsibility cannot be reduced to the isolated actions at the individual level. We have also, as groups of individuals, a responsibility about what “we” can and should do together to improve the social structure and the milieu.”⁵⁶

If we attempt to change how we think and behave without changing the social reality in which we are embedded, our efforts are likely to be unsustainable. Because we are part of a connected network of relationships, structures, practices, and institutions, responsibility concerns not only what one individual can and should do, but also what we can do together⁵⁷. For example, it is important to take into consideration the designers’ agency and behavior in the design process because the responsibility for change belongs to both designers and their users⁵⁸, where designers have to be aware of how their own processes and responsibilities permeate the responsibilities of others. Therefore, social change requires contestation and organization, and it is always permeating the individual and collective change. But one must be careful when addressing issues of collective responsibility. Droz warns that assigning collective responsibility to a group without accounting for differences among group members can disregard internal dynamics of oppression, create unfairness, increase resentment, create dilution of responsibility and may allow the individual’s perpetrators to get away without being held personally responsible⁵⁹.

54 More-than-human is a concept that challenges the traditional human-nature duality and expands the realm of understanding to include the interconnected networks of all beings residing on Earth, not just humans. It recognizes all Earth’s inhabitants, including non-human entities, as significant social actors. This post-anthropocentric perspective addresses overlooked aspects in humanities and social sciences, spotlighting climate injustices and other inequalities. It highlights the interconnectedness and complexities among all species and beings, advocating for a broader, holistic understanding of our shared world. See: María Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds*, *Posthumanities* 41 (Minneapolis: University of Minnesota Press, 2017).

55 Layna Droz, ‘Distribution of Responsibility for Climate Change within the Milieu’, *Philosophies* 6, no. 3 (28 July 2021): 62.

56 Droz, *The Concept of Milieu in Environmental Ethics*, 65.

57 Sally Haslanger, ‘Distinguished Lecture: Social Structure, Narrative and Explanation’, *Canadian Journal of Philosophy* 45, no. 1 (2015): 1–15.

58 Niedderer, Kristina, Geke Ludden, Stephen Clune, Dan Lockton, James Mackrill, Andrew Morris, Rebecca Cain et al. “Design for behaviour change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors.” (2016).

59 Droz, *The Concept of Milieu in Environmental Ethics*, 137.

In this sense, RA mobilizes the concept of milieu as a way for architects to think about our relationship with the environment, root a conception of sustainability, anchor an account of responsibility and help us direct our common actions to tackle sustainability challenges. Reflecting on webs of worldviews, values, and projects in the field of architecture, or what we might call our present 'architectural milieu' offers a space to connect issues of the architect's responsibility to practice responsible architecture within the context of environmental and social challenges we currently face.

Therefore, this research prioritized communication rather than intervention, and aimed to balance a critical analysis while not imposing its own project and ideas onto others. In this sense, this dissertation advocates that to develop a responsible architecture practice, it requires practitioners to be in constant dialogue with people affecting and being affected by architecture in different contexts. By proposing RA as an analytic tool that can assume several forms to accommodate a range of environmental and social problems according to the context, this dissertation is focused on what RA does rather than what RA is.

1.6 Responsible Architecture as a relational tool

This study explores sustainable behavior related to responsibility (understood as response-ability), exploring dilemmas between people's intentions to act and their ability to act. As will be explored in chapter 3, people's intentions are formed by their worldviews and values, while people's emotional states and their situational factors (psycho-social issues) mediate people's ability to connect their worldviews and values to their behavior. Chapter 3 will show how the interaction between people's psychological states and their social structure can help encourage sustainable behavior when positive (i.e., feeling connected, having a sense of purpose) or decrease if negative (i.e., fear or anxiety). Therefore, even when architects have 'good intentions', our ability to respond might be compromised by these psycho-social dilemmas.

To explore the role of worldviews, values, and psycho-social dilemmas to sustainable behavior, this study used a relational approach to untangle the relationship between these dimensions. This study understands that the interactions between behavior dimensions are complex, nonlinear, co-emerging, and interconnected. Therefore, instead of focusing on measuring, nudging, persuading, or 'designing behavior', a relational approach focuses on emotionally attuning, revealing, exploring, and untangling the complexities of sustainable behavior.

The relational approach used in this study helps to investigate how people translate their big ideas, what is important to them, into action, and the challenges in this translation. Arguing that to move from a sustainable architecture that exists mostly only in theory or concept to one that is tangible in behavior and praxis, we need to look more deeply into responsibility as a set of responses (based on the worldviews and values behind our intentions) and abilities (mediated by our psycho-social dilemmas) to deal with the sustainability issues of our field. In this sense, this study will untangle the relationship between people's responses and abilities.

A relational approach to sustainable behavior will show how focusing on the relationship between these factors can help us identify the dilemmas to practice responsible architecture and possible ways to move beyond them. Also, focusing on untangling the psycho-social dilemmas that we face in the architectural field can be a helpful tool to give us creative insights on navigating these dilemmas. Untangling dilemmas can empower people to respond to these challenges while taking responsibility for changing our profession to more ethical and sustainable practices.

But the topic of responsibility can be uncomfortable because it implies accountability, and people might use different tactics to avoid it⁶⁰. Engaging in a responsible architecture practice will inevitably face psychological dilemmas, such as cognitive dissonance, avoidance, rationalization, and others that will be explored in detail in Chapter 3. Nevertheless, these psychological complications and constraints are the link between what people say and do, their concerns and reparation, and addressing them is a pathway for creativity and engagement⁶¹.

This research argues that emotional attunement is a form of reparation because it helps people to deal with cognitive dissonance, by exploring people's personal stories, emotions, and psycho-social dilemmas and addressing the emotional roots can help them reconnect with their own worldview, and values with their practice. Therefore, this dissertation will investigate how sustainable behavior in architecture can be achieved by repairing the broken link between people's personal worldview and values and their professional practice with emotional attunement. Therefore, instead of focusing on how to 'remove the barriers' to sustainable behavior, this study sees emotional attunement as a form of reparation, focusing on what are the issues at hand and how responsible architecture can propose creative ways to address them.

60 Droz, 171.

61 Lertzman, *Environmental Melancholia*, 126.

For emotional attunement to happen, it is important to create intentional contexts in which change can take place. Facilitating a supportive and non-judgmental space focused on dialogue that invites creative participation, that addresses people's anxieties and dilemmas while focusing on solutions, is needed for creative and reparative energies to emerge⁶². Therefore, when discussing reparative actions in this research, being it during interviews or participatory design experiments, I focused on investigating and promoting engagement through emotional attunement, building trust, and providing a supportive context for critical reflection and creativity to emerge.

Grounded in the belief that relationships catalyze change, the investigative methods employed in this dissertation adopt a relational approach to intentionally craft contexts that facilitate spaces for dialogue and creative participation in psycho-social dilemmas, with a focus on reparative solutions. Meaning that the methods and modes of engagement utilized in this dissertation are based on emotional attunement, trust-building, and providing a supportive context for critical reflection and creativity to flourish. In this regard, responsible sustainable behavior in architecture is the product of changes brought about by numerous individuals relating, where relationships catalyze change.

Therefore, Responsible Architecture, as proposed in this study, recommends a relational approach to engaging with people's worldviews, values, and psycho-social dilemmas, while debating issues on responsibility in our profession to structure the conversation. In this sense, RA uses relational approaches and emotional attunement to engage with people's current worldviews and value systems to facilitate personal and cultural transitions towards a responsible practice.

1.7 Research aims

This dissertation explores sustainable behavior by developing the concept of responsible architecture and its potentials to boost architectural behavior change toward more sustainable practices. It asks the question, '**How can relational approaches to sustainable behavior be integrated into the architectural discipline to develop responsible architecture practices?**' and can be divided into the following objectives:

- To further develop the research link between sustainable behavior studies and architecture
- To further develop the concept of responsible architecture
- To promote sustainable behavior in architectural practice
- To explore new methods to engage with sustainability in architecture

62 Lertzman, 150.

1.8 Methodological framework

The relational-centered approach proposed in this dissertation emphasizes people's responsibility and emotional attunement, focusing on the holistic and complex relations between worldviews, values, and psycho-social dilemmas in architecture. To explore this relational approach, this dissertation uses a multidisciplinary lens that borrows methods from several fields that have explored sustainable behavior differently beyond the techno-centered approach. These fields include environmental psychology, environmental education, and critical environmental studies. This study uses a bricolage-narrative approach to weave epistemological and methodological propositions from these diverse fields together.

Bricolage is an explorative and qualitative methodology proposed by Denzin and Lincoln⁶³, focused on transdisciplinary and mixed-method processes. In this sense, sustainable behavior will be explored through this study by using several methods of data generation and experimentation, including a literature review to build a critical theoretical framework (chapters 2 and 3), Interviews with professionals in sustainable architecture in Denmark (chapter 5), participatory design workshops in Aarhus, Denmark (chapter 6 and 7) and explorations on sustainable architecture education in Portugal (chapter 8). A detailed explanation of the methodological framework will be presented in chapter 4.

This study investigated research issues in several scales: the literature review and research activities in Portugal with international students tied research issues to a global context, the interviews dug into issues in the Danish building industry, and the participatory design workshops looked at issues on a neighborhood scale. The goal of this dissertation is to help advance the theory and practice of sustainable architecture, contributing to architectural research and architectural practice in the sustainability field. While this research focuses on academics, professionals, and students of architecture, the findings could also be helpful for other professionals and anyone interested in sustainable architecture, design, and construction.

1.9 Reader's guide to the monograph

This dissertation's structure unfolds in six parts, as shown in figure 3. The structure includes an introduction, an critical literature review, a section detailing the methodology and methods, and the research experiments, followed by the discussion and conclusion. Chapter 4 encapsulates not only the overarching methodology of the research but also

⁶³ Norman K. Denzin and Yvonna S. Lincoln, *The SAGE Handbook of Qualitative Research* (SAGE, 2011).

the methods employed for all the forthcoming experiment chapters. As a result, it is recommended that the reader first explores each subsection of this chapter that aligns with the experiment before reading the corresponding experiment chapter, which will be concentrated solely on the results of data analysis and discussion. The transcriptions derived from the data collection process, graphic outcomes, and materials from the workshops are available in the appendix in Volume 2.

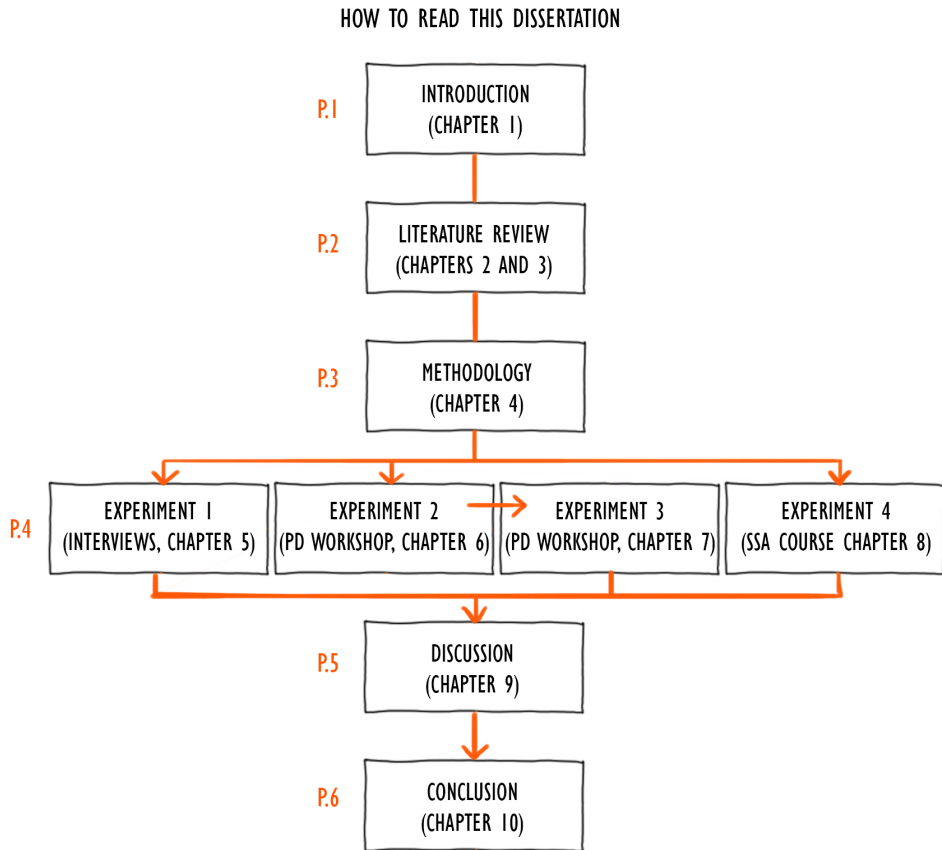


Figure 3: Dissertation structure and reader’s guide.

Part 1 - Chapter 1: INTRODUCTION (Research Questions and Context). This chapter introduces the context, the research questions, and the aims that address the primary complex issue of sustainable behavior in responsible architecture. It presents the main structure of inquiry of Responsible Architecture (RA) both as a critical framework and as a relational tool. This section establishes the research scope and limitations.

Part 2 - Chapters 2 and 3: Literature Review. These chapters form a critical theoretical framework by examining sustainable behavior scholarship from various fields. It challenges a linear and rational approach to sustainable behavior in architecture and design, focusing on control and technology to address sustainability issues, and introduces other dimensions or complexities of behavior that can influence sustainable behavior, particularly worldviews, values, emotional, and psychological dilemmas of human experience.

Part 3 - Chapter 4: Methodology and Methods. This chapter illuminates the multidisciplinary methodology of bricolage utilized in this research, as well as the diverse methods of inquiry and data collection used for each research experiment.

Part 4 - Chapters 5, 6, 7, and 8: Research Experiments. These chapters present a multi-method investigation of the research questions in various settings. They include interviews with professionals in the architectural sustainability field, participatory design workshops within the architectural studio, and research conducted within post-graduate architectural educational settings.

Part 5- Chapter 9: Discussion of Research Experiments. This chapter discusses the main findings and overarching themes across experiments. It discusses the main psycho-social challenges architectural professionals and students encounter when practicing responsible architecture in our current context. It presents relational approaches to practice RA as possible strategies to deal with these challenges. The research implications for architectural education and participatory design are also discussed.

Part 6 - Chapter 10: Conclusion. This chapter presents the main learnings of sustainable behavior for Responsible Architecture within the context of this dissertation. It discusses the shortcomings of the research and its contributions to the field of study. A summary of the main findings and the key themes of RA are presented as a critical framework and relational tool. Possible directions for future research are also indicated.



Picture from the Xcinema event, model making in process. Image courtesy by Useful Art for Communities (UAC).

2. Design for Sustainable Behavior



2.1 Introduction

In the latter half of the 1960s, researchers in the West started to look more specifically at sustainable human behavior, following the recognition of the field of environmental psychology (as well as environmental crisis, the emergence of deep ecology¹, and other sustainability fields). In that context, studies that examined the correlation between human behavior and the natural or built environment began to be centered as researchers sought to address complex environmental problems. Since then, behavioral studies have only grown in size and complexity.

Psychological studies on human behavior have been used not only by environmental psychologists, but also by a vast range of fields, including computer science, biology, anthropology, behavioral economics, education, psychology, sociology, design, and others. Each of these fields holds a specific worldview that influences how they appropriate behavioral studies to develop behavioral interventions in their practice (e.g., economics applies insights into consumer behavior to boost consumption²). At the same time, environmental psychology focuses on a multidisciplinary perspective to solve environmental issues while pursuing human well-being³. In the context of addressing climate change, the theme of sustainable behavior has been growing, and its goal is to try to predict what is needed in order to engage people to behave more sustainably⁴.

As discussed in the introduction, while diverse fields have been using findings from environmental behavior research for quite a while, the field of architecture has largely ignored the body of knowledge about environmental behavior. Drawing on insights about Design for Sustainable Behavior (DfSB) produced in the field of product design, architecture's close neighbor, this chapter will explore methods and other lessons that can address sustainable behavior in architecture. It will also be attentive to the risks of importing methods and worldviews from other fields into architectural practice related to ethical and methodological implications. This chapter will present a critical literature

1 an environmental philosophy and social movement that regards human life as just one of many equal components of a global ecosystem. It proposes a shift from the anthropocentric (human-centred) worldview to a more ecocentric or biocentric perspective, emphasizing the inherent worth of all living beings. It advocates for societal change in order to reduce human impact on the environment, emphasizing sustainable living, conservation, and a profound respect for the interrelatedness of all life forms.

2 Arndt, Jamie, Sheldon Solomon, Tim Kasser, and Kennon M. Sheldon. "The urge to splurge: A terror management account of materialism and consumer behavior." *Journal of Consumer Psychology* 14, no. 3 (2004): 198-212.

3 Gifford, Robert, Linda Steg, and Joseph P. Reser. *Environmental psychology*. Wiley Blackwell, 2011.

4 Sörqvist, Patrik. "Grand challenges in environmental psychology." *Frontiers in Psychology* (2016): 583.

review on design-behavioral studies, and address potential issues that we should pay attention to when thinking through the challenges of sustainable behavior in architecture.

2.2 Issues on Design for sustainable behavior literature

Most studies in the field of DfSB focus on shaping people's behavior by targeting their consumption, health, well-being, safety, crime prevention, and other ending results of using services or products⁵. Predominantly, the field views people as users/consumers and designers as decision-makers who determine which behavior should change and how. DfSB draws its worldviews and paradigms from the fields of social and cognitive psychology, as well as decision research and behavioral economics.

While it recognizes several dimensions that inform individual actions (including attitudes, external contexts, personal capabilities, habits, routines, symbolic functions and social values), it mainly focuses on behavior change according to people's individual cognition and how to help people change their habits. In this perspective, the choice of change and responsibility to do so lies within the individual.

To understand in detail the approach and issues behind the DfSB literature, I divided the literature into six dimensions that are most predominant in the discussions in the field (figure 1). The figure below shows these six dimensions in spectrums of focus, and a few studies were highlighted as examples of where several approaches of DfSB are placed. The spectrums map the following: who is in power in design decision-making, who is in the power of behavioral control, when does behavior change happen, what is the focus of behavior change, how behavior is understood, and how to engage with behavior change.

⁵ Niedderer, Kristina, Stephen Clune, and Geke Ludden, eds. *Design for Behaviour Change: Theories and practices of designing for change*. Routledge, 2017.

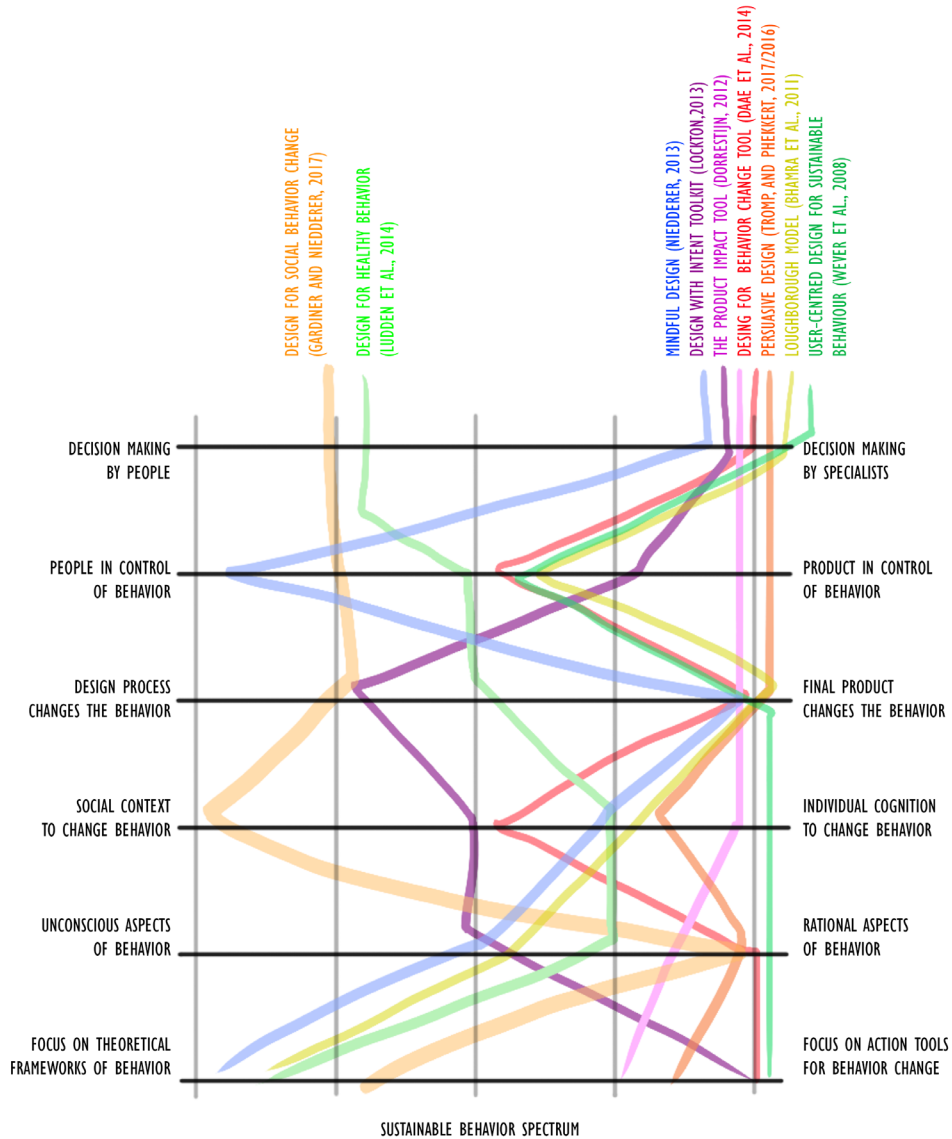


Figure 1: Spectrum of sustainable behavior and main issues in DfSB literature review

2.2.1 Who is in power in design decision-making?

Issues of power in decision-making are often discussed in the literature, and as it becomes clear from the diagram, most approaches place the power in decision-making about behavior change in the hands of the designer. The dominant mentality of DfSB is not necessarily to design something with users to facilitate their behavior but to design

behavior itself⁶. In these approaches, power is in the hands of technology, automatic processes related to persuasive technology, and cognitive nudges, focusing on the product's agency to change consumption⁷. This mentality is based on a worldview that human behavior is rational, and if people have information and get the right cues, they will behave better, and if they don't have information, technology will just direct them to the 'right path.'

Tromp & Hekkert's 'hidden influences of design'⁸ provides the user with the feeling that they are in control of their own behavior, when it is actually the designer who is programming it. In what they call 'moderately forceful' design, people experience being compelled to change their behavior while still feeling autonomous in doing it. When Tromp & Hekkert state that "we call for designers who dare to critically examine the environment and propose solutions that fundamentally change it. In fact, we argue that this is the only route to a truly social, sustainable future in the long run"⁹ they are reinforcing the idea that the designer is the one who knows what is "right" or "wrong," and it is their designs that hold the ultimate solution to a sustainable future. Although these forceful strategies might be understandable for certain situations (such as design interventions related to road safety, for example, which is addressed in their paper), there is a risk that similar strategies can be used in a coercive way disguised as 'do-gooders'.

The 'hidden influences of design' are often referred to as 'nudge'. The act of 'nudging' proposed by Thaler and Sustein¹⁰ refers to the hidden pushes design can offer to 'influence people secretly towards behavior change to a wealthier, healthier, and happier life'. But while it is important that design products are mediated by specialists, when all the power of decision-making is in the hands of the designer alone, it raises issues related to ethics and paternalistic worldviews¹¹. Who gets to decide which behaviors are sustainable or not? and which ones should change and how? These are important questions that have been largely neglected by most of the DfSB approaches that take for granted that the designers should be the ones making these decisions. People are seen as 'users' and

6 Tromp, Nynke, and Paul Hekkert. "Designing behaviour." In *Design and Anthropology*, pp. 209-222. Routledge, 2016.

7 Bhamra, Tracy, Debra Lilley, and Tang Tang. "Design for sustainable behaviour: Using products to change consumer behaviour." *The Design Journal* 14, no. 4 (2011): 427-445.

8 Tromp, Nynke, and Paul Hekkert. "12 The hidden influence of design." *Design for Behaviour Change: Theories and practices of designing for change* (2017), 148.

9 Tromp, Nynke, and Paul Hekkert. "12 The hidden influence of design." *Design for Behaviour Change: Theories and practices of designing for change* (2017), 148.

10 Leonard, Thomas C. "Richard H. Thaler, Cass R. Sunstein, Nudge: Improving decisions about health, wealth, and happiness." (2008): 356-360.

11 Mitchell, Gregory. "Libertarian paternalism is an oxymoron." *Nw. UL Rev.* 99 (2004): 1245.

‘consumers’ and usually don’t have an active voice when it comes to decision-making or sometimes, even consent related to interventions. The underlying idea of the ‘hidden influences of design’ approach is that designers have the power to be moral and make moral choices, and users are immoral people who have to be changed¹².

The design for behavior change tool¹³ takes a slightly alternative approach. This tool is a card deck to aid designers in specifying techniques for influencing behavior, inviting designers to ask: how do users perceive the product’s power control? Should the product or user be in power to make the decision on behavior performance? How might the user wish to behave? But while it invites designers to ask themselves these questions, it does not propose that they should engage with people, leaving room for assumptions about people and final decisions to designers alone. Thus, although some of DfSB approaches acknowledge that we need to understand the user to make effective design solutions¹⁴, in most approaches the user has no power of choice, and participation is not discussed. The understanding of people is merely focused on learning how to influence their behavior without them knowing it is happening. This approach can be considered forceful in the way the design is made, using things such as coercion and even a sense of shame to change people’s behavior towards what the designers decide is responsible behavior. Later in chapter 3, I will explore studies in psychology that have been showing that this type of forceful approach can actually be counterproductive to sustainable behavior.

2.2.2 Who is in power of behaviour control?

Is the product of design in control or are people in control? Do people have the power to open the windows, or is it an automated system? Usually, this is well discussed in the literature but treated as “power of decision making”, making it unclear whether it is a issue about decision making before or after the design is ready. It is important to make this clear separation, because it raises issues related to locus of control (people’s perceived degree of control) and ethics (in which people choose to comply or not with what the design is demanding from them).

12 Jelsma, Jaap. “Designing ‘moralized’ products.” In *User behavior and technology development*, pp. 221-231. Springer, Dordrecht, 2006.

13 Daae, Johannes Zachrisson, and Casper Boks. “Dimensions of behaviour change.” *Journal of Design Research* 12, no. 3 (2014): 145-172.

14 Tromp, Nynke, Paul Hekkert, and Peter-Paul Verbeek. “Design for socially responsible behavior: a classification of influence based on intended user experience.” *Design issues* 27, no. 3 (2011): 3-19.

The ‘axis of influence’¹⁵ and the Loughborough model¹⁶ for industrial design show that the product control ranges between feedback, steering and persuasive methods. Where products give users feedback about the positive or negative costs of their behavior, mainly targeting energy saving regarding heating or water resources. Users maintain control over their actions and decision making, but are informed by the product. Steering is when products encourage or discourage certain behaviors by giving a ‘reward or punishment’ and persuasive technology uses coercive strategies to ensure change and ultimately negates the user decision-making processes. In this sense, designers can employ obtrusive strategies to disrupt automatic and routinized thought processes and direct behavior or use feedback only when the behavior is more reflective and less automatic. Although in this model, the authors argue that the designer should consider ethical issues, such as democratic decision making, values and morals of stakeholders, as well as the designer’s intent and moral responsibility for the intervention, it is unclear how it applies in practice since they don’t explain if and how to address these issues during the design development.

It is true that making things easier facilitates behavior to occur and that having the desired behavior be as automatic as possible can be helpful in freeing up people’s time that would otherwise be spent thinking through their actions and choices. But the paradox in that is that it might take responsibility out of people’s hands without their consent or acknowledgment. This approach also sees behavior as a linear input-output and never changing system, which might be too simplistic. And as research has shown, persuasive design and tools that are highly dependent on technology and less on people’s decision making can create frustration, a sense of injustice¹⁷, and, therefore, might even impair lasting sustainable behavior.

One contrasting approach in the literature review is the Design for healthy behavior strategies from Ludden and colleagues¹⁸, which argues that especially in the first stages of a design process, people’s needs and desires may conflict with the designer’s intentions. So the designers can help people make better choices, but those should fit their personal situation, preferences, and interventions should empower people to create their own

15 Lilley, Debra. “Design for sustainable behaviour: strategies and perceptions.” *Design studies* 30, no. 6 (2009): 704-720.

16 Bhamra, Tracy, Debra Lilley, and Tang Tang. “Design for sustainable behaviour: Using products to change consumer behaviour.” *The Design Journal* 14, no. 4 (2011): 427-445.

17 Olsson, David. “From Technocracy to Democracy: Ways to Promote Democratic Engagement for Just Climate Change Adaptation and Resilience Building.” *Sustainability* 14, no. 3 (2022): 1433.

18 Ludden, Geke Dina Simone, and Paul Hekkert. “Design for healthy behavior: design interventions and stages of change.” In *9th International Conference on Design and Emotion 2014: The Colors of Care*, pp. 482-488. Ediciones Uniandes, 2014.

action plans. They advocate that design should create opportunities for people to change their behavior through what they call ‘social liberation’ as opposed to technological dependency, otherwise, the gap between design proposal and how it is actually used might lead to unsuccessful projects. In the paper “Buildings don’t use energy: people do”¹⁹, Janda explains how this technological dependency actually does not impact people’s sustainable behavior in the long run, and that other strategies, such as involvement, and education are needed. Therefore, architecture can be used as means of ‘social liberation’ through inclusive and democratic design processes such as participatory design, where people could have the autonomy to choose how their built environment could affect their behavior, and to which behaviors they want to comply or not.

2.2.3 When does behavior change happen?

Within the predominant worldview where designers see people as users and consumers, sustainable behavior interventions usually start when the product is up and running. The design process as a means to change behavior is not much discussed in the literature. The few approaches that take the design process into consideration are those that intersect with social or health sciences. Even when words such as ‘co-design’ are used²⁰, the user involvement in the design process comes after information and decision-making about the desirable behavior are already defined by the designer. People’s involvement is focused on giving designers clues about their interaction with the product in order to improve triggers on the chosen behavior.

Only two approaches take in consideration behavior change during the design process. ‘The design with intent’²¹ toolkit and the ‘design for social behavior change’²². The design with intent toolkit was developed as an educational tool for designers, focusing on brainstorming for the design process, inviting the designers to think about their own behavior in determinate situations. Although the focus on the process does not necessarily include other stakeholders, it proposes an important idea that designers are users themselves and are also part of the process and the body of stakeholders, and thus are part of the problem of what needs to change. This idea invites not only the users to change

19 Janda, Kathryn B. “Buildings don’t use energy: people do.” *Architectural science review* 54, no. 1 (2011): 15-22.

20 Wever, Renee, Jasper Van Kuijk, and Casper Boks. “User-centred design for sustainable behaviour.” *International journal of sustainable engineering* 1, no. 1 (2008): 9-20.

21 Lockton, Daniel. “Design with intent: a design pattern toolkit for environmental and social behaviour change.” PhD diss., Brunel University School of Engineering and Design PhD Theses, 2013.

22 Edward Gardiner and Kristina Niedderer, “Design for Social Behaviour Change,” ed. Kristina Niedderer, Stephen Clune, and Geke Ludden (Taylor & Francis, 2017)

their behavior in responsible ways, but also the designers as it sees them as people, not only as designers.

The design for social behavior change advocates for stakeholder involvement, and participation, where decision-making is made collectively and the behavior change can start as part of this process. Aligned with this view, Janda proposes the idea of using building as pedagogy, where architects need to work with users to deliver comprehensive energy reduction in processes of public education on building literacy²³. Focusing on the context is important because sustainability is a subjective goal that can be interpreted in a particular context through a dialogue with the context-specific stakeholders presents a meaningful and promising way to pursue sustainability.²⁴ This approach is closer to the relational approach that will be proposed in chapter 3.

Although the designer's behavior itself and the design process are rarely discussed in the literature on DfSB, thinking about the designers' agency and behavior is crucial in the design process because the responsibility for change belongs to both designers and users²⁵.

2.2.4 What is the focus of behavior change?

Most strategies focus on cognition to shape behavior according to individual capacity, brain, and perception, while few focus on how behavior is impacted and influenced by social cues and social power structures. Although approaches that seek a middle ground between the agencies have been growing, the majority of the current theories and toolkits put a higher emphasis on individual-cognitive models of behavior change, while very few models address the contextual aspect²⁶. Therefore, despite an emerging recognition of the social significance and complexity of design in sustainability, the so-

23 Janda, Kathryn B. "Buildings don't use energy: people do." *Architectural science review* 54, no. 1 (2011): 15-22.

24 Mathur, Vivek Narain, Andrew DF Price, and Simon Austin. "Conceptualizing stakeholder engagement in the context of sustainability and its assessment." *Construction Management and Economics* 26, no. 6 (2008): 601-609.

25 Niedderer, Kristina, Geke Ludden, Stephen Clune, Dan Lockton, James Mackrill, Andrew Morris, Rebecca Cain et al. "Design for behaviour change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors." (2016).

26 Niedderer, Kristina, Geke Ludden, Stephen Clune, Dan Lockton, James Mackrill, Andrew Morris, Rebecca Cain et al. "Design for behaviour change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors." (2016).

cial potential of it remains largely ignored and under-researched²⁷. Moezzi and Janda²⁸ call attention to the ways most people-centered work on sustainable building energy consumption is based on a mechanistic and often unrealistic view of people and their energy use, focusing on sustainable behavior as a fixed set of things and energy services. In their view, this omits an important part of sustainable behavior, which they call ‘social processes’, which includes things such as social contexts, professional cultures, habits, activities and practices behind energy use. Therefore, focusing on cognition only without considering social factors might not be effective, and approaches to sustainable behavior need to go beyond this binary to achieve a comprehensive and effective solution.

Furthermore, by focusing on individual cognitions to the detriment of the broader social context, designers can put responsibilities onto individuals and their rational decision-making without addressing the social and collective responsibility of institutions, businesses and governments. The field of environmental justice for example, recognizes the uneven political and economic power to make significant environmental changes²⁹. And as explained in the introduction, failing to recognize that the collective responsibility in environmental issues can lead us to the triangle of inaction and dilution of responsibility. Also, as will be explained in the next chapter, rationality and cognition can be impaired by psychological constraints. Therefore, betting on people’s rationality to change their attitudes and lifestyles might be ineffective.

Another important issue to consider is the attention to change behavior through design that doesn’t question the current social context. Gardiner and Niedderer argue that current design approaches to social behavior change sometimes seem to ignore or reinforce existing social behaviors rather than question them, and consider how to utilize or improve them³⁰. This aligns with the idea that focusing on the design process might be an important and overlooked area where involving people and questioning the current social dynamics can have a potential for individual and collective behavior change and a more democratic distribution of responsibility.

2.2.5 How is behavior understood?

27 Chick, Anne. “Design for social innovation: Emerging principles and approaches.” *Iridescent* 2, no. 1 (2012): 78-90.

28 Moezzi, Mithra, and Kathryn B. Janda. “From “if only” to “social potential” in schemes to reduce building energy use.” *Energy Research & Social Science* 1 (2014): 30-40.

29 Redclift, M. R., and Michael Redclift. *Social theory and the global environment*. Edited by Michael R. Redclift, and Ted Benton. London: Routledge, 1994.

30 Gardiner, E., & Niedderer, K. (2017). *Design for social behaviour change*.

Similar to the issue of cognition, most approaches to understanding behavior change view behavior as a result of rational processes. Even when some models focus on unconscious processes such as feelings, it is mostly from a hedonic perspective of comfort, pleasure and desire for privacy³¹, where these can be rationalized and quantified, such as the degree of comfort related to room temperature. As shown in the diagram, most DfSB approaches lack focus on how unconscious processes and emotional dilemmas highly impact sustainable behavior.

One approach that takes unconscious processes into consideration is mindful design³², where design disrupts people's automatic processes by triggering their emotions, helping people to be more aware of other available options to behave. For example, in the case of traffic junctions with a very high accident rate, traffic planners decided to remove all the signage around the junction, which improved safety significantly³³. This experiment suggested that the removal of the symbolic rules that guide traffic triggered an increased awareness because the expected guidance is missing. While this approach focuses on creating products that trigger these unconscious processes, it suggests that people have the full cognitive and emotional capacity to understand the meaning of design cues and adjust behavior accordingly. While that might work for some interventions (such as road safety), sustainable behavior poses a more complex challenge related to human emotions.

Maiteny³⁴ states that the behavior people perform to achieve psychological and emotional well-being inevitably has impacts on ecological and social processes and is part of the inner experiential dimension of human life, which is usually neglected even by environmental policy and social research. Similarly, sustainable behavior in design and architecture research seems to be neglecting these internal experiential dimensions of human life. These unspoken dimensions, and more precisely how they are negotiated socially and psychically, inform our choices from political engagement to what products we buy.

31 Lilley, Debra. "Design for sustainable behaviour: strategies and perceptions." *Design studies* 30, no. 6 (2009): 704-720.

32 Niederderer, Kristina. "Mindful design as a driver for social behaviour change." In *Proceedings of the IASDR Conference 2013*. 2013.

33 Webster, Chris. "Property rights, public space and urban design." *The Town planning review* (2007): 81-101.

34 Maiteny, Paul. "The psychodynamics of meaning and action for a sustainable future." *Futures* 32, no. 3-4 (2000): 339-360.

Furthermore, unconscious and unspoken dimensions of sustainable behavior inform people's choices, from consumer behavior to political engagement,³⁵ having profound consequences in action. Similarly, Ward³⁶ proposes that people's basic emotional needs are another half of any holistic definition of human needs, and attention to these unconscious processes needs to be recognized for affective change.

In chapter 3, I will explain more in detail how environmental psychology shows us that people's sustainable behavior is highly impacted by their anxieties, contradictions, meaning-making, affects and complicated ways in which people engage with environmental challenges³⁷.

2.2.6 How to engage with behavior change?

DfSB theories focus on creating theoretical frames in which behavior interventions can be implemented directly from theory to product design (theories to practically oriented guidelines). On the other hand, some approaches focus on creating specific guidelines and toolkits that can be used by designers even without the theoretical knowledge to promote application more directly. The issue with these extremes is that theory can hardly be directly translated to practice without facing challenges, and using guidelines without theoretical considerations can become a prescribed practice with a lack of critical reflection.

In a study conducted with professionals from the field of sustainable innovation in the public and private sectors, Niedderer and colleagues³⁸ evidenced how professionals highly knowledgeable about DfSB strategies didn't necessarily apply their knowledge to inform their innovation. The study shows that some of the reasons for this were that professionals had a lack of accessibility to DfSB theories leading to challenges concerning the terms and language used in the field. They suggested that projects should try to address the gap between theory and practice and build collaborations between professionals and academic researchers to learn from each other.

35 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

36 Ward, Ivan. "Ecological Madness: A Freud Museum Conference, December 1992." *British Journal of Psychotherapy* 10, no. 2 (1993): 178-187.

37 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

38 Niedderer, Kristina, Geke Ludden, Stephen Clune, Dan Lockton, James Mackrill, Andrew Morris, Rebecca Cain et al. "Design for behaviour change as a driver for sustainable innovation: Challenges and opportunities for implementation in the private and public sectors." (2016).

Acknowledging this issue, this research will focus on a praxis approach to connect theory and practical applications of behavior change. A Praxis approach to behavior change means that strategies should connect learning and change to real-life situations, focusing on critical thinking, and critical awareness while enhancing an ethical, self-aware, responsive and accountable action³⁹. Within praxis, the heart of all change lies in the way we process experience, with critical reflection of our experience. Where learning is a cycle starts from people's own experiences, critical reflection about these experiences, and action-taking. Real-life experiences that help people connect emotionally and personally with environmental issues and reflect upon their own position and responsibility, becomes a concrete experience that can be used for reflection⁴⁰ on further action and so on.

2.3 Implications for architecture

While diverse fields have been using findings from environmental behavior research for quite a while, the architecture community has been largely ignoring this field. Similar to DfSB, the few studies there are on sustainable behavior-architecture, most focus on the behavior being mediated by technology, such as computer-human interaction for energy consumption^{41,42} and developing smart cities⁴³, focusing on efficiency, automation, sensor tracking systems, and persuasive technology. Just such as most approaches in DfSB, it reduces behavior to a single action, a symptom that can be measured and explained by single-sided personal decision making, ignoring the broader psycho-social implications for sustainable behavior. Rather than having a tool to direct people, researchers have been showing that lasting behavior change depends on many other psycho-social factors^{44,45}, including:

39 White, Jennifer. "Knowing, doing and being in context: A praxis-oriented approach to child and youth care." In *Child & Youth Care Forum*, vol. 36, no. 5, pp. 225-244. Springer US, 2007.

40 Kelly, Curtis. "David Kolb, the theory of experiential learning and ESL." *The Internet TESL Journal* 3, no. 9 (1997): 1-5.

41 R. S. Brewer, G. E. Lee and P. M. Johnson, "The Kukui Cup: A Dorm Energy Competition Focused on Sustainable Behavior Change and Energy Literacy," 2011 44th Hawaii International Conference on System Sciences, 2011, pp. 1-10.

42 Jahn, Marco, Tobias Schwartz, Jonathan Simon, and Marc Jentsch. "Energypulse: tracking sustainable behavior in office environments." In *Proceedings of the 2nd International Conference on Energy-Efficient Computing and Networking*, pp. 87-96. 2011.

43 Khansari, Nasrin, Ali Mostashari, and Mo Mansouri. "Impacting sustainable behavior and planning in smart city." *International journal of sustainable land Use and Urban planning* 1, no. 2 (2014).

44 Donovan, Robert. "Theoretical models of behaviour change." *The SAGE handbook of social marketing* (2011): 15-31.

45 Kwasnicka, Dominika, Stephan U. Dombrowski, Martin White, and Falko Sniehotta. "Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories." *Health psychology review* 10, no. 3 (2016): 277-296.

- People perceive themselves as capable of performing the behavior (locus of control)
- Positive attitude towards the behavior (benefits are higher than costs)
- Emotional reaction or expectation in performing the behavior is more positive than negative
- Behavior is congruent with people's identity, beliefs and values
- Joy in engaging with the behavior and are satisfied with the outcomes
- Psychological and physical resources are plentiful (i.e. not being blocked by anxiety and economic constraints)
- Commitment and public intention to perform the behavior
- Skills and equipment necessary to perform a behavior
- Behavior is consistent with social roles and in line with relevant social changes

While there might be several reasons why architects haven't been engaging with sustainable behavior scholarship in a broader sense, this research focuses on untangling issues of responsibility to frame this challenge. One aspect of responsibility discussed in this dissertation is related to the ethical dimensions of sustainable behavior, but also about the ability to respond (response-ability) that might be blocked by psycho-social dilemmas.

Writer in architectural ethics and philosophy Thomas Fisher, points out that architects' investment in technological solutions while ignoring the broader dimension of environmental behavior research might be connected to architects' difficulty in dealing with the critique that comes from it. In his paper "Architects behaving badly: Ignoring environmental behavior research"⁴⁶ he points to the fact that environmental psychology reveals how the architectural profession has been too compliant in accommodating the private sector's rush to maximize profits and public sector's to minimize spending to the detriment of human well-being and environmental degradation, despite the field of environmental psychology showing that cutting costs associated with well being, quality of life, or the durability of buildings often creates a negative impact on human health and productivity, which translates directly into economic losses. And while many architects critique environmental psychology to state the obvious (health benefits from green space, large windows, and ventilations affecting work performance and satisfaction), a profit-oriented practice continues to design cities without green space and workplaces without proper windows. And while architects focus more on technical and aesthetical and not enough and ethical issues in architecture.

⁴⁶ Fisher, Thomas. "Architects behaving badly: Ignoring environmental behavior research." *Harvard Design Magazine* 21, no. 1 (2004): 1-3.

Fisher also points to another possible challenge that architects face when incorporating social sciences studies into their practice, which is related to a fear that design freedom and creativity will be hindered by data and science. Although understandable, it is a common misconception that pursuing a research-based approach based on social and psychological aspects is determinant while developing architecture, hindering architects' creativity⁴⁷. Not engaging with more complex issues of sustainable behavior might be related to a defense strategy against some anxiety architects might be experiencing in their practice. The next chapter will elucidate some psycho-social issues of why this disconnect might be happening, and will explain how feelings such as fears and anxiety can be a challenge for change.

2.4 Conclusion

This chapter discussed the technological worldviews and technical solutions to sustainable behavior that are predominant in the fields of design and their implications for the field of architecture. Influenced by a technological and economic worldview where products and technology are used to direct sustainable behavior, most approaches rely on creating feelings such as shame or punishment to persuade or nudge people to behave a certain way.

While these approaches might generate many products and 'solutions' that might give us a sense that we are doing something, it might also be masking more complex ways in which behavior change takes place. Technological approaches while not engaging with critical questions about the why, for whom, or by whom, also usually place the decision-making in the hands of the designer alone to decide how people should behave. This paternalistic mindset, besides having important ethical implications, might also rely on an incomplete understanding of human behavior. This approach can also make people feel patronized, left out of important conversations and decision-making, create division, and feel resigned. Not only does this raise ethical issues, it might also not be effective, because when we are trying to change or learn something new, anxiety, fear or shame can stop information from being integrated⁴⁸. Therefore, when thinking about engaging with sustainable behavior strategies, moving forward, architects can learn from the limitations of past endeavors in design to be attentive to the worldviews behind our approaches and their implications for practice. For example, issues of control and consent need to be critically thought about. Zerdichevsky and Neuenschwander pro-

47 Dayaratne, Ranjith. "Creating Places through Architecture: Can environment-behaviour research help?." *Asian Journal of Behavioural Studies* 1, no. 2 (2016): 1-12.

48 "Resistance to Learning: Overcoming the Desire Not to Know in Classroom Teaching - M. Alcorn - Google Books,"

posed a “golden rule” of persuasion as “the creators of a persuasive technology should never seek to persuade anyone of something they themselves would not consent to be persuaded of”⁴⁹. This statement raises an important question, how would designers/architects know if people consent to be persuaded to perform certain behaviors if they don’t consult with them?

Instead of focusing on sustainable behavior dependent on automated technologies and decided by the designer alone, we need a shift to focus on designing processes that engage with people and these broader issues needed to support lasting behavior change. Therefore, aligned with what was discussed before regarding issues of decision-making and control, a more comprehensive approach to sustainable behavior in architecture should start by focusing on the design process that involves people and the architect themselves as stakeholders (in which they are also part of the problem of what needs to change). In this view, people are not seen as ‘users’ or ‘consumers’ but as ‘makers’ of their own narratives and choices about how they would like to change their behavior. This shifts the perspective of the design process to focus on knowledge exchange to spark people’s sustainable behavior, which is an opportunity that is rarely taken by designers and architects and might be a key to unlocking long-lasting, sustainable behavior.

It was also discussed how a focus on individual cognition in most approaches ignores that sustainable behavior depends on the power of social norms and social-cultural factors⁵⁰ and the role of social values⁵¹. Therefore, more attention should be given to the social context and the potential for collective behavior change. Understanding that design changes our relationships with other humans and that these relationships influence sustainable behavior, solutions should consider the social dimensions of design as socially engaged practices⁵².

Lastly, the lack of integrative practices between theory and action tools was discussed. Using action tools without being informed by theory might lead specialists to engage with sustainable behavior in a prescriptive manner. And while it is important to consider and debate our actions beforehand, it is impossible to perfectly predict the behavior outcomes and results of our interventions before testing them. Therefore, there should be more focus on praxis approach that focuses on action-taking informed by critical

49 Berdichevsky, Daniel, and Erik Neuenschwander. “Toward an ethics of persuasive technology.” *Communications of the ACM* 42, no. 5 (1999): 51-58.

50 Kollmuss, Anja, and Julian Agyeman. “Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?” *Environmental education research* 8, no. 3 (2002): 239-260.

51 Ives, Christopher D., and Dave Kendal. “The role of social values in the management of ecological systems.” *Journal of environmental management* 144 (2014): 67-72.

52 Gardiner, Edward, and Kristina Niedderer. “Design for social behaviour change.” (2017).

thinking, because “ecosystems will collapse whether or not we win our intellectual debates. Only changing our behavior will make any difference to the outcomes of our crisis.”⁵³ In praxis, we can learn more about an idea by experiencing how it works if we keep in mind this feedback circle of action-reflection-action. This process helps us to make and learn from our mistakes, making people aware of their behavior, thoughts, and feelings, and it facilitates their effectiveness in performing sustainable behavior.

While diverse fields in the social sciences such as environmental psychology and environmental sociology have been considering the role of psycho-social issues for sustainable behavior, design and architecture have been mainly ignoring these issues. Therefore, in contrast to the dominant technocratic worldview presented in this chapter that focuses on nudging or control, this dissertation proposes that dealing with psycho-social dilemmas is important to create people’s sense of agency to change and to untangle the complex dilemmas behind their behavior. The next chapter will introduce sustainable behavior from a complex relationship between people’s worldviews, values, psychological and social domains of human culture.

⁵³ Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011. 216



Picture from the Xcinema event. A group makes a model with local materials. Image courtesy by Useful Art for Communities (UAC).

3. Expanding Sustainable Behavior for Responsible Architecture



3.1 Introduction

Drawing on literature from the fields of ecology, environmental psychology, and environmental sociology, this chapter will expand the discussion of sustainable behavior with a focus on the influences of people's worldviews, values, psycho-social dilemmas. The previous chapter addressed the limitations of the dominant technological worldview approach to sustainable behavior in design and architecture. This chapter will expand on important elements of sustainable behavior beyond the linear theoretical behavioral models that have been dominant in social-psychology research and discuss its impacts for sustainable architectural practice.

Recent studies in environmental psychology posit that environmental issues are deeply connected with psychological and unconscious issues of the human psyche¹. Meanwhile, environmental sociology advocates for fairness and the role of power relations in sustainable behavior², such as in the fields of ecology and environmental justice. As will be discussed, this is important because issues such as fairness and responsibility are linked with our emotional states, and ability to act, which can impact architect's and stakeholder's design choices and sustainable behavior. Attentive to the several epistemologies and methodologies of these fields, this chapter weaves common views that emerge from these fields and proposes a new perspective on how we can approach sustainable behavior in architecture.

3.2 The complexity of behavior

Most fields that engage with behavioral students, such as design, architecture, economy, technology, and others, do so by developing their own models based on earlier popular theoretical behavioral models from of social psychology. Some examples are the social-cognitive theory (Bandura, 1986)³, the theory of planned behavior (Ajzen, 1991)⁴

1 For example, in the book *Psychological Roots of the Climate Crisis: Neoliberal Exceptionalism and the Culture of Uncare*, Sally Weintrobe explore the psychic mechanisms of negation, disavowal and denialism, and how they are related to culture of uncare of the neoliberal culture that detaches people from being in contact with reality by distancing themselves from their own emotions.

2 Sabrina Fernandes, *Se quiser mudar o mundo: Um guia político para quem se importa*, 1a edição (Planeta, 2020).

3 Bandura, A. (1986). *Social foundations of thought and action : A social cognitive theory*. Englewood Cliffs : Prentice Hall.

4 Ajzen, Icek. "The theory of planned behavior." *Organizational behavior and human decision processes* 50, no. 2 (1991): 179-211.

, and the transtheoretical model of behavior (Prochaska & Wayne, 1997)⁵ that have been largely appropriated, modified, and applied in diverse fields.

In the field of sustainable behavior, the largely accepted Hines, Hungerford and Tomera Model of Responsible Environmental Behavior⁶, where they did a meta-analysis of 128 pro-environmental behavior research studies and summarized the variables associated with responsible pro-environmental behavior (figure 1). In their model, they propose that Responsible Environmental Behavior is a result of a set fixed number of variables that seem to happen linearly within a hierarchy. Where behavior is a result of internal personality factors, intention to act, and situational factors that can hinder or allow the behavior to happen, unconscious elements such as emotions are not discussed.

HINES, HUNGERFORD AND TOMERA'S MODEL OF RESPONSIBLE ENVIRONMENTAL BEHAVIOR

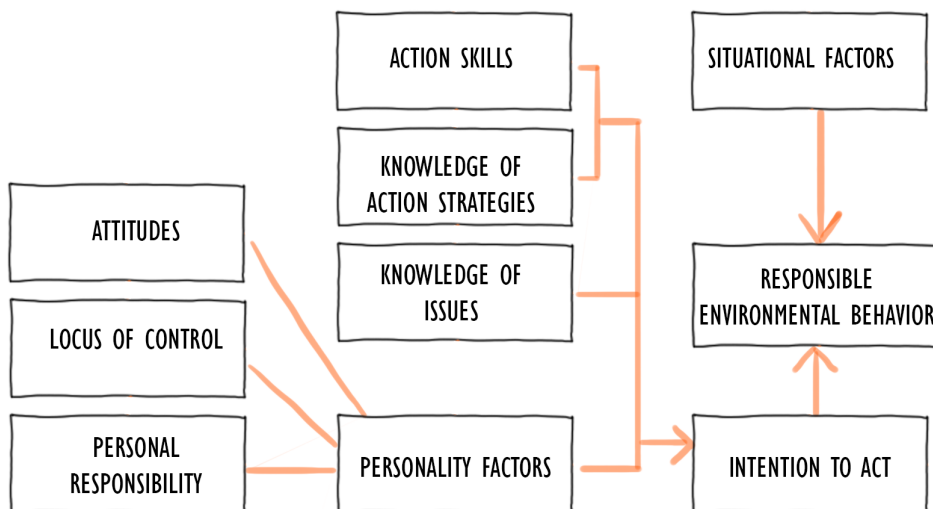


Figure 1: Hines, Hungerford and Tomera Model of Responsible Environmental Behavior adapted by the author

But many of the early models have been criticized for being over-simplistic frameworks⁷, because they fail to recognize the role of emotions, habits, motivation, self-identity, self-regulatory measures, and other critical broader dimensions that also shapes

5 Prochaska, James O., and Wayne F. Velicer. "The transtheoretical model of health behavior change." *American journal of health promotion* 12, no. 1 (1997): 38-48.

6 Hines, Jody M., Harold R. Hungerford, and Audrey N. Tomera. "Analysis and syn of research on responsible environmental behavior: A meta-analysis." *The Journal of environmental education* 18, no. 2 (1987): 1-8.

7 Sniehotta, Falko F., Justin Presseau, and Vera Araújo-Soares. "Time to retire the theory of planned behaviour." *Health psychology review* 8, no. 1 (2014): 1-7.

behavior, such as political and social structures. Similarly, Hines et al. recognize that their model of Responsible environmental behavior still misses behavioral dimensions influenced by external sources such as economic constraints and social pressures, which they called 'situational factors'. And although they propose the word 'responsible' in their study, little is discussed about critical issues on responsibility, being it related to internal or external factors.

KOLLMUSS AND AGYMAN'S SUSTAINABLE BEHAVIOR MODEL

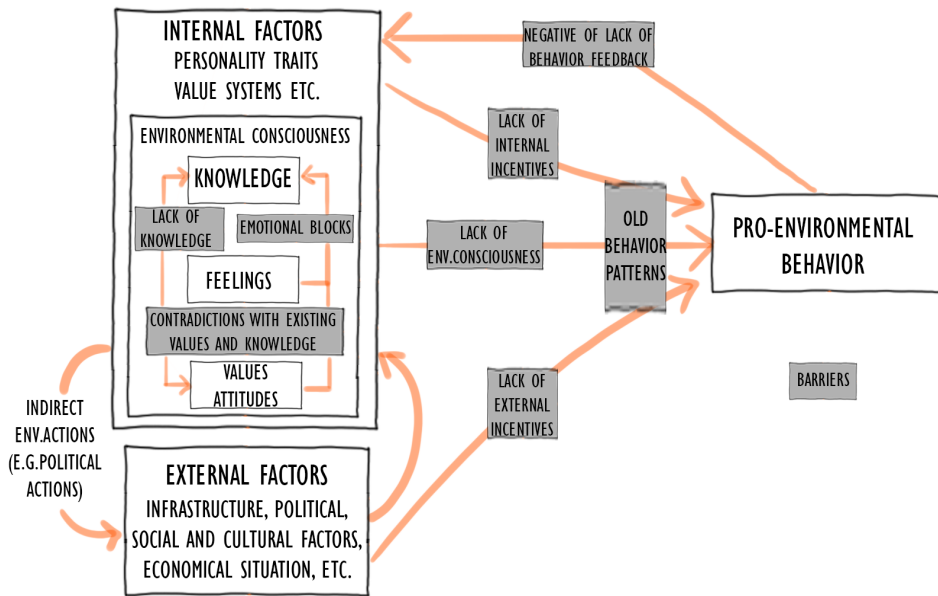


Figure 2: Kollmuss & Agyeman's sustainable behavior model adapted by the author

Looking for more complex ways to study sustainable behavior, newer paradigms have been emerging. One interesting example of this is Kollmuss & Agyeman's model⁸ of sustainable behavior from the field of environmental education. Their model focuses not only on deeper individual aspects of human behavior (feelings, values, motivation, personality traits) but also on external aspects such as demographic and institutional factors, political and economic context (figure 2). In their study, they show that environmental behavior did not depend on the amount of environmental knowledge, but on a confluence between knowledge, values, attitudes, and emotional involvement, which

⁸ Kollmuss, Anja, and Julian Agyeman. "Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental education research* 8, no. 3 (2002): 239-260.

they call “pro-environmental consciousness”. This pro-environmental consciousness is also shaped by internal personal values as well as external cultural and social factors.

This model is important because it starts showing how sustainable behavior is a result of non-linear and complex interactions between several internal and external factors. It also includes the role of feelings and emotional involvement in sustainable behavior. Their discussion also conceptualizes ‘gaps’ to sustainable behavior and the “barriers” to achieving behavior change.

Discussion of ‘gaps’ and ‘barriers’ has become common in sustainable behavior discourse⁹. Where usually, gaps are seen as failures to translate information effectively between awareness and actions of the behavioral factors they propose, and a barrier is anything that prevents people from changing their behavior. But conceptualizing challenges as gaps or barriers comes from a worldview influenced by a cost-benefit behavioral economics perspective¹⁰ that sees behavior as a linear happening, an orientation that relational approaches are trying to deconstruct to find more holistic solutions. Language carries embedded assumptions about people’s rationality. For example, if behavior is seen as unitary, rational and self-aware, people just need knowledge and information to be able to change. But affects can influence and inform how people process information and cloud their cognitive capabilities. Focusing on the lack of awareness or information may be related to the tendency to refuse the integration of new and challenging data¹¹, such as unconscious defense mechanisms that will be explained later in the chapter. In contrast to discussions of ‘gaps’ and ‘barriers’ that imply we should get rid of, push, break or overcome challenges to sustainable behavior by changing, manipulating, and nudging people. This dissertation proposes that we have to engage, listen, be empathetic, partner with, and co-create to unlock sustainable behavior. In that sense, it does not see gaps and barriers, but dilemmas and complexities that are highly contextual, dynamic, and systemic.

As was discussed before, most models in the field of design for sustainable behavior usually consider human rationality above other dimensions and forget that behavior is strongly influenced by inner experiential dimensions of human life and the unconscious

9 Robert Gifford, Christine Kormos, and Amanda McIntyre, “Behavioral Dimensions of Climate Change: Drivers, Responses, Barriers, and Interventions,” *WIREs Climate Change* 2, no. 6 (2011): 801–27, <https://doi.org/10.1002/wcc.143>.

10 Renee Lertzman, *Environmental Melancholia: Psychoanalytic Dimensions of Engagement* (London: Routledge, 2017), 19.

11 Lertzman, 21.

processes of sustainable behavior (such as anxieties and dilemmas)¹². But as the field of behavior studies expands more nuanced understandings of how complex behavior is emerging.

Rather than being regulated by one aspect alone (such as attitudes or knowledge towards an issue) or working in a linear and consecutive cascade of events where intervention in one end leads to change in the other, behavior is instead a confluence of intrinsic and extrinsic factors that occur simultaneously in many dimensions. In contrast with approaches that use persuasion, nudging, control or shame, psycho-social aspects of sustainable behavior enable us to meet people with greater levels of authenticity, empathy, compassion and attunement. Considering people's worldviews, values and practices as well as how these are mediated and influenced by our psycho-social dilemmas, this dissertation emphasizes how the relationship between our worldviews, values and psycho-social issues is often messy, contradictory, and paradoxical. It insists that understanding this complexity can help us to untangle the nature of investments, anxieties, and ambivalences in order to support reparative practices and responsible architecture¹³.

3.3 The role of worldviews and values

A worldview is a collection of values, attitudes, stories, and expectations about the world around us that influences our every action and thought, expressed in ethics, religion, philosophy, scientific beliefs, among other things¹⁴. A worldview is how we make sense of the world around us and the way in which our culture is embodied in our individual practices¹⁵. Our worldview is also built by our environments and the experiences we have in them, for example, if you come from a region of nomadic pastoralists with a culture of honor based on warrior classes or from Christian agriculturalists, even centuries later, that could still influence the values in which you were raised¹⁶. This is because our worldviews and values are part of our cultural identity, which can also be reinforced and mediated by the architecture and designed spaces. By the way we build our worship places, our homes, and our cities, humans share their ideological and value principles that affect the cultural climate of their societies, be they consciously or unconsciously perceived by people¹⁷. Beddoe *et al.* argue that in order to move towards a sustainable

12 Lertzman, Renee. "Psychosocial contributions to climate sciences communications research and practice." (2014): 1-34.

13 Lertzman, Environmental Melancholia, 146.

14 James W. Sire, Naming the Elephant: Worldview as a Concept (InterVarsity Press, 2014).

15 Alison J. Gray, "Worldviews," International Psychiatry 8, no. 3 (August 1, 2011): 58-60.

16 Smolicz, J. (1981). Core values and cultural identity. Ethnic and racial studies, 4(1), 75-90.)

17 Kistova, Anastasia V., and Anastasia N. Tamarovskaya. "Architectural space as a factor of regional cultural identity." (2015).

future, there is a need for a cultural transition in the worldview of individuals and institutions, rather than for mere technological fixes¹⁸. Our values, worldviews, and behavior are interlinked and influence each other. Therefore, a change in people's worldview means a change in values and can impact behavior. Untangling the worldviews and values behind our architectural practice is an important step to address sustainable behavior in a new way and looking for alternative worldviews and values systems that can help us achieve that.

Previous research has discussed how important changes in worldviews and values are to achieve sustainability. Some highlight that although our ways of thinking and behavior adapt depending on the cultural cues, emotions, and events happening in our lives, values can transcend situations and affect a wide array of beliefs, attitudes, norms, intentions, and behaviors^{19, 20, 21}. Others have shown the role of environmental worldviews and environmental values in influencing people to become professional environmentalists. The work of Chawla^{22, 23} investigated professional environmentalists and explored how their life experiences that shaped their relationships, values, and beliefs in relation to the environment influenced their environmental sensitivity. Similarly, Schein²⁴ explored the ecological worldviews of environmentalists and their deeper psychological motivations. Applying key theories from developmental psychology, integral ecology, and eco-psychology to sustainability practice. He collected stories from 75 global sustainability leaders based on their experiences and deep reflection to understand who they are and why they do what they do to uncover key themes that frame their psychological motivations. He found that 'worldviews' are mental models from which people's values manifest and are able to drive the most effective behavior change related to sustainable leadership, and he found that some big changes start with the individual experience. He advocates that for a possible shift towards ecological worldviews, people need to make sustainability

18 Rachael Beddoe et al., "Overcoming Systemic Roadblocks to Sustainability: The Evolutionary Redesign of Worldviews, Institutions, and Technologies," *Proceedings of the National Academy of Sciences* 106, no. 8 (February 24, 2009): 2483–89

19 Feather, Norman T. "Values, valences, and choice: The influences of values on the perceived attractiveness and choice of alternatives." *Journal of personality and social psychology* 68, no. 6 (1995): 1135.

20 Steg, L., G. T. Gardner, and P. C. Stern. "Environmental problems and human behavior." *Journal of Environmental Psychology* 25, no. 1 (2005): 120-123.

21 Nordlund, Annika M., and Jörgen Garvill. "Value structures behind proenvironmental behavior." *Environment and behavior* 34, no. 6 (2002): 740-756.

22 Chawla, Louise. "Significant life experiences revisited: A review of research on sources of environmental sensitivity." *The Journal of environmental education* 29, no. 3 (1998): 11-21.

23 Chawla, Louise. "Life paths into effective environmental action." *The Journal of environmental education* 31, no. 1 (1999): 15-26.

24 Schein, Steve. *A new psychology for sustainability leadership: The hidden power of ecological worldviews*. Routledge, 2017.

personal, focus on personal experience, and become change agents in how they show up and how they communicate with people.

Environmental sensitivity and environmental values relate to issues of care in a design process, where it is important to make an explicit connection between what people care about, their values, and their identity with environmental issues. Everyone cares about something related to environmental issues because the environment is not separate from what is needed for people to continue doing what they care about. For example, people who value the quality and diversity of food might be concerned about how availability is linked to environmental conditions that are sensitive to climate change, biodiversity loss, and water scarcity²⁵. The issue is that sometimes people don't recognize that their values and the things they care about are dependent and connected to environmental stability, while getting caught up in complicated dilemmas that make change difficult²⁶. Therefore, the design process can be an important place to explore the optimal contexts for facilitating expressions of care and its limitations (i.e., emotional blocks that will be explained later).

Ecological worldview is also important to create emotional affinity towards nature, crucial to building what Thomashow²⁷ calls ecological identity and what Matthews²⁸ calls the ecological self. The main idea behind these concepts is that people build their identity not as separated self-autonomous beings but from a core sense of connection and common identification with other people and other life forms, ecosystems, other species, or the planet. It opposes a long-standing western view that nature is inferior and stands in opposition to human existence²⁹ and, therefore can be freely used or tamed by technology so its bad effects can be reduced.

The idea of the ecological self is explained by Bragg³⁰ with three psychological elements: a cognitive sensitivity toward the well-being of others, an emotional feeling of sympathy, caring, empathy, and belonging toward others, and motivational concern about and intention to ensure the well-being of others. Where 'others' includes not only humans

25 Liverman, Diana, and Kamal Kapadia. "Food systems and the global environment: An overview." *Food security and global environmental change* (2012): 23-44.

26 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

27 Thomashow, Mitchell. *Ecological identity: Becoming a reflective environmentalist*. Mit Press, 1996.

28 Matthews, Freya. *The ecological self*. Routledge, 2006.

29 Weintrobe, Sally. *Psychological roots of the climate crisis: Neoliberal exceptionalism and the culture of uncare*. Bloomsbury Publishing USA, 2021.

30 Bragg, Elizabeth A. "Towards ecological self: Deep ecology meets constructionist self-theory." *Journal of environmental psychology* 16, no. 2 (1996): 93-108.

but also other species and ecosystems, this perspective is interesting because, different from persuasive methods we saw before, this focuses on a sense of building a common identity and belonging between the individual (physical self) and others (the ecosphere/the larger self), which is crucial for sustainable behavior. When we act from our ecological self, we don't have to try to make environmentally responsible choices because our choices become more sensitive, expanding to connect with the larger context and care about how our behavior affects the well-being of others³¹. Therefore, building a sense of identity with the ecological self is necessary to address environmental problems in sustainable architecture.

In later chapters I will discuss how the ecological self can be developed during the architectural design process and in education, by exploring the possibilities and limitations of including more-than-humans (flora, fauna and other species) as stakeholders in a design project. When designers and architects treat nature as having agency in our projects, I will argue that it can foster a closer relationship and emotional affinity with other species, contributing to building people's ecological selves. Expanding on Searles argument from "The non-human environment" Lertzman describes how at an unconscious or conscious level, relatedness to more-than-human elements and environments is among the most basic important ingredient of human personality development and psychological existence³². Limitations to integrating non-humans and nature in the design process may arise, however because feelings toward the natural world can be ambivalent. Since people are deeply connected and psychologically linked to nature while at the same time witnessing its destruction, cognitive dissonance can emerge to preserve psychological well-being³³. Moreover, anxiety about understanding and working with elements that can seem as chaotic and uncontrollable as the natural world may also arise, especially if practitioners are not used to communicating with these elements. I will argue that it is important to bridge the communication between people's identities with what is seen as 'otherness' in our design projects. As the eco-philosopher W. Fox³⁴ argued, we develop identification by experiencing the joys and pains of others, where we learn to identify with others as we observe their happiness, anger, and joy, and similarly,

31 Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011.

32 Searles, H. F. (1960). *The nonhuman environment*. Cited by Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

33 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

34 Fox, Warwick. *Toward a transpersonal ecology: Developing new foundations for environmentalism*. SUNY Press, 1995.

we also identify with the natural world if our experiences while forming our identity are shaped by the natural world.

This dissertation advocates for architects to adopt a holistic worldview based on systems thinking (figure 3) as an alternative to the predominant linear and positivistic model critiqued in Chapter 2. A worldview based on systems thinking recognizes that the world is made up of complex, interconnected systems, and that understanding these systems is crucial for addressing sustainable behavior. This worldview emphasizes the interdependence and feedback loops between several entities, and recognizes that changes in one part of the system can have ripple effects throughout the whole. It also emphasizes the importance of taking a holistic approach between several behavioral dimensions. A system-thinking worldview involves recognizing the limits of reductionist approaches and embracing an integrative, multidisciplinary approach to problem-solving that draws on diverse perspectives. It is a way of making sense of the complexity of the world by looking at it in terms of wholes and relationships, circularity, and interconnection of actors rather than separated parts, where everything can be seen as ecosystems.

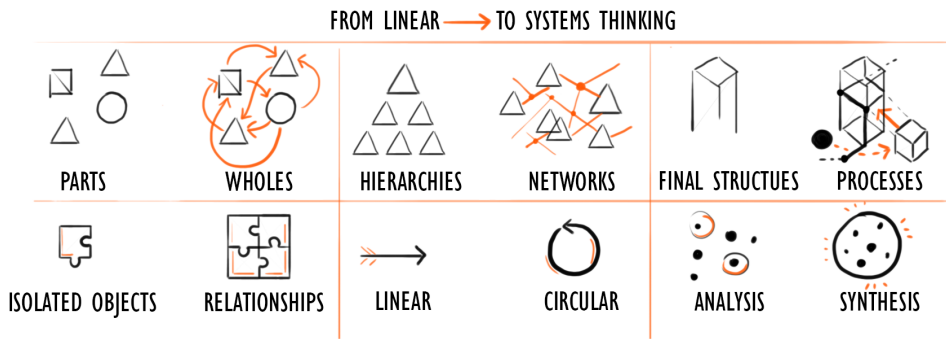


Figure 3: A few characteristics of systems thinking that compose a holistic worldview

Importantly, systems theory is concerned with complex, non-linear relationships not only between the material and biological systems of the biosphere³⁵, but also the psychological and social domains of human culture³⁶. Recently, the application of systems thinking has been growing in research as practice in diverse fields (such as agriculture, education, resource management, public health, sustainability, circular economy, artificial intelligence, and many others) as there is a growing awareness of how many things

35 Lovelock, James. Gaia: A new look at life on earth. Oxford University Press, 2016.

36 Guattari, Félix. The three ecologies. Bloomsbury Publishing, 2005.

from human bodies to social organizations and even technology can be understood as complex ecosystems³⁷.

Parallel ways of thinking can be found in Latour's actor-network theory³⁸ and in the fields of sustainability³⁹, circular economy⁴⁰, lifecycle assessment⁴¹, sustainable management⁴², and many others. And while systems theory and parallel theories may seem new in a Western context, similar ways of understanding have existed for generations in indigenous cosmologies and worldviews⁴³. Indigenous cosmologies and worldviews have for centuries, seen the world, ecosystems and species that inhabit it as a part of a whole living system that is interconnected and in constant change, cooperating rather than competing, where all the elements have to exist to maintain the balance of the system⁴⁴.

Indigenous system thinking worldview implies a change in the way we see hierarchies and relationships between humans and more-than-humans, and also between people (figure 4). This position questions the design approaches based on power, control, coercion and also the focus on technological solutions. It asks for a greater look into relationships, processes and emergence. Similar to the notion of "continuing design", which proposes a more inclusive approach relying on temporally open-ended activities and long-term perspectives required for sustainable collaborative development, blurring the lines between use, design, implementation, modification, and maintenance⁴⁵. In this ever-changing context of interconnectedness, there is no final answer for sustainable behavior, but a path that is constantly being unfolded and created collectively.

37 Donella H. Meadows, *Thinking in Systems: A Primer* (Chelsea Green Publishing, 2008).

38 Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (OUP Oxford, 2007).

39 Meadows, *Thinking in Systems*.

40 Eleni Iacovidou, John N. Hahladakis, and Phil Purnell, "A Systems Thinking Approach to Understanding the Challenges of Achieving the Circular Economy," *Environmental Science and Pollution Research* 28, no. 19 (May 1, 2021): 24785–806

41 Nuri Cihat Onat et al., "Systems Thinking for Life Cycle Sustainability Assessment: A Review of Recent Developments, Applications, and Future Perspectives," *Sustainability* 9, no. 5 (2017)

42 Mari Elizabete B. Seiffert and Carlos Loch, "Systemic Thinking in Environmental Management: Support for Sustainable Development," *Journal of Cleaner Production* 13, no. 12 (October 1, 2005): 1197–1202,

43 Bateson, Gregory. *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. University of Chicago Press, 2000. P 491

44 Gregory Cajete, *Native Science: Natural Laws of Interdependence*, 1st edition (Santa Fe, N.M: Clear Light Publishers, 2016).

45 Karasti, Helena, and Karen S. Baker. "Infrastructuring for the long-term: Ecological information management." In 37th Annual Hawaii International Conference on System Sciences, 2004. Proceedings of the, vol. 4, pp. 10-pp. IEEE Computer Society, 2004.

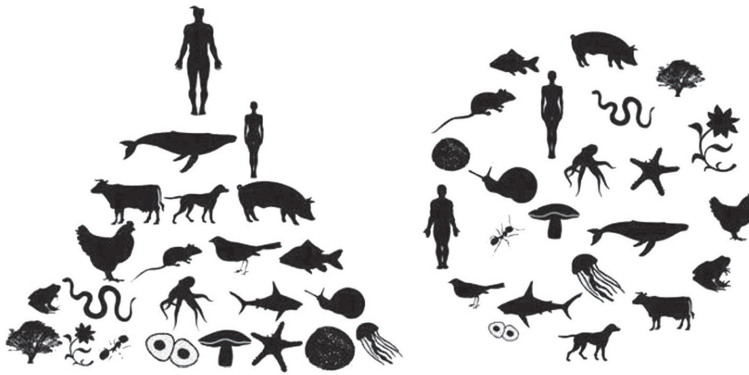


Figure 3: Two different worldviews represented by 'Ego-Eco' diagram, by S. Lehmann, 2010.

Sustainability in architecture is not only about sustaining the environment but I will argue that it should be concerned with the interconnected and continued workings of other social-political structures⁴⁶ as well as psychological ones. Applying the logic of system thinking, this dissertation will suggest that sustainable behavior lies in the interconnectedness between human psychological states, social structures, and our worldviews. To address the complexity of structures and actors in constant change, rather than trying to predict or provide final responses, I will show that sustainable behaviour in architecture should be a process of ongoing exploration.

Inquiring about sustainable behavior from a system-thinking worldview implies that there is no straightforward way in which behavior occurs, and therefore behavior can't be separated from the connections between people's life stories, lived experiences, feelings, memories and aspects of the self⁴⁷. Therefore, sustainable behavior in this dissertation goes beyond information and cognition, and dives into a complex dimension of human experience, embracing psychological states, identification, and relationships with other humans, more-than-human beings, and places. Schein⁴⁸ proposes that a shift to an ecological worldview happens if people become change agents, in how they show up and communicate with others. In this view, big changes can start with the individual experience, and therefore we need to make sustainability personal, focused in our personal

46 Hes, Dominique, and Chrisna Du Plessis. *Designing for hope: pathways to regenerative sustainability*. Routledge, 2014.

47 Lertzman, *Environmental Melancholia*, 76.

48 Schein, Steve. *A new psychology for sustainability leadership: The hidden power of ecological worldviews*. Routledge, 2017.g

experience. In alignment with Koger et al.⁴⁹, this worldview shift in how we understand sustainable behavior is less about knowing and more about becoming.

3.4 The role of Psycho-social dilemmas and the ability to respond

While worldviews and values are the structure behind people's intentions to change and behave differently, psycho-social dilemmas (between their emotional states and their situational factors) mediate people's ability to perform a behavior that is aligned with their worldviews and values. This assumes that the connection between what people value and their behavior is full of opposing ideas, mixed feelings, conflicting thoughts, and the continuous effort to establish a clear and consistent understanding of our own experiences⁵⁰. This understanding sees these dilemmas in the central human experience and looks for ways in which they are negotiated. Therefore, even when architects have 'good intentions' or and holistic worldview in place, our ability to respond might be compromised by these psycho-social dilemmas. This section will explore how the interaction between people's psychological states and their social structure can help unlock sustainable behavior when positive (i.e., feeling connected, having a sense of purpose) or decrease if negative (i.e., fear or anxiety).

3.4.1 Emotional internal dilemmas

Many sustainable behavior approaches in design/architecture are inspired by the views of conservation behavior (i.e., household resources usage), which tend to focus on technological/rational approaches that undermine the role of emotions⁵¹. But researchers in environmental psychology have been showing the important role that emotions, feelings and affects play in environmental engagement, enabling or impairing sustainable behavior⁵². For example, one emotional issue triggered by climate anxiety is apathy. The idea that people simply do not care has been propagated by market researchers to account for why the public did not respond to behavior change strategies triggered by (information campaigns, education, motivation, pressure, or guilt). But environmental psychologist Renee Lertzman explains that this apathy is related to a psychological defense mechanism in order to deal with the amount of anxiety that the task of dealing with and the current state of environmental crisis poses. And she argues that instead of focusing on

49 Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

50 Lertzman, Environmental Melancholia, 24.

51 Vining, Joanne, and Angela Ebreo. "Emerging theoretical and methodological perspectives on conservation behavior." (2002).

52 Kals, Elisabeth, and Jürgen Maes. "Sustainable development and emotions." In Psychology of sustainable development, pp. 97-122. Springer, Boston, MA, 2002.

apathy, we should investigate the complexity of emotional states to make action and response possible⁵³. In her book *Environmental melancholia: Psychoanalytic dimensions of engagement*, she unfolds issues such as loss, melancholia, anxiety, and the understanding of how other unconscious processes can help us to bring people back to potential concerns, desires, hopes, and engagement⁵⁴. Influenced by her findings, this dissertation posits behavior not as the observable action that can be measured and quantified but as a complex web of people's knowledge, values, motivations, and emotions that needs to be untangled. Lertzman's study also shows that even if care, motivation, values, and knowledge are in place, emotional states rooted in deeper psychological roots can block even the best intentions to behave differently.

In the book *The Psychology of Environmental problems*, Winter et al.⁵⁵ explain how sustainable behavior can be impaired by psychological defense mechanisms such as intellectualization, displacement, and suppression. The authors explain intellectualization as a process in which people distance themselves emotionally from problems by describing them or dealing with them in abstract terms (i.e., debating about abstract or general principles of planetary collapse might be easier than recognizing our own personal contributions to the status quo). According to them, over-intellectualization can lead actors to spend a lot of time overcomplicating problems with theories, or developing complicated technological fixes, displacing our efforts while lacking the urgent action taking needed to change the course of society. The book also explains displacement, when people channel their feeling to a less threatening target, giving the example of recycling. Recycling helps people feel that they are doing something good for the planet, yet it is a much less direct action than reducing consumption. This can be related to the responsibility displacement of the triangle of inaction presented in the introduction. Lastly, the authors explain that when environmental-related anxiety cannot be displaced anymore, denial starts to emerge, expressed in impatience, irritation, and anger as a way to suppress undesirable feelings. When that happens, anxiety comes in the form of sarcasm to reject threats and dismiss uncomfortable thoughts, and people might refuse to acknowledge the ecosystem's collapse while expressing their anger and irritation. They also notice that emotional frustration and hostility can happen not only related to environmental issues but also to other social injustices such as racial and economic inequalities. Aligned with Lertzman's view, they express that this anxiety and

53 Lertzman, Renee Aron. "The myth of apathy: Psychoanalytic explorations of environmental subjectivity." In *Engaging with Climate Change*, pp. 139-165. Routledge, 2012.

54 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

55 Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011.

denial might increase hopelessness, fear, and stress, limiting individual and collective perceived effectiveness to take actions and change.

Fear and anger are important limiting factors for sustainable behavior. In the book *Environmental psychology: An introduction*⁵⁶, Steg et al. show how emotions influence risk perception and can be perceived as higher or lower depending on if people feel negative or positive about an activity, and how fear can increase while anger reduces risk perception. In other words, when we are fearful, we don't risk enough, and when we are angry, we make bad decisions. But taking risks is a necessary endeavor to fight climate change, because we need to try new methods, new ways of thinking, doing and being in the world. Sustainable behavior strategies that are based in fear or shame can also be counterproductive because they stimulate the defense mechanisms⁵⁷ instead of creating bridges for reparation.

The field of architecture experiences something similar, where a psychological defense mechanism arises in order to deal with the amount of anxiety that the task of practicing sustainable architecture presents. These defense mechanisms can present themselves in various forms. Displacement can be seen in architectural practices in instances such as when it might be easier to focus on developing new ways to use construction waste as building material than to reduce construction. Reducing consumption is much more difficult, so focusing solely on recycling building materials might serve as a displacement of our anxiety that comes from the idea that we need to reduce building in the first place. The collective focus on technocratic solutions in architecture might be related to the defense mechanism of over-intellectualization. Kollmuss and Agyeman⁵⁸ explain that rationalization and emotional distancing is a common defense mechanisms among scientists and environmentalists since they are frequently exposed to 'bad news'.

In the other hand, there are also better mechanisms to deal with these difficult feelings. For example, creativity can be used a way to deal with uncomfortable emotions and can be channeled into actions that protect one's mental state while contributing to valuable projects⁵⁹ (i.e. expressing pain or anxiety through joining environmental organization work, modifying consumer habits, artistic expression of concern, art-activism). Creativity is an important element of engagement to deal with pressing environmental issues

56 Steg, Linda Ed, Agnes E. Van Den Berg, and Judith IM De Groot. *Environmental psychology: An introduction*. BPS Blackwell, 2013.

57 Lertzman, *Environmental Melancholia*, 106.

58 Kollmuss, Anja, and Julian Agyeman. "Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental education research* 8, no. 3 (2002): 239-260.

59 Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

in architecture. Therefore, it is important to acknowledge difficult emotions amongst architects and how they are being dealt with in order to move from self-defense mechanisms to creative modes of engagement. Because engagement can serve to create contexts for creative, authentic participation while cultivating capacities for reparation⁶⁰ and offer collaborative modes to allow creativity, concern, and contributions to emerge.

3.4.2 How emotions are connected to broader social external dilemmas

Human emotions are mediated by broader social contexts such as social environments or political systems. And environmental topics are politicized and involve people's personal values and attitudes, and can trigger emotional responses^{61, 62}. This is particularly evident in the growth of conceptions of environmental justice, where emotional experiences deriving from the civil rights and environmental movements helped reframe people's sense of environmental fairness⁶³. When behavioral studies are enriched from perspectives of the social sciences, research starts to incorporate the situational factors that have been ignored in the dominant understanding of behavior. Few researchers have added issues of power imbalances in their studies on environmental behavior. The work of Sabrina Fernandes⁶⁴ reminds that the power to make a significant difference in environmental change is immensely unevenly distributed, and the forgetting and placing responsibility in the hand of individuals might take away the focus on governments and business responsibility. Framing responsibility in individuals might then lead to a sense of guilt, frustration, lack of fairness and other negative emotions that can impair sustainable behavior. And also ignores the fact that people may care about environmental issues but feel insignificant and alienated in relation to the problems⁶⁵.

Similarly, Redclift and Benton⁶⁶ state that because of the power imbalance in environmental change, betting on rationality or care for people to change their attitudes and lifestyles might be ineffective. They acknowledge that values are not static, and they can

60 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

61 McCright, Aaron M., and Riley E. Dunlap. "The politicization of climate change and polarization in the American public's views of global warming, 2001–2010." *The Sociological Quarterly* 52, no. 2 (2011): 155–194.

62 Stokols, Daniel, Shalini Misra, Miryha Gould Runnerstrom, and J. Aaron Hipp. "Psychology in an age of ecological crisis: From personal angst to collective action." *American Psychologist* 64, no. 3 (2009): 181.

63 Bullard, Robert D. "Environmental justice for all: It's the right thing to do." *J. Env'tl. L. & Litig.* 9 (1994): 281.

64 Fernandes, Se quiser mudar o mundo.

65 Lertzman, *Environmental Melancholia*, 149.

66 Redclift, M. R., and Michael Redclift. *Social theory and the global environment*. Edited by Michael R. Redclift, and Ted Benton. London: Routledge, 1994.

be transitory, negotiated and even contradictory. Therefore, focusing only on the gap between values-attitude-behavior as a linear input-output mechanism would be naïve. In addition, Blake⁶⁷ recognizes that we need to consider also the roles of individual, social or institutional dilemmas. He brings to the debate the term “responsibility”, emphasizing negotiation and partnerships that involve a fairer distribution of responsibility between diverse environmental stakeholders. This is crucial because it adds the layers of collective and shared responsibility and power imbalance that are so important to allow and enhance sustainable behavior to occur. Therefore, ignoring the social dimensions of sustainable behavior might also be a diversion of responsibility, and similar to greenwashing, is that we risk ‘sustainable behavior washing’ if solutions only focus on technological fixes. For example, studies where hotels try to promote themselves as eco-friendly by encouraging guests to minimize their ‘towel usage’ as the main focus of sustainable behavior⁶⁸, putting all the focus and responsibility in the user, saving the hotel loads of money as they rebrand themselves under a false label of “environmentally friendly” and distract from a more substantive picture of unsustainable practices in the industry that epitomize corporate practices in hotel chains which is left unaddressed.

Psychological defense mechanisms may also kick in in response to socio-cultural threats and anxieties and are not limited to individual psychologies only, but can take collective forms of defense such as denial⁶⁹. Psycho-social dilemmas can be individual as well as collective, and permeate psychological states and socio-cultural factors that trigger people’s defense mechanism to difficult information. In this sense, the work of dealing with climate change and changing our behavior, is a political and emotional one, as well as an individual and collective one. Therefore, emotions influence our ability to respond to environmental issues. When anxiety and denial increase, stress responses limit individual and collective sustainable behavior. In this scenario, architecture could use ways to connect with people’s everyday emotions and concerns, to co-construct self-efficacy and responsible action⁷⁰. If sustainable behavior is linked with our emotional capacity to deal with environmental issues, we need to think more about developing design processes that can help to strengthen our emotional capacity to deal with the challenges ahead.

67 Blake, James. “Overcoming the ‘value-action gap’ in environmental policy: Tensions between national policy and local experience.” *Local environment* 4, no. 3 (1999): 257-278.

68 Nisa, Claudia, Celeste Varum, and Anabela Botelho. “Promoting sustainable hotel guest behavior: A systematic review and meta-analysis.” *Cornell Hospitality Quarterly* 58, no. 4 (2017): 354-363.

69 S. Stoll-Kleemann, Tim O’Riordan, and Carlo C. Jaeger, “The Psychology of Denial Concerning Climate Mitigation Measures: Evidence from Swiss Focus Groups,” *Global Environmental Change* 11, no. 2 (July 1, 2001): 107–17.

70 Nemeth, Darlyne G., Robert B. Hamilton, and Judy Kuriansky. *Ecopsychology: Advances from the Intersection of Psychology and Environmental Protection* [2 volumes]: *Advances from the Intersection of Psychology and Environmental Protection*. ABC-CLIO, 2015.

Otherwise, our response will fall into the fallacy of unconscious defense mechanisms such as intellectualization, displacement and suppression. These mechanisms allow us to express our concern without having to endure the emotional and political work of challenging the roots of sustainable issues in our field, and they help us to stay guarded by allowing us to address the issue superficially without dealing with the anxiety about its real impacts⁷¹. Therefore, we need to go beyond the mentality of ‘doing something is better than nothing’ and to recognize that while technological solutions for sustainable architecture may be an important part of the collective effort, it alone will not solve our problems, and we will be using it as a defense mechanism if we think it will.

Therefore, it is important to understand these underlying processes and how to work with these emotions to enable sustainable behavior. In this sense, this project asks, if sustainable behavior is linked with our psycho-social ability to deal with environmental issues, how do we use architecture as a means to build this psycho-social ability? Therefore, this dissertation seeks to understand various worldviews and values most present in architecture, the psycho-social dilemmas that architects face in their practice, and connect these elements to reveal new creative ways to channel negative feelings while engaging in environmental change work.

In the chapters that follow, I will explain several experiments and methods used to investigate the relationship between architect’s behavior and their worldviews, values, and psychological and social dilemmas. Through workshops with architectural students and interviews with architects, I used methods to try to uncover the complicated ways participants engaged with pressing environmental challenges in architecture.

3.5 Conclusion

This chapter delved into how sustainable behavior is a holistic and complex phenomenon shaped by the relationship between people’s worldviews, values, psychological and social domains of human culture. It underlined the significance of worldviews, values, and psycho-social aspects in promoting sustainable behavior and offered a structure for investigating these areas in this dissertation. The chapter posited that we need a cultural transition from a linear and technocratic to a more holistic, ecological and systems-thinking-oriented worldview. Unraveling the existing worldviews and values underpinning our architectural practice is a vital step in addressing sustainable behavior and seeking alternate worldviews and value systems that can guide us toward achieving sustainability. It also highlighted the necessity of linking macro changes and environ-

71 Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011.

mental issues to individual and personal experiences, such as people's values, feelings of care, and personal identities.

The discussion emphasized that forging an ecological worldview necessitates fostering emotional alignment between individuals and between people and more-than-human entities, assisting individuals in developing identities not as isolated, self-governing entities but from a core sense of connection and shared identification with other people, life forms, ecosystems, other species, or the planet.

Moreover, the chapter argued the importance of comprehending people's psycho-social dilemmas (conflicts between their emotional states and situational factors) in relation to sustainable behavior. Recognizing that the link between people's worldviews, values, and behavior is riddled with contradictions, mixed emotions, conflicting thoughts, and dilemmas, it explored how the interplay between individuals' psychological states and social structures can enhance sustainable behavior when positive (for example, feeling connected, having a sense of purpose) or diminish it when negative (for instance, fear, anxiety, and various psychological defense mechanisms).

The chapter also elucidated how psycho-social dilemmas can be both individual and collective and can pervade psychological states and socio-cultural factors that activate people's psychological defenses, as well as limit individual responsibility amidst environmental action power imbalances. In this regard, this section argued that dealing with climate change and altering human behavior is as much a political and emotional task as it is an individual and collective one.

Arguing that sustainable behavior is linked with people's psycho-social ability to deal with environmental issues, we need to develop architectural processes that can help to strengthen our emotional capacity and psycho-social abilities to deal with the challenges ahead. Hence, this dissertation explores the ways in which responsible architecture can resonate with people's everyday emotions, concerns, and the psycho-social dilemmas they encounter when engaging in responsible action.



Picture from the Xcinema event. A group makes a model with local materials. Image courtesy by Useful Art for Communities (UAC).

4. Methodology and Methods



4.1 Introduction

Employing epistemological and methodological propositions from diverse fields including environmental psychology, environmental education, critical environmental studies, and participatory design, this dissertation uses a bricolage-narrative approach to address the question of ‘How can relational approaches to sustainable behavior be integrated into the architectural discipline to develop responsible architecture practices?’. The first half of this chapter explains the main characteristics of the bricolage-narrative methodology and its implication for the research approach of this dissertation. The second half of the chapter delves into the specific methods used in the data collection process for the four experiments conducted. Specifically, it elucidates the application of ‘critical relational dialogue’ (CRD) to analyze 14 qualitative semi-structured interviews conducted with experts in sustainable architecture in Denmark; the Participatory Design methods used in the workshop experiments in Chapters 6 and 7. Finally, it describes the methods employed in the author’s participant observation of a postgraduate course in sustainable architecture in Portugal, which included online components as well as in-person workshops.

Sessions 4.2 to 4.6 provide an overview of the dissertation methodology, encompassing the overall approach employed. Sessions 4.7 to 4.12 delve into the distinct methods devised for each research experiment. It is recommended that the reader first peruse the specific methods section in this chapter before engaging with the corresponding experiment chapter and following this practice independently for each experiment rather than attempting to comprehend all the section methods entirely.

4.2 The bricolage methodology

Bricolage is an explorative and qualitative methodology proposed by Denzin and Lincoln¹, focused on transdisciplinary and mixed-method processes and grounded in a social constructivist ontology. The word bricolage originates from the French word bricoleur, meaning a craft person who uses any tool to get the job done. In this sense, the bricolage methodology is a multimethodological and multi-tooled research method, and it focuses on webs of relationships between phenomena instead of simply things in themselves. It acknowledges the complex relationship between material reality and human perception, where the object of study belongs to a complex framework of processes, relationships, and interconnections among phenomena². In this sense, the bricolage

¹ Norman K. Denzin and Yvonna S. Lincoln, *The SAGE Handbook of Qualitative Research* (SAGE, 2011).

² Joe L. Kincheloe, “On to the Next Level: Continuing the Conceptualization of the Bricolage,” *Qualitative Inquiry* 11, no. 3 (June 2005): 323–50.

methodology does not set a pre-established hypothesis, instead, to guide and develop the research, bricolage builds upon emerging themes and findings constructed during the research process. Bricolage actively produces research methods from the tools available to the researcher, creating research processes and narratives³. This exploratory approach is valuable to deal with the multidisciplinary and complex field of sustainable behavior in architecture.

Furthermore, the bricolage methodology is based on Paulo Freire's ideas of praxis, an action/reflection cycle, to democratize culture and raise critical consciousness⁴. Freire proposed that people's empowerment occurs when people recognize and act upon their ideas rather than consuming the ideas of others. This process occurs through dialogue and critical reflection on their realities and struggles. Praxis is a critical reflection linked to political action in the world, and in this sense, bricolage is an ethically grounded relational work, using research to develop a socially critical perspective by people who participate in it. The praxis of bricolage can also be seen in the ideas of action research by Greenwood and Levin⁵, where scholars are responsible for doing socially meaningful and socially responsible work. Therefore, using bricolage in architectural research means being committed to accomplishing transformation by producing knowledge or practices that propose radical, democratizing societal transformations by integrating inquiry into action⁶. In this sense, the methodology in this dissertation is concerned with linking theory to practice and producing knowledge based on experience, intuition, trial-and-error experimentation, and interactivity.

Another fundamental epistemological and ontological assumption of bricolage is that the world is a complex interplay of a wide variety of entities, and to understand this complexity, we need multiple ways of seeing. In this sense, the bricolage methodology avoids reductionist, homogenous, and monological knowledge and invites multiple perspectives and relationships between various forms of knowledge⁷. Instead of rigid rationalization and control, researchers as bricoleurs navigate the complexities of the process as methodological negotiators⁸. Therefore, in doing multidisciplinary research, bricolage can be helpful when mixing methods. Similar to a chemical experiment, bricolage mixes several components and methods and adjusts the mixture to end up with

3 Kincheloe.

4 Paulo Freire, *Pedagogia Do Oprimido* (Instituto Paulo Freire, 1968).

5 "Action Research, Science, and the Co-Optation of Social Research: Studies in Cultures, Organizations and Societies: Vol 4, No 2," accessed October 28, 2022.

6 Denzin and Lincoln, *The SAGE Handbook of Qualitative Research*, 34.

7 Kincheloe, "On to the Next Level."

8 Joe L. Kincheloe and Peter McLaren, *Rethinking Critical Theory and Qualitative Research* (Brill, 2011).

something useful. This perspective invites architectural researchers to be curious, have a ‘beginner’s mind’ to each research activity, learn from other fields beyond architecture, and be flexible with methods.

This methodology can help architectural research move beyond our particular discipline’s blind spots and explore new and intersectional ways of research and knowledge production⁹. As shown in table 1, the bricolage methodology is the overall arch of the PhD, that weaves several methods and stages of the research experiments in a cohesive and complementary manner.

Table 1: Methods that comprise the bricolage

Researcher’s role	Experiment	Methods	Data (primary)	Data (complementary)	scale
Sense-maker (bricoleur)	The PhD dissertation	Bricolage: knowledge building from sense-making	Literature review, writing, praxis cycle	reflection diary	Global
Relational listener	Relational interview with practitioners (14)	Semi-structured interviews	Formal and informal conversations	reflection diary and website analysis	National (Denmark),
Bridge (facilitator)	Participatory design workshops (2)	Narrative content analysis, visual analysis	Log books, focus groups, images produced, and post-workshop questionnaires	reflection diary, and conversations	Neighborhood (Aarhus, Denmark),
Observer and relational listener	Sustainable Architecture course (1-year online course 2 months in person)	Observation, narrative content analysis	Focus groups, conversations, and post-workshop questionnaires	reflection diary, and conversations	Global/ European (Porto, Portugal)

4.2.1 The narrative approach to bricolage

Having a narrative approach to bricolage means that we, as researchers recognize that stories shape research, those told to us by our interlocutors, and those we tell ourselves.

⁹ Kincheloe, “On to the Next Level.”

Personal stories reflect a particular worldview and unconscious process essential in establishing a narrative inquiry's credibility, plausibility, and trustworthiness¹⁰. Furthermore, stories are important because they reflect a particular worldview and new worldviews can also emerge from stories¹¹. This process can help people in architecture to critically rethink their worldviews and the stories they tell themselves, which are essential steps for behavior change.

Furthermore, paying attention to the richness of stories can help the researcher connect theory to real-world issues, as using only one theory to analyze a particular situation might fail to illuminate important aspects of sustainable behavior. Therefore, stories allow us, researchers, to dig deeper and analyze from several angles the various aspects of sustainable behavior in the context we are working on. This approach asks for careful contextualization to explore the complexities of how sustainable behavior in architecture is made sense of, experienced, and narrated. In this sense, the narrative approach in this dissertation is concerned with subjectivity and the construction of meaning that emerges from interactions with the research participants in specific contexts.

As sustainable behavior is impacted by unconscious processes, emotions, and meanings people give to their actions, a narrative approach helps look into how people construct narratives around their sustainable behavior. This dissertation explores narratives as a particular focus of interest that emerged during conversations with research participants. The interviews and interactions in this study are not about uncovering an essential truth but about facilitating the construction of stories that can help the research reveal important aspects of sustainable behavior. The qualitative approach of the bricolage-narrative methodology helps the research construct these stories by accessing a depth of immersive experience in situ and direct participation in local discourses and histories. Therefore, this research concerns high levels of contact with participants and provides space and context for narratives to emerge and develop.

Furthermore, sustainable behavior is connected to the social context, as humans produce, co-construct, and share unconscious negotiations of key issues through conversations, stories, advertising, and public media discourses¹². Therefore, using narratives as part of social practice theory invites a theoretical framework that understands behavior

10 Bobby Harreveld et al., eds., *Constructing Methodology for Qualitative Research: Researching Education and Social Practices* (London: Palgrave Macmillan UK, 2016), 149.

11 Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press Books, 2016).

12 Renee Lertzman, "Researching Psychic Dimensions of Ecological Degradation: Notes from the Field," *Psychoanalysis, Culture & Society* 17, no. 1 (April 1, 2012): 92–101.

as a social phenomenon, where behavior is guided by shared norms in specific contexts¹³. This view asks for attention to personal stories because they help researchers focus not on behavior aspects frozen in time but on their transformation and the context in which behavior change can occur.

In this sense, the data analysis focused on the richness of stories to convey meaning and invite a non-linear way to construct knowledge. By doing that, the methods in this dissertation followed the gestalt¹⁴ of the narratives and emerging themes of interest that seemed particularly important. With attention to themes, the research looked for core narratives in the data (within each experiment and across experiments).

4.2.2 Non-linearity in methods and data collection

Another characteristic of the bricolage approach is the non-linear way of collecting and analyzing data and conducting research. For example, the first experiments in this dissertation helped refine and update the methods for the following experiments, and later experiments provided additional analytical insights for previous experiments. Therefore, insights from research experiments were used to refine and update the methods and analysis of one another in a relational way. Figure 1 shows this strategy is a reflexive process of ‘ping-pong’ between experiments, scales, and time. It allows continuous comparison, adaptation, change, and adjustments to the research design according to unexpected findings, events, and recurring emerging themes. The research findings came from the knowledge generated from these interactions and the decisions to pursue themes that emerged during the process.

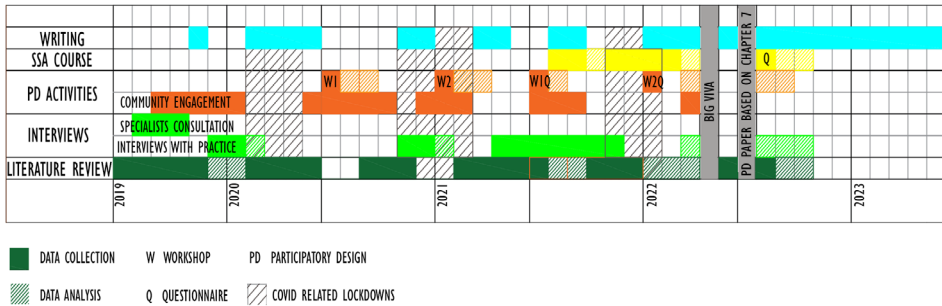


Figure 1: A timeline of research activities

13 Sarah Hards, “Tales of Transformation: The Potential of a Narrative Approach to pro-Environmental Practices,” *Geoforum, Space, Contestation and the Political*, 43, no. 4 (June 1, 2012): 760–71.

14 From German ‘Gestalt’, literally ‘form, shape’ is a term used in psychology that refers to the principle of how organisms perceive entire patterns or configurations rather than merely individual components. Gestalt implies that organisms piece information together by similarity, meaningful, whole pattern from stimuli, where “the whole is more than the sum of its parts”.

An important characteristic of the bricolage methodology is the richness of data and triangulation¹⁵. Triangulation in research means using multiple methods, theories, data sources, or investigators to develop a comprehensive understanding of phenomena¹⁶. It is a strategy to test validity through convergent information from several sources. Collecting data from several experiments with diverse methods, settings, and people added rigor, reduced bias, and enhanced the robustness of this study. As shown in table 1 and figure 1, using several methods at several stages and scales of the research was essential to study and triangulate several themes that emerged as the research developed. The triangulation strategy was used by the main researcher alone and with other participants. For example, the data analysis in this dissertation used feedback from supervisors and participants about data interpretation as a triangulation strategy.

As seen in figure 1, each experiment in this dissertation used several methods to investigate sustainable behavior in architecture. At the same time, a thread of thought was built between experiments to find relationships, patterns, contrasts, and intersections between them. Connected to the praxis cycle mentioned before, this approach of theory-action-reflection between several stages worked as an overall triangulation strategy for knowledge creation. With special attention to the research process, the findings do not only come from the analysis of collected data but also from insights about the changes in the research approach during experiments.

4.2.3 Reflection on the role of the researcher and accounting for bias

Furthermore, it is important to remember that the researchers are not separated from these contexts, as they have their own personal stories and are also influenced by social norms. Therefore, a narrative approach requires considering how narratives are self-reconstructs and interpreted a particular happening in a specific context and are filtered through a specific 'lens.' When working with narratives, reflecting on the researcher's subjectivity and influence on the data and interpretation is important.

For that, reflection upon several roles of the researcher was considered in this dissertation. Table 1 presents the 'role' of the researcher for each experiment. For example, the role of a 'relational listener' implies that the researcher was not merely an interviewer but invited their views, personal stories, and critical reflection to be part of the conversation, seeking to create a greater connection to the person in question in a relational

15 Norman K. Denzin and Yvonna S. Lincoln, *The SAGE Handbook of Qualitative Research* (SAGE, 2011), 5.

16 M. Q. Patton, "Enhancing the Quality and Credibility of Qualitative Analysis," *Health Services Research* 34, no. 5 Pt 2 (December 1999): 1189.

way. As ‘the bridge’ or facilitator, my role was to facilitate relationships between several actors in participatory design workshops, where the relational aspect was focused between groups with diverse interests.

During my exchange with participants, be it an interview or leading focus groups, I took the role of relational listener, in which I, as a researcher, used active listening and eventually shared my own experiences to relate to what the participant was expressing. Active listening means that I gave participants feedback about my own understanding of what was being said. For example, to check my understanding, I often summarized what the participant told me, stating, ‘From this I understand that X and Z are important to you, is that correct?’ and asked for clarification or confirmation of my understanding. This process also helped to reduce bias by allowing me to compare my impressions with the participant’s version of reality.

During interactions with participants, I allowed myself to share my own experiences when I could relate to the feelings that they were expressing or when a critical point or dilemma surfaced. I invited my personal stories and critical reflection to be part of the conversation, seeking to create a greater connection to the person in question. I focused not on sharing ‘right’ or ‘wrong’ opinions but on expressing my own challenges and feelings about the content of the information that emerged. Because the researcher’s involvement and subjectivity co-produce and generate the data, I considered the unconscious relational processes between researchers and participants, between my own experience and perception of self and what is perceived as the ‘otherness’¹⁷. The bricolage methodology sees the researcher as not separated from research contexts, having their own personal stories, and being influenced by social norms. Knowing that, I kept attention to the researcher’s subjectivity and influence on the data and interpretation.

Therefore, instead of trying to remain ‘absent’ or ‘neutral’ during the interaction, I made explicit my positioning and intentions, from email correspondence with participants to consent forms or how I interacted with participants. In this way, the data generated from the interactions in this research were collectively produced and subjective to local and specific real-life situations. Connected to the epistemic assumptions that there is no essential ‘truth’, the data that emerged from the exchanges with others were facilitated by processes that provided space and context for narratives to emerge and develop. These narratives helped me construct stories to reveal important aspects of sustainable architectural behavior.

¹⁷ Simon Clarke, “Psycho-Social Research: Relating Self, Identity, and Otherness,” in *Object Relations and Social Relations* (Routledge, 2008).

I paid careful attention to feeling states, thoughts, and perceptions before and during the exchange with others, to which I took notes in a reflection diary. After each interview or conversation, I would do a debriefing exercise in my reflection diary, where I would reflect on the main points that caught my attention in the interview, my impression of the participant's feelings and general state, the context in which the interview took place (if online, in an office and details about surrounding and the situation) and also an account of my feelings and thoughts about the experience. Later when I came back to the data, with more emotional distance, this helped me to account for biases and interpretative misunderstandings that I might have depending on my emotional state. This exercise also refreshed my memory regarding the interview context before engaging in the analytic process.

When it came to data analysis, as I encountered one idea, I related it with my previous ideas and asked: how does this idea challenge the other ones I already have? How can this make the research richer? These questions helped me to relate to the data in an open-minded way and, at the same time, keep a critical approach to the research and intentionally while searching for the participant's paradoxes and dilemmas of sustainable behavior.

Another way to reduce bias was to use triangulation methods as a sort of measure to create a sense of validity and check for potential unconscious projects and interpretation bias in the analysis. These measures included supervisor feedback, comparison to data and interpretation from other experiments in this dissertation, and comparing findings with the literature review.

Because I am not a specialist in the several fields I am using in this research, I searched for feedback from specialists as one of the first research activities conducted (figure 1). These talks were conversations with three sustainable behavior specialists working in architecture, including one environmental psychologist, one anthropologist, and one participatory design specialist. I introduced my research, theories, and the experiments I wanted to conduct, to which they gave me valuable feedback. I adjusted my research methods by acknowledging possible issues, exploring exciting areas, and further reading to complement my literature review. Two of these specialists participated in the first participatory design experiment and kept giving me feedback in other phases of my research. A significant milestone of my PhD was a mid-term presentation (called Big Viva, shown in figure 1), where the environmental psychologist Renee Lertzman gave me feedback on my literature review and helped me to check my own biases and possible problems in my methodology, theories, and data analysis.

4.2.4 How meanings are created and who creates them

Bricolage understands the world and its meanings as constructed by and agreed between people (including the researcher). Therefore, meanings and methods from each discipline used in this research must be up for negotiation and revision. An example of this came up during the early phases of this research regarding Participatory Design (PD). Several practices within PD exist, and what constitutes participation can have diverse meanings. Although this dissertation is built on previous PD literature, it did not require standardized participation in a rigid form for the experiments. Rather, participation meanings, activities, and goals were constantly negotiated with participants. Therefore, in the context of this research, the structure and understanding of participation cannot be seen as some universal, fixed, unchanging reality. It might instead be a concept that varies in relation to time and place and constantly mutates in relation to its connections with socio-cultural-economic, historical, political, and psychological contexts.

Dealing with complexity and avoiding reductionism, bricolage asks for thick description and multilayer interpretation of the intersecting issues of contexts, self, social-historical aspects, and other actors. For example, while reflecting upon the issues of self in this research, I saw myself as part of the research process and reflected upon my role and my own changes during the process. Mads Peter Laursen, one of the stakeholders in my participatory design workshops, refers to diverse roles as ‘different hats’ we have to use (and constantly change between) when engaging with diverse issues. In bricolage, research, researcher, and researched object are intertwined, and reflecting upon roles is important because it asks researchers to critically reflect on their methodological praxis of reintegrating their body and mind into scholarship¹⁸. Table 1 shows the main roles or ‘hats’ I used during this research, which will be explained in more detail in the following sections.

Another important aspect of bricolage is the understanding that knowledge is produced with interpretation. No fact can be self-evident in the zone of complexity, and no representation can be ‘pure’. Bricolage is attentive to knowledge in context where abstractions are not separate from contexts, and there are always multiple contexts to view a phenomenon. It questions reductionism and does not seek to generalize findings to a level of universal application. Therefore, while some abstractions and generalizations might be suggested in the research, this should not be understood as ‘truth’ or as something directly applicable in other contexts. Instead, it should be viewed as a starting point

¹⁸ Peter McLaren, “Bricklayers and Bricoleurs: A Marxist Addendum,” *Qualitative Inquiry* 7, no. 6 (2001): 700–705.

for discussion to develop insights in other contexts. In other words, findings should be understood as contextual and abstractions as possible indicators of methods of inquiry.

Bricolage understands that context can never be perfectly replicated due to the phenomena's ever-changing nature and complexity. Therefore, instead of proposing fixed 'knowledge' to be replicated, this research looks for insights understood as a way of looking at phenomena to expose their constellation. Insight emerges in a specific context to clarify the situation's nature and the best action. It is possible to learn from previous insight, but one can never replicate an insight when a new situation arises. Therefore, knowledge is seen not as a repetitive, replicable, or linear cumulative system but as emergent elements in a complex non-linear system. In this sense, attention should be given to not replicating but being inspired by methods and processes proposed.

4.2.5 Issues of power and recognition in knowledge creation

Another key aspect of the methodology is that it recognizes diverse knowledge beyond the academic. Knowledge is as diverse as the actors that produce it. Several actors display a diversity of world views and meaning-making modes. This research assumes that knowledge is not only produced from my academic background but also from what I learn from people from diverse cultural and educational backgrounds during my research. This includes people from practice, students, and more-than-human entities that I interacted with.

This position concerning knowledge is important because it invites us as researchers to deal with often messy, contradictory, and complex meaning-making processes of knowledge creation. A good example is Sapolsky's¹⁹ work, where he explains human behavior from several fields, where each field contains its epistemological assumptions (i.e., evolutionary biology, social sciences, psychoanalysis). Sapolsky recognizes that while all of them are right, they are also wrong and that the most probable explanation for how behavior occurs lies in the intersection between all fields. Similarly, the literature review addressed several epistemological assumptions about sustainable behavior, exposed their strengths and weakness, and proposed a more complex understanding of sustainable behavior for architecture.

Another important bricolage approach is its attention to power relationships in knowledge creation. Related to the Foucauldian view that power can be a censor that excludes, blocks, and represses, power in research can promote particular views of research rigor

¹⁹ Robert M. Sapolsky, *Behave: The Biology of Humans at Our Best and Worst* (Penguin, 2017).

and validity and notions of “unscientific” or “soft” research, unworthy of certification²⁰. One example of this was the challenge I faced during one of my experiments in a workshop with only European participants. Because our lived experiences differed, it was challenging for them to understand the importance of integrating indigenous/global south worldviews into how we practice and think about sustainability. Another challenge was being asked ‘how can I prove my research impact,’ while many of the impacts of my research, although real, might not traditionally constitute “academic knowledge” (i.e., workshops that strengthened communities and were catalysts to new projects). By being attentive to this power dynamic in knowledge production, this research tries to be attentive to producing, sharing, and legitimizing knowledge based on other ways of seeing. Relating this to the social constructivist ontology, this dissertation looks at how knowledge is socially constructed instead of searching for one true answer.

Responding to the above issues of power and recognition of knowledge, the dissertation highlights the much ‘unseen’ and unquantified results often not considered in scholarly production. It refuses the reductionism of transforming unquantifiable research processes and outcomes into ‘hard’ quantified outcomes. For example, transforming interactions and relationships into a ‘number of interactions and relationships’ reduces them to a quantifiable object but says nothing about the quality and insights generated from these interactions. Although sometimes hard to describe, the unquantifiable and ‘unseen’ are considered a real impact of research. For example, with the experiments, I do not know all the implications of these interactions. Around half a year after a workshop, one of the stakeholders told me that the students had kept in contact with that stakeholder and continued with collaborations. I heard about this interaction accidentally because it is not something the students would necessarily report to me. Therefore, quantifying and numbering these research impacts, while maybe impossible, might also reduce their importance. Nevertheless, an effort was made to report these unquantifiable phenomena as examples of how research impact goes beyond what is written on these pages.

4.2.6 Freedom of exploration and themes in a multidisciplinary approach

Although embracing all these complexities in research can be demanding and time-consuming work, it also allows freedom to deconstruct and merge several approaches from various disciplines that are not usual in architectural methods. This approach helped this research to develop new and creative methods to engage with architectural research. For example, I created a ‘logbook’ (table 1) to collect data from architectural students

²⁰ Kincheloe, “On to the Next Level.”

during workshops. This reflection journal was a mixture of the time-geographical method²¹ from social sciences with behavioral change reflection exercises from environmental education and environmental psychology. I also asked students to graphically represent some of their reflections since architectural students might be more familiar with expressing themselves that way.

This methodological freedom also allowed me to change how I conducted my interviews. First, I focused on a pre-determined set of questions to analyze specific behavioral issues informed by theory. In the process, I realized how non-linear and diverse behavioral issues were. I then migrated from a linear, goal-oriented, and 'hard' sciences epistemological understanding of behavior to a more holistic, complex, and process-oriented understanding of behavior. Then, my methods became less structured and more relational, focused on dialogue and the richness of stories. I started treating each interview as unique and meaning as constructed based on dialogue and reflection upon these stories. This shift forced me to expand my reading beyond the usual techno-cognitive behavioral theories used in architecture and pushed me to investigate the social, cultural, political, ethical, educational, psychological, and relational aspects of behavior.

Furthermore, the bricolage approach helped understand that the individual self (of the researcher or participants and their behavior) is not separated from culture, relationships, and connections. Therefore, this research is attentive to these relationships, research processes, and context changes. This also implies changes in the epistemological assumptions in the research approach and more attention to subtle 'unquantifiable' outcomes.

4.2.7 Aims of the research approach

Unlike the rationalistic quest of monological knowledge for order and certainty, bricolage searches for a patch-up of several forms of knowledge to address complexity. It builds on several strategies that go beyond a one-dimensional view of the world, order, and certainty of 'right and wrong or quick answers'²² to expose and describe complex phenomena and propose an open range of possibilities.

Another important feature of this method is that it recognizes the nature of constant change as a dynamic process where reality is not a fixed entity. In this sense, bricolage

21 Kajsa Ellegård, "A Time-Geographical Approach to the Study of Everyday Life of Individuals - a Challenge of Complexity," *GeoJournal* 48, no. 3 (1999): 167-75.

22 Gary Thomas, "The Myth of Rational Research," *British Educational Research Journal* 24, no. 2 (1998): 141-61.

aims to provide insights about research engagement with this ever-changing reality and the paradoxes of these interactions. Rather than validate pre-conceived ideas, the aim of the methodological approach of this dissertation seeks to construct knowledge and findings based on real stories from real people and genuine interactions. This was done using a praxis approach to gather insights and themes during the research process. The insights and themes emerged from a reflection and theorization of practice, generating new ideas to be tested in action that generated more reflection and so on.

In this sense, aligned with the social constructivist ontology, this research does not attempt to expose ‘the truth’ but a perception of phenomena embodied in its context, hoping that this perception can bring reflection and change for other contexts. Having that in mind while reading (and also writing), this dissertation is important, because mistaking perception for truth reduces our ability to make sense of the world and its complexity and can also harm those with less power by announcing ‘what is true’²³. Therefore, this research focuses not on examining truth but on critical insights that can help behavior change to unfold.

In this sense, the methodological objective is to produce research that provides a thick description of the investigated phenomena and a glimpse of how things could be. It uses as many methods as possible to make sense of a world of continuous change through language, worldviews, and discourses. It tries to provide insights that alert to things’ multidimensional, socially constructed, and ever-changing nature.

4.3 Scope and limitations of research

To address complexity, bricolage demands knowledge in several areas of expertise and experience with diverse research methods. In this sense, bricoleurs are generalists who bring insights from several fields of specialties. Although bricoleurs try their best, to have an ‘overview of everything’ is also limited to time, resources, and skills available to the researcher. In this dissertation, the scope and limitations of the research were not necessarily delimited in the beginning but took shape according to critical themes and limitations that emerged during the process.

This dissertation was done in the scope of a Danish PhD, which is a three-year educational program, including 840 hours of teaching and research dissemination, as well as participation in the School of Architecture’s events and committees. Additionally, the COVID-19 lockdowns highly affected the project’s methods and timeline. Many PhD activities had to be postponed and reimagined, and the project was extended for a se-

²³ Kincheloe, “On to the Next Level.”

mester. For example, several interviews with practitioners had to be done online instead of in person, and participatory design workshops had to adapt to lockdown circumstances. Juggling diverse topics and methods in a holistic and multidisciplinary research approach within these constraints was an ambitious task. Nevertheless, this project was aimed not at perfection in each experiment but at exploring the messy research process, failure, and success of a PhD educational process. Describing this process, limitations, failures, and successes are all considered part of the research findings.

Another important limitation to acknowledge is our human and cognitive capacity. I learned in behavioral studies that the brain is always looking for more manageable and less energy-consuming pathways to behavior²⁴. But sometimes, the faster answer leads people to less sustainable ways of doing things. Sustainable thinking, like bricolage, invites us to dig deep, think differently, search for the opposite, and find complexity while questioning every step. This process is far from comfortable and can trigger cognitive dissonance²⁵ for the researcher and participants, which makes everything more challenging. Dealing with and untangling complexity requires much of our cognition and can lead to fatigue. Therefore, it is important to acknowledge that rest and time off to 'digest' were part of the research process.

The first COVID lockdown, as shown in figure 1, imposed was an unintended 'break' in my data collection. During this first break, I could revise my initial data collection and literature review and do writing exercises that helped me to reflect on and update my research approach. Later, I held similar breaks after experiments or critical research milestones as a method for self-reflection and to critically look at my research process. Initially seen as a problematic issue, this forced break proved to help me re-organize my thoughts and research process and helped me to focus on that important part of the 'reflection' phase of praxis.

Besides the above contingencies for this PhD, the research's scope also included considerations about scale, audience, geographic-temporal setting, information sources, and logistics as follows:

24 Anja Kollmuss and Julian Agyeman, "Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to pro-Environmental Behavior?" *Environmental Education Research* 8, no. 3 (August 1, 2002): 239–60.

25 Cognitive dissonance is a psychological term used to describe an uncomfortable state of mind when that humans experience contradictions between their beliefs and their actions. It is a mental conflict caused by contradictory values, attitudes or perspectives about the same topic. For example, someone may experience discomfort and confusion when their values about saving the environment are contradicted with their consumer behaviors (i.e. eating meat instead of having a vegetarian diet or shopping fast fashion).

- **Scale:** as seen in table 1, this study investigated research issues in as many diverse scales as possible. For example, the literature review and research activities in Portugal with students from several countries aimed to link research issues with a global perspective, while the participatory design workshops aimed at investigating research issues locally.
- **Audience:** this research focuses on professionals and students of architecture, but it can also be helpful for other professionals and people concerned with issues of sustainability related to architecture, design, and the construction field.
- **Geographic-temporal setting:** the study considered the timeline of sustainable behavior studies in the context of international sustainability discourse from the 1960s to the present. Although focused and situated within the Danish and European context, I invited the non-Western perspectives of my own cultural background from the global south and previous experiences from my work in Asia. These perspectives are explored in the introduction and literature review.
- **Information sources:** while most information sources were limited to English, complementary materials included languages in Portuguese, Spanish, Japanese, and translated Danish. Interactions with research participants were conducted in English, which was a second language for both researcher and participants. Secondary data sources included books, research projects, journal articles, and participants' related data (such as their websites, publications, and others).
- **Logistics:** the research process and experiments were limited by COVID-related lockdowns and the constraints of the PhD program, as explained before.

4.4 Positioning

Aligned with praxis's approach that theory in action should help people change to be more critical, bricolage questions the ways research contributes to the social good. This perspective questions how our work influences the lives of the researcher, the community, and the world. In Cassie Earl's words, bricolage creates 'a radical action research for social change, and it may be described as the scientific methodology of social action'²⁶. Change is the primary goal of praxis, and knowledge is attained when change occurs. Therefore, this research understands that knowledge is not only to describe or observe but to intervene and use that intervention to reflect and change how we act in the world.

²⁶ Cassie Earl, "Being Realistic by Demanding the Impossible: Beginning the Bricolage," *Enquire* (Electronic Nottingham Quarterly for Ideas, Research and Evaluation) 8, no. 1 (2013): 20.

Similarly, architecture, in its nature, is a discipline that intentionally intervenes in the world, changing places and landscapes. Suppose the theories of sustainable behavior are brought into architectural practice. In that case, we can use an architectural praxis to change the world as we act on it more sustainably. With a praxis mindset, this research understands that knowledge does not need to come from academic theory only, it can emerge in practice and experimentation. Therefore, it is important to contextualize our practice and theory by connecting them with critical reflections.

Another important positioning of this study is that it understands that to achieve sustainable behavior, strategies should be focused on relational approaches and issues of responsibility. This research highlights relational approaches' fields and epistemological assumptions while acknowledging the broader complexity of sustainable behavior and diverse epistemologies and knowledge that contribute to the issue. The positioning does not imply that sustainable behavior strategies from other fields, such as 'hard science,' are entirely wrong, but implies that they need to be complemented if we want to develop more effective and holistic approaches to sustainability. Therefore, this study focuses not on realism but on relativism, qualitative and subjective social science perspectives.

Also, aligned with the issues of collective responsibility, this research views knowledge production as a collective practice emerging from several voices (including the voice of the researcher). Therefore, the researcher, as a bricoleur, became a sense-maker of a collective of voices and actors and tried to highlight the diverse roles of the researcher in this collection of voices. This idea is aligned with praxis-oriented knowing, which is collective and develops out of what Wenger²⁷ called communities of practice.

In this sense, this research sees every piece of knowledge as worthy, whether from academia, practice, professional or non-professional²⁸ backgrounds. During interactions with research participants, as I encountered one idea, I related it with my other ideas and asked: does this idea challenge the ones I already have? Does it add and make the research richer? These questions helped me to listen to several kinds of knowledge while keeping a critical approach to the research and intentionally searching for the paradoxes and dilemmas of sustainable behavior in architecture.

4.5 Ethical considerations

27 Etienne Wenger, "Communities of Practice: Learning as a Social System," *Systems Thinker* 9, no. 5 (1998): 2–3.

28 It is interesting to notice that in Denmark is the first place I heard architects using the term 'non-architects' to talk about people who were not educated in architecture. So far, is the only profession where I heard that. I never heard engineer saying 'the non-engineers' or anthropologists says 'the non-anthropologists'. It is important to notice that this separation can create a divide between worthy and unworthy knowledge.

All the research activities that involved participants during interviews or workshops were attentive to consent and voluntary participation. All participants were of legal age, and not part of vulnerable demographics, and the data generated was confidential and anonymized when processed. The chapters and appendix excluded the sensitive contents and information that could be used as possible identifying markers. The participants were informed about ethical considerations, either in person or described in a document sent to them by email. The general research proposal and institutional information linked to the PhD were also sent. Some of the interviews and highlights of the conversation were made into podcasts and were publicly available after the review and consent of participants.

4.6 Research procedure

The following steps is a simplified version of the research procedure and the interactive process between several experiments and constructed themes that emerged from the process. In this dissertation framework, the literature review chapters frame the research within the complexity of sustainable behavior. At the same time, the experiments focus on zooming in on several aspects of sustainable behavior. The following sessions explain the summary of data collection and analysis methods for each dissertation chapter.

- Reflection upon pre-PhD practice and research, scoping several fields for tentative categories of inquiry related to ‘the sustainable behavior issue’
- Literature review, round 1: literature review of sustainable behavior studies in several disciplines
- Feedback sessions from participants and specialists from academia and practice
- Literature review, round 2: Updating epistemological assumptions and research approach
- Experiments in architectural engagement
- Sense-making: writing for emergence and looking for themes across experiments



Register of an informal conversation with integrants of Institut for (X). Image coustesy by Aarhus School of Architecture.

4.7 Interviews with experts in sustainable architecture

The interviews' s chapter presents the findings of 14 qualitative semi-structured interviews conducted with sustainable architecture experts in Denmark. The interviews, conducted from September 2019 to October 2021, utilized the 'critical relational dialogue' (CRD) method to co-construct knowledge through interactions and negotiations between the researcher and participants²⁹. The conversations focused on responsible architecture and sustainable behavior, exploring the relationship between values, worldviews, and architectural practices, and the resulting insights were analyzed thematically³⁰, integrating both primary and secondary data (for a complete view of interview themes and transcripts, refer to appendix 1). The interviews aimed to uncover contradictions and unconscious processes, providing insights into the challenges and strategies of practicing responsible architecture. Additionally, secondary data from websites and the researcher's reflection diary complemented the primary data to refine themes and link them to the literature review.

4.7.1 Method outline

The CRD method was designed using a Biographic Narrative method as a baseline and adding the methods from environmental psychology, including Schein's work on worldviews and Letzerman's work on psycho-social³¹ issues. Inspired by Schein, the CDR method framed the dialogue in a way that it would highlight participant's worldviews, values, and personal life stories, and how they connect these factors to their professional practice and professional stories. This helped me start the conversation and create a base to discuss more complicated topics such as challenges, dilemmas, and personal responsibility.

As pointed out in previous chapters about cognitive dissonance, I expected that pointing out possible dilemmas as responsibility issues could be triggering. Therefore, another aspect of the CDR method was to have a dialogue that aimed at uncovering unconscious processes and contradictions of the participant and bringing these contradictions to the surface, adding the critical element of self-reflection. This part of the method was inspired by Lertzerman's work, in which she designed a 'Dialogic Relational Inter-

²⁹ Rosalind Edwards and Janet Holland, *What Is Qualitative Interviewing?*, Research Methods Series (London; New Delhi; New York; Sydney: Bloomsbury, 2013). 17

³⁰ Virginia Braun and Victoria Clarke, *Thematic Analysis: A Practical Guide* (London ; Thousand Oaks, California: SAGE, 2022).

³¹ Renee Lertzman, *Environmental Melancholia: Psychoanalytic Dimensions of Engagement* (London: Routledge, 2017).

view' methodology that focuses on free-associative narrative interviews based on in-depth dialogue and using data analysis informed by psychosocial and psychoanalytic research methodologies. This method is helpful to go underneath participants' rational minds and understand the unconscious processes of their feelings, anxieties, and meaning-making behind their narratives.

Therefore, the methods I designed aimed at exposing the links between worldviews-values-psycho-social issues to behavior, weaving interviewees' conceptual ideas into their concrete practices. Framing the discussion on Responsible Architecture, the conversations linked the participants' worldviews and values with methods they use to bring these values into their architectural practice. And doing that from a critical approach aimed at uncovering contradictions, inconsistencies, and affective and complex ways practitioners engage with environmental challenges.

By combining these two methods and adapting them to the architectural context, the interviews presented in this study aimed to gain in-depth information about the current worldview, sustainable behavior strategies, and challenges that professionals in the architectural field have when practicing responsible architecture. The method focused on understanding participants' stories, experiences, opinions, attitudes, perceptions, and contradictions to convey meaning. By doing that, the method proposed followed the gestalt³² of the narratives and emerging themes of interest that seemed particularly important. With attention to themes, the research looked for core narratives in the data.

Besides the primary data collected with the CRD, this study was complemented by secondary data. This secondary data included written and visual data from the participant's website and reflections from the researcher's reflection diary, in which I took notes during and after each interview, writing down my perceptions, feelings, and main topics that emerged from the dialogue. The interviews were transcribed and coded, giving rise to themes that were compared and complemented with secondary data for further refinement. These themes were then linked back to the literature review for analysis to help develop further the main themes proposed. By having a one-on-one conversation between me and the participants, I could dig deeper and gain first-hand accounts from the architectural practice's perspective upon the previous and newly emerged themes.

4.7.2 Interview topics and guide

³² From German 'Gestalt', literally 'form, shape' is a term used in psychology that refers to the principle of how organisms perceive entire patterns or configurations rather than merely individual components. Gestalt implies that organisms piece information together by similarity, meaningful, whole pattern from stimuli, where "the whole is more than the sum of its parts".

Although highly flexible, an interview guide was created to maintain structure within the method and aid the interview process. The questions were designed to address five parts of inquiry. For each part of the interview, an initial prompt question was asked, and eventual backup questions were used to spark the conversation, rephrase the question if needed, or go deeper into the topic (see table 2). I used this guide to consult thorough the interview, marking off topics already discussed and probing into topics that were not being covered. The questions were designed to gather descriptions of participants' conceptual understanding of the topics and their behavioral strategies to deal with the topics in practice. Therefore, the conversation aimed at weaving theory and practice, concepts, and practical examples. Although all interviews were asked similar questions, each interview also had specific questions that addressed keywords and projects that each practice had in their website or specific concepts that emerged during the dialogue. Three pilot interviews with two colleagues and one expert were made at the start to develop and refine the interview guide and method, and these were not included in the study.

During my interview tests, I realized that not all participants resonated with or understood the meaning of certain concepts such as 'worldview' or 'values,' so backup questions helped me to get to the information through other means. The order in which questions were asked also depended on the narrative from each participant and where they felt more comfortable going. Some people were more comfortable speaking about their professional practice first and later, allowing some space for more personal questions, while others initiated their stories with their personal background, weaving them into their professional practice. Therefore, the dialogue did not follow a rigidly structured guideline and mainly flowed according to the interest and tempo of the participant.

Table 2: Interview topics and questions

Topic	Initial prompt question	Backup or complementary questions
Part 1: Understanding their values and worldview, what is important for them	Could you explain the core values of your architectural practice?	What is the main focus of your practice? How do you think working in architecture had an impact on your worldview?

<p>Part 2: Understanding their practice and behaviors, how they put into practice their conceptual values and world-views</p>	<p>How do you put your values into practice? Can you give me some examples of project outcomes, dissemination activities, or design choices connected to these values?</p>	<p>How would you describe these values are related to X in architecture?</p> <p>Do you have any project in mind that connects with these issues of X?</p> <p>(where X represents the specific topic that they raised, i.e., X = sustainability)</p>
<p>Part 3: Understanding their background stories and why these things are important to them, how they came to be</p>	<p>Where do you think your deeper motivation comes from concerning these issues?</p>	<p>Why did you become involved with X in your architectural practice?</p> <p>Looking back, can you point to any events or transitions where you started to look differently at the world, yourself, and these issues? When did the concern with these things start?</p> <p>Is this something you learned during your education, before or after?</p>
<p>Part 4: Understanding dilemmas and how they position themselves in the larger architectural practice</p>	<p>How do you perceive the architectural practice today is dealing with these issues?</p>	<p>Can you think of a situation or dilemma when your values conflicted with an activity in your practice? How did you resolve this?</p> <p>Do you ever say NO to a project? What do you believe are some of the implications of X in the development of architecture in general?</p> <p>What do you see as the challenges to accomplishing your goals at both the individual and organizational levels?</p>
<p>Part 5: Inviting a sense of responsibility and the way forward</p>	<p>Regarding your practice, what do you feel responsible for? What do you want to take a stake in?</p>	<p>What is important to focus on in the future?</p> <p>What would you hope to change in the way we practice architecture?</p> <p>What is responsible architecture for you?</p> <p>What is lacking for us to practice more responsible architecture?</p> <p>What message would you like to pass on to architectural students and other architects?</p>

The first two parts of the dialogue looked into main topics related to the research questions: the first topic concerned the concepts of RA, related to the interviewee's worldview, values, wishes, and conceptual or theoretical ideas (what they say they do). The second is related to sustainable behavior, their actions, strategies, and methods explored in examples from their practice (what they actually do). This first question could be understood by mapping the terrain of 'what is there.'

Within these two overarching topics of the research questions, the third part of the interview looked into understand in depth the 'whys' and 'how it came to be.' This part of the interview aimed at identifying the participant's personal stories and meaning-making, connecting their personal experience with their professional experience, and inviting reflection into the conversation. The first three topics helped to prepare the terrain for the more sensitive part of the dialogue, which focused on critical reflection that could trigger cognitive dissonant for participants.

When the interviewee gave me the feedback that they had nothing else to add, I moved to the fourth part of my interview, when I used critical questions to invite the participant to reflect on the surfaced paradoxes between their 'values' and personal stories of their actual behavior. This part of the interview, aimed at bringing unconscious paradoxes to the surface, invited participants to reflect on the architectural field's dilemmas critically. By shedding light on these dilemmas, we could move to the last part of the dialogue, where we discussed possibilities for behavior change and possible ways of moving forward, highlighting their responsibility plays a role in the broader collective responsibility of architectural practice.

Although this PhD is within sustainable architecture dealing with environmental problems and sustainable behavior, the terms 'environmental issues' or 'behavior' were seldom used explicitly in the dialogues unless participants brought it up themselves. Instead, I focused the discussion in general terms about the participant's central values and what is important to them and their practice. With the ontological assumption of the research sees that ethical issues of responsibility and how to engage with environmental issues must be seen in the broadest context of psychological, social, internal, and external dynamics beyond the term 'sustainability.' Therefore, the dialogue allowed participants to speak about topics and free-associate openly, so I, as a researcher, could trace and track core narratives that help provide specific threads of meanings and themes.

In this sense, I would give as much space and time as possible for the participant's free association, follow up with backup questions and clarifications, and sometimes steer the discussion further into a particular theme or topic that seemed to contain significant rel-

evance. When we both felt at ease and comfortable with each other and when the participants felt they had 'exhausted' their narrative stories, I would invite the last phases of the interview to invite people to confront dilemmas where psychological barriers could arise. In some instances, some participants engaged openly with the dilemmas, inspired by the first part of the discussion, and others retreated, had a 'defended' response, or were unsure how to respond.

4.7.3 Selecting participants and data collection

To select participants for the interviews, I began by creating a list of architectural offices in Denmark that featured specific keywords related to my research topics on their websites. These keywords included sustainable behavior, behavior change, responsible architecture, participatory methods, and social sustainability. I expanded this list by adding suggestions from interviewees, supervisors, and colleagues working in Denmark. After conducting research, I finalized a list of 22 offices that seemed to go beyond the typical notion of 'sustainability' and advertised more critical or alternative approaches to sustainability, often mentioning responsibility or sustainable behavior.

From this list, I contacted all 22 offices and interviewed 13 of them, expressing interest in contributing to my research. I also interviewed one anthropologist who works as a consultant for architectural projects, bringing the total number of interviews to 14. Before scheduling the interviews, I usually had a brief conversation with the offices to explain my research, allowing them to identify the most suitable person to address the topics I proposed. These interviews typically lasted between 1 to 2 hours each.

The first step in data collection involved preparing an individualized document for each participant, noting key words and projects from their websites to familiarize myself with their work. I typically had two conversations with each participant. The initial meeting was brief (about 15 minutes) to introduce ourselves, explain my research, and discuss how the interview would proceed. This initial step was crucial for breaking the ice, building trust, and fostering familiarity so interviewees would feel more at ease during the next session. During this first session, I also shared the main topics I wanted to explore in the interview: the central values or issues concerning responsible architecture in their practice and examples of how they translated these values into their work. I encouraged participants to discuss their practice and individual perspectives, as I wanted to incorporate a more personal touch in the interview. Not all participants were able to meet twice, so some initial exchanges were conducted via email. In these cases, I conveyed the same information and requested their perspectives on responsible architecture and how they translated it into practice.

Before the second meeting, I reviewed notes from my reflection notebook, where I recorded my impressions of their work based on their website and our initial exchange. These notes helped me identify key issues or projects to discuss during the interview. The second meeting lasted between 1 and 2 hours, and I used various opening questions to prompt narratives depending on the impression and feedback from our first meeting. I quickly realized that rigid, linear interview methods did not encourage open and comfortable conversations. Instead, I adjusted the flow or topic of the conversation based on the individual, using a flexible, semi-structured approach with several questions as prompts when needed.

The final prompt asked participants to discuss their future hopes for the practice of responsible architecture, allowing them to respond at length and without interruption. We then debriefed briefly, and participants could ask questions about the study or the conversation. Each participant could receive the recording and final transcripts if they desired.

Following each interview, I listened to and partially transcribed the digital recording, noting any patterns or emerging themes. After every interview, I wrote in my reflection notebook, documenting the main issues discussed. Then, I took a break from the data, returning to these reflections during data analysis. Before starting the analysis, I listened to the interview again to refresh my memory and ensure a strong recall of the detailed accounts. This process allowed me to identify changes in my perception after gaining emotional distance from the event.

During the transcription phase, I also took notes in the logbook about the main points of the interview. By comparing my impressions from before the interview, immediately after the interview, and after transcription, I could pay close attention to repetitive narrative structures, which helped me identify patterns and construct themes. This practice played a vital role in effectively analyzing the collected data.

4.7.4 Data processing and analysis

Each interview was recorded and transcribed using Descript software for automatic basic transcription. I then revised the transcriptions manually and conducted three rounds of bottom-up coding, identifying codes that emerged from the data. After the first round of coding, I divided the codes into 'values and worldviews' and 'practical examples of practice (behavior)'. This process revealed approximately 710 concepts and 312 behavior strategies. I took note of the main ideas and patterns between interviews or isolated interesting topics while coding.

In this process, I visually identified dilemmas, main ideas, paradoxes within and between interviews, challenges, and potential ideas. I paid close attention to themes and dynamics as they surfaced in the material, carefully considering feeling states and corresponding thoughts or perceptions before and during interviews. I searched for core narratives and explored the relationship between themes in the data, both within each interview and across interviews.

The free association style employed during interviews focused on how meanings were produced and constructed, with particular attention given to affective themes, repetitions of topics, and how each person connected and moved between topics and ideas to convey unconscious processes or motivations (such as fear and emotional attunement, which will be discussed in chapter 5). By examining the connection between personal stories and professional behaviors, and with the support of the literature review, I could find links between interviewees and discourses that were not immediately apparent. In this way, I analyzed the data with attention to core themes, ambivalence, contradictions, and affects.

Working with narrative analysis, I looked for stories about people's beliefs about how the world should be, how architecture should be practiced, what responsible architecture entails, the main challenges in their stories, and how they arrived at their current positions. I typically asked about their trajectory in entering the architecture field, their education, and even some aspects of their childhood. The idea was to help people relate what they do to who they are to find what is truly meaningful, why, and how they put it into practice. In the following data presentation, I will not necessarily present background stories or focus on individual accounts but instead seek similar human-embodied experiences and shared understandings and meanings. This approach allows us to access the experiences of others to develop a deeper understanding of ourselves as practitioners.

4.7.5 Limitations

One limitation I faced when conducting the interviews was related to cultural and language barriers. Interviews were conducted in English, a second language for both researcher and interviewees. Having only one chance to interview participants meant that multiple encounters, which could have clarified my interpretations of the data, were not possible due to time constraints. Another limitation is the labor-intensiveness of this method. Conducting 14 in-depth interviews, transcribing, and analyzing them was highly demanding in terms of time, mental, and emotional resources. Writing up and analyzing the material also took significant amounts of time.

Moreover, it is crucial to acknowledge that while attempting to uncover unconscious processes, such as participants' emotional states, we cannot assume people are 'telling it like it is.' Defense mechanisms operate unconsciously, making it difficult for individuals to report their experiences accurately³³. I tried to counteract this with triangulation from the literature review and supervisor feedback.

In the interview analysis, I did not attempt to mimic or emulate a form of 'objectivity' valorized in the sciences, as engaging with such personal material inevitably evokes certain projections, associations, or feelings due to our particular subjective positions. But, I must recognize that my training is in architecture, not social science or psychology. I had no formal training in this area despite using qualitative methods, including interviews, for many years and in previous research. While this might have given me some blind spots, I tried to counteract these with feedback from psychologists and professionals in the social sciences to provide input on my process and my supervisors' feedback.

33 Wendy Hollway and Tony Jefferson, *Doing Qualitative Research Differently* (6 Bonhill Street, London EC2A 4PU United Kingdom: SAGE Publications Ltd, 2000).



Main plaza of Institut for (X) and main event building (A-Hus). Image courtesy by Institut for (X).

4.8 Exploring sustainable behavior relational strategies in architectural learning

Chapters 6,7 and 8 are the results of exploring research topics within diverse architectural learning engagements. To promote architectural students' responsible sustainable behavior, these chapters explored how relational sustainable behavior strategies can be used in architectural engagements with students to cultivate responsible architecture practice. It was used to test some ideas from the literature review and some insights from interviews. These chapters work as an iteration of the research process, each building on the previous in search for improvement of methods, clarification, and the emergence of themes. Therefore, each is written in a specific manner according to the methods and type of data collected.

4.8.1 Methods for Participatory Design workshops

Chapters 6 and 7 will explore several sustainable behavior strategies in responsible architecture participatory design workshops between a grassroots community and architectural students in Aarhus, Denmark. The PD workshops were designed using methods of environmental psychology applied to environmental education, connecting environmental information with individuals' lived experiences, real-world situations, relationships, and emotional attunement to facilitate changes in their feelings, thought processes, and actions³⁴.

In this regard, this thesis utilized lived experiences as a catalyst to stimulate emotional attunement both interpersonally and between individuals and their environment. The goal was to challenge people's worldviews and values, addressing their psycho-social dilemmas in architectural sustainability practice. These lived experiences were crafted employing various methods derived from psychology and environmental education literature, including studies conducted by Hungerford and Volk³⁵, a literature review of

34 One good example can be seen in the work of Renee Lertzman 'Project inside out' that provides a holistic series of methods, tools and guiding psychological principles for address the complex and messy experiential dimensions of engaging with societal change in face of climate change. Their principles cover cognitive, emotional and behavioural dimensions, engaging people as partners and stakeholders in this work of change, and focusing on "emotional intelligence", addressing lived experiences, perspectives, and conditions across several stakeholders and communities. For more information access: <https://projectinsideout.net/>.

35 Hungerford, Harold R., and Trudi L. Volk. "Changing learner behavior through environmental education." *The journal of environmental education* 21, no. 3 (1990): 8-21.

environmental education studies by Stern et al.³⁶ and Varela-Losada et al.³⁷, and an assessment of climate change education interventions by Monroe et al.³⁸. Table 3 presents an overview of these methods; while specific behavior change strategies are exclusive to individual studies, it is evident that emotional connection is broadly recognized as a critical factor for sustainable behavior across all studies.

Table 3: learning strategies from sustainable behavior based on Environmental Education literature

Strategies	Meanings and methods	Related to
Emotional connection	The experiential focus is on interactions with others, encompassing people, animals, and places, to cultivate environmental sensibility and empathy, employing extensive group discussion and collaboration.	Monroe et al., Varela-Losada et al., Hungerford and Volk, Stern et al.
Identification	The learning experience centers on creating personally relevant and meaningful engagements for learners, integrating their interests and personality factors.	Monroe et al., Varela-Losada et al., Hungerford and Volk, Stern et al.
Holistic experience	The learning experience emphasizes real-world issues through a multidisciplinary approach involving other disciplines and/or scientists, enabling individuals to identify and deliberate on appropriate solutions. This approach underscores a comprehensive narrative and process.	Monroe et al., Varela-Losada et al., Stern et al.
Experiential engagement	The learning experience is project-oriented, concentrating on real-world problems and local issues.	Monroe et al., Varela-Losada et al., Stern et al.
Social learning	The learning experience emphasizes cooperative group work, fostering understanding of diverse viewpoints, knowledge bridging, community creation, and trust building.	Monroe et al., Varela-Losada et al., Stern et al.

36 Stern, Marc J., Robert B. Powell, and Dawn Hill. "Environmental education program evaluation in the new millennium: What do we measure and what have we learned?" *Environmental Education Research* 20, no. 5 (2014): 581-611.

37 Varela-Losada, Mercedes, Pedro Vega-Marcote, Uxío Pérez-Rodríguez, and María Álvarez-Lires. "Going to action? A literature review on educational proposals in formal Environmental Education." *Environmental Education Research* 22, no. 3 (2016): 390-421.

38 Monroe, Martha C., Richard R. Plate, Annie Oxarart, Alison Bowers, and Willandia A. Chaves. "Identifying effective climate change education strategies: A systematic review of the research." *Environmental Education Research* 25, no. 6 (2019): 791-812.

Collective actions	The learning experience is centered on social engagement and community involvement, enhancing individuals' locus of control through action-taking.	Varela-Losada et al. Hungerford and Volk, Stern et al.
Role models	The learning experience involves intergenerational programming, incorporating individuals with firsthand experience with the issue and encouraging teacher engagement.	Varela-Losada et al., Stern et al.
Learner's active participation	The learning experience positions individuals within the narrative, prompting them to actively learn about a problem or issue, investigate and evaluate it, and choose solutions.	Varela-Losada et al., Stern et al.
Focus on specific places	The learning experience explicitly links program content to individuals' lived places and experiences, provoking reflection. This approach allows individuals to immerse themselves in the issue and recognize their connections to it.	Monroe et al., Stern et al.
Empowerment	The learning experience prioritizes people-centered learning, facilitating the development of skills and perceptions of self-efficacy.	Hungerford and Volk, Stern et al.
Critical thinking	The learning experience emphasizes a deep reflection on the complexity of environmental issues, drawing attention to relationships among psychological, social, and environmental issues and the process involved.	Varela-Losada et al.
Teacher passion and own identity	The learning experience is enriched by the educator's passion for the subject matter and their genuine care and concern for individuals.	Stern et al.

These studies were the foundation for developing methods for the Participatory Design (PD) workshops developed in this thesis. For instance, the workshops concentrated on fostering emotional connections by creating conducive settings for participants to engage with each other personally - sharing life stories, values, spending time together, and actively listening. The main goals of the workshops were not framed around the design output but rather around the design process, which focused on cultivating relationships with the human and more-than-human elements of the place. The PD workshop emphasized establishing relationships before initiating design decisions or designing spaces. The workshop concentrated not solely on results but on deep reflection on the complexity of environmental issues, with attention to relationships (i.e., between psychological, social, and environmental issues) in the results and the design process. Furthermore, The workshop aimed to provide a holistic experience for students by focusing on PD and inviting real stakeholders with real design projects.

Additionally, the workshops were designed so that each student could choose specific roles to play, which they could select based on their personality, identity, and skills. Therefore, learning strategies that focus on emotional connection and building identification were used to help students consciously think about psycho-social issues related to responsible architecture. These methods can assist individuals in developing skills to address their psychological barriers while aligning their values with the behavior they desire to exhibit. The strategies used called for enhancing individuals' knowledge while tapping into their emotions and empathy³⁹.

Moreover, sustainability during the workshops was addressed holistically, connecting diverse aspects of sustainable architecture, such as environmental and social issues, and always inviting specialists from several disciplines to deliver lectures and contribute to the workshop. Although the workshops had several tutors with various specialties to assist students, the experience was focused on collective learning, where tutors were solely there to guide students through the process. Decision-making stemmed from conversations with stakeholders and not solely from the tutor's influence. In this sense, the workshops aimed to provide experiential engagement with a clear connection between the workshop process and results and the social impacts of the students' work.

Focusing on the process is crucial because it is primarily during this time that we can implement learning strategies and create knowledge-exchange to spark people's sustainable behavior. For instance, when a design process focuses on critical thinking about our behavior, participants avoid making mistakes by acknowledging cognitive biases by understanding the psychological dimensions of their sustainable behavior⁴⁰.

Focusing on the design process helps to enhance learning based on holistic approaches and experimental engagement. As argued by Stern et al. ⁴¹, holistic processes can convey a complete idea/story that carries the potential to provide a coherent picture of the relevance of the activity performed and clear points for people to reflect upon and pursue after the experience. It is also during the process that participation can occur. As

39 Schultz, P. "Empathizing with nature: The effects of perspective taking on concern for environmental issues." (2000).

40 Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

41 Stern, Marc J., Robert B. Powell, and Dawn Hill. "Environmental education program evaluation in the new millennium: What do we measure and what have we learned?" *Environmental Education Research* 20, no. 5 (2014): 581-611.

pointed out by Varela et al., participation, especially in the early stages, is key to connecting people's personal interests and emotional involvement with the activity or project⁴².

Furthermore, paying attention to the process helps address crucial aspects of belonging and engagement. For instance, focusing on particular places, social learning, and identification assists in cultivating a sense of place attachment - a key element for fostering a sense of belonging. Place attachment evolves when individuals spend time in a location, listen to stories, and experience significant events that overlap with their self-identity. It develops when individuals perceive similarities between themselves and a place and integrate cognitions about the physical environment, such as memories, thoughts, values, and preferences, into their self-identities⁴³.

To address the often overlooked aspect of context in sustainable behavior, especially in acknowledging the power of social norms and socio-cultural factors⁴⁴, and the role of social values⁴⁵, the workshops emphasized methods to enrich the social context and the potential for collective behavior change. In this sense, strategies to facilitate social learning were used, where students consistently worked in groups, with each group accountable for engaging with a specific set of stakeholders. Students had to complete several exercises collaboratively with their stakeholders to make design decisions. These design decisions were shaped by collective decision-making aimed at improving sustainable behavior use of the site, focusing on a specific place and context. By working closely with stakeholders on real projects, students had the opportunity to develop their perceptions of self-efficacy, enhancing their belief in their ability to make a difference.

Students were also tasked with translating theoretical knowledge and social learning (often considered as soft/qualitative data) into specific design outcomes. They had to derive design responses that could be either material (i.e., creating a new structure) or immaterial (i.e., altering how people used the existing structure). The praxis approach in the workshops was used as a cyclic learning process that begins with individuals' experiences, followed by critical reflection, and eventually leads to taking action. This approach promoted a smoother transition between theory and action, imparting knowledge in a way that integrates participants' understanding, action, and being.

42 Varela-Losada, Mercedes, Pedro Vega-Marcote, Uxío Pérez-Rodríguez, and María Álvarez-Lires. "Going to action? A literature review on educational proposals in formal Environmental Education." *Environmental Education Research* 22, no. 3 (2016): 390-421.

43 Gifford, Robert. "Environmental psychology matters." *Annual review of psychology* 65 (2014): 541-579.

44 Kollmuss, Anja, and Julian Agyeman. "Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental education research* 8, no. 3 (2002): 239-260.

45 Ives, Christopher D., and Dave Kendal. "The role of social values in the management of ecological systems." *Journal of environmental management* 144 (2014): 67-72.

The praxis approach aids in making individuals aware of their behavior, thoughts, and feelings, thereby facilitating their effectiveness in adopting sustainable behaviors. It aligns with Hungerford and Volk's perspective, which emphasizes the role of locus of control concerning sustainable behavior. They argued that individuals are more likely to engage in a behavior if they have confidence in their abilities, thereby presenting opportunities for students to apply their skills within the community to boost their locus of control⁴⁶. Praxis also assists individuals in dealing with emotions, overwhelm, fear, and despair, which can be addressed through action⁴⁷. The exercises derived from the strategies in table 3 encapsulate the fundamental ideas on encouraging sustainable learning behavior, connecting back to the main issues discussed in the literature review and raised during interviews. The subsequent sections will detail the methods tested to stimulate students' sustainable behavior during the workshops.

4.8.2 Participatory Design's potential to sustainable behavior

These diverse learning methods were tackled within the primary methodological framework of participatory design (PD). Focusing on how community involvement and collective efforts can facilitate behavior change while being attentive to power dynamics and ensuring local voices are considered⁴⁸. PD also offers ideal conditions for co-creating shared values and problem-solving^{49,50} encouraging participants to form a collective of action-oriented individuals, enacting their responsibilities and abilities to address local ecological issues⁵¹. For instance, in Fowles's synthesis of participatory and ecological design, he calls for a transformative architecture that incorporates "community participation in the design and development process, while at the same time embracing an ecological agenda, there evolves a strengthening of social sustainability as well as increasing sustainability in the physical environment."⁵² Consequently, the workshops investigated how relational approaches could assist individuals in translating an ecological worldview to architecture using diverse participatory methods.

46 Hungerford, Harold R., and Trudi L. Volk. "Changing learner behavior through environmental education." *The journal of environmental education* 21, no. 3 (1990): 8-21.

47 Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011. 216

48 Markus Miessen, *The Nightmare of Participation*, 1. (Berlin: Sternberg Press, 2010).

49 Clay Spinuzzi, "The Methodology of Participatory Design," *Technical Communication* 52, no. 2 (May 2005): 163-74.

50 Judith Gregory, "Scandinavian Approaches to Participatory Design," *International Journal of Engineering Education* 19, no. 1 (2003): 62-74.

51 Bob Fowles, "Transformative Architecture: A Synthesis of Ecological and Participatory Design," in *Ethics and the Built Environment*, ed. Warwick Fox (Hoboken: Taylor and Francis, 2012), 118-30.

52 Fowles.

Collaboration and participatory decision-making are essential to address concerns of homogenization or domination of particular worldviews over others, characterized by hierarchical and oppressive organizational patterns⁵³. In this respect, PD helps foster collaboration across varying groups and worldviews by mediating differences and identifying commonalities. Additionally, concerning the issue of collective responsibility, the PD process invited various stakeholders to be co-creators responding to the site's ecological issues, where design emerged from collective dialogues between the architect and other agencies. In the experiments, we delved into the concept of responsibility in architecture, its meanings, values, and methods related to ecological worldviews and participants' psycho-social dilemmas.

The workshops and the PD process primarily commenced by constructing shared values as the starting point of the design process. Students and stakeholders were urged to reflect on their core values concerning the project's ecological and social issues. Interactions began by connecting individuals at a personal level and fostering emotional attunement among participants by centering the conversation on what was important and why. In this sense, value-led PD processes can yield material outcomes in the form of the design product and immaterial outcomes, assisting transformations in the participants' ways of thinking⁵⁴. This approach served as the foundation for all other activities since, as previously discussed, emotional attunement and the ability to explicitly connect our values and worldviews with our psycho-social states and practice are integral to sustainable behavior.

53 Lařna Droz, "Distribution of Responsibility for Climate Change within the Milieu," *Philosophies* 6, no. 3 (July 28, 2021): 62

54 Tuck Wah Leong and Ole Sejer Iversen, "Values-Led Participatory Design as a Pursuit of Meaningful Alternatives," in *Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction*, Parkville VIC Australia: ACM, 2015), 314–23



Pictures from the Xcinema event. A group presents their model of a dream house that reflects their shared values. Image courtesy by Useful Art for Communities (UAC).

4.9 Participatory Design workshops with Institut for (X)

As a component of my doctoral research, I forged a collaborative relationship with a neighboring grassroots organization, the Institute for X, between 2020 and 2022. Our collaboration entailed organizing a sequence of events and workshops, engaging the Godsbanen neighborhood's local population, a contested and rapidly gentrifying area in Aarhus, Denmark, and students from the Aarhus School of Architecture. The objective was to foster participatory practices to reinforce and broaden the existing community while advocating for sustainable, self-built urban spaces.

The PD workshops occurred as the Aarhus School of Architecture prepared to move into its new building in this fraught territory. The project area for the workshops included various areas within Institut for (X) territory, as well as the space now owned by AAA. As well as the human inhabitants, the site is also home to a collection of endangered plant species that can only be found in that area, hosting a unique ecology of plant organisms. The Aarhus School of Architecture and its student body, the Institut for (X), the non-human environment on site, and the broader community of the Godsbanen area form a networked ecology of interconnected actors with an influence on the site and each other. This experiment tested several strategies to promote sustainable behavior in participatory design to deal with the situated ecological perspective of this site.

The workshops encompassed diverse stakeholders, including architecture students, members of the Institute for X, representatives from the Aarhus municipality, and more-than-human stakeholders such as local fauna and flora, which biologists and other specialists represented. In this context, I was a facilitator, serving as a bridge and translator between various stakeholders and disciplines. The PD process tested several sustainable behavior strategies and explored their challenges and potential in an architectural learning setting. Methods of collecting data included conversations and recorded focus groups with participants, images produced during the workshop (drawing, sketches), a reflection logbook from students, and a post-workshop questionnaire. Data analyses were a mixture of narrative content analyses and visual analyses. The goal was to look for the main dilemmas and challenges and investigate the potential of sustainable behavior strategies methods in architectural learning.

The PD process was divided into three main phases with specific methods: the 'ground-building' process, the 'responsible architecture' workshop, and the 'building collective futures' workshop. The ground-building process focused on creating a relationship with the community through time in situ, observation, individual conversations, and later focus groups with communities interested in participating in the

workshops. The ‘responsible architecture’ workshop was two weeks long with 100-130 students from AAA and the communities from Institut for (X). And the ‘building collective futures’ was a continuation of this workshop, a smaller-scale two-week workshop with 15 students that was done online due to corona restrictions.

While I used the methods of environmental education and participatory design to devise the workshop activities, I gathered data from students to analyze the effectiveness of interventions and their potential for promoting sustainable behavior. Primary data generated included students’ reflection logbooks, questionnaire surveys, conversations, and focus groups with stakeholders and students. Secondary data encompassed graphic results of processes and outcomes and the researcher’s reflection diary.

4.9.1 The context: Institut for (X) and a contested site

The site selected for the design interventions is in Godsbanen, a disputed and rapidly gentrifying area in Aarhus, Denmark. Around 2000, following the closure of Aarhus’ rail terminal, the deserted buildings were seized by a cultural community named the Institute for (X). Later, in 2009, Aarhus municipality granted them a temporary lease for the buildings. As the city expanded, most of the former terminal was transformed into the Godsbanen Cultural Production Center⁵⁵. Much of the neighboring land is currently being developed into offices and housing, including a significant part of the land allotted for constructing the new Aarhus School of Architecture building. Consequently, the Institute for (X) is gradually being confined to the remaining unoccupied land (figure 3).



Figure 3: Aerial view of Aarhus School of Architecture adjacent to the Institute for (X). The area noted in red represents the area owned by the Aarhus School of Architecture, including a semi-public space owned by the school but shared between the users of the Godsbanen area. Image courtesy of Aarhus School of Architecture and modified by the author.

⁵⁵ “Godsbanen,” Godsbanen, April 14, 2021, <https://godsbanen.dk/english/>.

Despite their uncertain status, the Institute for (X) has become a prominent fixture in the city's cultural community, presently hosting several hundred members in over 100 small businesses, creative enterprises, community organizations, and cultural events⁵⁶. There is a widespread agreement that the Institute for (X) serves as a platform and a critical mass for cultural production and experimentation, thereby enriching the city of Aarhus. As such, it is appreciated by both members and the thousands of visitors who regularly engage with the community⁵⁷.

The PD workshops were conducted as the Aarhus School of Architecture was preparing to relocate to its new building in this contentious area. The project area for the workshops encompassed various regions within the Institute for (X) territory, as well as the space now owned by the Aarhus School of Architecture, marked in red in figure 3. This space is immediately adjacent to the Institute for (X), and bridges a corridor linking each institution to the city on one side and to the still undeveloped landscape on the other.

In addition to the human inhabitants, the site also houses a variety of plant species not typically found on the Jutland peninsula. The industrial history of the site has resulted in an artificial posthuman landscape condition, which is harder, drier, and warmer than it would naturally have been. Serving as a terminus in a rail network that spans the European continent, the site now hosts a unique ecology of plant organisms. As this new urban quarter evolves, the New LAArch harbors the ambition to preserve this unique ecology as a landscape laboratory⁵⁸.

The Aarhus School of Architecture, its students, the Institute for (X), the non-human environment on-site, and the wider Godsbanen area community collectively create a networked ecology of interconnected entities that influence the site and one another. This dissertation employed this particular group of actors to cultivate ecological values from the situated perspective of the site to steer the participatory design workshops.

4.9.2 Pre-workshop groundwork

In the realm of participatory design, it's imperative to establish a foundation through community-building efforts before launching any design process. I started frequenting the Institute for (X) during my first doctoral studies semester in late 2019, introducing

56 "Institut for (X) | Culture, Business & Education at Godsbanen, Aarhus," Institut for X, April 14, 2021, <https://institutforx.dk/>.

57 Louise Kielgast, "Innovative erhvervsmiljøer i Aarhus," n.d., 28.

58 "Vi vil bevare Godsbanens vilde arter," Arkitektskolen Aarhus (blog), October 27, 2020, <https://aarch.dk/vi-vil-bevare-godsbanens-vilde-arter/>.

my work and exploring the potential for research collaboration with the institute. The main management team warmly received me, providing an opportunity to acquaint myself with the community and gradually define the nature of our collaboration. While the Institute for (X) includes various groups, I will simply refer to these groups as ‘partners.’ This initial groundwork helps build trust within the community and identify key partners who can contribute to my workshops.

During the groundwork phase, I committed about three to five days per week to be on-site, engaging in observations and dialogues with people, and recording reflections in my diary. By sharing initial ideas for possible collaborations and seeking feedback, I was able to fine-tune the workshops’ structure. A key insight that surfaced during this time was the individuals at (X)’s eagerness to participate in and express interest in my research, despite their busy schedules. To secure their time and energy for this project, it was critical to clearly articulate the project’s objectives and potential benefits for both the community and the participants.

This process unfolded over the first two semesters, during which I delivered formal presentations to the entire community, engaged in one-on-one discussions with individuals and groups to refine my research, and identified collective aspirations and collaborative opportunities beneficial to all involved parties. The partners who eventually participated in the workshops mainly sought to foster relationships with students to strengthen and extend their own community beyond the usual users of (X) space. They also intended to use this collaboration as a blueprint for future partnerships they planned to develop with other entities. Moreover, they were keen on acquiring design ideas for improving their physical space, as some were interested in using the workshop design outcomes for funding applications.

Additionally, we determined that the workshop should be linked to an ongoing project at (X) focused on developing the urban plazas situated within their site (figure 4). Each of the partners who would participate in the workshops had a plaza adjacent to their community hub, which they utilized for their respective activities. For instance, the Kulturtorvet plaza in figure 4 was used by the African community (The Drum Wagon) for outdoor practices, classes, and community gatherings. Therefore, the workshop should utilize these areas to help the local (X) partners and (X) in general to develop design ideas for their plazas.

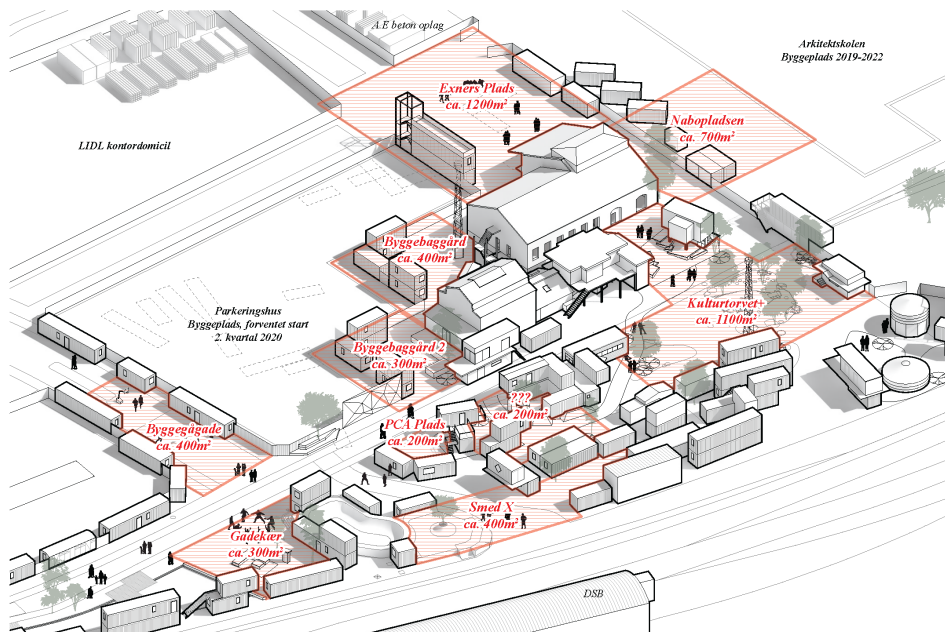


Figure 4: Institut for (X) plan for the plaza's development. Image courtesy of Institut for (X).

The first (X) partner that committed to participate in the PD process was UAC (Useful Art for Communities). Together, we organized a collaborative event to announce the commencement of our partnership and identify other possible partners for my workshop. The event, titled (X)cinema, was held on-site on March 8, 2020, and attracted a diverse audience, including the broader community of (X), architecture students, and individuals from Godsbanen and Aarhus. This one-day open event facilitated discussions on participatory design and sustainable architecture, encompassing both a modeling workshop and a screening of a documentary about a participatory sustainable building project in which I had participated (cover pictures on page 102).

The modeling workshop divided participants into groups and invited them to construct models of their ideal living spaces (including housing and immediate surroundings) based on shared values and worldviews. The materials provided for this activity were natural and locally sourced from the beaches and forests around Aarhus, encouraging participants to contemplate natural building materials and the environmental impacts of construction. Following the presentation of each group's design choices and shared values, a documentary—primarily focusing on the collective building of a house using locally sourced and natural materials—was screened for all attendees. This event aimed to disseminate information about the project and potentially establish broader partner-

ships. Given that the Godsbanen area, where the design activity was being carried out, is open to the public, partners from (X) were keen to include individuals from the general public beyond (X) and the School of Architecture in the workshops.

Regrettably, Danish authorities implemented lockdown and quarantine measures the day after this event in response to the COVID-19 pandemic. A three-month lockdown initially disrupted my efforts to engage with stakeholders and conduct on-site community visits, making online collaboration a difficult task due to the 'Zoom fatigue' experienced by the individuals at (X). Despite these challenges, I connected with some municipal representatives open to online communication and focused on developing a literature review and planning workshops for the following semester. During 2020-2021, quarantine measures intermittently imposed or lifted led to significant fluctuations in the Participatory Design (PD) process. While the initial plan involved extensive interaction with stakeholders, the restrictions forced me to streamline the process and involve stakeholders only in key events, saving their time and ensuring their commitment. As a result, the broader community's involvement shifted to focus on immediate stakeholders, and the PD process was mainly confined to partners at (X) and architecture school students, with intermittent participation from the municipality. The quarantine also limited my on-site interactions, necessitating changes in workshop methods and goals.

While the first in-person workshop, titled Responsible Architecture, happened between lockdowns, the second one was online due to another lockdown, and the third was postponed due to uncertainties related to future lockdowns and scheduling conflicts among stakeholders and institutions.

4.9.3 Preparation for Workshop 1- community building with individual stakeholders

Despite the various challenges and fluctuating modes of collaboration due to COVID-19 issues, during the first two phases of my PhD, I conducted around 40 meetings with several stakeholders. Many of these meetings were online due to the pandemic, but I also conducted some in-person workshops with the (X) partners. After the initial groundwork and informal conversations, I selected stakeholders based on their availability to participate in the workshop and their shared interests and alignment with my research goals. The final main stakeholders included the five partners at (X), with an external stakeholder being one representative from the Aarhus municipality's department of development, and the Architecture school, represented by five architect tutors who participated in the workshop as internal stakeholders.

During the groundwork phase, I established five primary community partners would participate in the initial workshop, with each group consisting of 5-10 representatives from the community. The following briefly explains each partner community (for more detailed information about each stakeholder, refer to appendix 2). I held a series of small workshops with each external stakeholder group in preparation for the Participatory Design (PD) workshop, totaling three meetings with each partner and informal conversations (figure 5). The initial meeting was designed to ‘align views,’ discussing the workshop, research, their role in the project, and our mutual expectations for the collaboration. The second meeting was a more structured workshop where I assisted them in coming together as a group to identify their community’s values, goals, and challenges. Finally, we convened to summarize the process and prepare the material they would bring to the workshop for collaboration with other stakeholders.

This phase was crucial for defining collaboration, ensuring inclusion, and evaluating the participatory process. The bricolage methodology does not stipulate fixed rules for collaboration or the definition of successful collaboration. Therefore, I encouraged each stakeholder to articulate what would make them feel heard and included in the project and how they would measure its success. In this way, I could adjust the workshop goals to their perspective and arrive at a compromise between what the students could deliver and what the stakeholders desired from the experience. After each interaction with stakeholders, I would also inquire if they felt heard and included and ask for their general feedback on the process.



Figure 5: Left side- The Gateways partners brainstorming session. The right side is a graphic representation made by UAC members of their shared values.

Once we had determined the workshop intervention sites, outlined the workshop goals, and managed expectations, I requested each stakeholder to prepare a brief presentation for the workshop. The presentation was to consist of their background and main areas of practice, the values their practice is based on, expectations for the workshop (what they would like to develop with students), and potential fears related to expected challenges (refer to the appendix 2 for stakeholder's detailed information). This brief presentation aimed to create a space for stakeholders to clearly share their expectations and potential fears, thus fostering an environment where students could address project-related feelings. This process was also crucial for establishing connections between stakeholders and assisting individuals in recognizing commonalities regarding their values and fears.

4.10 Participatory design workshop 1: In Search for Responsible Architecture

The inaugural participatory design workshop involving all stakeholders and students from the Aarhus School of Architecture occurred during the first two weeks of September 2020. This workshop was part of an event hosted by TP3 (Teaching Program 3-Radical Sustainable Architecture), designed to bring together all program students, from first-year undergraduates to master's students, to work collaboratively and familiarize themselves with each other at the start of the semester.

The workshop was attended by 130 students and five teacher representatives from TP3, a representative from Aarhus municipality, a primary representative from Institut for (X), and approximately 2-3 representatives from each of the five (X) partner groups. This collective formed the core body of stakeholders, and they were further supported by a social architect, two anthropologists, and an environmental psychologist who occasionally contributed during the workshop. Throughout the workshop, students were encouraged to identify 'invisible stakeholders,' such as regular or occasional site users.

The sites for intervention were divided into five different areas within the borders of the Institut for (X), including the area now officially owned by the new school, which is situated between the two institutions, as shown in figure 3. Each area corresponds to the location of each (X) partner's headquarters within the community and their surrounding landscape that interfaces with the broader community and neighborhood, as shown in figure 4.

4.10.1 Workshop structure

For the first workshop, I experimented by incorporating themes from D&D (Dungeons and Dragons role-playing game) into participatory design. Considering the significant role emotional connection and identity play in behavior change, the idea of role-playing

during the workshop was introduced. Students could choose specific roles that aligned with their personalities and what they identified with, thus bridging the issue of identity with the project itself and personalizing the experience.

Moreover, participatory design projects are complex, and the roles architects can play in them are still evolving. Therefore, proposing diverse roles for the architect was a way to present to students the idea that an architect's impact on the design process should be expanded and can take many forms. I created seven different roles from which students could choose. These included: The Tech Wizard, The Scribe, The Rogue, The Cleric, The Artificer, The Ranger, and The Paladin (for details, see appendix 2). While some roles were more straightforward and technical, others were responsible for the relational aspects of the process, such as fostering collaboration, building trust, and encouraging critical thinking. This approach was instrumental in showcasing to students that architectural projects, especially those using PD methods, are complex and require many diverse specialties and personalities to handle complexity effectively. Furthermore, it underscored that all skills are needed to work together to achieve better results.

The 130 students were organized into five TEAMS, each of which was further divided into three smaller 'fellowships,' each containing approximately 7-9 students. Each (X) partner was paired with a TEAM made of three student fellowships. Each group was a mix of first, second, third-year, and master's students. A teacher mentored every team, and a master's student was assigned the overall 'coordinator' role for the three fellowships (refer to annex 2 for more details).

Due to other mandatory course commitments, the master's students could only participate until the second phase of the workshop. As a result, around 75 students completed the workshop, with approximately five students per group responsible for finalizing the design. Only five master students could participate in the workshop. Given their experience and skills, we decided to assign them as co-tutors. Therefore, each team had one master's student overseeing the three fellowships. These master students assumed the role of the Bard and, together with the tutors, guided the fellowships throughout the workshop process and towards achieving the workshop goals.

Each fellowship was tasked with creating a design project in response to their assigned (X) partner, considering inputs from other stakeholders from the municipality and the architecture school. They collaborated with the partners to develop a design program catering to their needs for their assigned site. The students were asked to devise an internal space for working/meeting and develop a strategy for how it opens up to the broader

(X) community through a plaza landscape intervention. They presented their work with text descriptions and graphics of their design process and final product.

Additionally, each student was required to manually complete an individual reflection logbook called ‘the scroll of the wise.’ This logbook chronicled their thoughts, emotions, and experiences throughout the workshop, thereby providing an account of their progression during this event (figure 6).

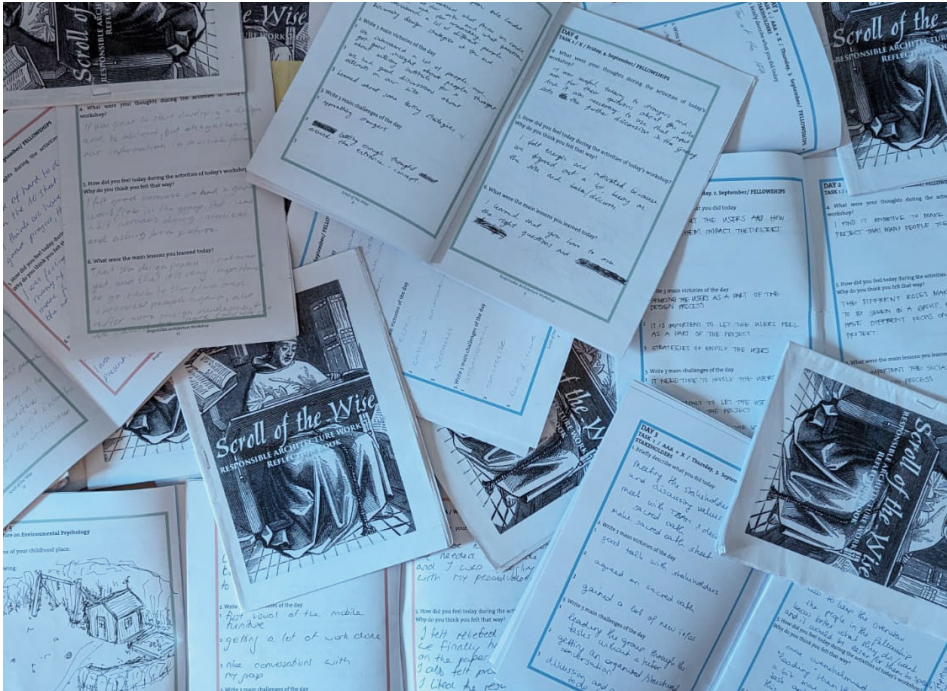


Figure 6: Examples of a logbooks filled by a students during workshop 1.

In addition to exploring and testing several learning tools to link sustainable behavior and design practice, the workshop also aimed to equip students with skills for developing participatory design. Skills included managing conversations between several stakeholders, incorporating non-architects in the design process, mastering infographics to communicate and present the design process, acquiring basic social science skills applied to data collection for architectural projects, and building awareness of environmental psychology applied to design.

4.10.2 Workshop data

To evaluate the impact of the methodologies on learning, I gathered primary data encompassing students' reflection logbooks (38 in total) and students' graphical productions. The students' work comprised a blend of text and imagery created during their design process and the final infographic design. The daily logbook maintained by the students was formulated using a time-geographical diary method⁵⁹; each day, they responded to structured questions about the methodology being learned, thereby facilitating comparison and consistency across students' experiences throughout the workshop (to detail information, refer to appendix 2). Data analysis correlated students' written reflections with their productions to ascertain how the methods introduced during the workshop influenced their thoughts, feelings, behavior, and design choices.

After the workshop, I devoted approximately one month to digitally transcribing data from the handwritten logbooks. Concurrently, I initiated an analysis logbook in which I recorded my primary impressions. I transcribed the handwritten responses from 38 completed logbooks and conducted a qualitative thematic analysis using NVivo. For each workshop day, I classified students' responses as positively valenced, negatively valenced, or mixed. I then coded the text for each workshop phase to identify predominant themes associated with the workshop methods. Subsequently, I compared the logbooks to discern patterns or disparities in how students perceived each phase and exercise. Later, I revisited the text in search of overarching themes across phases and patterns within each logbook. I paralleled students' perceptions with the graphic material they generated during the workshop.

I sought patterns and themes that surfaced from their responses, and the quotes displayed herein represent the themes students expressed in their reflections. These logbooks functioned as records for the analysis of the workshop and tools facilitating students' reflections on the process. They were encouraged to review and reflect upon their logbook to identify key highlights (either positive or negative) of the process that could be presented in their final infographic.

As supplementary data, I also observed and recorded notes from several meeting sessions between students and stakeholders, enhancing this data through individual conversations with participants and observing interactions between students and stakeholders. Following the workshop, I conducted two focus group discussions: one with the workshop tutors and another with the five Bard master's students to garner their feedback. I also had individual meetings with each external stakeholder to gather their

⁵⁹ Kristina Orban, Anna-Karin Edberg, and Lena-Karin Erlandsson, "Using a Time-Geographical Diary Method in Order to Facilitate Reflections on Changes in Patterns of Daily Occupations," *Scandinavian Journal of Occupational Therapy* 19, no. 3 (May 2012): 249–59

insights. Additionally, I maintained a personal logbook, jotting down daily accounts of my impressions from the workshops, which I later used for comparison with the collected data. The subsequent section provides an account of each phase of the workshop, the methodological approaches underpinning each exercise, and the outcomes of interventions based on the analysis results.

A year post-workshop, I requested that students who completed the logbooks during the workshop respond to a concise questionnaire. The aim was to identify the methods and aspects of the workshop that had the most significant impact on students' long-term sustainable behavior and architectural practice.



Design output from Materializing Collective Futures workshop. Made by students Anne Kristine Haagen, Khoshal Arghestani, Mathias Vang Christensen from Aarhus Architecture School.

4.11 Participatory design workshop 2 – Materializing Collective Futures

Building from the experience of the initial workshop, I organized a second workshop, ‘Materializing Collective Futures’, in collaboration with my PhD colleague, Joel Letkemann. We used our individual PhD research methods to create the teaching tools for the workshop, where we brought together two methodologies: Responsible Architecture and a method of science fictioning architecture. The workshop introduced two linked ideas for teaching architecture within the participatory design: RA, which focuses on many ecological factors and value-led changes in behavior, and science fictioning, which explores how stories about the future are built into the teaching of architecture. The workshop explored a broader body of stakeholders, including more-than-human participants, represented by local biologists and other experts in local plant and animal life.

4.11.1 Focusing on ecological issues and more-than-human Stakeholders

The initial workshop concentrated on participatory design, social sustainability, power distribution among stakeholders, qualitative data collection, relational negotiation, and trust building and explored the roles architects can play in this process. However, it lacked an in-depth focus on the impacts on local more-than-human entities, such as the site’s ecology, wildlife, and vegetation. For the second workshop, I aimed to underscore the importance of more-than-human stakeholders and the long-term environmental changes occurring at the site.

To center the workshop on local ecologies and ecological perspectives, we connected the proposed methods with the theory of systems thinking and indigenous worldviews elaborated before. Therefore, we emphasized holism, interconnectedness, and constant ecological change of the site. We paid particular attention to intricate, non-linear relationships between the material and biological systems of the biosphere⁶⁰, while also including human culture’s mental and social domains⁶¹.

For this workshop, I broadened the scope of Responsible Architecture (RA) to accentuate the interconnectedness between social structures and a diverse network of actors, including humans as well as biotic and abiotic more-than-human entities such as flora, fauna, water systems, and tectonic actions. In response to recent concerns in Participatory Design (PD), I wanted to address the fractured relationships address the broken

⁶⁰ James Lovelock, *Gaia: A New Look at Life on Earth* (Oxford ; New York: Oxford University Press, 2000).

⁶¹ Felix Guattari, *The Three Ecologies*, trans. Ian Pindar and Paul Sutton (London ; New York: Bloomsbury Academic, 2014).

relationships between human and more-than-human elements by questioning singular worldviews and instead attending to more-than-human dimensions⁶². More-than-human entities can influence human behavior, making establishing an ecological perspective a crucial tool for rendering the invisible visible, thus democratizing the PD process⁶³. Therefore, recognizing more-than-human as equal stakeholders can positively impact all ecological participants.

Treating nature as having agency in our projects might help create a closer relationship and emotional affinity with other species, contributing to building people's ecological selves. Understanding these relationships is also crucial to architects when dealing with flora, fauna, and other species elements in a design project. Lertzman cites Searles's argument from "The nonhuman environment" in describing how at an unconscious or conscious level, relatedness to more-than-human elements and environments is among the essential ingredients of human personality development and psychological existence⁶⁴.

Furthermore, recognizing the complexity and fluidity of the structures and actors involved, the workshop emphasized that architecture should be an ongoing co-creative process. Even after construction, the designed object should remain adaptable to the ever-changing dynamics of communities and ecosystems. This concept aligns with the "continuing design" idea, which encourages a more inclusive approach relying on temporally open-ended activities and long-term perspectives essential for sustainable collaborative development, blurring the lines between use, design, implementation, modification, and maintenance⁶⁵. In this interconnected, ever-changing context, there are no set answers for sustainable design and no final solution for RA. Instead, a pathway is constantly unfolding and being collectively created.

Thus, this workshop investigated how to translate an ecological worldview into architecture using various participatory methods. We included several stakeholders, treating both human and more-than-human actors as co-creators responding to ecological

62 Yoko Akama, Ann Light, and Takahito Kamihira, "Expanding Participation to Design with More-Than-Human Concerns," in Proceedings of the 16th Participatory Design Conference 2020 - Participation(s) Otherwise - Volume 1 (PDC '20: Participatory Design Conference 2020 - Participation Otherwise, Manizales Colombia: ACM, 2020), 1–11.

63 Louis Rice, "Nonhumans in Participatory Design," *CoDesign* 14, no. 3 (July 3, 2018): 238–57.

64 Searles, H. F. (1960). *The nonhuman environment*. Cited by Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

65 Helena Karasti, Karen S. Baker, and Florence Millerand, "Infrastructure Time: Long-Term Matters in Collaborative Development," *Computer Supported Cooperative Work (CSCW)* 19, no. 3–4 (August 2010): 377–415.

issues in a PD project. The design emerged from collective dialogues between the architect and other agencies. Subsequent experiments will explore the meaning, values, and methods related to the concept of responsibility in architecture, grounded in this ecological worldview.

4.11.2 Science Fictioning future ecologies

Joel Letkemann's PhD work 'Elaborate Strategies of (In)Direction: Science Fictioning Architectural Pedagogy' introduces the concept of 'science fictioning.' It's a methodology exploring speculative possibilities within architectural design and pedagogy. This methodology aligns with historical practices in architectural design established as Experimental Architecture⁶⁶,⁶⁷ in the 1970s and more recent practices such as Design Fiction⁶⁸, and Speculative Design⁶⁹. Building upon this more critical reading of SF's affordances for design, as well as from speculative currents in philosophy and feminist scholarship, Letkeman Letkeman develops an exploration of SF's utility in design rectified by the work by Butt⁷⁰, Clear⁷¹, and Fortin⁷².

Particularly, this methodology enhances the unique authorship qualities integral to SF, as the futures envisioned are elaborated in the discourse between various works and the reader. This approach shifts the emphasis from the design object to the world-building narratives communicated by design, fostering critical encounters by perpetually reading design as science fiction, even after it has become 'fact.'

Reading SF and architecture concurrently reveals the potential for adapting SF ideas to challenge established categories within architectural pedagogy. For example, adapting elements from SF short fiction can both stimulate new ideas and form critical questions about our current architectural practices – prompting us to ask what we can expect from

66 Peter Cook, *Experimental Architecture* (New York: Universe Books, 1970).

67 Rachel Armstrong, *Experimental Architecture: Designing the Unknown* (London New York: Routledge, 2020).

68 Author Julian, "Design Fiction: A Short Essay on Design, Science, Fact and Fiction," *Near Future Laboratory* (blog), March 17, 2009, 49.

69 Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming* (Cambridge, Massachusetts London: MIT Press, 2013).

70 Amy Butt, "'Endless Forms, Vistas and Hues': Why Architects Should Read Science Fiction," *Architectural Research Quarterly* 22, no. 2 (June 2018): 151–60.

71 Nic Clear, "Refreshingly Unconcerned with the Vulgar Exigencies of Veracity and Value Judgement: The Utopian Visions of Iain M. Banks' *The Culture and Constant's New Babylon*," *Design Ecologies* 3, no. 1 (June 1, 2013): 34–63.

72 "D. T. Fortin, 'Indigenous Architectural Futures: Potentials for Post-Apocalyptic Spatial Speculation,' in *Beyond Architecture: New Intersections & Connections*, University of Hawai'i, Honolulu, United States, 2014, Pp. 475–483," n.d.

architecture and what lifestyles it should support⁷³. Viewing architecture as SF prompts us to consider how adopting methods and concerns from SF storytelling and scholarship can benefit how we construct future narratives in architectural practice.

Letskemann's research explains that the use of the term 'science fiction-ing,' heavily influenced by Jessie Beier's formulation⁷⁴, suggests that people attempt to describe their world as a fiction assembled from their world experience, where narratives often solidify into consensus realities – 'common sense' perspectives that can either be productive or restrictive, as they may preclude alternative worldviews. The strength of science fiction-ing lies in its perpetual impetus to read the 'fact' of consensus reality as fiction, continually prompting us to "defamiliarize the given,"⁷⁵ – offering the chance to "fiction another world" from the material of the present⁷⁶.

In this sense, science fictioning is about treating the future as a fiction. Confining future expectations based on present-day knowledge limits what can be envisioned according to current cognitive paradigms, an approach Frederic Jameson refers to as a project to "colonize the future" from the perspective of the present⁷⁷. Hence, science fictioning is a practice of not-knowing. As endorsed by Emma Cocker, not knowing offers a state of expectation, anticipation, and openness to "desirable indeterminacy." "Not knowing," she writes, "is not experience stripped clean of knowledge, but a mode of thinking where knowledge is put into question made restless or unsure"⁷⁸.

Embracing the complexity of an ecological worldview necessitates being open to various perspectives from diverse participating actors. Not-knowing is not a call for ignorance but rather an acknowledgment of the limits of one's knowledge. It is crucial for future architects to understand that their 'professional expertise' may open some perspectives while closing others. Haraway reminds us that our politics and epistemologies result from embodied positions and optical devices – where we are and how we look at the

73 Joel P.W. Letkemann, "Science Fictioning Architectural Pedagogy," in *Strategies of Design-Driven Research*, ed. Claus Peder Pedersen et al. (Aarhus, Denmark: Aarhus School of Architecture/ARENA/EAAE/ELIA, 2021), 364–83.

74 Jessie L Beier, "Dispatch from the Future: Science Fictioning (in) the Anthropocene," in *Interrogating the Anthropocene*, ed. Jan Jagodzinski (Cham, CH: Springer International Publishing, 2018), 359–400.

75 Jessie L Beier, "Close Encounters of the Pedagogical Kind: Science Fictioning a Curriculum-to-Come," in *Provoking Curriculum Encounters Across Educational Experience: New Engagements with the Curriculum Theory Archive*, ed. Teresa Strong-Wilson et al. (Routledge, 2020), 158.

76 Beier, "Dispatch from the Future," 377.

77 Frederic Jameson, *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (London New York: Verso, 2007), 228.

78 Emma Cocker, "Tactics for Not Knowing: Preparing for the Unexpected," in *On Not Knowing: How Artists Think*, ed. Rebecca Fortnum and Elizabeth Fisher (London: Black Dog Publishing, 2013), 127–31.

world⁷⁹. This not-knowing puts the student at a level equal to other storytellers. This notion is particularly relevant within this Participatory Design (PD) project, where students are first taught to articulate their subjective positions and then encouraged to engage with diverse storytellers in a dialogue about the future.

In contrast to the certainty of a single future perceived as an extended present, SF provides a tool to investigate multiple futures. This concept builds on the SF practice of worldbuilding, with Haraway's notion of 'worlding' emphasizing that our interpretations of the world in any form can reshape how we comprehend the world and enable us to share those understandings with others⁸⁰. In this sense, worlding isn't just a tool to describe fictional worlds, but it also suggests our views of 'reality' are themselves fictions. These perspectives are fluid, changeable, and they frame our experience of the 'real' world. Sharing narratives about the future is an opportunity to collaboratively test these futures, understanding their potential to generate new worlding practices now and in the future.

Similar to RA's emphasis on highlighting the architect's agency and responsibility in changing the current architectural practice and worldview, the concept of not-knowing is helpful to make students aware that they are active constructors of their discipline. Teaching students to become storytellers reframes their agency regarding the future, transforming it from something they passively experience to something they actively shape. We may not yet know what the future holds, but crucially, in terms of architectural pedagogy, we don't yet know what architecture or the role of an architect can evolve into. Acknowledging architecture's instability resists the closure of the term, making (re-)construing the discipline a necessity and ethical prerogative for practice.

Science fictioning, therefore, serves as a reminder to resist the finality of 'future' and 'architecture' concepts and encourages us to keep crafting narratives, evolving our worldviews and practices. The question of storytelling is also a question of authorship. Being a storyteller involves recognizing one's unique authorial voice, acknowledging its situated perspective, and understanding which other voices to include in the chorus of the future. Science fictioning calls on all current and prospective architects to become active and mindful storytellers- individually and collectively – conscious that, as Haraway articulates, "stories make worlds."⁸¹ Therefore, when integrated with the RA framework,

79 Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575.

80 Donna Jeanne Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, *Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices* (Durham: Duke University Press, 2016).

81 Haraway, 11–12.

science fictioning introduces novel pedagogical tools for negotiating future aspirations within Participatory Design contexts while fostering collective and individual responsibility and ecological worldviews among people.

4.11.3 WORKSHOP STRUCTURE AND CONTEXT

“Materializing Collective Futures” was a two-week, full-time participatory design workshop attended by 16 second-year architecture students. This module was the only task assigned to the students and required their full commitment for 37 hours each week. Half of this time was set aside for group activities, including stakeholder meetings, lectures, and tutorials, while the remaining half was for independent work. Due to Covid-19 restrictions, the workshop took place online.

The students were tasked to collaboratively design proposals for a shared site located between the Architecture school and the Institut for (X). This area is a semi-public space owned by the school but is shared among users of the Godsbanen area (as depicted in red in figure 3). The design was expected to be a product of a negotiation process that incorporated participants’ diverse ecological worldviews and values, along with a collective vision for the site’s future use.

The starting point was to understand shared values and build a site-specific ecological worldview, forming the foundation for stakeholders to collaborate in the later stages of immediate design proposals for the site. I selected this area as the focus compared to previous workshops because it represents the main point of interaction and shared space among the diverse users and stakeholders in the area. I thought it would benefit all working groups to develop proposals for the same area to stimulate dialogue among several proposals and strategies, highlighting the varied possibilities and diverse approaches the design could take. Additionally, as tutors, this would allow us to delve deeper into one area and develop a more critical and comprehensive approach to the design process.

The workshop was structured into three phases: Aligning Futures, Worlding Futures, and Building Futures. Each phase spanned 3 to 4 days, with the methods detailed in the following sections loosely corresponding to each phase: authorship and participation (first phase), storytelling (second phase), and translation (third phase). However, this structure was more accumulative than strictly segmented, with elements of each method being explored throughout the workshop. To evaluate the impact of the methodologies on learning, we collected various forms of data similar to what was done in the previous workshop. This data included an updated version of the reflection logbook, the students’ work, conversations with participants, and observations of interactions be-

tween students and stakeholders. We further supplemented this data by attending and taking notes from several meetings between students and stakeholders and through individual conversations with participants during and after the workshop. The data were analyzed qualitatively, with attention given to the images, collages, and diagrams produced by the students. Textual content from the logbooks and conversations was also analyzed. Our analysis of the text focused on identifying recurring patterns and themes emerging from the data. Chapter 7 will summarize the main lessons learned from each method and phase of the workshop.



Students learning about wood joinery at the Critical Concrete wood workshop. Image courtesy of Critical Concrete.

4.12 Sustainable-sustainable Architecture course

Chapter 8 presents the findings of a study conducted on a postgraduate course in sustainable architecture in Portugal. The research stays abroad is a compulsory component of the Danish PhD program, designed to enable the researcher to broaden their knowledge base and gain diverse perspectives on their project.

During my research exchange, I engaged with and examined a postgraduate course in sustainability, a collaboration between the cultural association Critical Concrete (CC) and Porto Superior School of Art (ESAP) in Porto, Portugal. This year-long course ran from September 2021 to August 2022. Although the course was conducted predominantly online, it included two in-person, hands-on workshops—one held in February 2022 and another in June 2022. I participated virtually and spent two months in person at CC, which involved participating in the first workshop.

Throughout this research exchange, I interviewed students, teachers, course designers, and coordinators and explored the course methodologies to provide a comparative study for this thesis. This research augmented my arguments and broadened my understanding of the teaching of responsible architecture in architectural learning.

4.12.1 Method outline

Data were collected by observing the postgraduate course, conducting focus group discussions with students, and interviewing course teachers and coordinators. The same interview methodology was employed, with adaptations for a focus-group conversation format. In addition to the focus groups, I also engaged in one-on-one conversations with students during the workshop. Unlike the interviews with architects, the students worked collaboratively in groups throughout the course, particularly during the workshop, all sharing a mutual interest in the course. Consequently, the focus group format was selected to facilitate data emergence from their inter-group dialogue and identify commonalities and differences. The workshop hosted a total of 24 students divided into three working groups.

Upon the conclusion of the one-year postgraduate course, students were requested to respond to a brief questionnaire regarding their experiences and the integration of these experiences into their lives. I received 14 responses and conducted several email exchanges with students for additional questions and clarification.

In addition to the primary data collected through focus groups and student questionnaires, secondary data was also produced, which comprised notes from my reflection

diary and interviews with four course teachers (two of whom were the course designers and coordinators). As was done in previous chapters, the data were transcribed and coded to derive themes.

During the coding process, I noted the main ideas and patterns that seemed to recur across focus groups and isolated intriguing ideas. Given that I already had themes from previous experiments, I also began to cross-reference the data with that from prior experiments. These themes supplement the ongoing thesis discussion by introducing new layers to the conversation and aiding in refining themes from earlier experiments. Moreover, they expand upon and compare with the experiences of other architects and architecture students outside Denmark.

4.12.2 Topics and data collection

Given that this was the final experiment of my thesis, my focus had naturally matured. The focus groups centered on the students' viewpoints of the pedagogical tools and methodologies and their reflections on how the course equipped them to grapple with the complexities of practicing sustainability in their discipline. Open prompts allowed the conversation to progress organically, with the transition to the next question occurring only when no further additions were forthcoming. While all participants were encouraged to share, some were more reticent than others; in these instances, I directed specific questions to them to provide an opportunity to contribute to the dialogue. While four main queries guided the discussion, sufficient space was permitted for specific topics of interest to surface and be examined by the students. I would then delve deeper into these specific topics until the group felt they had fully exhausted the subject. The four guiding questions during the focus groups were:

- What is your background, and what motivated your decision to enroll in this course?
- What aspects of the course methodology or tools were most unique or drew your attention? What did you learn that differed from your previous experiences?
- How did your feelings towards practicing sustainable architecture evolve? Did the course assist in navigating these emotions?
- How do you envision integrating what you've learned in this course into your practice? Do you perceive any potential or challenges in doing so?
- Upon completing the focus groups, I discerned a concern among the students about linking the course with their professional practice. This prompted the design of questionnaires to investigate how they were addressing these concerns, as well as which aspects of the course were most impactful. Furthermore, I sought to understand the course's influence on their personal and professional lives and worldviews.

Questionnaire:

- How do you feel about the course overall? What emotions are evoked when you recall it?
- What are the three most memorable aspects of the course that left an impression on you?
- What knowledge or skills did you acquire during the course that you continue to utilize?
- What knowledge or skills did you acquire during the course that you found difficult or impossible to apply to your practice, and why?
- Has the course experience impacted your beliefs or worldview? If so, how?
- How do you define 'Responsible Architecture'?
- How could future courses be improved, supplemented, or modified for the better?
- What is your vision for the future of the field of sustainable architecture? How would you like to see it evolve?
- Is there anything else you would like to add?

4.12.3 Students profile

The 24 students involved in this study brought various professional and cultural backgrounds. The student body represented a global perspective, with participants from various countries across Europe, Asia, South America, North America, and Africa. Many students were architects or urban planners, while others hailed from fields such as liberal arts, design, and engineering. Age and experience levels varied widely among participants, ranging from recent bachelor's degree recipients to seasoned practitioners in their mid-fifties. Their professional roles were equally diverse, and some were still finishing their studies, while others owned studios or worked for architectural firms. Those working had projects from intimate interior design or furniture work to large-scale development initiatives, such as social housing, urban renewal, or broader construction industry endeavors. Some students were well-versed in sustainable architecture practices; for others, this course marked their initial exposure to the topic. However, the one shared attribute among all participants was a desire to deepen their understanding of sustainable architecture and to learn how to incorporate sustainability more thoroughly into their practices.



Students discussing the design with local stakeholders FEUM from Institut of (X) during PD workshop 1. Image by author.

4.13 Conclusion of chapter 4

This research explores strategies of relational approaches to sustainable behavior for responsible architecture. The relational-centered approach emphasized responsibility and emotional attunement, focusing on more holistic and complex relations between several phenomena of sustainable behavior. These phenomena included worldviews, unconscious processes, emotions, and meanings of sustainable behavior in architecture and how they are made sense of, experienced, and narrated. To achieve this, a bricolage-narrative methodology was developed. This methodology is characterized by an explorative, qualitative, transdisciplinary, relativist, subjective, multimethodological, and mixed-methods social science approach. By borrowing methodologies and methods from several fields, including environmental psychology, environmental education, critical environmental studies, and participatory design, the methodology focused on context, processes, change, and webs of relationships between researched phenomena.

The methodology emphasized praxis as a theory-action-reflection cycle, using dialogue and critical reflection to link research with action in the world. By linking theory to practice, this dissertation constructed knowledge based on direct experience, intuition, trial-and-error experimentation, and interaction with the local context, stories, and actors. This research underwent several changes; it was unclear where this process would lead from the beginning. From initial explorations by talking to environmental psychologists, architects, and anthropologists to interviews and participatory design workshops, the research process weaved together several voices from each experiment. Meanings were co-constructed and emerged from participant interactions, creating emerging themes. Through the series of experiments, these themes gained richness and depth.

The methodology also recognized diverse ways of seeing, including knowledge from participants, practice, and experimentation. These several voices intersected with the role of the researcher. Where research, researcher, and researched object are intertwined, the researcher needs to critically reflect upon how their subjectivity can influence the data and interpret the narrative through a specific lens.

However, this process has not been an easy task. Juggling with multiple disciplines, methods, and sources required multitasking, keeping track, and making sense of the broader picture while diving deeper into experiments. At the same time, I had to adapt to how much I could do based on limitations of time and resource constraints. However, this process has also allowed me to develop my skills as an interdisciplinary professional

and researcher and allowed me freedom of approach and blurred boundaries between academia, practice, and teaching in diverse disciplines and discourses.

In summary, the methodology proposed here helped produce research that provided a thick description of sustainable behavior strategies and could be used in architecture. Alerting to the behavior's multidimensional, socially constructed, and ever-changing nature, it used as many methods as possible to make sense of the complex and ill-defined emerging field of sustainable behavior in architecture. Inviting praxis aimed at proposing insights on how sustainable behavior theory can be implemented and help architects be more critical and invite change into their practice.



Picture from the Xcinema event. A group makes a model with local materials. Image courtesy by Useful Art for Communities (UAC).

5. Interviews with experts in sustainable architecture



5.1 Introduction

This chapter details the primary findings and recurring themes generated from 14 qualitative semi-structured interviews conducted with experts working in the field of sustainable architecture in Denmark. Interviewees included 10 architects (Adam, Fred, Carl, Ethan, Bea, Henri, Isla, Liam, Jeanne and Karen) and 4 social sciences professionals working in architecture (Diana, Mark, Gina and Noah). These social sciences professionals mainly work with qualitative data aspects of architecture and are responsible for the social connections and communication between actors in a project.

The conversations addressed two main themes: issues on responsible architecture and issues on sustainable behavior in architectural practice. The conversations linked the interviewee's worldviews and values with methods they use to bring these worldviews and values into their architectural practice. While worldviews and values were related to the architect's feelings of responsibility to sustainability, the methods they used to link those with their practice were related to their behavior. A thematic analysis was made by building emerging themes and constructing findings from in-depth exploration of the interview topics. The final themes presented in this chapter were constructed by creating a link between the main issues discussed in the literature review and the interview themes that emerged, showing the most important themes that affects interviewee's sustainable behavior and responsible architecture practice. The insights of this chapter emerged from constructed knowledge with experts, adding richness and real-life experiences and narrative stories related to the research issues.

For clarity, interviewees were speared into categories according to their practice size and approach (leaning towards technological or relational approaches to responsible architecture). The quotes in the text are colored accordingly, where technological practices are coded blue, relational practices are coded orange and practices in-between approaches are coded green. While this chapter uses key quotes to illustrate main themes of analysis, the full transcriptions organized by themes can be found in appendix 1.

5.2 Interview themes

The forthcoming analysis elucidates the principal themes that were identified during the interview process. The result of this analysis led to the construction of major themes, which are subsequently categorized into two main sections: Psycho-social dilemmas in the architectural field and relational approach to sustainable behavior in architecture. Under these two main sections, the chapter will discuss the most important themes that affects interviewee's sustainable behavior and responsible architecture practice (figure

1). Four themes of psychosocial dilemmas (profit oriented and conservative industry, people and green washing, the startchitecture culture and architects lacking political power and unity) and four relational approaches to deal with these dilemmas (Holistic approaches, social responsibility, sharing and partnership and critical architecture).

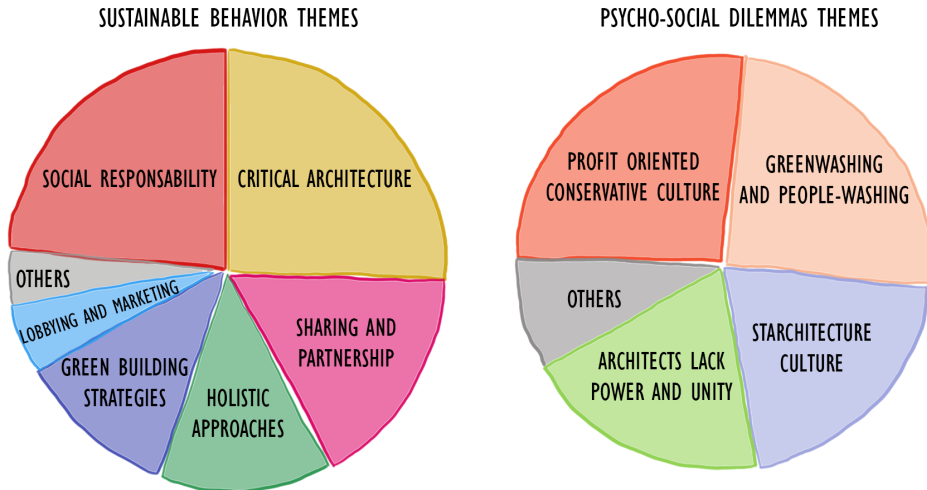


Figure 1: Themes constructed from interview analysis.

The following analysis will start elucidating interviewees worldviews and values and practices. It will also elucidate how interviewees position themselves within the discourse of responsible architecture. Later, the chapter will detail each theme and correspondent subtopics that were identified as most relevant to discuss responsible architecture. The discussion will start from the psycho-social dilemmas, since they contain common perspectives between most the interviewees, and building up to possible solutions from the relational approaches. After the themes, the chapter deepens the discussion connecting to emotional roots related to the challenges and solutions presented.

5.3 Interviewee's worldviews and values and how they put them into practice

The data analysis revealed two distinct worldviews within architectural practices regarding sustainability and responsibility: technocentric and relational. Interviewees' discourse were not related to these worldviews in a binary way, but in a spectrum, in which their position ranged from ranged between these two extremes (figure 2). Relating the data back to the sustainable behavior spectrum introduced in chapter 2 and well as the proposed the proposed topics of sustainable behavior in chapter 3, I constructed a spectrum to graphically represented where the different practices could be placed. In

this graphic, there are two ends of the sustainable behavior spectrum. The relational end of the spectrum is related to approaches that focuses on critical aspects of behavior change, focusing on people having power in decision making as well as behavioral control, where behavior change happens during the design process, its focused on the social context to promote change, considers relational aspects of behavior beyond technical and rational issues and invested in praxis approach to change. The technological end of the spectrum is related to approaches that focuses on the technical and technological aspects of behavior change, where specialists are the decision makers, the design product is in control of behavior, and behavior change happens within the finished product, and they also focus on individual cognition and rational aspects of behavior.

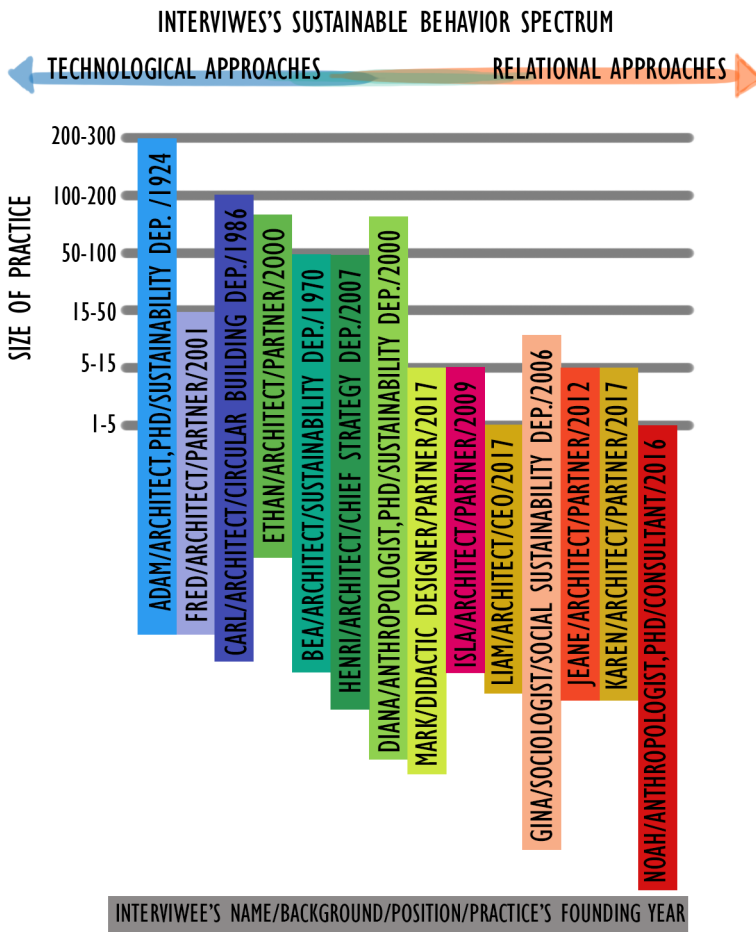


Figure 2: Interviewees placed on a spectrum of sustainable behavior according to interview contents.

The image also shows the size of the practices to which participants belongs to, the year when the practice was founded and the professional background of participants. In the image we see that participants with a social science background leans towards relational practices, where architects can be found everywhere in the spectrum. The image also evidences that within these practices, the ones that focuses on relational approaches are mostly newer and smaller practices (7), while the ones focusing on technological approaches are mostly bigger and older practices (3). There is also a category in the middle (4), which is mid-size or big practices that generally lean to the technological approach but have an internal department dedicated to relational approaches. Because I interviewed people who were part of the internal department dedicated to relational approaches of the middle category practices, I will include them under the discussion of the relational approaches and point out differences when needed.

From studying this spectrum, it was found that technocentric practices gravitate towards using technical and technological solutions to achieve sustainability, heavily relying on specialist decisions and technical issues. They adhere to a rational view of behavior and see sustainable behavior as a function of individual cognition and consumption, and sustainability as a technological problem that requires technological solutions. Their sense of responsibility revolves around creating efficient, high-tech buildings that help direct sustainable behavior, and lobbying and marketing strategies of sustainable technologies.

Words such as ‘technology, behavior design, traditional Nordic values, research and innovation’ were a reappearing part of their discourse. When asked about examples of projects that materialize their values, the projects they referred to were examples of high-tech buildings designed with parametric and computational tools and usually displaying material sustainability as a key element, such as timber buildings or design for disassembly. These projects mainly used computational tools to develop the architectural program, focused on daylight analysis, indoor comfort and energy saving.

Conversely, practices towards the relational side of the spectrum, social responsibility are at the center of sustainability. They believe that sustainable behavior change should be fostered during the design process and that social context should be considered to promote sustainable change. These practices invest in a praxis approach, emphasizing relational aspects of behavior beyond mere technical and rational considerations. Responsibility, in their view, extends beyond green building and technology, to include social impact, aiming for change in relationships between humans and their environments. They prioritize social responsibility through inclusion and the development of a

critical architectural practice, advocating for participatory design methods and power distribution in design decision making.

Words such as ‘dialogue, involvement, community, people, social, critical, curiosity’ frequently appeared in their discourse. When asked about projects that embody their values, they mentioned projects mainly related to education, community and cultural centers, and urban intervention and renewal. Most of these projects focused on participatory design methods, involving diverse stakeholders affected by the projects in various degrees of the design process. They also expressed deep concern with issues of democracy, power distribution, and inequality in the decision-making process of design and urban policies. Interviewees that displayed a relational worldview employ broader approaches to sustainable behavior. They work in multidisciplinary teams where technical and social science specialists collaborate, recognizing that sustainability is not merely a technical issue that can be solved by technology alone, but a social issue that requires changes in relationships between humans and their environments.

Interestingly, the study also uncovered correlations between these philosophical approaches and the nature of the practices. Technocentric approaches are typically associated with larger, older practices, while relational ones are commonly found in smaller, newer practices. Yet, some large practices also accommodate internal departments dedicated to relational approaches, indicating an emerging blend of worldviews.

Regardless of size, background, or founding date, interviewees agreed on the crucial role of sustainable behavior in their work. However, their interpretations and approaches to responsibility and sustainability varied significantly. To understand the relationship between interviewees’ worldview and values and their sustainable behavior practices, data analysis untangles the complex psycho-social dilemmas interviewees face in their practice, their engagement strategies to deal with these dilemmas, and possible emotional roots behind their behavioral responses towards these dilemmas.

5.4 Psycho-social dilemmas in the architecture field

5.4.1 Profit-oriented and conservative industry

All interviewees cited at least one challenge related to profit-oriented and conservative culture in the building industry. Under this theme, interviewees discussed how hard it is to practice sustainably and with quality and responsibility in a profit-oriented culture that focus on speculative architecture based on fast profit and short-term goals. Interviewees mentioned that speculative developers’ solely focus on profit hinders the

sustainability potentials of the project and ignored architect's proposals to make projects more sustainable and with better long-lasting quality.

For example, **Karen**, who works with participatory methods with citizens to develop urban planning, view developers of public projects are more aware of holistic design process for sustainability, while the challenges lie within the private sector, especially on speculative housing development: 'a lot of the public projects they're doing it better around the processes, and they are more and more aware of the importance of having a good process around it. And then it's probably more in the private sector, where developers and investors are just building houses for profit.'

Most interviewees mentioned their difficulty in working with private clients for several reasons. **Carl**, who mainly works with circular building practices trying to implement design for disassembly and circular economy in architecture expresses his difficulties 'actually most building owners can only see like maybe five, 10 years out in the future maybe 20 when they've paid off the building, they don't look 50 years ahead. They want to have value now (...) then there's price as another thing, its very cost focused in our business and people just want to build, if not as cheap as possible' Most practices seem to share this dilemma where they see themselves stuck with clients and developers who are some of the biggest paychecks at the same time pushes the industry to build with poor quality and lack of awareness. Interviewees mentioned that speculative developers and short-term fast profit mindset in the construction industry is creating architecture that has poor quality and low sustainability standards. Like Carl, many interviewees found themselves in this dilemma of working for a client that makes it difficult to practice sustainably but at the same time pay signs their paycheck.

Within this topic, interviewees also mentioned the issues related to the building industry and market being conservative and having little space for innovation and trying out new sustainability approaches. **Adam**, who is an architect specialized in green building and renewable energy, stated that: 'the building sector is quite conservative (...) there's always a bit of inertia when new things come along and how you get them integrated.' And **Isla** complements this view saying that: 'of course, it's not just architects, entrepreneurs and engineers are maybe practices that are even more conservative somehow in the way that they think' In this sense, the conservative landscape in which architects are operating represents a big challenge for sustainable behavior, because it hinders the courage of risk taking and creativity to propose and implement responsible architectural solutions.

Political landscape and economical paradoxes

Another aspect of conservatism raised is related to maintain the status quo so business can keep making money or politicians can keep being reelected. In this sense, many relational practitioners linked social responsibility of architecture as an issue of democracy. For example, Jeanne shared that political decision can quickly change policies, funds, demands from investors and create power imbalances. As the main focus of her work is participatory and democratic involvement with citizens to improve urban and rural areas, she sees the political landscape as ‘a big challenge is our democracy that I think is really threatened. Because basically what this is, is that it’s practical democracy in a way, you give people direct access, to make decisions, and to be part of our society and democracy. And I see in many parts of our world today, and also in Denmark that democracy is threatened.’

The issue of democracy is an important debate for sustainable behavior for various reasons. Research shows the relationship between democracy, environmental sustainability and innovation-driven knowledge, where countries with higher political freedom also tend to have higher environmental performance¹. That maybe because in a global level, states and societies have to continuously deliberate and negotiate between scientific evidence, political rights, social, cultural, and ecological needs and desires and the willingness of political actors to achieve globally negotiated policies.²

Similar to what was discussed in the literature review, to achieve collective responsible behavior it is important to be able to negotiate between diverse worldviews. For that to happen, the power in decision making and in environmental responsibility should also be fairly balanced. Therefore, the political systems should guarantee that diverse voices can articulate their alternative visions of development and responsibility distribution. In that sense, democracy provides a good platform for difficult negotiations and deliberations that are necessary for sustainable behavior to happen.

Furthermore, interviewees commented that the lack of democracy and inclusion in decision making also affects how funds are spent in architectural projects, which leads to less funds being allocated to social sustainability. They mentioned economical paradoxes where funds (such as pension funds) are being used for development projects, where is everyone’s money being used but not everyone’s decision on how to develop the city. Liam, an architect that frames his practice as ‘democratic architecture’ mentioned: ‘a lot of everyone’s money basically because that’s the pension company’s money is being put

1 Elias G. Carayannis, David F. J. Campbell, and Evangelos Grigoroudis, “Democracy and the Environment: How Political Freedom Is Linked with Environmental Sustainability,” *Sustainability* 13, no. 10 (January 2021): 5522, <https://doi.org/10.3390/su13105522>.

2 Dan Banik, “Democracy and Sustainable Development,” *Anthropocene Science* 1, no. 2 (July 1, 2022): 233–45, <https://doi.org/10.1007/s44177-022-00019-z>.

into this city development and that is the paradox of city development in Denmark that is everyone's money that is doing these projects that maybe needs to social stuff.' Fred, an architect who currently works with big development projects for new neighborhoods and city expansion, complement this argument sharing that mechanism of investment is used as a reelection tool: 'But it's a complex situation and therefore if the turnover is not interesting enough, they'll just invest it in stocks instead, if they don't get enough for the land prices they need to raise the taxes and so on, they don't get elected.'

Jonas, an anthropologist working in the renovation projects of 'ghetto areas' in Denmark, explains that the money for the renovation projects he works with is mainly coming not from taxes, but from the National Building Fund, which is money from the people who are tenants in the affordable housing sector pay through their rent: 'it's money from the people who are renting, and basically we're using them to remodel the estates where these people live and actually push some of them out of the places they're living because we want them to move to live in different patterns than they're living in currently (...) that money has been like taken again with the logic of serving greater good and serving the nation, but again of course it's used politically (...) whereas maybe you could make people happier or better off if you spent that money on refurbishing old buildings and making them more inhabitable, or lowering the rents for some of the people who have the least money or building common spaces that were useful in some way to the local communities.'

Challenges in the building code

Besides the issue of public and collective funds not being reinvested in a way that really benefits those who are paying for them, interviewees also mentioned that the political landscape is also dominated by the monopoly of the concrete industry, leaving little space for more natural and sustainable materials to be used in large scale. When comparing the use of timber in Denmark with neighbor countries like Sweden and Norway. The techno-oriented practices mentioned many times the difficulty to deal with the conservative building code and conservative regulations to be able to design with timber or alternative building methods such as circular design. Carl mentions that: 'in C-house because we are using so much design for disassembly. It's just getting things not certified, but there's a lot of demands for fire and instructions (...) it's really difficult to reuse materials in new projects.'

Carl's perspective raises a paradox when the building industry asks for more tests before they are able to approve certain technologies: 'apparently the industry needs to get the experience so the legislation can change. We can't look to the outside of borders appar-

ently'. In the current scenario, the industry says they need to have experience so they can ask for the legislation can change, but to have the experience they need to test and build, which they are not willing to do because they are afraid of taking economical risks. This inertia and lack of action can be related to the triangle of inaction and displacement of responsibility, where the responsibility of making projects more sustainable keeps pushed between the industry practices and building legislation.

The issue of displacing responsibility is also connected to a lack of holistic understanding of systems and collective responsibility. For example, Carl shares that for circular building practices to work, it doesn't depend only on a good design from architects, but from a collective effort to rethink the whole system: 'that's the thing about circular economy and circular design, you need to change like every layer or every link in the value chain to try to change something. Because if I take just design something that's built for the disassembling, but if the contractor doesn't build it like that, then everything is lost. And again, if it's not operated and maintained regularly then it's also just lost'. In this sense, to achieve behavior change in architecture, we need to change how we organize ourselves in the building industry as whole.

Another limitation of the building code noticed by relational practices is that the social aspects of the project are not demanded enough. For example, Liam shared that the building code has too much emphasis on the technical aspects but not enough emphasis on the social aspects, and that, if the social responsibility is not a legal requirement, it becomes very difficult for architects to convince clients to address social issues in the project: 'that is the core issue, not taking serious the social aspects of a building and how much you can actually change a building and how it can change you (...) and in this kind of economy, once it's not a requirement, then it doesn't get valued. We have this sort of checkbox architecture style at the moment. And once you check all the technical aspects, you really don't want to add something else to it. Because you cannot make money on it, basically.'

At the same time that Liam advocates that architects should always try to convince investors to address social issues of projects he also recognizes how difficult this task can be, because: 'once you talk social values, you could say it's extremely difficult. It's extremely intangible. So, it's so difficult to do a legal format for that, but I think we should try'. Similar to him, most of the relational practitioners interviewed also mentioned that a big challenge for them is to have to 'number' and 'put a price' in qualitative aspects of the project to be able to convince clients to address those in the project.

In the scenario imagined by Liam, the building code could be an important instrument of change to assist architects to guarantee that social sustainability in projects get the attention and funding it deserves. Furthermore, it could be an instrument to guarantee citizen participation for example, enhancing the democratic mechanism of project developments.

5.4.2 People-green-washing

Not surprisingly, greenwashing was a challenge mentioned by most interviewees, especially the ones in the relational side of the spectrum. For Karen, the greenwashing related to the profit-oriented culture is a big challenge because ‘so much thought about profit, as like the single factor (...) then you have a little bit of sustainability and this and even have some goals, or some stickers you can put on your project, but it’s very focused on the economy. And you can build something sustainable only if it’s good for the economy, right?’. Although many interviewees share the view that it is getting better with the increase of environmental awareness and new legislation, profit oriented clients still only invest in sustainable solutions if architects convince them of the economic benefits of it. Which makes many architects to focus only on quantitative aspects of sustainability as explained before.

But the relational practitioners see that the current focus on quantitative aspects as a ‘ticking the box’ approach to sustainability, and misses the point of holistic sustainability that also considers broader aspects of sustainable behavior such as social responsibility. I suggested the term people-washing because trying to distil social responsibility into measurable outcomes and tick boxes is a similar approach used in greenwashing to just ‘pass’ a project as being sustainable, without really making sure of project impacts for sustainability. Many relational practitioners noted that this strategy is dishonest and usually involves mechanism of false or superficial involvement processes. Gina, a sociologist working in architectural practice shared that: ‘which to me is only a legitimizing way of doing things. And ethically, that’s wrong, we’re not doing that’.

The relational practitioners often mentioned the social aspects of sustainability because according to them the material and technical sustainability shouldn’t even be negotiated, it should be considered the minimum, and that what they try is to go beyond a technological aspect to involve more holistic takes on sustainability. As Gina puts it: ‘its implicit in the practice at the studio, that of course you choose stainable materials, we think about climate and energy optimizing, and there is nothing new about that, it’s become mainstream’.

For Jeane, architects need to openly acknowledge that the construction practice is part of the problems, and that involvement is an important part of change making: ‘we need to work with an awareness earlier in the process of sustainability and involvement as a way of solving the problem, and not just focusing on sustainable materials (...) I think sustainability, when it’s discussed within our business, it is narrowed down to materials, then I think we can constantly and constantly discuss how we can minimize co2. But I think we will never get there if we don’t notice that it starts with how we work and the process also.’

People-washing

While relational practices focus in how architecture can influence broader aspects of sustainable behavior related to social responsibility, the technological approaches understand sustainable behavior mainly related to the physical interactions people have with buildings and technical parameters that can be measured and calculated such as indoor comfort. Things such as user involvement, when mentioned, were only used in a prescriptive manner, as a way to gain information about functionality. Many paradoxes became evident around the topic of ‘buildings for people’, where the architects seemed to have an idea about the importance of user involvement but their approach to it was nonexistent or superficial.

Therefore, it was clear from the data that if these practices do not see user involvement as something important, and when they do some sort of user engagement, it is mainly because of requirement by certain projects. Most of these practices seems to work in silos, and that user involvement seems to be just a ‘tick box’ to say they did involvement. This approach is seen by some relational practitioners as ‘people washing’. Furthermore, just like most approaches in DfSB discussed in the literature review, the technological approaches from the practices presented here, reduces behavior to a single action, a symptom that can be measured and explained by single-sided personal decision making, ignoring the broader psycho-social implications for sustainable behavior.

For example, Adam’s practice stated on their website that they design ‘buildings for people’. When I asked him about what does that mean, ‘how do you figure out what is good for people?’ The answer was: ‘on most projects is sort of quite a big focus on indoor comfort. So, now we’re getting into the more like the sustainability, like what makes a good building.’ He then mentioned user involvement in the early stage of design processes, referring to ‘participatory design’ and said that they usually do workshops with users, where: ‘you know, a big piece of paper, and like, cutout blocks, showing the different spaces and trying to get people to organize them, which direction they want to

face and where they will be sitting and what the view, getting them to understand that the interrelationships between the different functions.' At the same time, paradoxically, he highlighted technology as a better solution to solve the functionality in buildings, that they use parametric tools in early design process to work the functionality, and added that 'I have a dream that we should be doing something with, like functionality and buildings (...) that you can use artificial intelligence to sort of do this optimization process of when you design certain types of function'. This paradox in his discourse shows that the type of user involvement or alleged 'participation' is only prescriptive and not really about involving or listening to people. Besides few superficial takes in involvement, there was no mention of any type of people's involvement in decision making or more substantial approaches of inclusion. The issue of inclusion is connected to the issue of power in decision making as discussed in the literature review, where practices within the technological worldview place all power of decision-making in the hands of the architect and the technology.

For example, Fred gave an example of how his practice design schools by investigating student's behavior to find better architecture solutions to improve education. Their approach is to use sensors to collect quantitative data about student's behavior and from that data imply about their behavior and needs: 'we created an app that is like the user interface of the technology. We have currently a thousand sensors placed in three different schools (...) it can be cameras that are using infrared mapping. So, you can see groups of people and how they are arranged and so on.' With that data from sensors, they identify student's behavior such as concentration span and other learning related issues. Based on that, they make design decision making, and understand themselves as the 'guardian' of user's interest, even though no dialogue with the user was mentioned: 'I would say unfortunately most of the users, for instance, if you're talking about schools, are students, they're actually the last to be heard. So, there we are guardians for the interest.'

Therefore, being the 'guardian' of interest does not necessarily imply that the architect talked with the users or understood their needs and wishes, but 'knows' what they need based on sensors, measurements, and information from quantitative data and research. Fred shows a believe that quantity of information is more important than quality, and contrasted their approach with the social sciences approach to understand the user: 'with the artificial intelligence, you might find correlations in the data sets that are actually relevant (...) today what we base it on maybe an anthropologist that's been visiting the building for a week and doing studies. Maybe it is three stakeholders that has experienced the use of the building (...) but that's a very small amount of knowledge, right?'

(...) usually numbers get the upper hand of feelings. So, we have to be the guardians of those who don't have numbers, I would say.'

In these technologically oriented practices, architects seem to be very far from the final users of the building, and their interactions is mediated and limited by technology, such as creating virtual environments for user experience or collecting data from user input based on apps and sensors. In this approach, architects are one making decisions for users without necessary getting any feedback from people about their assumptions or from the sensors' data for example. This approach displays a paternalistic attitude towards the users and places the architect as the all-knowing expert about what people need.

Therefore, the perspectives from the interviews highlighted an issue with the current technological solutions, where 'building for people' should not mean only focusing on indoor comfort or design based on quantitative data analyzed by artificial intelligence, which is just a prescriptive and superficial understanding of social sustainability. The danger of using superficial participation to legitimize decision making in projects, can lead to a false sense of consensus and agreement, where decisions are imposed to others³.

5.4.3 The starchitecture culture

To address the current profit-oriented building culture and people-green-washing, relational practices talked about a need to shift the current architectural worldview. Where we need to change the focus of architecture from the 'main hero' as the genius behind the project to a 'collective intelligence' where architecture is a product of co-creation. In this sense, there is also a shift from the focus on the architectural 'product' to the architectural 'process' to achieve sustainability. To achieve this worldview shift, many interviewees mentioned that we need to overcome the idea of the starchitect.

While relational practices define focus on holistic and socially engaged practice, they contrast their approach with the current 'starchitecture' culture, which according to them is based on control, power, technology-oriented practices and the architectural ego. The starchitecture culture is much focused on accommodating a profit-oriented industry, where the sustainability potential of projects is being killed by economics and short-term thinking. They also discussed how the current architectural culture promotes people's egos and ignore the 'why' of the projects, how architects lack critical and scientific knowledge a lack of self-critical analysis. And they also mentioned that starchitecture culture is linked with architect's fear to engage with real world problems outside of their office, and to psychological dilemmas related to playfulness/joy and wanting to leave a

³ Markus Miessen, *The Nightmare of Participation*, 1. (Berlin: Sternberg Press, 2010).

mark in the world. These fears and dilemmas are also linked to a competition culture that doesn't promote collaboration and is focused on individualistic values.

For example, Jeane's practice focuses on co-creating design solutions with stakeholders and she highlights that even now the architectural profession has been focusing too much on individualism and the architect's ego: 'it's been a very masculine kind of culture that where its shape and its volume, and its power and those kinds of values, and we should let go of them and embrace and acknowledge other parts of the profession. (...) the architect should move out and not be in the center as a master, as an artist. I think that's how we are often in the public debate about architecture and star architects, that whole rhetoric is based on the idea that the architect is in the center of everything (...). For Jeanne, in the current starchitecture culture, architects are still looked upon as 'artists and magicians' and something that is very distant from the everyday life of people, making architecture seem out of reach. That represents a problem in terms of involving citizens in the debate of architecture. She shared that in her ideal scenario, the conversation about architecture shouldn't be about 'Bjarke Ingels, or how tall something is (...). But it's about how our conversation and process of building our living environments actually is an issue for everyone. And it is not about only aesthetics, it's also about our everyday life (...)

Feelings of alienation and 'the joy of being an architect'

Similarly, starchitecture alienates not only lay people, but also architects themselves. Bea shares that before her current job, she was working for a starchitecture firm, and that the types of projects she was involved in made her feel alienated from her own life and her values, and how gradually she started questioning her practice by getting involved with more tangible projects. She mentioned that at some point she and a colleague were designing luxury homes with spaces for housekeepers, yet the irony was that they realized that they couldn't afford a single square meter of the homes they were designing even if they combined both of their month's earnings: 'We laughed about it, but it is the sad truth. (...) now in most of my projects I am into retrofits and reuse. And that was also some vision that I grew during these years (...) my shift, if you want to call it ideology, it was very gradual, project by project you learn to stop, and from a very detailed point of view, ask a why, for example.'

Bea mentioned that the more critical she became towards her own practice, it also helped her to realize that not only she wanted to shift the focus of her practice, but also she notices shifts on her worldview of what food architecture meant and which architects to admire: 'when I compare myself to my classmates, I feel that I'm somewhere else

(...) even some architects that I used to admire, and now I see their work and I like it that I ask a big question of what was about it that I liked? (...) so, your heroes change and champions change, and I like it. It is a new me.'

Bea recognizes that the starchitecture projects can be appealing because the amount of attention and funds it has, which might allow architects to have a 'playground' and enjoy the 'joy of architecture'. But at the same time this 'joy' can be an issue when it diverges the architect's attention and start ignoring the 'big why' behind the projects, such as the project's sustainability impacts or people's alienation. Referring to projects she did when working on high profile firms financed by oil money investors, she shared: 'of course it is some joy of architecture to design those, but there is always a big why involved in it (...) as an architect you have to narrate the life in that house in your head, and why you're designing it, and if you cannot relate to that life (...) So, the joy of doing architecture, I think, is for many, the reason that they ignore that why, but should be aware of that, that is also the mainstream market of architecture, and it is more and more getting, with the inequality everywhere is going up.' She also pointed that with inequalities growing everywhere, architects should stop ignoring the inner 'why'.

Similarly to Bea, Mark points out the how the starchitecture attitude allows architects to focus on their 'playground' while ignoring their environmental responsibility. He uses the example of how some architects are now betting in the solution to design architecture on Mars, instead of focusing on current problems on earth: 'It's really is funny, it's a lot of play going on there, right? Building brick Lego, having fun on another planet, while this one is burning.' Mark stated that the starchitecture mentality and focus on the 'architectural fun' also reduces the role of the architect to something superficial and can remove the architect's responsibilities to answer critical questions of their projects. He shared that instead, we need to change the way we approach the question of what is architecture and how it is created: 'it also pushes to the idea of the architect and the architects responsibility. And the architect's role within a building process, which should be looked upon is way more complex than just an artist creating a really beautiful building. (...) we need to change this whole mindset around processes, design process, and building processes.'

Bea's and Mark's insight invites architects to look for other ways to feel joy in the profession while not ignoring the critical impacts of architecture. In Bea's case, shifting her practice to focus on user involvement, retrofitting and participatory design, which brought her this joy and helped her stay connected to people and not feel alienated while addressing important issues with her projects. One project she used as an example of this was a small community project for young people and social challenged people, us-

ing reused materials and reactivating an urban area in Copenhagen. The project has user involvement in the design phase as well as in the building phase, where people participated in building some parts of the project that were safe and easy to make user architect's supervision. Bea notices that this type of project, although very simple and probably not something that would create an impressive architectural structure, brought her a different type joy and also gave her the opportunity to let go of control and redistribute responsibility: 'was a very interesting project process as well to be very close contact with users (...) and actually when people are more involved in the process, and maybe you as an architect also practice losing control in different levels, but people would like it in a long run more because they were involved (...) that project I really liked.'

Her insight also sheds light in power distribution in decision making and invites us to shift our views about the role of the architect from the 'puppet master' to a 'catalyst': 'you should go against some of the egos that they teach you in architecture school that architect is this puppet layer, like modernistic view of architects that is a superstar (...) you change the role of that one who has the key to all the locks, to somebody who is more a catalyst,

She also related the architectural ego with issues of funding distribution for social sustainability, and mentioned that architects should ask themselves: 'should I make a cool architecture for my portfolio with the money of the client and people pay for it? Or should I have a humbler one (...) but the benefits goes to people? or How can I keep this balance between these two that I give the quality of the more interesting architecture to people? why I keep economy and social benefits for them?'

Another issue raised is that the architectural ego is detrimental to partnership and collaboration, because it makes it difficult to embrace diverse worldviews, knowledge and ways of working. Mark, who works with managing multidisciplinary teams and creating partnerships with other companies in his architectural firm, gave an example of a clash of architectural worldviews in one of his projects: 'the partner of another a big architectural company, addressed us at a meeting saying, well, when you've done what you're doing, then the real architects can step into the scene and create. And I got so mad, so, there is also still an idea of what is the architect'. The relational practices mentioned that starchitects usually have a dismissive attitude towards architecture that focuses on user involvement and democratization of the design process, and poses a challenge to more holistic approaches because, as Mark points out 'as long as we see architecture as just a field of art, I think there's a barrier there in terms of involving the user of it.'

Therefore, a shift in the perspective of the ‘starchitect’ mentality means seen architecture not only as an artform and the architect as the genius artists, but expanding the possibilities of the profession and the impact of architecture beyond aesthetics, and even beyond the ‘joy of architecture’ that is blind to broader architectural impacts. This shift also invites architects to remember their own place in the world, to not be alienated from their own human condition, as Gina reminds us: ‘don’t go for yourself, architect. Leave the ego at home, give the building to the people who will actually use it. I think the less architect’s ego you can see in the building, the better. (...) I would like them to be able to think less as an architect and more as the human beings they are.’

5.4.4 Architects lack political power and unity

Many interviewees mentioned that collective action taking and distribution of responsibility within the building industry is essential to practice responsible architecture. They recognize that it is too hard for architects alone to deal with all the complex issues to practice more sustainably, and that we would evolve faster if we collaborated more. Using an example of a project on circular design, Carl mentions: ‘everybody needs to be engaged and take action and take the responsibility in changing. And it also helps when you have a common project that you know is going to be circular (...) you can only get so far when it’s only an idea. But when we had a common project and a client saying that we are going to build this in a couple of years, like everybody pushed themselves to the last bit to actually come up with solutions that were practically buildable.’

Competition with engineering firms

Although many interviewees mentioned the need for more collaboration and partnership, interviewees from mid-size and big practices displayed a fear of sharing in their discourse, where they mentioned how architects are being bought by engineering firms, making architects losing their creative freedom and critical approach to projects. Ethan, an architect that works bridging multidisciplinary fields in his practice, shared that: ‘the reality is now that a lot of offices are being bought by big engineering companies. And we really believe that we have to maintain that position of being like an office run and led by architects with an agenda that is very free in relation to thinking about how architecture actually can create a positive difference.’

While bigger companies seemed threatened by the issues that opening up their methods and process for collaborations could bring, relational practices have an opposite view. For example, Jeane believes that the fear of architects losing their jobs to engineers is related to the worldview of starchitect-male dominated culture, and that it only results

in a lack of self confidence and in architects having to play number's game to constantly prove themselves. Instead, she shared that architects should have a more courageous attitude towards sharing: 'we are being not threatened, but we get competition now from different angles and other professions. And I think it's time for us architects, to actually realize that we don't own certain areas, that we can open up and in taking input from others, and it would just strengthen our position and not weaken it'. In this sense, architects have the collective responsibility to reframe themselves and their position within the building industry and regain their autonomy by changing the way they approach collaboration.

Furthermore, in the scenario where architects are being subjugated by engineering and by profit oriented conservative market, interviewees shared that it is important the government and municipalities also should take responsibility and intervene to demand sustainable solutions. Ethan shared that they are often in dialogue with the municipality because they need some external policy to be able to help them to get more quality out of the projects they make when negotiating with investors: 'otherwise we can sometimes be struggling alone and if we struggle alone too much or too long with a client, the client would probably just choose someone else. Because there are always, practitioners or offices that are hungrier for, getting something, getting a client on board.'

Architects are not taken seriously

Another issue mentioned by interviewees is that many times architects raise the issues of social sustainability, but are not taken seriously by investors or other professionals in the construction industry, and lack the political power to influence in decision making in projects. Interviewees referred as engineers or those who are the 'safeguard' of numbers having more power in decision making and influence, while architects have a hard time to 'measure' and communicate immaterial and social impacts of projects. This difficulty also represents a challenge for architects to advocate for changings in the building code to include social sustainability. Relational practices also mentioned that many times they end up doing pro-bono work to address social responsibility in projects, since there is a lack of quantifiable measurements for social sustainability means lack of funding for this type of work.

To communicate intangible values and convince investors to pay for and address social impacts of architectural projects is no easy task and should be made collectively. For example, Liam shares that collectively advocating for changes in the building code could be a joint task between architectural community. In his opinions, the building code hasn't been challenged enough by architects, and in the past 30 years has become

way more technical than it ought to be, without considering social aspects. While he firmly believes that that is an endeavor architects should do together, he recognizes that the task requires a lot of time and the political power of the architecture association, but that currently there is a lack of unity in the architectural field.

This lack of unity reflects the starchitecture mentality, but also from a profit-oriented culture where architects lack the resources to be able to stop and be critical about their practice and create unity and a possible task force as imagined by Liam. Within this current situation, Liam mentioned that he feels trapped in a paradox where it is difficult to create a collective task force due to lack of funding and the fast pace of the industry, which generates a stressful working life and business, not giving architects the time to reflect and be critical about their own practice: *'it's really a difficult time at the moment because people don't have time because they don't have the money to have time (...) everyone in the big companies are super stressed because there's so much work to be done. And everything is flying so fast. It's very quick architecture. So, we create these loops of constantly being going in this project mode. And then you don't step back and actually maybe reflect on your profession and your working life'*.

Interviewees also pointed to a general lack of shared responsibility and collective action related to a lack of consensus on what are good solutions in architecture, and what should be the common focus of change making. The divide between technological or relational approaches that emerged from the data is just one example of this challenge. This lack of unity might be related to the fact that there is no consensus among architects of what constitutes responsibilities in architecture or even what constitutes good architecture.

An example of this was brought by Noah, an anthropologist working with housing renovation in the Danish ghetto area, where he was the mediator between several stakeholders, including architects, politicians, investors and local dwellers. He mentioned that this project involves a lot of debate around demolition and renovation of pre-existing buildings and architects themselves could not agree on which solutions were sustainable. He mentioned that while some were arguing that the scale of the project is too immense, and advocating for significant demolitions and changes in the existing buildings, other believed the buildings were high quality and should be preserved. Some architects also advocate for blending various architectural styles, while others adhere to a more purist perspective, desiring to maintain the existing aesthetics and layout of the buildings. He also notices that the lack of consensus is connected with a political engine similar to people-washing that tries to include everyone's opinion in the public debate about architecture in a superficial way: *'everyone wants to discuss when it's political, the ar-*

chitects the engineers the municipal officials, the politicians, the residents (...) everyone can discuss architecture, everyone can say whether they think a building is beautiful or ugly. Everyone can say what they think about what places look like or the materials are made of (...) it's like it's architecture taken out of the architectural domain and discussed as something which is an engine for something political'. In his view, the mechanism of collectively debating architecture only focusing on aesthetical aspects, besides being time consuming and not really relevant to address the critical issues of the project, it also dilutes the architect's relevance in the process.

Within the debate under the theme of lack of unity, we can see how diverse architectural worldviews enter in conflict and can be a challenge. But as is evident from the data, many architects understand that it is important to have unity and to find a common ground that would be more beneficial for architects to be able to push the agenda of architectural solutions that are more sustainable and have more overall quality. To practice responsible architecture, there are many challenges architects facing in the construction industry, such as speculative developers, losing their voice to engineers and numbers, trying to change client's mindset, having to advocate for new solutions in a conservative landscape, being easily replaceable, having to deal with green washing and people washing. These challenges become even greater when architects lean into the starchitecture mentality and invest in competition rather than cooperation. From the data, it is clear that it is too hard to deal with so many challenges if architects are dispersed and lack unity and a common agenda to practice responsible architecture. Some architects are trying their best in their practice to promote change, but their power of influence might be limited. Therefore, this indicates that architects would benefit from coming together and trying to find a common practices and projects where they can collaborate to increase their political influence and push the agenda of responsible architecture.

5.5 How interviewees see the issue of responsibility

Those interviewed from a technological perspective in architecture contend with challenges through lobbying, marketing, competition, and promoting green building initiatives. While sustainability is employed as a strategic tool for competition and future market creation, it often derives not from ethical or altruistic reasons, but from a desire for business growth. For instance, Adam's firm heavily invests in advocating for timber materials and LCA analysis, utilizing sustainability as a narrative device for competition. They perceive responsible architecture as a technological problem, necessitating more technical competencies and technological solutions.

Concerning the responsibilities of the industry or clients, they directed criticisms at their conservative and profit-driven approach. However, the discussion about the industry's and investors' need for change was scant. Only Fred discussed the role of local government in regulating speculative developers, albeit with little optimism: 'of course it has to do with how the local government acts. But it's a complex situation (...) if they don't get enough for the land prices they need to raise the taxes and so on, they don't get elected.'. Shared responsibility within the construction industry was identified as both a challenge and a solution by two individuals in the technological side, although concrete contributions to collective efforts were lacking.

Conversely, practices towards the relational side of the spectrum have a more critical approach to responsibility. They deal with challenges by focusing on developing holistic approaches to architecture, social responsibility, sharing and partnership and developing critical approach to redefine what is good architecture. Responsibility, in their view, extends beyond green building and technology, to include social impact, aiming for change in relationships between humans and their environments. To do that, they engage with diverse inclusion methods and strategies during the design process such as: power distribution in decision making, changing people's behavior through educational strategies, creating platforms for dialogue and knowledge exchange between stakeholders and between experts, open source knowledge sharing with stakeholders and within the industry, connecting with others in a human level and emotional attunement and others.

Regarding interviewees within mid-size practices, although they belong to a small group within the company trying to address social issues and use relational approach, they feel their autonomy in projects is limited and responsibility rests predominantly with investors. And despite discussions about social responsibility and critical architecture, the responsible projects mentioned constituted a tiny fraction of the firm's portfolio. Thus, a dilemma arises where firms may advocate for responsible architecture but in reality, only a few projects, usually small ones, incorporate a critical approach.

For example, Diana, who is an anthropologist working in a rather large firm, explained how the majority of their projects might be more business as usual to keep the economy running, but are also what gives them the change to invest in less paid projects where they try to propose more critical approaches. Referring to a small children's hospice project they made, she shares that : 'it is a very small project, so I think the level of risk was maybe not too big either.' Similar to her example, most of the projects that interviewees presented as responsible projects were usually small scale, funded by the

government, public buildings, or had some sort of higher social goal such as community projects.

Furthermore, it was also mentioned by relational practitioners that many aspects of responsible architecture, such as holism, focus on social responsibility often becomes lost as a firm grows. The larger the company, the more challenging it is to maintain a holistic approach to projects due to the separation and lack of an overarching view of the entire process. While larger firms can invest in responsible projects, smaller firms may adopt a more critical approach to sustainability, but lack the resources to do so. Data suggests that practicing responsible architecture may be challenging in an industry that emphasizes large-scale, quick profit gains.

In conclusion, there is a recurring paradox where architects understand the pressing need for structural change but fear the loss of job opportunities. This dichotomy manifests itself across large, medium, and small firms, creating a question of compatibility between private practice and sustainable practice. Small practices strive to focus on socially meaningful projects and secure funding to lessen their dependence on private projects. Medium-sized practices take on a small amount of key projects where they can practice responsible architecture while dependent on many projects that are business as usual. Whereas larger firms often overly emphasize technological solutions, mainly ignoring social aspects. The overall data suggest that balancing a private practice with critical sustainability is currently challenging.

The dilemmas found in the data raised important questions architects should ask themselves: if we want to deal with climate change, can we survive on good examples of few small projects while the majority of our projects are still so unsustainable? Or should we find other modes of working and re-focus our efforts?

5.5.1 Dilemmas about compromise, aligning worldviews, values and behavior

Another aspect of responsibility is how interviewees negotiate dilemmas with clients and what is the role of compromise in their practice. What became clear from the interviews across the spectrum, is that very rarely big clients that move a lot of money are interested in practicing responsible architecture. But at the same time, they are responsible for big environmental impacts and also for a great portion of the capital that keep architectural offices running. In this sense, I investigated how they deal with this dilemma. How is their view on working for profit-oriented clients; do they say no to projects for example, or how do they deal with compromise? This discussion boiled down to the dilemma of should architects insist on working with big clients that have a big impact so

they can try to change their mind and the project along the way? or should they focus on maybe doing smaller project but with clients that are more aligned with our values?

Some interviewees in bigger practices have the perspective that architects can be easily discarded or disregarded in projects in present profit-oriented construction industry, and even if they want to, it is very difficult to say no to a project, because then they would be replaced by someone else. In this scenario, architects might feel that their values and ethics are suppressed by the economy, and can make them feel unheard and devalued. Connected to the fear of embracing complexity discussed before, even though architects may want to do more responsible projects, these feelings can make it difficult for architects to work with complexity and broader aspects of sustainability, and instead, they focus on the bare minimum. As Carl shares: *'it's also sounds very depressing, but like at least you can be as sustainable as it's possible within the frame for your projects. I think that's like a bare minimum. But I think to be actually responsible it is to do as much as you can and... I want to have that at least climate neutral building is like the minimum because otherwise it's not responsible.'*

But one can ask, in the face of the urgent climate crisis, is the bare minimum enough? Should we be spending our energy in projects where we can only do a tiny difference or should we try to get involved in projects that we well we can have a bigger impact? By having a critical practice, these are questions that architects should constantly ask themselves. Karen understand that this dilemma is an important one to think about in your professional life: *'sometimes you need to ask yourself where you want to make the biggest change. If it's together with someone who doesn't see the value in what you're doing, or you want to work together with someone who really sees the value, and then you can get further.'* In Karen's perspective, there is this attitude of focusing only on tiny bits of the project that we can relate to our values, but that sometimes we can't handle the reality of the rest of the project, so we have to 'close our eyes' to these complexities. But this attitude takes us further from a holistic approach that is counterproductive to sustainability. Instead, we should try to expand our capacity to look deeply into these dilemmas and complexities to see how we can make the biggest impact instead of the bare minimum: *'I think that's also what I mean about not being so afraid about the complexity of projects, we want to understand and we want to know more and then by understanding it we can have better solutions.'*

In the sense, while many smaller practices also share the position that you can engage in the project and do what you can, their attitude towards it comes from a different place. It comes from a place of critical engagement and dialogue, to enrich the project and finding meaning in it, where architects stand up for their worth. As Karen shares: *'we also*

have a duty in telling them what we think is the best way for a project. And if they would then rather do something else with some other companies, then they should do that'. In that sense, smaller offices also seemed to have a clear understanding of how much they want to compromise, to make sure that they are involved in project where they feel they are being heard and doing a meaningful job. Interestingly, data showed that while one can imagine that it is easier for bigger offices to turn down projects, it was mostly the smaller practices that showed to have a clearer and more frequently used 'no' policy.

Nevertheless, some small practices also shared to struggle with finding their financial freedom so they can focus on the projects they consider responsible. Liam states that there is a line where he should say no to a project, but he considers: 'what we are really looking for is financial freedom in terms of also being able to say no, because how you spend your time is, for us the most important part. Of course, we want to be paid fairly, but we also want to spend our time on the projects that we feel are giving back to us as well (...) we could say you become what you eat, you also become what you draw and what you're engaged with.' Liam's perspective on 'you become what you draw' highlights the connection between compromise and architect's mental health, which was cited by many interviewees as an important aspect of having a healthy good working life.

In this sense, interviewees shared the ideas that if you are working with projects that do not align with your values, it will probably be difficult to use all your potential to practice responsibly. That's because the contingencies of your working environment can cause internal conflicts with your personal worldviews and values, causing stress and ending up in an unsustainable professional life. Although not mentioned much by interviewees in the technocentric approach, this constant negotiation between professional and personal values showed to be important for relational practitioners. Data reveals how important it was for professionals to align their worldviews and values to their professional behaviors to be able to maintain a sustainable work-life balance.

Relating this back to the critical thinking discussed before, the relational practitioners believes that architects should have a standard that can be openly and honestly discussed. This standard is related to the architect's values and the extent of their responsibilities and power to influence the project. This should be openly discussed with clients, users and stakeholders so they can try to align values and distribute power and responsibilities. It is also important to draw a line to which projects you say no to, that compromise has a limit, and that if we compromise too much we are also worsening our profession and personal life by getting involved with projects that don't align with our values. Related to the lack of unity discussed later, we also worsen the necessary collective effort to have a standard to how the profession works and values we stand by.

5.6 The relational approach to sustainable behavior in architecture

5.6.1 Holistic Approaches

Compared to the technological approaches, relational practitioners display a more holistic view about broader aspects of sustainable behavior that goes beyond technical or spatial issues. In this sense, their practices focus on architectural impacts beyond the building as product, but focusing in the design process that considers the cultural, historical and social contexts and the complexities of human behavior. They also focus on multidisciplinary approach to architecture that bridges ‘soft and hard’ sciences. They also consider that sustainable behavior and change making happens during the design process and not only after the building is finished. In this sense, they focus on an expanded design process that takes into consideration of what happens before, during and after the building.

One example is from Karen’s practice, where they developed a model called ‘four different perspectives.’ This model is a method to look into a project or a place and research about four different perspectives that affects that place, including top-down (such as state/municipality), bottom-up (people/users) and the insiders and outsider’s perspective and how they can integrate that in the project (figure 3). They use this method to map key stakeholders and interests related to the project. Doing this mapping reveals political, social and cultural structures of projects that also impacts architecture beyond the physical aspects: ‘it’s not only the physical, also, how do we organize? How do we meet together with other people? What is the social life around it? What’s the economy around it (...) thinking about all kinds of different areas that are not related to architecture, but are essential if these physical structures are going to work.’ In this sense, their practice sees complexity as a richness and not as an issue: ‘we always look not to reduce complexity, but to understand it. and we are not afraid of the complex reality. And just to narrow it down and then make hopefully more simple illustrations of how it all works, and help people to make it work better.’ In this mindset, the architectural impacts become broader and the design process expands, in a way that sustainable behavior starts before the building and continues after construction: ‘we are really interested in the process that begins before we even know what is the structure, but also how are we going to use the structure afterwards. And that’s really important for us.’ In this extended timeline, architectural impacts might not limit to the site or the project itself, but can permeates the culture and social structures around it, acting as a catalyst for broader change: ‘it’s not just housing, but it’s also a part of the social strategy. It’s also a part of the health strategies, also a part of an Education Strategy.’

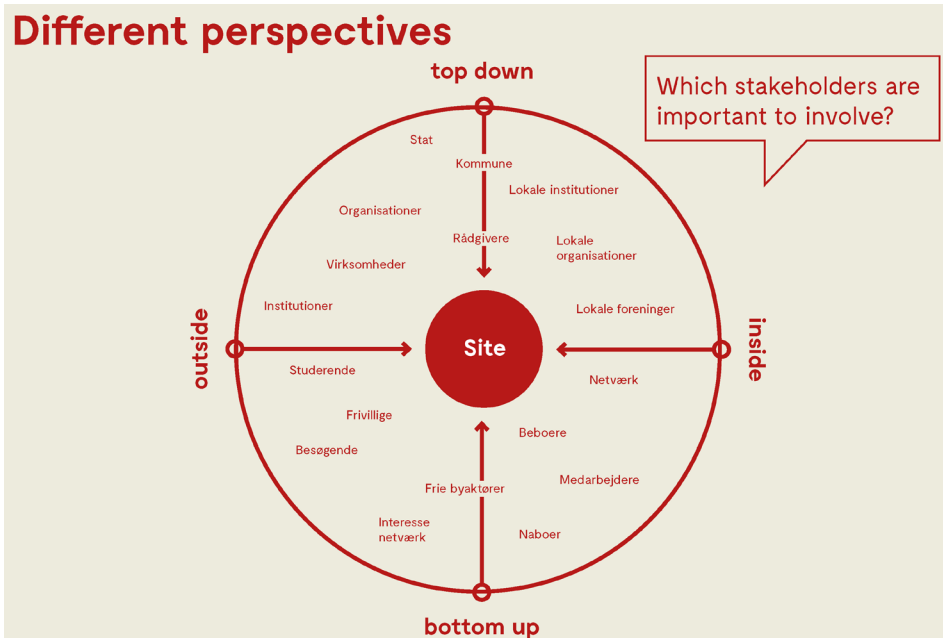


Figure 3: Karen's four different perspectives diagram.

Another holistic strategy from Karen's practice is what they call 'strategic action planning' that combines strategic long-term perspective with a very short-term action. For example, when they start a project, they do small mockup tests of possible solutions for the project before starting to design something, and to think how short-term architectural interventions can contribute to the improve decision making and long-term impacts of projects. One example was a project they did where a municipality wanted to transform a parking lot into a public space, but that was a big fear of people complaining about lack of parking space, and also uncertainty about which kind of activities would be good for people, and the municipality was having a hard time deciding. To find out what type of architectural program would work better, Karen's practice made events on the plot and invited the local people and key stakeholders to use the space in diverse ways while testing several spatial options: 'have a barbecue have a concert (...) to bring people together to see how can this not as a visualization, but as a one to one test? How can this actually work? What kind of value it would add to our community?'. She mentioned that his method has shown to have a really high value to both citizens and also the politicians, because they can then have a dialogue about the project and test one on one their ideas, breaking misconceptions or assumptions and seeing diverse possibilities. In this strategy, temporary and simple architectural spaces were used as a dialogue

and closeness strategy to deal with feeling of fear and uncertainty between stakeholders: 'If they were afraid that they will have the lack of parking lots that we can test it (...) maybe it's not such a big problem. If I think about what do I gain on the other hand? I think this testing, combined with the strategic long-term perspective, has a really nice way of bringing people together in a constructive dialogue.'

Another interesting example is Mark's practice. Mark himself is not an architect, but a didactical designer with background in cognitive science. And in his office, he helped to develop a method to analyze institutional buildings as 'organisms', where several domains of human behavior (including human organization, pedagogics, didactics, culture and values) intersect with architecture: 'We don't see the space itself as the final solution. A space in its itself cannot solve a complex problem within a school. So we work with a model that I call paddock, which is a model for analyzing an institutional building as a organism'. The paddock model helps them to see a project in five different domains: organization of humans (such as teamwork, sizes of group), culture (the cultural values), pedagogics, didactics and architecture. Each of these domains have certain characteristics that influence each other in a non-linear way: 'So this holistic approach of never seeing space as an isolated island, but always affected by and in relation to these other four domains.'

When working with this model, Mark's practice invites key stakeholders (decision makers and users) to talk about these different domains before they start making design decisions. They invite people to understand how space relate to something that is not space 'for instance, people's values, people's way of talking to each other, communication, ways of organize in yourselves as groups'. In this way of thinking, architecture promotes change not only because of space as a product, but as the interaction and co-creation of space and organization at the same time: 'to see its part of developing architecture is developing people, which are in an either political or societal frame that we call education, right? (...) there's so much more than architecture going on. So we're trying not to separate architecture from what's happening within.'

Multidisciplinary approach to architecture

Many interviewees also mentioned that to achieve sustainability and the holistic potential of projects we need to invest in more dialogue between disciplines and invest in multidisciplinary approach to architecture. In this sense, relational practices recognize the need to have a multidisciplinary team where people from the social and technical backgrounds can come together to find ways to translate knowledge from the social sciences into materiality and space. Many interviewees highlighted that architects usually

collaborate with technical disciplines but are not used to or good at collaborating with the social sciences. And therefore, this is an area that should be enhanced if we want our projects to more sustainable in diverse aspects, not only in the technical aspects.

Gina, a sociologist working in an architectural practice for more than 10 years, explains that in her practice: ‘So what the studio knows something about it is how to create the architecture as the hardware. But what I know something about is how to provide the software to actually increase the impact of a building in various ways. (...) it’s its important to integrate those different perspectives, in order to find more sustainable solutions.’ Jeane’s practice also have an ethnologist as part of their multidisciplinary team to complement the architect’s skills: ‘because we need to know how to interact with people. And we need to understand the psychology behind these group dynamics and how we can actually create an atmosphere where people are willing to and have the language to participate and inspire each other’.

Diana, as an anthropologist working in architectural practice, sees her role as crucial to transform data she collects from research and from users and stakeholders into knowledge that can support architects in design decision making. She leads a multidisciplinary team of social scientists, architects, landscape architects and engineers to research and map the whole value chain of architecture: ‘how does architecture create behavior and practices? And how does that then create value? value, meaning different things, but also economical value? you need different disciplines to kind of go through because that’s a very wide disciplinary field’. The way the work of her team feeds into decision making ranges from before the project starts while collecting research and data from users and stakeholders, during the design process when the project has to have modifications and therefore the agreements made with users and stakeholders are at stake, and also after the project is build, to collect information about the success and failures of the project and how they can improve their work in future projects. ‘So, I think cross disciplinary competencies, or multi-disciplinary competencies are very much useful when we’re trying to inform architecture and kind of build a knowledge base or decision support, providing decision support for architects.’ Diana highlights that having a multidisciplinary team can help architects to make more informed decisions as well as give them space to focus on their unique skills and contribution for the project. She believes that architects, instead of being absorbed with number to match up to engineers or trying to do the job of social scientists, they can use their creativity to translate all the contingencies and complexities of the project into architecture: ‘but doing the transformation into architecture, is not something that you could put on a formula. So you really need to have good intuition (...) and I think as architects, you need to be very careful not to become

too absorbed with numbers. And, you know, you need also to still be architects and not try to become like pseudo anthropologists or pseudo economists or psychologists'

One key project that Diana used to illustrate how they work is a children's hospice where her team was involved from the concept development to post-occupancy evaluation, and decision making was done together with the entrepreneur, users and design team. Besides desktop research, they visited several children's hospice to talk with users and staff through interviews and workshops. Based on this research they came up with the project's concept and most important features, and used their data to support and quality their decisions. After the first conceptual phase and sketches are done, the project usually is handed to another department for details and technical development. Diana notices that many times in this change is where things get lost and the knowledge from user involvement is not integrated. But in this case, she was also part of the technical development phase to make sure the decisions that were being made followed the project concepts and what was agreed with stakeholders: 'When there were changes that needed to be made. They would ask, so what was the background? And what would you suggest or if we did this, then what would the consequences?'. In this case, Diana was the main 'guardian' of user's interest in the project, and in contrast with what was shown in the technological approaches, her data comes from deep listening and involving people.

Sustainability beyond green-building, the role of social sciences for sustainability

The multidisciplinary approach is not only important to keep the interests of the stakeholders in check, but also to make sure the final architectural product is indeed designed as it was intended. The relational interviewees believe that the holistic approach using multidisciplinary teams and user involvement can help projects to make better decision making, better solutions that can end up speeding up the decision-making process and might make the process cheaper. They mentioned that if architects don't use holistic approaches and knowledge exchange, they might end up developing design solutions that don't work.

Noah, one anthropologist amongst the interviewees, mentioned examples from his research and work with architects, where the intentions behind projects would backfire because decision makers would focus on technical solutions without understanding enough the users and the broader social and cultural aspects influencing the project. He stated that if someone builds something that people are not supposed to be able to use in a certain way, people will inevitably find a way to do it, because architecture 'will always be confronted with social life with humans and with the ingenuity, with the all the ideas that humans have in order to change their environment or use it differently than what

it was meant than how it was meant to be used.’ These perspectives show how focusing on technological solutions of ‘green architecture’ only might not lead us to sustainable behavior.

One example of this is a school project where Mark participated, where a school that wanted a spacious area for physical activities and architects designed the space with a large glass wall to take advantage of a nice view, understanding that people generally respond well to looking at nature. However, they didn’t consult with those in charge of indoor climate control. As a result, the room’s temperature soared to 50 degrees making the room impossible to use. This misstep led to a costly 500 square meter room being left unused.

Mark also mentioned the importance to integrating the engineer’s work with the hidden intricate systems that operate behind the walls and under the floors. He realized that if these “hidden” systems malfunction, any discussions about behavior, psychology, teaching methods, or student organization would be irrelevant. Therefore, he acknowledged that although collaboration between several professionals or stakeholders can be challenging, it provides immense value: ‘because all their decisions will affect my decisions or my possibilities as the learning space designer and a didactical designer (...) it sure does create a lot of value (...) if we’re going to talk about sustainability in a broader sense more than just environmental sustainability, and in terms of not user involvement, but just general involvement of all actors.’ Mark views this as a cautionary tale illustrating the need for integrated design processes and continuous, collaborative dialogues to prevent such mistakes. It also reveals how technological and technical solutions have to be integrated with a broader understanding of human behavior for better results.

The architect Ethan also talked about an interesting example where focusing solely on technological green aspects of sustainability delivered an unsuccessful project. He cites an example of an experimental project his practice developed of a green energy-positive house, meaning it was supposed to generate more energy than it consumed. They had a real family living in the house for one year, providing Ethan and his team with valuable data on human behavior within a sustainable dwelling. Interestingly, the energy consumption in this house was significantly higher than in typical houses of comparable size. Ethan believes this was due to the family’s perception that the house’s “green” energy was essentially free, leading to excessive energy use, such as overly long, hot showers. This surprising outcome underscored for Ethan the importance of ensuring that users interact with sustainable architecture as intended, a lesson that now forms a central part of their design strategies to prevent such unintended consequences: ‘a colleague who was very interested in sustainability as well said, the most sustainable performing square

meter isn't really sustainable if the users don't use it correctly or if they're not interested in using it at all. So, I think we have a deep interest in the social aspects of sustainability (...) we, as architects, we really need to ensure that the users use our architecture as we would like them to really make something sustainable.'

To be able to have integrated design processes, interviewees mentioned the important role that a skillful professional (architect or not) plays into bridging several people and disciplines. For Mark, he views his role as the mediator between these diverse disciplines and actors and a translator between the different languages they use to communicate. He also sees his job as helping architects translate all the knowledge collected from these diverse actors into space. Mark, Diana, Gina and Noah are all professionals from the social sciences working with architects who does similar work mediating, translating and being responsible for the social connections and communication between actors in a project. While most of the relational practices have someone, who does that work as a social scientist, some architects also venture in the social work. But what became clear from the data is that while architects can, to some extent so the social work, they benefit more to have a specialist in their team, to architects can learn from it but focus more on the architectural side of the job, such as translating the data gathered by the social scientists to space. Therefore, the holist and multidisciplinary way of working based on dialogue and collaboration is important to help architects to make more informed design decisions, but also to help them to strengthen their decision by backing them up with a broader body of collective knowledge.

Furthermore, relational practitioners believe that the complexity that social science brings to architecture can actually increase creativity, as Jeanne explained: 'the thing about the blank canvas is not stimulating, the stimulus are all the challenges and all the good ideas'. Similarly, Ethan mentions that 'having that agenda where unexpected answers to complicated questions can bring something new to the table. I like the fact that we don't have this way of doing it every single time. When we start a project, bring all these different agendas and research and having that cross-disciplinary approach to what we do is also just personally what makes it more interesting and inspiring to work with architecture.'

5.6.2 Social responsibility

Within the theme of social responsibility, relational practitioners talked about how architecture can address social issues and how this is important for sustainability. In their view, sustainability is not only an environmental issue, but as a social issue. They show an understanding that the sustainability and the quality of a project is linked with the

social impacts of it, and how people feel connected to the architecture. Bea mentions that she is striving to advocate for less iconic architecture and more quality in terms of social sustainability, because finding ways for people to feel connected to the project can have long lasting sustainable impacts: ‘because if it’s socially sustainable, it is more interesting, it’s more beautiful, it will be also more lovable. And if people want it, it will be possible to be more long lasting.’

For example, Liam’s practice focuses mainly on how architecture can create more inclusion in the public space and invite people to be part of the debate about public space. He talked about how architecture can be a catalyst to engage people, that by focusing on how the design process can help solving social issues and create change: ‘the aesthetics and the artistic stuff is just as important, but it’s also important to understand the social sides of architecture (...) on a social level, it’s way more socially sustainable to have a great space that will actually address maybe the loneliness, it could address different kinds of rather big societal issues on a local scale.’

He gives an example of a project he did to revitalize an urban park located in the suburbs of Aarhus. The park was located between a rich and a less privileged part of the neighborhood, where many immigrants lived, especially from the Somali community. But Liam noticed that the decision makers involved in the project did not represent the people who lived there, because they were mainly ethnic Danes. Liam then proposed that before starting to design the project, they would do a temporary community house at the square as a place to facilitate conversations with the local people, the mayor and the architects to meet on a local level. After discussing with the local people, they learned that besides being considered a ‘dead space’ and being hated by most residents from both sides, the park also represented a divide between the different parts of the neighborhood. So besides inviting people for the discussion about the square space, they also invited residents to co-build temporary structures with the office as a way to integrate people and to start a conversation and test several ideas about what the square could be.

Firstly, they build a temporary structure for the discussion to happen, that later become the community hub. As community started to use the spaces, many needs that initially Liam did not know existed started to emerge, such as nursery, music space for babies, woman discussion groups and others. Liam experienced that if they did not have this space for inclusion, the project would never be able to really attend the local community needs.

At the beginning, many adults joined but they did not have time and commitment to continue being too much involved in the project. And to Liam’s surprise, when the

school semester started, the students started to come by and expressed their curiosity and willingness to participate in the project: 'because they thought it was super cool to be able to, to do some physical stuff and build and do something for the community (...) So that's how the office really changed our focus a lot on youth and architecture'. With this experience Liam learned how sometimes participatory design and involvement can be challenging for adults to participate because of their busy schedule or maybe lack of motivation. But that in contrast, focusing in youth and involving local schools can be a great catalyst of engagement. The local youth helped Liam to build the square space and became involved in many branches in which the project grew into, including a community center, a place for workshops, renovations of an old and abandoned gas station close to the square space, and others. Since that experience, Liam's practice started to focus on bringing architecture and the politics of urban space into the primary education system, involving youth in the debate of public space and how they can influence it. Liam shared that this was a way he found to change society in a more democratic way where the youth could understand and advocate for better and more inclusive public space.

With this experience, Liam learned that by involving young people and listening to their needs can create a big social impact by making people feel heard. For example, he shared that some kids asked him for a place to repair and wash their bikes: 'we just paid maybe a small amount for a guy to come and take a water hose outside the building and it was free to use. And they thought it was the coolest thing ever that they actually were heard in terms of this conversation'. Therefore, in Liam's view, even if it is just a small change in the design, by doing something that makes people feel heard, helps to fight alienation and can create more connection between neighbors and between people and the urban space.

In sum, Liam believes that this feeling of connection and positive understanding of the project can help people to continue to use the space and be involved in taking care of it in the long turn, as well as create long term relationships and social cohesion. This can be seen in the fact that even years after the project, he is still involved in conversations with the local community and the students at the school to continue to maintain the project. Some residents get a small fee to take care of and maintain the buildings and a local who is an anthropologist has a paid job to run the community house. In this example, by focusing in an inclusive design process and simple architecture that didn't cost much, the project could create long lasting impacts 'this also showed that you can start small with the conversation or having activity and then in turn, they can actually create a greater change'

Another interesting example is from the anthropologist Diana, where her practice won a competition to make a student residency by going beyond the brief and focusing how architecture could help to improve the issue of loneliness amongst students. At the time of the project around year 2000, research showed that loneliness was one of the biggest challenges amongst university students in Denmark, and that represented a huge societal problem due to health-related issues as well as economic issues, because loneliness influenced student's capacity to finish their studies and enter the working life.: 'digging just a little bit deeper trying to find out okay, so we're not just making homes for students, if we're going to do this, what is actually going on with students now, okay, there's actually a challenge or a problem that we can maybe help solve.

By going beyond the brief that only specified building and technical elements, and creating a narrative around a broader societal issue that architectural could help to improve, they created a very powerful storytelling that helped win the competition. Differently of what was asked in the brief, they transformed individual square meters to communal square meters and distributed several communal areas around the building. In this way, in order to get to their apartment or use diverse facilities, students had to move a lot around and go through the common areas such as kitchen, laundry or the gym. Another architectural future that to help create more interaction in the building was to have a glass façade in the interior, where you can see the different levels and common areas: 'So, there is a lot of interaction going on even not kind of face to face or physically, there are a lot of qualities in the physical space, that supported community.'

After the project was finished, they did research interviewing students and studying their behavior in the building to see the impact of these design decisions 'the residents said that it's actually kind of it's really neat, that you connect, you can actually see who it is and then you know whether it's someone that you want to go and join' and they also collected data from similar youth residencies that exists in the area for comparison: 'And that discovery was actually that it had worked and that the feeling of loneliness was lower in our proposal than some of the other ones that hadn't had that same agenda. And since then, it's just been something that has become a very integrated part of how we think architecture and work with it'. With this example, Diana discussed the importance of identifying an unseen problem that can be the main focus of a project. For her, this is important not only to create a compelling story for the projects that can persuade developers, but also to give professionals a sense of purpose in their work, making them feel that they are making a meaningful contribution to society.

Process over product: creating platforms for inclusion

Another interesting perspective regarding social sustainability mentioned by six of the interviewees, is that they see the main product is not necessary space, but creating organization and enhancing community. In this sense, their approach to change is characterized by creating platforms for knowledge exchange, conversations and critical reflections during the design process. In this sense, their work is usually more focused on impacting behavior during the design process rather than only with the final product.

With a focus on the process, relational practitioners mentioned diverse methods in which they create platforms for deep listening and dialogue and make people feel included. Inclusion is important for sustainable behavior because if people see themselves as capable of performing change, it helps build their confidence, sense of self-worth, and motivation to set and achieve challenging goals⁴. In this approach, the architect is not the ‘all knowing’ master decision maker, but people are seen as local experts, which input can help architects to make more sustainable decisions. Therefore, many of the interviewees also mentioned the importance of being involved in the ground work, meeting people in ‘eye height’ and being part of the community as much as possible. They also mentioned the importance to include unheard voices such as youth and vulnerable people. With this in mind, they try to create tools to democratize the design process and improve platforms for dialogue.

For example, the sociologist Gina for the past 10 years, she has been working with her architectural office focusing on community building, social housing areas, sports facilities and urban meeting places. Their design process focusses on creating organization with the users and surrounding communities or main stakeholders of the project, from which the design emerges from people’s interaction and creativity (see figure 4).

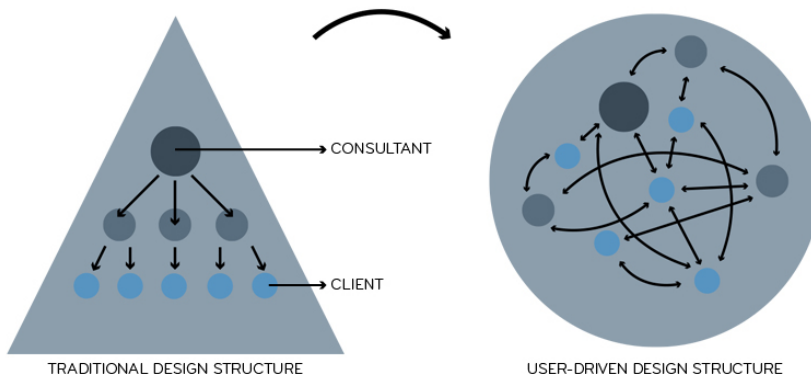


Figure 4: Gina’s diagram to represent their practice’s approach to design processes.

⁴ Chawla, Louise, and Debra Flanders Cushing. “Education for strategic environmental behavior.” *Environmental education research* 13, no. 4 (2007): 437-452.

One key project she mentions from her practice was a renovation and expansion of a former slaughter house as part of an urban renewal. This project is an association of cultural and social meeting spaces that started 10 years ago and keeps expanding while emerging entrepreneurial ventures from the users requires more space. Structures are made from renovation and extension of old industrial buildings, and create flexible spaces for workshops, an office hotel, a professional production kitchen and facilities for concerts and theatre.

By talking to the local people and inviting young people to use the space and test out ideas, Gina found out that what users wanted was very different from what architects had in mind. Realizing this, they changed their focus from the building itself, to help the local young people to organize and create a community using the already existing facilities. By starting to use the space before designing it, people could use their creativity to change the spaces and test several solutions on how to use it: *'it was a better invitation to the users, because then they had to fix things or invent solutions to a not perfect surrounding. And it was a driver for innovation, and it was a driver for creating meetings between people (...) I think one of main learning was I don't need to design perfect.'*

Realizing the great creative potential of opening up the design process for the user, they then facilitated workshops where they invited the local community to help them generate ideas for the space, where around 700 people participated. Based on people's input about present and future needs of the community, they could make design proposals and small mockup that were tested in the space together with the users.

They then made the final design based on the best ideas as agreed with users, and the project slowly started to be implemented in different phases and continues to grow, always open to change and in constant dialogue between the office and the users. Although the initial phase of the project was funded by the municipality, the subsequent phases depend on the office and users working together to apply for funding. But being going on and growing for the past 10 years, this example shows how creating organization and empowering people to be the main starts of the project can create long lasting impacts.

Similarly, contrasting with the architecture culture, Jeane shares that her practice's philosophy is based on prioritizing people over aesthetics in the design process. She proposes a focus on the design process and inclusion that enables people to voice their relationship with their surroundings and identify any deficiencies, and this input becomes the basis of their architectural and design strategies. She shares that the final design isn't considered the main output, but a physical supportive structure for community development that started during the design process: *'we don't talk about the design as*

the main product, we talk about the community as the main product. (...) we often talk about something immaterial, not physical as our main product, and then the physical product as a framework for nurturing that community in the future.' Therefore, their process and methods focus on building connections to strengthen existing communities or even spawn new ones.

By focusing on the design process as the 'star' of the architectural project, Jeané's practice developed several tools for user-involvement. They use these tools to design cities with people, facilitate the design process and gather data from citizens. These tools focus on for engagement, placemaking and learning, and use several strategies such as model making, prototyping, card games, board games and digital interactive platforms. They use the data generated by these tools to bridge the gap between citizens and the macro level of urban design strategies. One example of a project where they used many of these tools was when they were hired to do an urban development plan for O-city in Denmark. The municipality wanted a sustainable development strategy to be developed in the next 10 years. The municipality hired Jeané's practice over bigger consultants because of their focus on young people, which the municipality wanted to involve. Jeané's practice than did an involvement process internally within the municipality and also within local schools, and later between the municipality and the schools.

They started the process by using a board game they created to help people analyze, understand and discuss urban spaces together to develop their spaces and communities: 'there's two layers of that method. One is the atmosphere created around a board game is shoulders down. It's collaboration. It's not competing within the contestants that within your group (...) But basically, what it does is that it also creates a space where you first off you read each other's faces, you are slowly and sort of pedagogically, taking by the hand through the process of analysis.'

In this case they started with an in person long duration sessions to kick start the involvement process, but the boardgame is used in several formats, shorter versions of the game used in pop up style for data gathering in open urban spaces and a digital version for collaboration. She explained that the boardgames facilitates collective participation and also helps architects by creating huge amount of data that is very rich for the project. She also mentioned that this method has been working very well to create social cohesion and bridge differences between people: 'what happens is actually that people realize that there's a lot of similarities, but also the differences are being put out there. And they are then taken seriously. So, there is a psychology behind the game, or behind this method that really works well with the communities.'

After the first phase of involvement with the boardgames, they moved into phase two, where the same young people were invited to develop temporary projects around the city to test the ideas from phase one. Jeane stated that doing small scale mockup projects is an important part of the process, not only to test some solutions but also to create social cohesion and keep people motivated: ‘especially with a strategy like that, where you only see drips and drops of changes over 10 years (...) so use placemaking and temporary activities as a way of materializing the changes quickly, and to motivate especially the young people. The final document they gave for the municipality contained the strategy chapters made in co-creation with stakeholders from the municipality and local schools, as well as the mockup tests as examples of how these strategies could be implemented in different parts of the city in a materialized form. And what the municipality realized after this process was that they wanted to extend the contract with them so the same process could be done within the municipality to help them reframe their organizational methods: ‘that was a real value and they needed tools to be able to do that in the future. So again, you can see new community, but also way of organizing in a way of thinking and way of working in the future also (...) which is more sustainable part of the product of these kinds of processes.’

Another tool Jeane’s practice developed in collaboration with university researchers, is a digital app that allows people to give ideas and feedback about their city in a playful way. In this app people can take a picture of a place, make a collage and upload it, and all the ideas of improvement of the city spaces are gathered on a single platform where people can interact and elaborate. The online platforms created by them also allow people to answer questionnaires and participate in the projects online at any time, which created flexibly and allowed a bigger number of people to be able to participate. In her view, this online open source tool can help democratizing the design process by opening up the discussion towards a broader and diverse audience, such as including vulnerable people, women and young people.

In Jeane’s practice website, they share all these tools and resources openly. Anyone can download and use the tools they developed, which are made in a very easy way to understand and operate. This approach shows a critical take into sharing knowledge and can be seen in contrast with the competition culture in architectural practice. It also shows how architects can work closer to people, bringing down ‘the barrier from being a professional and being a lay person and giving people access into our methods and our work process’ as a way of creating trust, and creating architecture together. And also how architects can help bridge top-down and bottom-up structures and balance power relations, such as bridging the conversation between municipality into the community:

‘we also brought politicians and the mayor to participate, get, you know, stimulating or motivating them to move closer to the people.’

Jeane believes that this way of working is urgent if we want to practice responsible architecture, because we need to fight polarization and create trust and togetherness, which are important elements for collective responsibility and collective action: ‘especially also now with the climate crisis and also political crisis, I think, really, our profession has the possibility to break down barriers and to minimize also polarization in our society.’

Building less, connecting more

Across the board, many interviewees mentioned that responsible architecture is also focusing on building and demolishing less and more on transformation, renovation, densification and organizational change. For example, Fred shared that: ‘the most sustainable building you can actually build is actually not building at all, the next is actually retrofitting something that is good, and then if you have to build, you have to build for a very intense use (..) So instead of talking about the quality or the value of a square meter, you don’t say euros per square meter, you say, activity per square meter. That’s the quality of space.’

But only people in the relational side of the spectrum shared concrete ways in which they are expanding their professional expertise beyond building new projects. For example, many professionals in the relational spectrum shared that the issues clients usually want to solve in their projects, instead of being solved by building big structure or many square meters, can actually be solved by changing the way people organize themselves as a business or institutions. And that by involving people and helping them think critically about their project, helps people to realize that maybe what they need is not a building but better ways to meet and organize themselves to make the project they want while spending less resources.

They shared many examples of projects where they built small or temporary structures built to start dialogue and conversations around the projects. In this approach, instead of waiting for an architectural solution to be able to start the organization and activities and maybe build something way bigger and far from what they needed, they started the organization first and the architecture followed accordingly. With these, the people involved usually found that they needed less space than initially thought, and while some issues could be solving architecturally, others were a matter of organization. Therefore, these projects ended up being more sustainable because they costed less, used less resources, built less square meters and create social cohesion.

Within this mindset, Karen shared a radical proposal: ‘not always start building something but start using something before it’s actually there to find out what are our needs. Can we use a snow suit? Is that a better alternative for a building? And in 90, 80%, it is a better solution’. This view can be challenging for architects because it implies that buildings are not the main solution, and that architects should have a critical position in which we should ask if we should build anything to begin with. But 6 interviewees across the spectrum mentioned that the most sustainable things to do is to not build new, to build less and focus on renovation, reuse or transformation. But that creates dilemmas for the architectural practice that will be discussed later in the chapter.

Furthermore, some architects shared they feel let down and tired because a lot of their work ‘ending up in the drawer’. This sentiment arises when their numerous proposals, after thorough analysis and strategic planning, are overlooked and cast aside. To counteract this, it is important that change is instigated and solidified during the project’s inception. This involves focusing on changing behaviours right from the start and finding ways to make these changes last. Doing this makes it more likely that the strategies put forward will actually be followed.

In this sense, many architects in the relational practices shared that focusing on small-scale projects within larger ones play a key role in encouraging sustainable actions. They help keep everyone, including architects and stakeholders, interested and motivated. Furthermore, creating temporary testing spaces and carrying out activities can motivate people and help them see that change is already happening. This is especially important in long-term plans that span over many years. Seeing change in action encourages people to work together, which strengthens the project and keeps everyone involved. It’s also a good way to try out ideas and strategies.

Therefore, involving local people and investing in platforms for collaboration and communication showed to be crucial to increase creativity and engagement. Regarding the “blank canvas” problem mentioned earlier - where architects are faced with an empty space and need to create something - we need to remember that architecture isn’t just about creating something from nothing. It’s about interacting with people and the real world. So, our engagement with architecture should move away from the “blank canvas” mindset and get our information and ideas from many several sources, especially by talking to local people and specialists. This way, we can gather a range of challenges and ideas to work from.

5.6.3 Sharing and partnership

Interviewees also mentioned that to achieve responsible architecture, actors in the building industry should collaborate and share more within the building industry. Relating this with the challenge of lack of power and unity mentioned before, relational practitioners mentioned that architects need to grasp their evolving roles and reclaim their authority. There's an inherent need to regain relevance, rather than being merely pawns in the hands of developers used to enhance building value or marketing tactics. As architects, we need to master our craft and advocate for it. For that, it's crucial to invest time in study and self-improvement, to gain competence, and to stand up for high standards of quality. This isn't just about artistic quality, but also about the overall quality of the design process and other related elements.

Many interviewees mentioned the importance of collective intelligence and collective responsibility for this change to happen. They mentioned how collective intelligence from collaboration and knowledge sharing in the industry and with external stakeholders can create more sustainable projects. For example, Isla refers to her practice decision-making process as the 'consulting the common brain': *'the common brain is more clever than we are. So we often talk about, let's ask the common brain, because then, you know, everyone around the table is the common brain. So we would like as many participants in the project development as possible, because that is just making the project better.'*

In contrast with placing decision making only in the hands of the specialists and mediated by technology, relational approaches trust the collective and knowledge sharing to arrive at solutions that specialists only could not achieve. One way in which Isla's practice shares knowledge is that they participate in a network between municipalities and universities to share knowledge about reuse. They did a school project in which together with the network, developed solutions to reuse building components of an older building that was being demolished: *'because there's many things that right now people don't know how to do it, it's the first time we all do it.'* Therefore, focusing in a collective intelligence, helps us to imagine solutions in diverse ways, and help us cope with the amount of ideas we have to generate to deal with challenges of a fast changing world.

The perspective that sustainability depends on open knowledge sharing can be challenging for the competition culture that is still dominant in the architectural industry. But just like Jeanne's online open source tools for involvement, many relational practitioners did not seem to be afraid of having a sharing attitude, and as Isla proposes: *'the common thought about sharing knowledge is really important or crucial for the climate (...) because in the end the idea is not that we are architects winning a lot of projects. The idea is that as the society becomes better.'* Isla is convinced that sharing and collaboration in-

stead of focus on competition could accelerate the development of sustainable solutions and helping combat climate change.

Interviewees also mentioned that to achieve sustainability, we have to focus on the collective responsibility and action taking attitude, that is currently missing in our field. For example, Liam mentioned his difficulties in implementing social responsibility because clients would not necessarily want to pay extra for having something in the project that is not required by the building code. While he advocates that the building code should expand and incorporate social sustainability at some degree, he recognizes that this is an endeavor that can only be achieved collectively, and that we need to: *'somehow address it on the national level, I would say that requires a lot of people involving in the same direction, and working towards that.'*

Ethan also mentioned his difficulty with speculative developers, and that a collective effort to insist in a responsible practice develop arguments and language around architectural impacts for sustainability could be a great help: *'I think too many unambitious developers are having it too easy currently. It would be amazing if we could like, really as a whole community insist on creating an architecture that is aware of and really based on bringing a positive impact. That would be amazing.'*

Therefore, there is an urgent need to shift our mindset from the responsibilities of our individual practice to think about responsibility as a collective body of architects as whole. Jeanne complements this view when she says that: *'the idea is that you move away from yourself and you move into an awareness of a larger community. And in that way, you can move bigger issues, right? You can mobilize people, when you work with that process, and you start by moving the individual into a group and then into a larger group.'*

Collective critical thinking and power distribution

Interviewees also shared how developing collective critical thinking is important during collaboration to build bridges between diverse worldviews and values of stakeholders involved. As Gina states, architecture *'can build this bridge between some different views and client and consumed or users'* and therefore be a powerful tool to create collective change.

Karen gives an example where they were invited to design new workspaces for a company. In that company, the workers wanted them to find solutions for possible sleeping spaces, where workers could take naps or sleep at the workplace. Instead of starting designing for that, she invited the workers to have a critical conversation about their

working conditions and negotiate better working conditions with the company. In the end, instead of designing new spaces, they negotiated with the company to flexible their working culture in a way that workers that reflected on them spending less time in the work place, not needing a sleeping space. Karen shared that this not only makes projects more sustainable from a resources and social perspective, but it also bring more meaning to her professional life: *'this journey on helping people through methods to reflect and come up with new solutions for the work life, but also for the personal life. That's really interesting for me, and I think that gives meaning to my job, or my work life as well, to help people in this way.'*

Similarly, Mark mentioned that we need to rethink our idea of human responsible behavior as central part of architectural projects if we want to practice more sustainably. In his view, responsible architecture is architecture that *'makes it easy and possible for people to help each other, create or be more responsible, and create awareness of the effects of their actions (...) and that doesn't have to be very expensive in terms of building materials.'* In his view, the way we spend resources in architectural projects would be very different, and probably shift from a focus on purely technical sustainability to a broader understanding of sustainable behavior: *'we can either use all the money on facades, expensive materials, or we can use a lot of money figuring out what develops human responsibility in terms of teaching or learning or interaction.'*

Jeane shared that her practice focuses a lot in involving youth and schools in developing urban spaces, in many of her projects she has the opportunity to bring the discussion of democratic participation and sustainability to the classroom. When they collaborate with schools, they relate what students learn in diverse subjects such as math or history with the project such as the history of the local urban development or calculations for wood mockup model building. Jeane proposed that architecture can be used as *'as a catalyst for empowering people and making them understand the impact of our built environment, not just as a social framework, but also as a big center in our climate crisis (...) giving people the power to make decisions based on that helps the sustainable issues along, you could actually use it as a platform to educate and enlighten people.'* In this sense, many interviewees see the design process as a catalyst for collective behavior change by using several strategies, from raising awareness, to education, empowerment and emotional attunement with people.

This collective critical thinking and distribution of responsibility should be present not only with users, but also when negotiating with clients. The relational practices showed a great focus in dialogue with clients to align values to change their mindset to practice responsible architecture. Liam recognizes that the *'client architect relationship is one of*

the most critical parts in terms of doing great architecture. If you have a really bad relationship with your client with your client, I think it's really difficult to do a great project.' Because if the values and worldviews of a responsible practice are not aligned between architects and clients, it will be hard to have a good collaboration. But if there is alignment, the project can be more efficient, more focused and achieve greater potentials, as Bea puts it, 'the architect can push the agenda a little bit. But if the client is not aligned, you cannot go very far.'

Diana stated that the projects in her practice which were really key examples of responsibility and sustainability, were the ones in which all stakeholders' values and visions were aligned. In that situation, there are less conflicts of interests which can help the project happen faster, smoother and be realized in its full potential. In regard to the example of the children's hospice, she noticed: 'the project was so aligned. I mean, the project is like one big bleeding heart (...) I think our values were quite aligned. So, they did not see it as a money-making project either.'

They also mentioned that it is also more meaningful and motivational to work with clients that sees the value in their work and in the potentials of the project beyond just 'green building'. Karen states that it is way more inspiring when clients can agree that an architectural project can help solving broader societal issues, instead of focusing only on getting certified for green building standards: 'then it's hard for us to do real value. But if it is someone who really want to implement and think cross disciplinary as they create more value than I think it's the exciting project for us'. In this sense, practitioners used several strategies to help clients see the values on investing in a more sustainable project.

They mentioned how important was knowledge and research to convince the clients. Showing them how the holistic process and tools of gathering data from projects and past projects they made creates a pool of arguments and examples that they can help to illustrate the possible architectural impacts. Diana states that in her practice they 'usually never just build a school because the stakeholders said it has to look like that.' By using her multidisciplinary team to do post occupancy evaluation of their projects and research from theory and from involvement with users, Diana can create solid arguments to convince the clients. In this sense, she recognized that responsible architecture is a collective endeavor where all the stakeholders need to be onboard. Referring to the children's hospice, she shared: 'there can be a lot of negotiations and pushing responsibility around and kind of pushing the monkey around and stuff like that. But in this case, it actually kind of became more like we're whole team and everybody's on board with the decisions that we're making.'

In this sense, many of the interviewees strategies to enhance collective critical thinking in collaboration and create change was to focus on a closer relationship with their clients. By spend time with the clients in a human way, focusing on honest dialogue and acknowledging their fears and building trust, clients slowly start to see the changes in their organizations and relationships, and start to see the value in that. Therefore, different from an idea that if the clients are paying we should do as they say, relational approaches actually question the client, the brief and support them to try things different. Interviewees recognized that in this approach, honesty is an important value to hold on to.

Finally, an important perspective about the role of the architect in this collective approach to making architecture, is the recognition of power imbalances in design process and decision making. Marks emphasized in his discourse that architecture is not neutral; instead, it's a language of space that inherently influences and directs human behavior. It is an instrument of power with the potential to significantly impact not only individual actions but also the movements of large groups and society as a whole: *'it can make people grow, and it can diminish them. It can solve problems, as well as it can create more problems, which it often does too'*. His vision is that architects can use their knowledge to better distribute power and responsibility, thereby managing environmental impacts among various stakeholders.

Bea adds that architects occupy a unique position, serving as mediators between grassroots movements and top-level decision makers: *'we are involved in both ends, through municipalities and politicians and through the clients and users. So, the role that we can play is somewhere in the middle'*. Therefore, architects can interact with both municipalities, politicians, and clients, and can use this position to foster collective action and distribute responsibility and power more evenly in decision-making processes. This idea further echoes discussions from previous chapters about the importance of collective action in the distribution of responsibility and power.

Creating care, ownership and distributing responsibility

Another important point raised in the interviews related to collective responsibility was that involvement processes can help to extend people's care. Interviewees shared that involvement is not only a way of educating and mobilizing people to continue developing community and organization, but can also help increase the material sustainability and life spam of projects. Liam sahred that involvement creates long-lasting relationships between people and between people and space, and that his relationships are essential because they help buildings last, instead of *'be torn down maybe in 30 years or 40 years*

that is the current trend (...) I think that will make building stand longer, basically. And once it stands longer, they are way more sustainable on a material level'

Some practitioners identified that a common practice in the architectural consulting industry, where consultants work on a project and then leave, taking most of the knowledge with them. But that this is not productive because it doesn't help accumulate knowledge and share upon previous learnings. Therefore, key stakeholders that could carry the knowledge and continue to carry on implementations plants should be identified and empowered in design processes.

Jeane complements this view with the example of the urban development strategy her practice did, where: 'the municipality did not want to put up trash cans because it costs money to empty them. So out of this project, we applied more trash cans to the city, because the youth signed a contract with the municipality to empty the trash cans themselves. Again, ownership, empowerment'. Therefore, when architects suggest new sustainable urban strategies that involves behavior change, they need clients and citizens to actually continue to apply, test and carry out the suggestions. Otherwise the project will just 'end up in a drawer'.

Furthermore, the interviewees believe that sharing responsibility and ownership in architectural projects helps them relinquish unnecessary control and distribute workload. This involvement fosters a sense of satisfaction among stakeholders who partake in the project. Bea emphasizes that people appreciate being part of the process and architects can benefit from practicing "losing control" at different levels. Karen shared an example where their firm involved local schools in a city development strategy, where students were taught various aspects of the project, from conducting interviews and performing urban analysis to designing and building models. And Liam suggested that identifying people's potential contributions and encouraging them to step up eases the architect's job and improves the overall project. The architect can then concentrate more on the architectural side, resulting in a more satisfactory project. Therefore, there is plenty of human resources if architects use a involvement a design process that can help distribute responsibility and make the architect's job more enjoyable and make the project more sustainable.

5.6.4 Critical architecture

Honesty and compromise

The interviewees highlighted the importance of honesty and open-source knowledge sharing in responsible architectural practice, emphasizing the necessity to share failures

and mistakes, not just successes. They criticized the competitive architectural culture that often hides failures, arguing that such transparency is essential for sustainability, as it allows for learning and improvement based on what hasn't worked. This issue appeared even in my interviews, very few interviewees shared examples of failure, such as Ethan's example about the smart house that backfired (with the residents overusing energy). Nevertheless, many relational practitioners mentioned that sharing what was learned from a project, even its failures, can be beneficial for many.

Furthermore, by also being honest and open about responsibility and compromise, we can be clear about the power to make environmental impacts and decision making in the projects. In this way, architects can address clearly their share of responsibility in the project, and avoid either dispersing responsibility or taking in too much of it. Bea complements this view, sharing that taking responsibility for failure and have an honest approach is in contrast with greenwashing: 'greenwashing come from... it is very soothing, because they see oh, everything is solved, and how many tons of CO2 we save and what? But being ignorant about the consequences of this claims (...) responsible architecture would mention boldly where it went wrong, and not cover the mistakes.'

Redefining good architecture beyond numbers and aesthetics: architectural impact

As discussed before, the technological approaches showed a tendency to not critically question the projects, and focused to inserting sustainability in a way that wouldn't 'cost more or look different' or challenge the project or client. In contrast, many relational practices mentioned that architects should be focusing on the impacts of architecture. That beyond numbers or aesthetics, good architecture should be defined by its impacts. Gina shares that: 'responsibility in architecture is also the subtle approach (...) it's the impact of architecture instead of architecture itself, that is important.' For example, in relation to questioning the brief discussed before, Ethan shares that: 'we think about briefs as something we need to read between the lines (...) key projects in relation to impact has been developed in processes where we have actually challenged the brief and set ourselves in another position.'

Another example of a critical approach was cited by Bea, where she suggested architects could expand their skills and influence beyond just the physical building to create new methods of financing architectural projects to make their projects more sustainable and accessible. She asserts that while creativity is often applied at the design level, it could also be used in financing a project to enhance its quality. One cited one example of a housing project in her practice, where residents agreed to participate in building main-

tenance in exchange for lower rents. This approach not only finances the project but also encourages resident involvement.

Many interviewees also talked about including the study of human behavior in their projects to make them more sustainable. But while some technically oriented practices focus on the quantitative aspects of human behavior, relational practitioners go beyond number to also include the ‘why’ people do what they do. Noah explains that: *‘it’s easy to fall into some types of traps when you just observing behavior, which is I think a relatively typical architectural practice or way of collecting data on places (...) people have many different rationalities behind what they’re doing and why they’re doing it, how they’re doing it that you can miss out on if you don’t add the qualitative level of this type of investigations.’*

In this sense, some practices are trying to develop ways to think, explain and account for architectural impacts beyond numbers. In Diana’s practice for example, her multidisciplinary team attempts to map the entire value chain of architectural impact to construct a strong argument that the sustainability impacts of architecture are multifaceted and go beyond mere quantitative measures. They focus on questions like, how does architecture drive behavior and practices? How does that create value? And what are the worthy intentions or higher goals for building a specific structure?

Diana urges architects to reflect on the purpose of their projects and to consider whether the impact created by the architecture balances out the environmental impact it creates.

Contrasting with technological approaches where architects are trying to match up to engineers’ data sheet to measure project’s sustainability impacts, architects should expand their approach. While there’s a desire among architects to quantify everything to have arguments to negotiate with engineers and developers, Diana advised against just accepting their playing field and succumbing to the need to put a number on everything: *‘to be able to show the qualities of the way that good architecture works, which is not necessarily by putting a number on it. But can also be a matter of showing how people’s life quality enhances, there’s a lot of different ways of doing that which is which still acknowledges the quality of the competencies and the expertise which is within architecture.’*

An interesting project to illustrate an critical approach to architecture is from Ethan’s architectural practice, which includes anthropologists, engineers, and architects, offers an insightful example of how focusing on social responsibility and user involvement can

create a strong narrative based on the qualitative aspects of architecture, moving beyond a purely numerical and quantitative approach.

His team won a competition to design a holiday resort for disabled people and their families. The competition brief specified that everything should be on one level due to accessibility considerations, as many of the users would be in wheelchairs or have other disabilities. However, Ethan's team found through initial user involvement and research that there were alternative design possibilities. The team immersed themselves in the position of the users, spending time in wheelchairs and conversing with disabled people about their limitations and priorities. They found that one significant wish was not to feel disabled, and to experience a sense of freedom. This perspective led them to think about architectural solutions that could elevate users above the ground and give them a sense of freedom in the space, despite the competition brief calling for a flat, one-level design.

Their final design was a large spiral-shaped building, which provided stops along the way for users to overlook diverse situations, including a central multipurpose arena for sports, gatherings, and concerts. This three-dimensional design introduced experiences, views, and feelings that were unexpected and would not have been possible if they had strictly followed the competition brief. Ethan believes this user-focused dialogue was crucial to the success of the project. Following the building's completion, the team revisited the site and collected interviews from users. They were amazed to hear how these users experienced the space, with some commenting on the liberating feeling of being in a building where they didn't feel disabled.

This approach not only helped Ethan's team to win the competition and several awards but also had a significant impact on the users' lives: 'And that became a very important project as well as something that convinced us that this take on architecture is actually really important and powerful. And of course, it's important for us to keep on winning competitions because that's what we live off.'

Expanding knowledge

Interviewees in also mentioned that curiosity was a core value in driving them to look for research and theories in other fields. Many architectural practices, regardless of their focus, incorporate a research unit or dedicate significant resources to investigating other fields. This provides a strong foundation for design decision-making and enables a broader understanding of sustainability and sustainable behavior.

In Diana's children's hospice project, she mentioned how external scientific research made a significant impact. They discovered through their research that the well-being of the staff was essential for the quality of treatment to be good. This insight, obtained from research, then became a focal point in their architectural concept. Diana noted that it's essential to draw from diverse disciplines when conducting her literature search, including engineering, psychology, anthropology, biology, and economics. The challenge is to consolidate agreed-upon knowledge and quality standards within each discipline to be applied in their architectural practice.

Isla's practice offers another approach to incorporating interdisciplinary knowledge. They hold weekly internal knowledge-sharing sessions where they discuss several theories and consider how to translate them into architectural terms. For example, they studied the work of Elinor Ostrom, a Nobel-prize-winning economist known for her work on the success of commons and shared economy, which Isla's team then applied in their architectural development. By consistently sharing ideas and exploring various theories, they continuously enhance their practice with insights from a range of disciplines.

Relational architectural practices emphasize the importance of integrating researchers and academics into architectural dialogue. Mark's practice, for example, fosters interdisciplinary collaboration and evidence-based decision-making by pairing academics with classical architects. He gave an example where in developing design for schools, they invested in exploring fields such as autism and how architecture can support individuals with this condition. Interviewees mentioned that this knowledge expansion helps architects navigating difficult clients and offers a more holistic approach to design.

Many interviewees also mentioned how is part of their profession to translate these multidisciplinary knowledges and theoretical ideas into space and architectural design. For that, many of them recurs to approaches that are similar to the praxis approach explained in the literature review. In which they work with feedback loops, trying out several theoretical concepts in architectural processes and space, and learning from the projects to create new knowledge and feed back into theories. In Isla's example of researching theories behind communities, they use this knowledge to create central key points in their design where people can interact and create relationships; *'that's very tangible way of working with community or a platform where people can meet. So, we try somehow in each of the projects we're doing, we're trying to make tangible solutions for a kind of theoretical idea about making communities.'*

To do the translation between theoretical concepts to architectural solutions, architects like Liam and Jeane perceive the role of architects as vital translators of multidisciplinary

knowledge into tangible, physical spaces. While acknowledging the importance of information gathered from fields such as social work or anthropology, they caution against architects losing their primary focus on designing spaces. Their role, despite engaging in interdisciplinary collaboration, remains rooted in their architectural responsibility of shaping and realizing aesthetically pleasing and valuable projects within budget constraints. They describe themselves as hybrids, gaining experience and understanding in diverse disciplines, but their core competencies as architects remain central to their professional identity and practice.

Many relational practitioners had interesting concrete examples of tools and methods they used to do this translation. For example, Ethan mentions that in his practice they create a compass tool to keep track of the translation between the 'big intentions' of the project (such as theoretical concepts, values and agreements with stakeholders) to a concrete architectural solution. Using an example of a student housing project where the big intention was to reduce the feeling of loneliness among students, he mentioned: 'then of course, the question is how do you do that? And that's pretty concrete in that project. That's about how we manage the square meters and the different functions and how we link flows together. And that's something we can't compromise (...) there would be these different intentions described. And then on a sub level of the compass, that would be an explanation of how we would do it in an architectural strategy.' The compass tool is used throughout all design stages, aiding in decision-making, particularly when facing dilemmas in concept direction. The compass is collaboratively interpreted by the multidisciplinary team, who use their combined expertise and user insights to navigate towards the most suitable direction. The ability to input key aspects into a system that adjusts the diagram accordingly ensures the continual alignment of the project with its initial intentions, an achievement attributed to their diverse mix of skills and competences.

5.7 Emotional roots of psycho-social dilemmas

As discussed in the literature review, emotions play a key role in enabling or disabling sustainable behavior. It was explained how sustainable behavior can be impaired by negative feelings such as fear or anxiety⁵ and psychological defense mechanisms of intellectualization, displacement, and suppression⁶. It was also explained how human emotions are mediated by broader social context such as social environments or political systems, and therefore responsibility is linked with our emotional states and ability to act. It was

5 Steg, Linda Ed, Agnes E. Van Den Berg, and Judith IM De Groot. *Environmental psychology: An introduction*. BPS Blackwell, 2013.

6 Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011.

also explained that environmental topics are politicized and involve people's personal values and attitudes, and can trigger emotional responses^{7,8}. And therefore, the ability to act according to one's values and worldview is also related to their ability to attune to their difficult emotions in order to solve these psycho-social dilemmas. In the face of the challenges discussed, what the data showed is that architects are confronted not only with social and political challenges but also with emotional ones, and interviewees hinted to possible emotional roots related to the themes.

5.7.1 Fear of change and biases

Some relational interviewees mentioned that the challenges related to the profit-oriented culture have fear of change as its roots. **Mark**, the didactic special designer, recognizes that this fear of change is a psychological issue, and cannot be solved with architecture or architectural skills alone. In his practice, he uses research in psychology, sociology and other social fields to try to address fear of change in clients and stakeholders. When proposing sustainable methods that might be new or not understood by the stakeholders involved, he invests in participatory processes to increase knowledge and educate project's stakeholders to address the issues of fear.

The fear of change might also be connected with architects or stakeholders not being able to let go of their control and power in a project, specialty when it comes to decision making. The sociologist **Gina** expresses that fear to lose control is one of the big impediments to create more democratic and innovative design process: 'I did one user processes where it was very clear that the client wanted to control it. They were afraid that it would run out of their hands if we were too open in our approach (...) for me there's not going to come anything innovative out of this user involvement process, because it's ran too tight.'

Furthermore, in the present short-term economy and political landscape, fear also is expressed in investors and decision makers by not investing in long-term costs of projects. Diana, an anthropologist working as a coordinator of a multidisciplinary team in an architecture firm, shared that: 'There's always a bias of what is the cost now, compared to what can we gain in the long run. So, a cost today is always viewed larger than the sum of what we can gain.' Therefore, the profit-oriented and conservatism landscape in which architects need to operate, keep pushing projects that perpetuates an approach based on

7 McCright, Aaron M., and Riley E. Dunlap. "The politicization of climate change and polarization in the American public's views of global warming, 2001–2010." *The Sociological Quarterly* 52, no. 2 (2011): 155–194.

8 Stokols, Daniel, Shalini Misra, Miryha Gould Runnerstrom, and J. Aaron Hipp. "Psychology in an age of ecological crisis: From personal angst to collective action." *American Psychologist* 64, no. 3 (2009): 181.

business as usual and fear of change, and represents a great challenge for architects to practice responsible architecture.

5.7.2 Architect's fear of challenging the status-quo and being replaced

The data revealed that the conservative market creates a pressure for architects where sustainable solutions can only be implemented if they don't change anything and don't challenge the 'status quo'. In this sense, architects feel that they have to 'hide' their real intentions and their agenda so it can be accepted by the market. Carl shares that in his practice, they have to try to implement sustainable solutions without it having to change costs or aesthetics: 'it's a very conservative business and, also people want as low risk as possible. So, they basically just want to do it as they used to do it. (...) but we are aiming to get all these sustainable products and ideas into projects, but without it costing more or looking different.'

But this represents a paradox, because in Carl's practice he wants to focus on circular building materials, and to actually do that, he recognizes that there is need for radical change in the whole value chain of the industry. He stated that to practice circular economy and circular design, we need to change 'every layer or every link in the value chain' otherwise, even if you do design something for disassembling 'if the contractor doesn't build it like that, then everything is lost. And again, if it's not operated and maintained regularly then it's also just lost (...) but all those mechanisms are not in place yet, a lot of companies don't have takeback systems and we can't reuse all the materials.'

This example shows how some practices feels trapped in a paradox that, to be really sustainable there is a need for radical change in the building industry, but at the same time their strategy is to stay in the 'safe zone' of what is acceptable and what can also be commercialized. At the same time that they complain about the building sector being conservative and the lack of space of experiment and creativity, they also comply with this situation.

Data showed that the fear of challenging the status quo might be related to architects fear losing their jobs and being replaced, Bea expressed this fear sharing that: 'You feel like you are a gear in the capitalistic machine, and still all of us are. To be honest, these gears are replaceable. It is not that the project will stop because somebody stopped or somebody didn't like it, but the machine is going forward'. This reveals how some architects seem to be stuck in the paradox of understanding the urgent need for structural change while fearing the loss of job opportunities.

5.7.3 Architects fear to engage with complexity and critical thinking

A downside of this hyper focus on the technical side of architecture is that architects might be entering a mode of working without thinking much critically about their own practice. Carl hints on that when he says ‘I want us to think before we draw actually, because I don’t think we’re doing that all the time right now, sometimes we are just drawing because we need to solve a program or something like that.’ The fast pace and the mentality of growth and competition of these practices seems to also be taking a toll for architects to have more time to be more critical and think about more creative ways in which they could help the industry to change without having to comply with everything that is imposed to them.

Therefore, technological practices mainly proposed sustainable solutions that are within the ‘safe zone’ imposed by the construction market and focusing on technical aspects of architecture in detriment of a more critical approach. These practices display intellectualization of architecture by a hyper focus on technological approaches and the dismissive attitude towards architectural practices that use social sciences perspectives. This might be related to a fear of taking more critical approaches that question the status quo of the industry and the clients who are the primary source of their jobs.

This can be argued to relate to the fact that although they complain about the clients and types of brief they receive, there was no mention about trying to change the client’s mindset or inviting them to rethink their approach, instead, many times they mentioned how they had to adjust their approach to comply with the client’s demand. Using Adam’s discourse as an example: ‘have quite a lot of just called normal speculative housing, where it’s a developer, and they just want 20,000 square meters of apartments that you can sell or rent (...) speculative developers, they’re usually quite difficult to work with (...) but we find solutions to the problems so that we can work architecturally with it.’

The fear to engage with more complex aspects of sustainability, might also related to psychological defense mechanism to deal with the anxiety that this big task can pose to architects. Mentioning the psychological term ‘the path of least resistance’, Mark mentioned: ‘We always choose the easiest way. And trying to work with sustainability, both socially and environmentally. It’s not easy (...) Because there’s so many new factors. And we don’t really know what sustainable materials are still, because we don’t do all the Cradle to Cradle, it’s just that muddy field.’

Similarly, relational practitioners pointed out that the dominant starchitecture culture creates a challenge for architects to be humble enough and open to engage with other types of knowledge due to fear of being confronted with challenging information. For example, as an anthropologist leading a multidisciplinary team in her practice, Diana

shares that architects often adopt a selective approach to gathering information due to a lack of academic training in critically assessing the quality of knowledge, where architects pick and choose various pieces of information, especially if it aligns with their initial assumptions. In her view, architects don't have traditional academic training and are not equipped to deal with the challenging task to confront biases and abstract insights from scientific knowledge in a critical way. Therefore, her team must remain aware of the need to challenge architects, given the potential for numbers and research findings to be twisted to support contradictory claims: 'we need to be very aware is that we also challenge the architects, because you can bend numbers, you can find research saying one thing, and you can find research saying exactly the opposite'.

Acknowledging architect's difficulty to have a critical approach to their practice, many relational practices shared that this is a challenge that should be addressed, because having a critical approach to knowledge in architecture can help architects to make more informed decisions as well as have tools to communicate the impact of their practice. In that sense, many relational practitioners, specially the ones who were not architects themselves, expressed that architects need to expand their knowledge or work with people that can bring the knowledge not available to architects when it comes to human sciences.

Therefore, practitioners that fall more into relational side of the spectrum put their efforts into developing design process that tackles these complexities. Instead of fear, relational practitioners approach complexity with curiosity and openness, because they believe that investing in a complex holistic approach is needed for sustainable architecture. As Diana shared: 'there's a lot of the holistic design which is broken along the way, because there's a lot of other considerations that then take priority (...) if we actually kept the concept through the whole of the project, how would it end up working? And I'm pretty sure that it would end up working a lot better than it does today.' Therefore, instead of complying with the status quo and following the path of least resistance, they focus on strategies such as questioning architectural briefs, expanding their knowledge to other fields beyond technical ones.

5.7.4 Fear of collaborating in the competition culture

Data revealed that a fear of job scarcity might be in the center of the dilemma of green-washing and a hyper focus on technology, as architects are afraid of losing relevance for engineers and more technical oriented people, making them putting their effort into proving their credibility by catching up with engineers' quantitative methods.

Data also revealed that fear of scarcity also lead professionals to fear collaboration and sharing their knowledge.

Collaboration and partnership are essential to address sustainability and collective responsibility. While most interviewees share the idea that we should collaborate and share knowledge more openly, it seemed that the bigger the practice the more afraid they were of sharing. For example, smaller practices usually shared their methods and tools in their website in an open source mode. When I interviewed them, they had no reservations to show me in detail about their methods and tools, and usually shared with me images and tools that they use internally in their practice. Mid-size practices did not share with me in detail about their methods and tools, although they shared orally about how their processes worked, they refrained to show me the tools. While the bigger practices limited themselves to talk about their design methods in general terms, which also made it difficult for me to dissect or have detailed examples of how their methods work.

Within the competitive mindset of the current profit-oriented practice, the fear of sharing is counterproductive to knowledge sharing and partnership which is necessary to tackle sustainability issues. Most technological practices only mentioned collaboration regarding outsourcing the social work for smaller architectural offices. And big and mid-size practices expressed concern of losing their jobs to engineers or being bought by construction companies. Therefore, professionals might find themselves in this dilemma of how 'safe' is it for them to share within the industry.

Ethan, who's practice is one of the biggest in the interviews, referred to his method of going interdisciplinary work, stated that: 'sometimes we're in a dilemma, because we love to talk about it, we love to show it. And, but of course, we're also in this world of competition all the time. And our concern sometimes is that someone else, or maybe some of the big engineers are just gonna say that they're gonna do the same'. The fear of losing their jobs to engineers can be connected back to how some practices choose to focus on technical aspects of architecture more a more. This behavior of 'catching up with engineers' might be a way architects found to secure their relevance in the projects and secure their jobs.

Adam, who's practice is the biggest amongst the interviews, shared that in his view, there is a problem in the architecture branch and education now which is how to balance between the architectural relevance and impact with the technical relevance in buildings, and that engineers have been better at advocating for their relevance in projects: 'engineers, they've been very good at increasing the number of areas that are needed in buildings. And when you do that, you get to pay more the fees. (...) so, you could be

scared (...) that's always been the architect's role constructing detailing. Now, where we have to do LCA, if it's the engineer who do the LCA, then you could expect that is going to be the engineers that start specifying the materials.'

In this scenario, architects are pressured to prove their credibility and the impact of architecture based on quantitative data so they can compete with engineers' arguments and data. Similarly, Fred mentioned that their work with collecting quantitative data from sensors and user apps is a way to be able to put a number into user experience to be able to advocate for architecture qualities as engineers do for building properties in projects. He shared that: 'this way of doing stuff is a tactical defense (...) saying that what we are met with a program can actually be disrupted by the architect playing the same game, a numbers game and saying, nope, experienced values are more important because they're actually based on the user.'

But the issue of the architect 'playing the same game' as quantitative and technical professions to prove their relevance is that it can reduce architecture and its impacts to quantifiable numbers only. Instead of elevating architectural impacts and what it can do differently, this approach limits architecture to quantifiable elements that are only valuable if they can beat engineer's data sheet. The fallacy of this approach is that to achieve that, we need to then invest even more technology and technical developments for us to reach sustainability potentials in our profession. This can lead to a never-ending cycle of solving issues with technology that actually create new and more complex problems for ourselves.

Adam recognizes this dilemma, when he mentioned that in his view, building services are supposed to minimize energy consumption, improving comfort, but in reality, sometimes they make it worse than it would have been. In his opinion, in the last 15 years, the new buildings' complexity has significantly increased, particularly in terms of their technical demands (such as ventilation, heating, cooling, electrical, and building management systems). He expressed particular concern about the issues, such as the excessive space it occupies and its cost: 'there's a huge amount of things that didn't used to be in buildings that we have to accommodate (...) and the new things are really not working (...) it takes up a huge amount of space. And they cost quite a lot of money.' He also emphasized the problems arising from the increasing complexity, which takes up a lot of time during the design process: 'the complexity of the technical side is increasing. That's like the biggest, biggest problem there is. (...) I think it is a bad thing, because it takes a huge amount of time and in the design process, figuring out what the best solution should be.' Additionally, he mentioned that the poor communication in the

engineering sector between diverse specializations for each of these building systems, leads to issues in newly constructed buildings that are difficult to diagnose and resolve.

In his opinion, the increasing complexity of building systems is a greenwashing strategy rather than a responsible approach to make building more sustainable: ‘my personal feeling is a lot of the requirements we have today, they’re more the result of good lobby work by the engineering branch and the certain companies to get new standards into the building sector so that money has to be spent on these new things that are technical.’

It is interesting to notice that Adam seems to have a clear understanding about the harmful effects of buildings becoming too technical, and how this is related to the greenwashing lobbying from companies to sell more products. But paradoxically, he also advocated from more computational power and artificial intelligence to calculate all the complexities and building functions. In this dilemma, Adam’s practice is focused on replying to a need to deal with the growing technical complexities that he seems to know is a problem in the first place. Although he mentioned that the sustainability requirements have more to do with lobby work to standardize and sell technical solutions, his practice uses similar strategies for the lobbying of timber and computational solutions to sustainability.

When I gently asked him about this possible paradox in his practice, he replied that in his opinion, the increased energy regulation of today’s building systems can reduce energy consumption much more than compared to 15 years ago: ‘the buildings that we build today, on paper, like much, much better performing, then what we used to build (...) because a lot of things we did is sort of greenwashing, but at the same time (...) there’s a lot of new things that are sort of in the system, there’s a much better description of the regulations for thermal comfort in buildings’

At the same time that he said that the complexity of the technical side of the buildings were the biggest challenge and that sometimes they seem to make buildings ‘worse than it would have been’, he also states that ‘building are better than what we used to build’, or at least, they are better ‘on paper’ or when it comes to the ‘description of the regulations for thermal comfort’. His discourse highlights a paradox where buildings might be better on paper when it comes to energy consumption and new regulations, but the total costs when this added technical complexities is unclear. In Adam’s discourse we can see how challenging it is to keep tracking if all these technical complexities that are rapidly changing and being added to regulations and building standards are actually sustainable or the opposite.

Relational and smaller practices also struggled to collaborate within the industry mainly because of the competition culture. While bigger practices see competitions as some of their main interest and build their practices around it, smaller practices mentioned competition's downside, where teams are competing with each other, making it a secret their expertise and knowledge. For example, Isla, whose practice revolves around collaborative architecture, mentioned that it saddens her the current way of doing architectural competitions forces people to be secretive instead of collaborating to find better solutions together: 'the most important thing is actually that it's good building or, or urban space that is created. So, we think it's an actually it is a little bit sad the way that we're doing competitions, where it's very secret what each other's to each other doing, instead of just making it you know, an open book.'

Isla also shares that offices need to have references to be qualified to participate in competitions, and that we need to collaborate and make projects with each other to build this reference. A disadvantage in this system is that bigger and older firms have more references, so it's easier for them to enter competitions and create more references, while smaller and newer firms struggle to be part of this 'loop': 'you have to have five references for how cohousing of this exact square meters in this exact region. It's hard to get if you're not already in the loop somehow. So, this system is very excluding for young emerging firms.'

Isla also explains that the current way to design competitions in Denmark pushes projects to be less innovative and repeat what has been done before. Because to enter the competition, firms had to have built a similar project before: 'the best reference is the one that is exactly the same square meters and exact the same assignment (...) but often you can be a very good architect, often you can easily do a renovation of a school, even though you've only been doing renovation of daycare centers, for example'. Therefore, while smaller practices shared that while it is important to have big and older firms on board because of their accumulated knowledge and power of influence, they are also compromised by many constraints and lack the new energy and critical thinking to challenge the status quo. While newer and smaller practices have more freedom, energy to experiment and are less restricted by structural limitations of big organizations, they might lack the power of influence and resources that bigger practices have. Linking this back to the theme about how architects lack political power and autonomy in projects, the interview data revealed that the fear of collaboration due to the competition culture is counterproductive to achieve sustainable behavior in the field.

Although relational and smaller practices acknowledge this is a fear in the industry, did not seem to share this concern. Because they found ways to keep themselves relevant not by trying to keep up with engineers, but by differentiating themselves and offering something unique that engineers cannot provide, such as stakeholder involvement and other things that will be explained in the next section.

5.7.5 Fear of not building anything new anymore, what will architects do?

Some interviewees across sustainable behavior spectrum agreed that the most responsible solution in architecture, sometimes is to not build anything at all, or to build less and less. However, this raised the discussion that this topic might be a challenge for architects to accept and engage with. If architects accept that as a reality, they need to start developing new ways to practice and show architectural impact beyond the building, as well as reframing their role as architects and professional goals.

For example, some relational practitioners recognized that changing the architectural practice from product to process might raise fears in architects related to the fear of not being ‘architects enough’ by building new projects. Gina shared that: ‘the overall threat is that we will not be building new. I think this sustainability agenda in itself is a big challenge or big threat to architecture. But it can also be helpful in a way that there will be a quest, a logic quest for good architecture that can transform old, boring, worn out buildings into something useful in a sustainable way.’

Heidi also points out that one of the meaningful and rewarding things about architecture profession is to feel and see that you produced something with your work: ‘It’s not just something they are type writing in a document and then sending off in the mail, but they are actually producing something. And I think it’s probably a need also for a lot of architects (...) and then it is a discussion whether not to produce a building also is a production, is it also something that you can show off?’. In that sense, many relational practitioners mentioned focusing on creating meaning through other ways that are not dependent only in creating new psychological structures, such as focusing on social impacts of renovation and community projects.

5.7.6 Introverted culture and the issue of stress

Another challenge that emerged from the data is that in the current architectural culture is that architects might have a fear of engaging with people outside of their comfort zone, their offices and therefore the real world. For example, Noah, the anthropologist, shared a big communication issue between specialist and people in the renovation projects in ‘ghetto districts’ in Denmark. And while the municipality was attempting to do

participatory process, this failure in communications could not be bridged: ‘generally specialized professionals I’ve talked to, they’re very much inside their own world, right? They know why you can’t do this, you can’t do that, and they don’t always understand why people can’t see that. And they’re not used to being confronted with the end user like the residents who will ask, why isn’t it here and not there?’

Similarly, the architect Karen shares that ‘if we go too much into our own design offices, and close the doors and the windows, and we are not letting anyone disturb us in our process. I think that that could be a mistake in itself.’ Karen recognizes that this issue comes partially from an architecture culture who taught architects should have a introverted, individual and controlled process, but also comes from the amount of stress and lack of time that architects are currently subjugated to: ‘if we are under stress, then it’s quite common for people that they close down, that they don’t make a project more complicated. And what really is a help for a stressful situation is to have people to help you and open it up. So that’s a dilemma itself, right?’ This perspective links back to session 2.4, where interviewees expressed a stressful working life and business, not giving architects the time to reflect and be critical about their own practice

5.7.7 Emotional distancing

Again, a big contrast appears in the interviews, where people in the technological side had difficulty sharing and relating their professional life with their personal story. They shared very little about their personal life and opinions, and when they did, they mainly related their concerns with something they learned during their architectural education. In contrast, most relational practitioners talked about their life stories and direct experiences with topics at hand. They shared how the way they were raised, educated, or key events in their personal and professional life stories helped them change their worldview and search of other ways to practice architecture.

This difference might be related to the topic discussed in the literature review about emotional distancing. Technocratically oriented people might be more prone to work with technological approaches because the emotional demand of these approaches is not so high compared to more critical approaches. For example, when I asked Adam directly about ‘So for you, what would be responsible architecture?’ he limited himself in answering from the point of view of his office instead of showing his personal opinion, and focused on competition winning factors instead of a sense of responsibility ‘we definitely want to see more timber buildings, pretty happy that we have buildings with less glass. We’re starting to do quite a bit with microclimate around the buildings, (...) But I

think most important for me is more like the process, ensuring that we're a bit ahead of the competition in having a good idea where we think things are going'.

While it is hard to say for sure why this emotional distancing happens, it was explored in the literature review how this can represent a challenge for sustainable behavior. This emotional distancing can create a space for professionals to preach something and practice another and to diverge responsibility to other actors. With emotional distancing, one does not have to go through cognitive challenge to deal with uncomfortable confrontations between what they preach and what they practice, at the same time one does not have to critically think about their practice neither change it. In this emotional distancing is also where many of the paradoxes shown of psycho-social dilemmas happen. Where professionals seem to be stuck in psycho-social dilemmas of ethical and emotional issues related to their practice. Similar to the issue of suppression discussed in the literature review, unfortunately, many times professionals just comply with the 'status quo' and what is asked from them, even though some displayed clear understanding that this meant compromising their own believes on what is the best action to take.

The fears discussed are the result of a fast-profit industry, which might be a reason why some professionals fall into defense mechanism of intellectualization, displacement and suppression (explained in chapter 3) and choose to distance themselves emotionally and personally from their own practice to focuses on technological orientations instead. This might also be related to a general lack of capacity to deal with more emotionally triggered topics of more critical approaches to architecture. The emotional capacity to deal with the paradoxes presented didn't seem to be cultivated in their educational, professional or personal background. And as a result, most of them now believe that architectural education lacks technical competencies rather than a critical one. For example, in Adam's practice 'a lot of people here in the office don't think the two Danish architect schools, they're not producing people with high enough technical quality competencies. There's too much focus on heart architecture, rather than real architecture. Well, you know, the reality of having to work in the architecture branch.' In contrast, many relational practitioners shared how architectural education could expand their curriculum to teach students to have constructive dialogues and engage with people as important to sustainability in the project. They mentioned how in their education in the architectural schools in Denmark they did not learn enough about how to do proper research, or multidisciplinary work, involvement, but the main focus was on aesthetical and material aspects. For example, Karen shares that: 'they don't learn how to go deeper into what are the needs, what are the resources, how to not only analyze the fiscal structure, but also the social the organization and all that kind of stuff.'

The interview data revealed that the technocratic practices worldview is dominated by feelings of fear, scarcity, competition, and a relative attitude of complacency. The mindset is that architects need to keep up with the fast-changing scenario of technology, engineer's data sheets and new products, as well as to compete and comply to demands of a profit-oriented market. In this scenario, a lot of paradoxes can be found in what interviewees said was the problem and how they deal with it in their practice, between their discourse and practice. The main paradoxes discussed were how architects recognize issues of speculative architecture but comply with demands of speculative developers, or the recognition of the issue of too much technical dependency at the same time that they propose more technical solutions for sustainability, or recognizing greenwashing at the same time defending its possible contributions to sustainability. These paradoxes reveal that a purely technological approach to architecture might not be responsible and sustainable and can actually contribute to worsen the problem. Whether this fears that comes from a lack of knowledge, a need to have total control over all aspects of the project or uncertain economic and political outcomes, fear leads people to emotional distancing, hindering possibilities to responsible action taking. As argued in the literature review, feelings of isolation, lack of trust, fear and suspicion can make people experience the world as an antagonistic place⁹, which can hinder sustainable behavior.

In contrast, instead of fear of losing significance in the building, relational professionals perceive possibilities for growth within the architectural sector and the potential amplification of the architect's role. They also believe that to practice responsible architecture it is also necessary to use architecture and the design process to create connection between people. The consensus is that architects are not likely to lose their relevance because they have a unique role of bridging people and translating diverse types of views, disciplines, data and theoretical concepts to design. Different from bigger practices, relational practitioners in small offices don't perceive the architect as easily replaceable, perhaps due to the novelty and uniqueness of their approach. Therefore, relational professionals demonstrate a more critical and fearless perspective when it comes to dealing with psycho-social issues they face.

It was also argued before that behavior change can happen if congruent with people's identity, beliefs, values, worldviews and psychological wellbeing¹⁰. Therefore, emotional attunement in the data showed to be an important aspect of how some professionals engage with psycho-social dilemmas in an alternative way. While relational practices face

9 Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

10 Kwasnicka, Dominika, Stephan U. Dombrowski, Martin White, and Falko Sniehotta. "Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories." *Health psychology review* 10, no. 3 (2016): 277-296.

similar psycho-social dilemmas as technocratic practices, and recognizes the possible fears, they engage with issues with emotional attunement, connecting with people and aligning their personal life and professional life.

5.8 Emotional attunement

Jeane shared that early on in her career, while working in a big Nordic firm, she felt alienated because her ‘professional moral compass was going in all directions, looking for a direction’. Besides her already having issues to align her personal values with her professional life, Jeane and her partner (who is a life partner and a professional partner) lost a child. In her view, that was the main turning point for them to shift their approach to architecture: ‘that also gave us some years of course of trauma and grief, but then also created some kind of space to reflect upon the career and what we wanted to do with our life, both professionally and privately. And that is of course intertwined.’ She shared that starting her new practice, that focuses on involving schools and youth to participate on democratic urban renovation projects, was a personal journey and an active choice to reconnect with the architectural profession in a meaningful way. For her, it was important that her passion for architecture had to be connected to her ideology and values. Similar to her, some interviewees also mentioned to have drastically changed their approach to architecture when they had the realization that they were working for a practice that were not aligned with their values and worldviews and forced them to compromise their ethical standards.

Other interviewees also connected their practice of responsible architecture with the way they were raised and influence of role models. For example, Isla connected her professional focus on sharing economy and knowledge with growing up in a collective, where sharing common resources was not an alien concept for her. Liam shared that his practice is probably very influenced by their parents as role models, where his mother was a school worker and his father an architect and teacher, both focused on pedagogics and how to engage with people. Diana shared that she comes from a working-class family with very strong community values and sense of responsibility. She also shared that by living in diverse countries outside of Denmark where social inequality was more evident, she could recognize that not everybody has same opportunities, and that also made her curious and open to accepts people with diverse values and different cultures. Her experiences impact how she works with involvement and decision making in her practice, and made her very aware of aligning her values and sense of responsibility with her professional career.

Many shared that the lack of alignment with their worldviews and values causes stress and therefore is not a sustainable professional life. In this sense, for many interviewees, developing emotional attunement also showed to be important to deal with conflicts and the issue of stress in their practice. They shared how focusing on finding emotional attunement in their projects (such as building meaningful relationships, or doing social relevant projects) helped them to create resilience to deal with internal psychological conflicts and external social conflict with stakeholders or clients.

They also shared a few examples of how during involvement processes, it was important to align values and consider emotional states of people in order to develop better conversations and handle disagreements between stakeholders. In this sense, data showed that emotional attunement with people is crucial for the development of collaboration, partnership and involvement in design projects. Dialogue to create emotional connection with stakeholders showed to be crucial for engagement because it encourages people to contribute with their resources, commitment, and the creativity required for a good participatory process. Rather than focusing solely on motivation and telling people what to do, design processes from relational practice focused on connection, developing feelings of belonging, revealing unconscious processes of fear and biases, to develop opportunities for reparation.

5.8.1 CULTIVATING CURIOSITY AND MEANINGFUL RELATIONSHIPS

Many interviewees mentioned that having curiosity and is super important to have a critical approach to architecture. From the interviews, curiosity seem to be a value that is connected with the search for meaning. And when practitioners focus on having meaningful work and meaningful projects, they also challenge the clients and the program. Furthermore, curiosity was an important value to cultivate in involvement processes, because it is important to feel curious about people's perspectives and make space for them to express their opinion and share what is important for them, creating a good starting point and common ground for architectural projects to develop from. In this sense, curiosity is key to integrate diverse perspectives, worldviews and people's core values in architectural projects. Karen shared that: 'I hope we will have society where is perhaps less materialistic, where we see the core values more clearly, as our starting point. It was all about growth in the last decade, I would like to have something else in the center that is not just growth.' In her perspective, Karen thinks that the purpose of responsible architecture is to help people to improve their life by supporting what is valuable to them and strengthening the meaning of the projects, and this approach is what gives meaning to her professional and personal life: 'helping people through methods to reflect and come up with new solutions for the work life, but also for the personal life,

that's really interesting for me, and I think that gives meaning to my job, or my work life as well (...) I don't have this drive of putting my mark somewhere, I have a drive to actually maybe strengthen what they already have by helping them to do better, or in a nicer way or support something that they think is valuable.'

Interviewees also related curiosity to wanting to create meaningful relationships with people, an important aspect that brings meaning to their work. Cultivating social relationships contributes to the sense of belonging and rootedness, and is essential to people's psychological comfort and well-being ¹¹. In this sense, interviewees shared that the most important projects for them were those in which they could use architects as a platform to create relationships between people. Jeane shared that this is important for her because she has a need to go to work every day and feel fulfilled, and she thrives when she can develop connection with other people: 'often what happens also is that we create personal relationships with some of our clients, or some of the people we are meeting up in the different communities we're working in. And they become friends afterwards.'

Having this curiosity and search for meaning help us to connect our practice to who are as people, as Noah shares: 'as a professional anthropologist, I'm professionally curious about why people do what they do (...) but it's, it also of course, connected to who I am as a person.' And also helps us to connect our practice to our aspirations to make the world a better place, as Ethan shares: 'I think personally it has to do with being curious, it can sound so banal, but actually wanting to make the world a better place through your work. That's something that I find very important and fulfilling.'

5.8.2 BELONGING

The need to feel belonging can also be found in the discourse of relational practices. Where they have strategies to feel belonging within the communities they work with, but also use strategies to create feelings of belonging between people during the design process. For example, many talked about the importance of meeting people with 'eye height', having honest dialogues and aligning values as ways to create connection and belonging. They focused on create closeness with and people and clients to create meaningful projects, and invested in collective intelligence and shared responsibility amongst stakeholders, addressing not only uneven power to make significant environ-

¹¹ Valentín, Jorge, and Lucila Gamez. Environmental psychology: new developments. Nova Science Publishers, 2010.

mental changes, but aligning social-cultural factors¹² and social values¹³ to help collective behavior change. Furthermore, belonging also was an important aspect to rethink the architect's role as a bridge and translator between people, especially if they were in a position where they had to represent groups with less power in decision making in the design process. Therefore, relational interviewees expressed how these strategies helped them cope with stress, and feelings of alienation and that we are replaceable and gave them motivation and created joy and connection in their profession

Smaller practices also described how creating a sense of belonging within their own office was an important part of their holistic approach to design, and to keep people involved and motivated. In Gina's office for example she mentioned that it was important for them to limit the size of the practice to maximum 20 people, so everyone is able to participate in the projects together. For them, the one-on-one component of a design team is extremely important to maintaining a holistic approach and aligned vision and values during the design process: 'it's important to everyone at the studio to be close to the projects. So to build relationships with the clients and the users.' She also mentioned how this delineates their targeted area of action where they develop projects, which are mainly the surrounding areas in which their practice is based, because it is important for them to be close to the stakeholders and the site project, otherwise creating feelings of belonging becomes difficult.

5.8.3 GENEROSITY, HUMBLENESS AND NON-FEAR ATTITUDE

To create feelings of belonging and connection, relational practitioners showed diverse strategies in which they show up with a attitude of non fear and generosity. This can be found in Isla's approach to knowledge sharing: 'sharing knowledge is not something that you're paid from, it's partly funded by funds, but some of the hours you give. And I think that's necessary right now, just to give, maybe that's exactly responsible architecture.'

It can be seen in Jeane's attitude towards learning from local experts and co-creation, where she displayed a non-fear attitude to listen more and be open to learn 'I don't think we should be that afraid of listening more than talking, or more than drawing. I think listening in every aspect of life, but especially also, when you're an architect is something we should do more.' Diana complements this view sharing that listening is an important element of partnership and multidisciplinary work, where all knowledge should be un-

12 Kollmuss, Anja, and Julian Agyeman. "Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?" *Environmental education research* 8, no. 3 (2002): 239-260.

13 Ives, Christopher D., and Dave Kendal. "The role of social values in the management of ecological systems." *Journal of environmental management* 144 (2014): 67-72.

derstood as important, and architects should keep learning ‘we should always be humble towards the all the things in the world that we don’t know’.

As an anthropologist, Noah encourages architects to consider their place in the ever-changing world, emphasizing that a rigid attachment to preconceived notions can be unproductive. From lessons learned from his work within the Danish ghetto renovations, he mentioned the importance of understanding the local context - the people, their behavior, and the unique dynamics of the place, and advised against imposing a predetermined idea of how things should be. He suggests that while some strategies may have proven effective in certain scenarios, it is unwise to dictate a ‘one-size-fits-all’ approach, as every place, city, neighborhood, and the people living there, are different. He argues that the reality will always differ, no matter how many rules are enforced to standardize it, and this consideration is crucial: ‘I think that is also part of the point that we shouldn’t be pointing out as politicians or experts are saying that this is the right way to do, because it’s rarely like that.’ This methodology of increased listening, learning, and understanding before making decisions or starting designs contrasts with the traditional fast-paced architectural practice, which often involves immediate problem-solving and design generation.

5.9 Conclusion

This chapter discussed results from interviews with 14 professionals in sustainable architecture in Denmark, their understanding of responsibility and how it impacts their sustainable behavior in their practice. Interviewees were categorized according to their practice size and approach (leaning towards technological or relational approaches to responsible architecture).

Professionals leaning towards the technocentric side of the spectrum understand responsibility in architecture as matter of developing technical competencies and technological solutions. Their discourse leans towards a technocratic, rationalist and paternalistic worldview, where architects see themselves as experts who better know how to ‘design sustainable behavior’ with knowledge they gather with quantitative and technological methods. They display values of efficiency, growth, rationality and productivity. They are usually concern with developing new technologies and securing their relevance in the market. They measure sustainability according of a performance of a closed system, a result of quantitative metrics, where technological responses are complex but not necessarily holistic.

Therefore, their share of responsibility focusses on creating efficient a high-tech architecture that help direct sustainable behavior, and also on lobbying and marketing strategies of sustainable technologies. Concerning collective responsibility, although they criticized the conservative and profit-oriented approach of the building industry and politicians, critical ideas and contributions for change were lacking from their discourse.

In contrast, the professionals leaning towards the relational side of the spectrum understand responsibility in architecture as matter of involvement, dialogue, power distribution, collaboration, inclusion, knowledge exchange, emotional attunement, praxis and sharing responsibility. Their discourse leans towards a holistic and critical worldview. Where architects see themselves as bridges between people, where people are seen not as users or consumers but as co-creators and makers, where design decision making for sustainable behavior are made collectively and by gathering diverse knowledges using quantitative and qualitative methods. They display values of empathy, altruism, honesty, curiosity, openness and humility. They are usually concerned with being part of the local community, feeling connected and belonging, and search for meaningful projects that they fell can make a difference in people's life. Their measurement of sustainability is defined differently according to each project and each context, considering how many parameters such as material, social and environmental impacts interact.

Therefore, their share of responsibility focusses on creating inclusive and critical design process in architecture that help direct sustainable behavior. They see collective responsibility as critical for sustainability, and although many struggles with time and resources to be able to do more, they use several strategies to sharing and building responsibility in their projects. These include: power distribution in decision making, changing people's behavior through educational strategies and connecting with them in a human level, creating platforms for dialogue and collaboration, open source knowledge sharing and others.

The chapter also discussed the importance of relational approaches to practice sustainable behavior in architecture by presenting four main themes with their strategies of engagement to sustainability. Under the theme of holism, interviewees shared to practice responsible sustainable behavior in architecture requires expanding the design process to include both pre- and post-design phases, ensuring stakeholder engagement from the onset and ongoing assessment of the architectural impacts on human behavior. Such a broad view allows architects to address sustainability beyond just 'green building', considering the social, historical, and behavioral context of the project. Additionally, fostering dialogue and building trust with all involved parties are crucial elements, as they enable growth of individuals alongside the development of architecture. A focus

on integrating 'soft' (social sciences) and 'hard' (technical) disciplines is also advocated, requiring investment in multidisciplinary teams and professionals who can translate between these varied fields, and apply theoretical concepts to the architectural space. Architects are encouraged to embrace complexity and open to collaboration to help them move beyond the 'blank canvas' and develop creative solutions. Such an approach, far from diluting their work, can provide architects with more informed and compelling justifications for their design choices, and the orchestration of complexity can become a distinguishing attribute of the architectural profession.

The theme of social responsibility, interviewees shared that architects should prioritize addressing social issues within their projects, fostering social cohesion and connectivity, enhancing wellbeing, and promoting fairness and democracy. This extends the impact of architecture beyond numerical, technical outcomes to incorporate more holistic benefits. Equally vital is the adoption of deep listening and dialogue, considering local people as experts, and democratizing the design process through collaborative and open source platforms and tools. Being part of the community, including youth, the vulnerable, and unheard users, reinforces the idea that people, not the architect, should be at the center of the design process. Finally, the importance of the process over the product is underscored, with an emphasis on early design phases. This shift allows dialogue to shape projects, where architects are encouraged to focus less on new construction and more on transformation, renovation, and organizational change, preventing over dimensioned or unnecessary projects, while also enhancing community organization.

Under the theme of sharing and partnership, interviewees emphasized collaboration and open-source knowledge sharing, where architects and the building industry can improve design decisions and collectively practice responsible architecture. This involves fostering increased trust in collective intelligence and distributing responsibility among various stakeholders. Embedding collective responsible behavior in architectural projects is critical for achieving sustainability, and this can be promoted through various tools such as raising awareness, education, empowerment, co-creation, developing critical thinking, and fostering trust relationships. By aligning values and sharing knowledge honestly, architects can encourage users and clients to be more receptive to sustainable solutions. A humble, fearless attitude is also important, with architects taking the initiative to listen to local experts, invest in dialogue, and empower stakeholders to partake in and continue developing design strategies. This approach can nurture a sense of care and ownership that enhances the social and material longevity of architectural projects. Acknowledging the power imbalances inherent in the architectural process is also crucial; architects need to help better distribute power and environmental impact respon-

sibility among various stakeholders, reinforcing the democratic and equitable nature of sustainable architecture.

Under the theme of redefining good architecture, interviewees urged architects to adopt a critical approach to their work, viewing sustainability beyond numerical or aesthetic attributes and redefining what constitutes 'good' architecture. It was suggested that a need for a critical practice where architects should focus on aligning professional practice with personal ethics, enhances the collective effort to practice responsible architecture. They urged architects to openly discuss their failures, mistakes, ethics, and moral standards. Such transparency helps balance power and responsibilities in environmental impacts. A non-fear attitude is important, with architects encouraged to engage, dialogue, search for meaning, and maintain a 'no' strategy when their moral standards don't align with a client's demands. Challenging traditional architectural briefs, proposing creative economic models, and accounting for human behavior are all part of this broader impact. The value of curiosity is key in the architectural practice, connecting professional and personal lives, enhancing relational approaches such as user involvement and knowledge exchange, and fostering critical thinking. Expanding knowledge through multidisciplinary research is also vital, incorporating researchers into architectural dialogues and translating these multi-disciplinary knowledge bases into architectural design.

Emotional attunement showed to be a key way in which relational professionals align worldviews, values, and responsibilities in their practices. Often, individuals who have a clear understanding of their architectural practice, its impact, and their origins, including family, environment, and education, can more effectively integrate their personal values into their work. They do not compartmentalize their personal and professional identities, resulting in a human-centered perspective that reveals their vulnerabilities and deep personal connections. This overarching outlook also allows them to perceive architecture not just as art or a job, but as a platform for building a better world and personal growth, intertwining their ethical stands and practices. Such individuals typically provide clear examples of how they embed their values into their projects, illustrating a profound interplay between their personal life and practice.

Data analysis also revealed a certain lack of ecological worldview and inclusion of more-than-human perspectives. When inquired 'what is responsible architecture to you?' and 'what are the implication of responsible architecture to sustainability?' only Mark mentioned the importance of more-than-human elements: 'for me, responsible architecture is an architecture that reconnects humans to nature (...) creating a better world meaning creating a stronger connection and bond between humans and nature. I think if we

reconnect to nature, we also reconnect to each other. Because that's where we all met. And that's where we all came from.' Although this might have been a shortcoming of the interview itself that didn't use specific wording such as 'nature,' it also highlights that for interviewees, social aspects or technical aspects seems to be in front of their mind rather than broader ecological aspects.

But research has shown that an important aspect of sustainable behavior is human's emotional connection towards nature¹⁴, which is an important determinant of sustainable behavior. Research has also explored the connection between environmentalism with an emotional affinity towards nature that derived from having had important life experiences in nature¹⁵, especially during childhood¹⁶. Research also shows that past experiences that build emotional affinity towards nature are related to a sense of environmental responsibility¹⁷, and it predicts sustainable behaviors such as energy conservation or political involvement in environmental issues¹⁸. While having less interaction with nature diminishes not only people's health and well-being but also their positive emotions, attitudes and behavior regarding the environment¹⁹.

Relational practitioners, while displaying emotional connection with other people, lacked a discourse in emotional connection towards more-than-humans. While the feelings of belonging were discussed in connection other people, almost no mention to belonging with the natural environment. When they talked about their life experiences and how they connect them with their current practice, there was almost no mention about more-than-human and nature elements in their discourse. Therefore, data revealed that there might be a gap in architectural professionals in the Danish context when it comes to have an ecological worldview, or a lack of broader empathy that could be extended to not only people, but also towards more-than-human elements in architecture.

14 Kals, Elisabeth, Daniel Schumacher, and Leo Montada. "Emotional affinity toward nature as a motivational basis to protect nature." *Environment and behavior* 31, no. 2 (1999): 178-202.

15 Myers Jr, Olin E., Carol D. Saunders, and Sarah M. Bexell. "Fostering empathy with wildlife: Factors affecting free-choice learning for conservation concern and behavior." *Free-choice learning and the environment* (2009): 39-56.

16 Wells, Nancy M., and Kristi S. Lekies. "Nature and the life course: Pathways from childhood nature experiences to adult environmentalism." *Children Youth and Environments* 16, no. 1 (2006): 1-24.

17 Geller, E. Scott. "Actively caring for the environment: An integration of behaviorism and humanism." *Environment and behavior* 27, no. 2 (1995): 184-195.

18 Kals, Elisabeth, Daniel Schumacher, and Leo Montada. "Emotional affinity toward nature as a motivational basis to protect nature." *Environment and behavior* 31, no. 2 (1999): 178-202

19 Soga, Masashi, and Kevin J. Gaston. "Extinction of experience: the loss of human-nature interactions." *Frontiers in Ecology and the Environment* 14, no. 2 (2016): 94-101.



Image from the final workshop presentation at Institut for (X). Image by the author.

6. PD Workshop 1: In Search of Responsible Architecture



6.1 Introduction

This chapter details the primary findings and recurring themes generated from the participatory design workshop experiment, titled 'In search of Responsible Architecture'. To maintain an objective viewpoint, in-depth data such as lecture contents and graphical design results have been omitted but can be found in appendix 2. Different from the interview data analysis that was divided into themes, the data analysis here focuses on highlighting the main relational sustainable behavior strategies tested to that impacted student's behavior (according to chapter 4, section 4.8.1) and how these strategies can be integrated into Participatory Design projects for the practice of Responsible Architecture.

6.2 Workshop background and structure

The workshop 'In search of Responsible Architecture' was attended by 130 students and five teacher representatives from Aarhus school of architecture (lab3:Radical Sustainable Architecture), a representative from Aarhus municipality, a primary representative from Institut for (X), and approximately 2-3 representatives from each of the five (X) communities. This collective formed the core body of stakeholders, and they were further supported by a social architect, two anthropologists, and an environmental psychologist who occasionally contributed during the workshop. Students were divided into five teams, each containing three working groups. Each team was responsible for working with one of the 5 (X) partners according to the areas as shown in figure 1. The workshop was divided into three phases: "In Search of the Sacred Oath" (focusing on building relationships and shared values), "Unfolding the Magical Structure" (concentrating on translating shared values and concepts into design), and "Forging the Ultimate Scroll" (emphasizing finalizing the design and creating exhibition materials). Each phase lasted 3-4 days and tested several relational methods to promote sustainable behavior in architectural engagement.

The workshop was divided into three phases: "In Search of the Sacred Oath" (focusing on listening and building relationships and shared values), "Unfolding the Magical Structure" (concentrating on translating shared values and concepts into design), and "Forging the Ultimate Scroll" (emphasizing finalizing the design and creating exhibition materials). Each phase lasted 3-4 days and involved specific exercises and methods that will be explained in the following sections. This division is cumulative rather than discrete, with aspects of each method being explored throughout the workshop. Each fellowship was required to generate three key outputs from the workshop:

- A graphic of agreed shared values is called the “sacred oath.” This graphic should also contain a text description of each value and a value-action-design response scheme.
- Visual representations of their final design product.
- An A0 size infographic including the design process and the two preceding outputs.

Each workshop stage should be depicted in the fellowship’s final infographic poster. The infographics were to be comprehensive, incorporating both visual and textual elements to reveal the design process through narrative development. At the culmination of the workshop, they showcased their poster to the stakeholders in an open exhibition space, situated at the heart of each site for which interventions were designed.

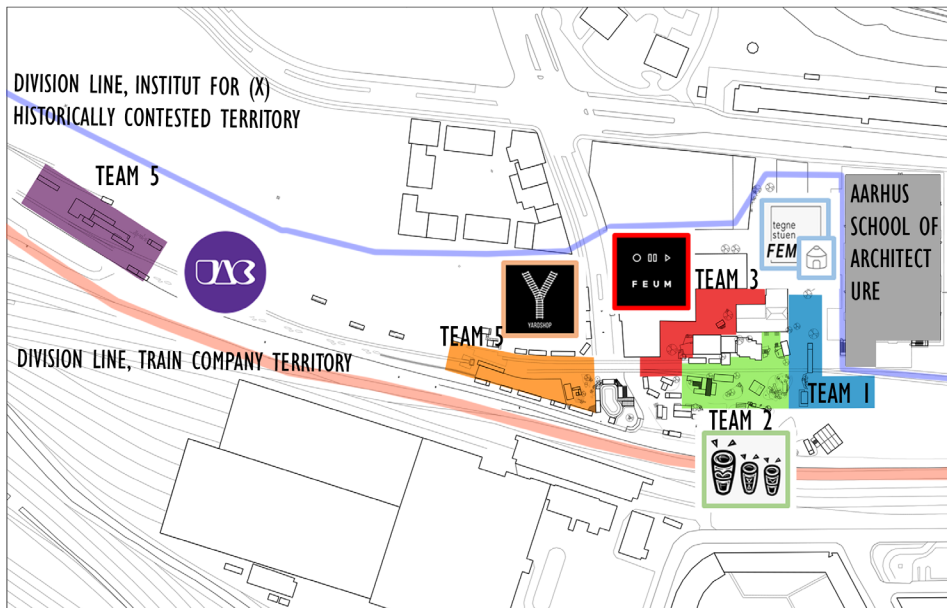


Figure 1: Map of site interventions for each (X) partner.

6.3 Phase 1: In search of the sacred oath

Phase one of the workshop (day1-3) elucidated the complexity of responsible architecture, as it is influenced not only by environmental factors but also by social ones, and underscored social and qualitative aspects of sustainable architecture while introducing participatory design methods. It equipped students with foundational knowledge about responsible architecture, containing lectures on sustainable architecture, participatory design, and methods and tools of anthropology applied to architecture. Students en-

gaged with the site and people, doing interviews, observation, and collecting qualitative data to inform their future design. This phase also introduced varying roles architects can take within a PD project, and how architects can also help negotiate with several stakeholders. The relational exercises in this phase focused on communication, aimed at creating emotional attunement through connecting student's personal values to professional practice and aligning shared values with peers and stakeholders. Upon the completion of this phase, students were expected to produce a document of shared values between all stakeholders and termed 'the sacred oath,' which would serve as the foundation for their design and future decision-making processes.

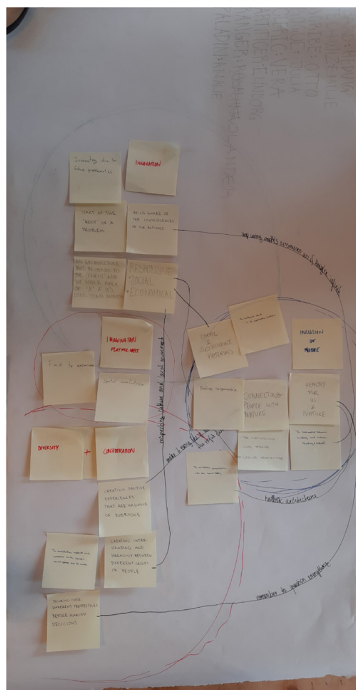
6.3.1 Emotional attunement through intrinsic and shared values

The first assignment required participants to express the values that shape their personal and professional lives. We facilitated this by requesting them to reflect individually using their logbooks, followed by a group discussion of their values. This activity enabled students to identify the areas in which they could apply their values and influence the world, both individually and professionally. Data from student logbooks showed that a majority of students demonstrated a nuanced and holistic understanding of sustainability in architecture. Data revealed both technical and social sustainability aspects related to students' values, where they expressed concerns about environmental and social issues. They expressed environmental values, social and community values, personal well-being and balance, respect and empathy, open-mindedness and adaptability, collaboration and communication, and professionalism and work ethic as important concerns.

After reflecting upon their nascent architectural practice emerging from personal values and not only disciplinary norms, we looked at how they could begin to collaborate. Students were asked to articulate their values within the context of their peer group. They were subsequently encouraged to share insights from their reflection logbooks regarding the connection between their personal and professional values, specifically in relation to sustainability. Using post-it notes to record individual values, students identified commonalities and discrepancies within their group's value set, creating themes to describe them. They were then tasked with creating a diagram encapsulating their shared values, assigning it a representative name, and presenting this to their tutor (figure 2).

The intent behind these exercises was twofold: firstly, to assist students in articulating how their values shape their practice and discerning internal from external motivations; secondly, to foster a recognition of the significance of integrating personal worldviews and values into their professional work and the subsequent impact on design deci-

sion-making and workshop engagement. Furthermore, this exercise aimed to heighten the emotional connection, and identification by helping students identify areas where they can actualize their values and effect change both personally and professionally.



We found that our personal values overlapped in 4 overarching themes. Some of our values belonging to one theme also had connections to values in other themes. We connected these with lines trying to describe how they are similar. As we all come from different semesters, backgrounds and interest our values are all slightly different. We have tried to collect them at make them more defined in the key values seen below.

Key values

- Innovation:
Starting at the root of the problem. Developing innovative holistic solutions that consider the consequences, economic, social and environmental.
- Inclusion of nature:
Designing healthy solutions for us and nature that uses local and sustainable materials while also connecting people and nature.
- Diversity and Considerations:
Understanding that we work with many different people and cultures, therefore trying to be considerate and respectful of culture, social structure and physical needs.
- Imagination:
Remember to have fun, so we create experiences that are fun and comfortable both for us or users.

Figure 2: Group 4A shared values. For the full names of group participants and their respective workshop materials, see appendix 2.

Psychological research underscores the human inclination towards consistency, favoring behavior that aligns with personal values¹. Studies suggest that reflection on intrinsic values can enhance well-being², potentially stimulating emotional responses and fostering motivations for change³. Hence, emphasizing value-driven design methodologies can augment students' sense of responsibility and their willingness to address complex sustainability issues within the project.

1 Linda Steg, "Values, Norms, and Intrinsic Motivation to Act Proenvironmentally," *Annual Review of Environment and Resources* 41, no. 1 (November 1, 2016): 277–92.

2 Natasha Lekes et al., "Influencing Value Priorities and Increasing Well-Being: The Effects of Reflecting on Intrinsic Values," *The Journal of Positive Psychology* 7, no. 3 (May 2012): 249–61.

3 Shalom H. Schwartz, "An Overview of the Schwartz Theory of Basic Values," *Online Readings in Psychology and Culture* 2, no. 1 (December 1, 2012).

This introductory exercise aimed to foster group cohesion and encourage students to contemplate how personal values, identities, and life narratives intertwine with their professional practice, and how these elements might influence their design decisions. It also challenged students to critically analyze the practical implications of the terminology they employ, scrutinizing their word choices and underlying meanings.

Furthermore, students were asked to use their values to position themselves within the design process. Underscoring the notion that students are not merely architects, but integral stakeholders and active contributors in constructing their shared reality. Fostering student subjectivity empowers them to view themselves as political agents, contributing to an active political body⁴. This sense of agency correlates with the psychological concept of locus of control, where individuals are more likely to modify their behavior if they perceive their actions as impactful, rather than solely influenced by external factors^{5,6}. In this sense, the exercise also aimed to assist students in recognizing their stakeholder status within the project, reflecting on their level of power and responsibility, and considering their role in the collaborative creative process. By initiating exercises that bridge individual and shared values, we emphasized the role of intrinsic values and collective values in driving decision-making and design in our Participatory Design (PD) project.

The logbook entries disclosed some difficulties in articulating and negotiating with others; however, they also highlighted the significant contribution of the values exercise to their engagement, motivation, and critical thinking. In the ‘victories of the day’ section of the logbook, a student noted ‘clarifying the values of the fellowship and coming to agreement after a bit of a struggle, feeling a sort of consensus on our team as well as mutual understanding and respect in our discussions’ and other student said ‘the way our steps on how we approach the workshop with the values was very inciteful and made me think a lot about how I should design in the future.’ These highlighted showed how this exercise was crucial to develop students’ critical approach to design as well as mutual understanding.

6.3.2 Understanding responsibilities and roles in collaborative projects

4 Paulo Freire, *Pedagogy of the Oppressed*, 50th Anniversary Edition (New York: Bloomsbury Academic, 2018).

5 Anna-Karin Engqvist Jonsson and Andreas Nilsson, “Exploring the Relationship Between Values and Pro-Environmental Behaviour: The Influence of Locus of Control,” *Environmental Values* 23, no. 3 (June 1, 2014): 297–314.

6 Kelly S. Fielding and Brian W. Head, “Determinants of Young Australians’ Environmental Actions: The Role of Responsibility Attributions, Locus of Control, Knowledge and Attitudes,” *Environmental Education Research* 18, no. 2 (April 2012): 171–86.

Within their respective groups, students were encouraged to examine the workshop handouts to comprehend the various roles they could undertake during the workshop. They were then prompted to discuss their preferred roles within their groups, elaborating on their choices. This exercise served as a platform for students to acquaint themselves with each other's personalities and competencies, potentially fostering a richer group dynamic. We encouraged students to remain cognizant of their role as stakeholders in their projects, navigating their influence through dialogue, negotiation, and mutual understanding.

In their logbooks, students reflected on their chosen roles and the reasons behind their selections. The students who opted for the roles of the artificer or the tech wizard, chose these roles because they aligned with their pre-existing skills, experiences, or interests. They mentioned that they wanted to focus on problem-solving and to translate ideas and concepts to design by using several technical-related skills such as design software, focus on materials, and image production.

What was interesting to find is that students who chose roles that depended on communication and people's management, choose roles based on their values, using the role as a connector between their values, personality, abilities and responsibilities in the PD process. For example, students opted for the roles of Cleric or Paladin, articulating their choice as predicated on their interpersonal and communicative aptitudes, aspiration to interconnect individuals, or emphasis on generating an affirming and inclusive social environment. One of them expressed their interest in being the Cleric as: *"to make everyones voices beign heard. I like equality. Fairness/justice, the spirit of motivtion and energy restored"*. During the workshop, these students aimed to underscore the significance of sustaining motivation by cultivating a positive ambiance, fostering effective communication amongst participants, and offering support to fellow team members.

The students elected the roles of Scribe, Rogue, or Ranger, and determined their roles based on responsibilities aligning with their values, analytical thinking, or eagerness to observe and scrutinize situations. The students in these roles concentrated on fostering open dialogue, practicing active listening, and facilitating discussions within the group, and envisioned their contribution to the workshop as critical to maintaining a critical perspective during the design project, both in relation to other stakeholders and towards their own actions: *"I will try to make sure conversations go fluid, try to make sure we stay true to our values & that other groups understand our ideas"*.

The logbook data analysis illuminated this exercise's significance in enabling students to connect their self-identity, competencies, values, and the pivotal roles they could

assume within a PD project. Furthermore, it facilitated their understanding of each other's preferences, strengths, and weaknesses, and initiated the process of distributing the workload and tasks of the complex project ahead. Their responses underscored their commitment to productive communication, collaboration, and support within the group. Students demonstrated an eagerness to share their knowledge and expertise, engage in creative problem-solving, and contribute towards sustaining motivation throughout the workshop.

The data also revealed how students leveraged their roles to facilitate communication amidst challenging group dynamics. This was particularly evident as the workshop commenced with sizable groups. One student observed, 'the different roles make it easier to by seven in a group, because we have different focus on the project'. The roles also underscored the significance of each participant's engagement in equitable collective responsibility, workload, and motivation distribution. Reflecting on a day marked by the absence of numerous master's students due to other engagements, a student noted, 'we missed a lot of people in our group and learned that we need all every role to complete each other well'. This insight highlights how the lack of shared responsibility can hinder people's motivation in the design process.

Moreover, the roles seemed to foster improved interpersonal relationships within the group, by providing insight into the potential contributions of each member. Reflecting on the process during the final day of the workshop, a student wrote: 'Everyone just accepts your role in the group. If someone takes for example leadership sometimes or starts making deadlines and putting pressure on the group, it's okay. Because everybody knows it's his role and doesn't asks questions about it. It made sure the group worked as a whole and all the necessary responsibilities were taken.' Therefore, members were more inclined to accept critical inquiries if they understood that such questioning was integral to the assigned role and its significance to the project's success. Students adopting the roles of Rogue or Bard, for instance, felt they could critique others without fear of reprisal or inducing tension, while others were receptive to criticism and being challenged without harboring negative sentiments. Feedback from the tutors and bards post-workshop indicated that the allocation of roles served to motivate students due to the autonomy it provided, allowing them to assume roles that resonated with their personalities. This not only empowered them to make decisions but also facilitated smoother communication.

However, some students struggled to connect with their assigned roles in the Dungeons & Dragons-themed architecture project due to unfamiliarity with the game or uncertainty about their roles. This indicates that the role-playing method needs better clarity

when connecting to architectural language. Three out of five master's students, assigned the assisting role of 'Bards', reported difficulty in their roles, primarily due to involuntary assignment and a perceived mismatch with their personality and skill set. Workgroups led by these Bards that struggled with their leadership roles, often struggled with understating and performing tasks. This highlighted the importance of alignment of people's personalities, identity with their professional roles for better group cohesion, and engagement.

6.3.3 Engaging with complexity

After the first exercises to foster group cohesion and establish a good foundation for collaboration, the workshop started to prepare the students for meeting and engaging with stakeholders. Subtends had a series of lectures on social sciences methods to engage with the participatory process (including anthropology applied to architecture, and participatory design strategies, for more information, see appendix 2). Furthermore, the students were given access to an array of files shared by the stakeholders. These included documents, maps, plans, digital materials, photographs, and other resources containing pertinent information about the stakeholders and the site. This allowed each group to familiarize themselves with essential information about their respective stakeholders.

Subsequently, the students were tasked with formulating a list of information they likely needed to acquire from the stakeholders, including potential questions to pose and possible methodologies for engaging with the stakeholders in their inaugural meeting. This exercise was intended to encourage students to consider relationship-building as the initial phase of their design process. Rather than commencing with spatial or design considerations, students were instructed to contemplate the stakeholders' stories, desires, fears, and values to identify pathways for establishing a human connection. Students were also required to strategize about how they might collect data through site exploration, space utilization, observation, conversation, or interaction with local users and materials.

The students were further required to reflect on their individual roles and how each might serve a significant function during their discussions with stakeholders and site visitations. For instance, during stakeholder meetings and negotiations, I underscored the importance of the Rogue's role in fostering critical thinking, while the Cleric's responsibility was to sustain positive relationships with the stakeholders. The Paladin was tasked with facilitating consensus on shared community values and ensuring their voices were represented in the process. Simultaneously, the Scribe was to record the key topics of discussion to maintain an accurate record of the process and agreements.

During the site exploration phase, the Artificer, Ranger, and Tech Wizard were urged to be particularly mindful of their roles in beginning to compile an inventory of existing elements such as materials, colors, resources, and undiscovered features that could be leveraged in the design process.

Student feedback indicated both positive and challenging aspects of the workshop. While some participants found the lectures and exercises enriching, others struggled with the influx of information and the complexity of integrating social science perspectives into architectural design. The introduction of real stakeholders and clients added pressure to perform, leading to stress among some students. Acknowledging the complexity of transmuting societal values into attainable design objectives, a student stated 'I felt very excited, because we are creating a space for people by their values. I also felt frightened, because it is a very hard job to actually meet a lot of the goals'. Upon reviewing the feedback, I noticed that I had underestimated the sense of overwhelm that introducing new information could elicit in students unfamiliar with integrating social science perspectives and participatory practices in their design processes. In addition, this was the first instance where the students collaborated with real stakeholders and actual 'clients', which may have contributed to the pressure to perform, leading to stress among some participants.

The results highlight the need to address the sense of overwhelm experienced by students when introducing new methodologies and perspectives. It is crucial to provide sufficient support and resources to help students navigate integrating social science insights and participatory practices in their design processes. Creating a secure and inclusive atmosphere is essential for fostering collaboration and facilitating the implementation of these newfound concepts in future projects.

This phase of the workshop successfully prepared students for stakeholder engagement by introducing social science methods and participatory design strategies. Despite the challenges faced, students expressed enthusiasm, dedication, and a desire to apply concepts in their future architectural projects. This research highlights the importance of integrating anthropological insights into architectural practices and emphasizes the need to design with a focus on people and communities.

6.3.4 Shared values with stakeholders and on-site engagement

On the third day of the workshop, students had their inaugural meeting with the stakeholders and site visit guided by stakeholders. The day began with a more formal gathering in an auditorium, where stakeholders presented themselves, articulating the values

they sought to express in the architectural space of the project, as well as their specific needs and concerns. Later, the students convened with their working groups, and the stakeholders moved between these groups for brief discussions. This activity required the students to combine the values of their working groups with those of the stakeholders, thereby creating a unique set of shared values for their collaborative design endeavor. This exercise aimed to assist students in establishing qualitative focal points to weave a narrative for their design decisions, which would resonate with all parties involved. In the afternoon, guided by the stakeholders, the students were introduced to the site through a walking tour. They were encouraged to immerse themselves in the environment and gather information by photographing, sketching, conversing with other site users, and observing the people and the spaces themselves. This allowed the students to assemble an inventory of the site's features, including human and more-than-human elements, materials, colors, and resources that could be incorporated into their design projects.

On this day, students were instructed to conduct a shared values exercise similar to the one carried out on the first day of the workshop, but this time in conjunction with their stakeholders. By the end of the day, students were required to present the 'Sacred Oath,' a summary encapsulating the final set of values agreed upon with the stakeholders. The Sacred Oath was envisaged as a tool to foster collaboration between students and stakeholders and to assist the negotiation process in design decision-making throughout the development phase. These mutually agreed-upon values would be the guiding principles that students were obliged to uphold for the remainder of the workshop, ensuring their translation into the design, spatial layouts, and materialities of the final project.

Previously students expressed stress and uncertainty in dealing with real clients and the project's complexity, but meeting stakeholders in person promoted a notable shift, where these negative sentiments were noticeably absent. Students' logbook entries for the third day primarily reflected feelings of excitement, inspiration, and motivation. Numerous students conveyed that their encounters with the stakeholders and the site visit had a profoundly inspirational and motivational effect on them. They expressed that the project assumed a more tangible purpose and that was intrinsically linked to a real, concrete context. One student shared: 'It felt good to feel like we are trying to help and be a part of something bigger than just ourselves, and our life-projects' and another student added: 'I really want to understand what they want for the place. I was grateful for getting this opportunity and wanted to learn a lot'. Therefore, highlighted that interacting with actual stakeholders helped their motivation to learn and navigate the workshop's challenges.

Students further observed that their interactions with the stakeholders and their time spent on site significantly altered their initial perceptions and assessments of the stakeholders' desires and identities. One student, who had adopted the role of the Paladin - primarily charged with ensuring that stakeholders' voices were heard and their wishes integrated into the design process - shared how their encounter with the stakeholders from the Drum Wagon served as a transformative experience because they were surprised to see the contrast between what he thought about the stakeholders and the reality: 'I was very impressed by the way the drummer and the dancer talked about their work/hobby (...) and had experiences way different from what I thought. I also felt guilty because I discovered that I judge too fast. I learned that there are a lot of things I do not know about people and the world.' This reflective observation illustrates how such experiences aided students in forming a personal connection with both the project and the stakeholders, fostering a sense of belonging and identification with the project. Moreover, it also facilitated students' realization that design decisions are often made based on fast judgments of people and places, which may not align with the actual circumstances.

The concise presentations given by the stakeholders, openly expressing their aspirations and apprehensions, along with their openness towards each other and the students, contributed to fostering an environment of trust, tranquility, and curiosity. Many students noted this atmosphere as essential for fostering effective communication and harmonious relationships, as it made them feel welcomed and included. A student mentioned: 'I think I got to know the community well and that the rest of the team also, because the atmosphere was calm and we were curious about each other.' This underlines the necessity of committing to thorough preparation, achieving a clear understanding of the participatory design objectives, acknowledging the power imbalances among participants, and generating opportunities for forthright and open discussions.

Regarding the difficulties encountered by the students, some noted feeling challenged by the prospect of interacting with people and undertaking participatory work. For the majority, this marked their first experience of engaging in such a manner with real stakeholders. A handful of students expressed feeling intimidated by having to interact with people, yet they acknowledged the importance of such interactions and displayed a desire to improve their skills in this area. One of them shared: 'I did at time feel a bit intruding, I did not personally get much in to anthropological research today, but I feel like I could get very intimidating, so that is kind of a hurdle I want to get over.' This viewpoint highlighted a possible gap in architectural education, where students typically lack the requisite interpersonal skills necessary for effective stakeholder engagement.

Numerous students expressed difficulty in negotiating divergent values and viewpoints among participants. For instance, on occasion, local (X) partners would hold a different perspective on a given issue compared to the municipality. Alternatively, there might be a clash between the students' perceptions of a place and those of the stakeholders. Despite being forewarned about the potential for such discord and having been taught several conflict resolution strategies during their classes, many students found the process of negotiation and compromise particularly challenging. When reflecting on these hurdles, students noted their struggles in identifying common ground and compromises among the varied values of the participants, inclusive of their own, and some realized that beyond design issues, in real projects, there are: 'a lot more politics involved that you have to deal with'.

Despite these difficulties, students acknowledged the importance of possessing the interpersonal skills necessary to navigate these challenges to progress with the design. One student articulated their struggles as: 'discussing our many options in an organized way that gives a better overview of our tasks and moves us forward. Finding a way to organize ourselves that balance between democracy collaboration and efficacy'. While grappling with the challenge of balancing inclusivity and effectiveness, many students recognized the significance of this phase in finding compromises and listening to diverse perspectives. They understood its importance in equilibrating power dynamics and fostering democratic collaboration within the design process and decision-making: 'Not jumping to conclusions in the design process. Valuing the FEUM team as expert-citizens and citizens-experts and not just using our knowledge.' These insights showed how experiencing interactions with real stakeholders helped students see the importance of considering local people's voices for their design process.

Some students also encountered difficulties with decision-making requiring time to unfold, and finding it challenging to envision the final outcome. Despite my repeated reassurances that they would collaboratively determine the design program with the stakeholders, students found the absence of a predefined design program unsettling. Some students had an evident struggle during the initial days of the workshop, a period during which they were not yet involved in any design activities, expressing that they found the pace of the design process to feel slow or monotonous (despite a great number of tasks available). These struggles tie back to the 'think before you draw' notion addressed in the interviews, demonstrating the challenge many architects face in engaging with theoretical foundations and critical thinking before immersing themselves in design and decision-making, hastily seeking design solutions and making decisions for problems and people they may not yet fully comprehend. These struggles underscore the potential repercussions of students not gaining experience with real-world situations during their

education. This insight highlights a need to integrate into architectural learning with critical professional skills such as effective communication, understanding the temporal aspect of the design process, negotiation, and partnership, and trust-building with project participants to make informed and critical design decisions.

6.4 Phase 2: Unfolding the Magical Structure

The second stage of the process (days 4-6) was dedicated to equipping the students with the necessary methodologies and tools to facilitate the translation of accumulated data, agreed-on shared values with stakeholders, and theoretical concepts into design, space, and materiality. They initiated the design development and engaged in feedback sessions with stakeholders on-site. This phase emphasized activities on site to encourage students to engage and be inspired by local realities, showing them a contrast with the typical approach of isolation within their studios, far from the site and users. This phase highlighted the design process by focusing on experimentation, helping students understand that participation culminates in solutions and that the final proposal would materialize from numerous trials and steps influenced by the design process.

6.4.1 Value-action-design response tool

On the fourth day, I also introduced the Value-Action-Design Response (VAR) tool to facilitate students' alignment of their proposed design responses with the values agreed upon. This tool is predicated on Homer and Kahle's value-attitude-behavior cognitive hierarchy model⁷, which proposes that cognitions are organized on a spectrum from abstract cognitions (values), through midrange cognitions (attitudes), culminating in specific behaviors. Despite acknowledging the limitations of such linear behavioral models, I deemed the VAR model an effective and straightforward introduction to the potential correlations between values and student design choices. The exercise was intended as an experimental probe into whether a visual and explicit connection between values and design choices could enhance students' critical design decision-making.

As previously noted, pro-environmental values were already significantly represented among the students. This exercise was conceived to reinforce the linkage between individual and shared values and their design proposals. In the VAR exercise, students were instructed to divide their work into three columns (figure 3). The first column contained the values that surfaced from their dialogues with stakeholders, represented by chosen keywords and a brief text delineating each keyword's significance. The second column reflected upon behavioral outcomes (actions) that their design might inspire in response

⁷ Pamela M. Homer and Lynn R. Kahle, "A Structural Equation Test of the Value-Attitude-Behavior Hierarchy," *Journal of Personality and Social Psychology* 54, no. 4 (April 1988): 638-46.

to these values. In the third column, students began to speculate on how their design ideas could correspond to each action, proposing a design response for each action, including references, sketches, or text.

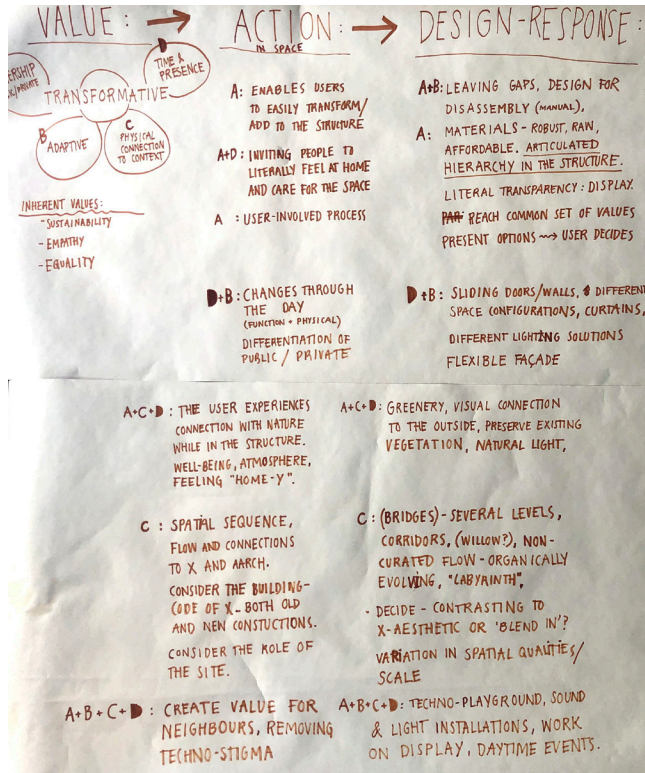


Figure 3: Example of VAR exercise from group 3A.

This exercise is an experiment to help ‘materializing’ conceptual ideas, a translation of the speculative story to another media – specific programmatic elements, spaces, materials, or tectonic articulations. It proved to be a useful tool to connect the workshop phases, and helped students link their design proposals to the challenges and values they had defined for their specific project.

In participatory design (PD) projects, various factors can derail the collective ‘vision,’ including technical contingencies and shift priorities. Leong and Iversen argue that a PD process where people are engaged in dialogue about their values throughout the design enables them to discover meaning alternative future outcomes concerning their current

practice⁸. In this context, the VAR exercise served as a tool to help students retain their focus on collective values and visions as they iterated through their design proposals, maintaining a record of how and why design decisions were made.

6.4.2 Feedback from stakeholders

On the sixth day of the workshop, the students interacted with the stakeholders to present their design progress and solicit feedback, while they navigated varying interests and negotiated with the stakeholders. During these negotiations, students were urged to bear in mind their roles and consider the variety of ways they could facilitate a smooth process. I provided them with instructions in the task handout, detailing the crucial roles each would play during this phase, from the Rogue's critical thinking to the Cleric's relationship maintenance, the Paladin's community representation, the Scribe's diligent note-taking, the artificer's explanation of design choices, the Ranger's planning, to the Tech Wizard's illustration of information.

Meeting with stakeholders proved again to be a booster for students' motivation and advancement in the workshop. Despite initial nervousness ahead of meeting the stakeholders, most students felt positive afterward, stating that receiving the stakeholders' feedback instilled confidence to continue with the project. One of the students articulated their heightened sense of purpose and motivation, spurred by the realization of the tangible impact of their design on real stakeholders: 'I loved the reactions of FEUM and X today, they were super encouraging (...) I felt happy to hear we could actually help people by giving them inspiration or even an actual design proposal. The fact that it's not alone imaginary does a lot'. Many students also reported that feedback from stakeholders provided a clear direction for their ideas, making their decision-making process faster and easier, and enabling them to promptly discard unfeasible ideas. One participant reflected on their learning experience, summarizing it as an understanding that 'we don't need to know everything'. Therefore, despite grappling with complex tasks, students generally expressed confidence in their capabilities due to the sense of shared responsibility and understanding between group members and workshop stakeholders.

However, some students found it challenging to modify their designs in line with stakeholder feedback, realizing that the final design might not align entirely with their initial vision. This struggle with accepting critique and displaying patience was articulated by a student: 'having patience with the last corrections of some work to get it even better. Getting passed the stakeholders response and 'killing your darlings' (...) I went back and fourth between great enthusiasm and being a bit tired and negative a lot today. It ended

⁸ Leong and Iversen, "Values-Led Participatory Design as a Pursuit of Meaningful Alternatives."

on a great note though (...) be better with criticism versus stay positive.’ Connecting with the interview’s discussion about cultivating a humble and curious attitude instead of the starchitecture mentality, this student’s insight showed how important the participatory design process was for him to develop these values.

Upon completing the first phase, students’ logbooks revealed a majority of positive responses towards the workshop, expressing excitement, motivation, satisfaction, and growth. These sentiments were attributed to progress, effective collaboration, and improved communication. Many comments highlighted their progress in translating conceptual ideas into design decisions. One student shared that ‘I felt that we made an important step forward, by linking our first week outcomes to a design strategy’. Some students also indicated increased comfort in their roles, stating that they had learned to distribute responsibility and trust the process: ‘understand a bit more the boundaries of my role, go with flow more, I’m not responsible for everything, relax!’. Many felt a sense of excitement about the progress made, and engagement with local community members on the project site invigorated them, generating energy and motivation. A sense of relief was also expressed by some, as they could finally commence the design stage, with one student reflecting: ‘excited to have a concrete view of what people think about the area we are working on and actually start designing something because all we did until now was observe’. Students also noted their satisfaction and enjoyment derived from the growth of their group relationships and engaging in inspiring discussions.

However, students expressed excitement but also acknowledged feelings of stress or fatigue after an intense week of activities. Some expressed disappointment about the workshop’s duration, desiring to apply some of the learned methodologies that needed a longer timeframe. From these insights and the feedback gathered from the focus groups post-workshop, I discerned that for future workshops, I would reduce the number of lectures and reorganize certain activities to better align with the students’ cognitive progression. I acknowledged that my ambitions with regard to content were high, operating under the assumption that providing students with an array of methods and tools would allow them to select what best suited their needs. While this strategy was effective for some students, it resulted in confusion and decision-making difficulties for others, due to the sheer number of options available. Another point of feedback from both students and tutors post-workshop was that, while the role assignments were engaging and especially effective during the participatory design activities with stakeholders, students struggled to align these roles with specific design tasks. Students understood their roles in discussions and negotiations but found it challenging to comprehend how they could contribute to the group during the design phase. I admit that I initially assumed that students would naturally divide the work and make decisions independently. However,

this feedback has highlighted the need for refining the role tool to enhance its efficacy, necessitating a more explicit and robust connection between the design phase and students' roles and responsibilities.

6.5 Phase 3: Forging the ultimate scroll

The concluding three days of the workshop were primarily devoted to integrating stakeholder feedback to refine and finalize the design project. Students were prompted to contemplate the question, "how do we effectively communicate our process and design results to the general public?". As a response, they were tasked with producing an A0 infographic that would serve as a tool for presenting the final design and the participatory process. On the workshop's final day, students presented their work on the premises of the Institute for (X). Each group conducted their presentation in the central area of the site they were designing for, and their designs remained on display for a month. The entire morning and afternoon were devoted to on-site presentations, with stakeholders providing feedback to the students. Following the presentations, the Institute for (X) stakeholders hosted a small celebration to mark the workshop's conclusion.

6.5.1 Design results

In total, thirteen distinct design outcomes were presented on the final day of the workshop. Except for one group working with UAC (indicated by the purple area in figure 1) who chose to combine their design and develop a single joint proposal for the area, the other locations each had three unique final design proposals. The following section highlights a few relevant aspects of some design proposals; for more detailed information about the design, please refer to annex 2.

As indicated by the blue area on the map, students were tasked with generating a proposal for the group known as 'The Gateways (Yurt Village + FEM)'. The Yurt Village and FEM studio function as a collective of workshop spaces, serving various small studios in the area with activities related to architecture, sound, art, and performance. These stakeholders requested students' assistance in formulating design proposals to enhance connectivity between the grounds of (X) and the neighbors, while underscoring the existence of (X), their territory, and activities in the area. There was concern that, with the construction of the school, an 'invisible wall' might be created, dividing (X) from their neighbors and limiting interactions among local actors. The designated site bordered the future architecture school (under construction during the workshop). The three groups engaged with this area opted for design proposals to enhance the relationship and collaboration between the school, (X), and the neighbors of Godsbanen. Thus,

they desired design programs to bolster local collaboration, encourage outdoor usage of shared spaces, and emphasize the presence and importance of (X) in the area.

Group F1C, who named their project ‘Material Looper,’ proposed revitalizing the train tracks to support a material bank structure and a mobile container (figure 4). This container could move along the tracks and be utilized by diverse neighbors at (X), the school, and the Godsbanen workshops. Group 1B students pinpointed shared values between themselves and stakeholders, which they aimed to incorporate into the design function and materiality. They identified a collective value within the group, termed ‘solicitude,’ signifying group members’ focus on projects exhibiting care, concern, accountability, and community orientation. They related this value to (X) stakeholders’ ‘active power’ value, demonstrating their desire for the neighborhood’s residents to be more active in using and appropriating urban space for their activities. After interviewing stakeholders and other area users to gather more data and determine which design program could enhance these values, the group opted for the material loop proposal. They discovered that many neighborhood actors produced substantial waste from their activities (e.g., the local bicycle repair shop at (X) and the Godsbanen workshops) and lacked storage space or means to share or exchange materials. Similarly, students recognized that they, as school students, encountered a comparable issue, as the school’s workshop generated significant material waste at the end of each semester. This waste could potentially be re-used by others in the area but was currently being discarded. The ‘Material Looper’ proposal included a physical structure and track revitalization that accentuated the historic train tracks and a collectively owned and managed structure that responded to some of the shared values identified with stakeholders. This proposal underscores the group’s successful identification of the wishes and responsibilities of external stakeholders and the school’s and students’ as significant stakeholders.

Though this project successfully developed a design proposal emphasizing shared responsibility and acknowledged students as significant stakeholders, not all groups reached the same outcome. Despite the workshop and group values exercise’s emphasis on students as stakeholders, the final presentations and tutor feedback revealed that some students overlooked their own positions as stakeholders. Instead, they focused exclusively on the desires and expectations of others, veering towards a traditional architect-client dynamic. This occurrence might be attributed to the fact that students were tasked with creating a design product for evaluation by stakeholders at the end, leaving less time and emphasis on the presentation to showcase students’ values and perspectives. Nevertheless, an important lesson learned is the need to further emphasize the idea that architects (in this case, students) are part of the user base, actors, and therefore stakeholders of their environment.

Situated in the green area depicted on the map in figure 1, students were tasked with proposing a design for 'The Drum Wagon,' a collective specializing in African drumming and dance. The members of The Drum Wagon expressed to the students a desire for a design that enhanced community and connection between people and the surrounding environment while also highlighting their presence in the area. They emphasized the importance of 'no boundaries' and creating an atmosphere of openness that invites people to participate in their activities, use their spaces, and co-create with them. Furthermore, they mentioned their deep appreciation for nature and outdoor activities, yet acknowledged the challenges presented by Denmark's frequent rain, which often forced them to practice indoors, contrary to their preferred connection with and visibility within the urban context.

Considering these factors, the three groups working on this area recognized it as a significant meeting point in the urban landscape. They proposed designs that connected this central area with the surrounding spaces. The students also noted the contrast between the aesthetics of African culture and local Danish aesthetics, and attempted to propose designs that represented the co-existence of these two dynamics. Projects pertaining to The Drum Wagon demonstrated an effective grasp of the stakeholders' cultural context, crafting proposals that not only accentuated the African presence in (X) but also underscored their role as crucial social links between (X) users and the wider community.

For instance, Group 3B proposed a circular wooden roof structure with a sand floor, drawing inspiration from Senegalese culture, which formed part of the background of some stakeholders. This structure was designed to serve as a performance area, practice ground, and community gathering point. With curtains instead of walls, the structure would remain predominantly open to not obstruct the visual and physical connection with its surroundings. The structure's shape also embodied the values of togetherness and community (figure 5).

The proposals presented in the red zone of the map were aimed at FEUM: The Association for Underground Electronic Music. The stakeholders from FEUM expressed their aspiration to organize open, accessible urban events that reflected their values of inclusivity and creative liberty for experimentation. They envisioned a versatile space capable of hosting their events in various formats and housing their equipment. Furthermore, they sought to gain recognition and understanding from the public and local government, and hoped that the students could assist in conveying the importance and impact of their events on community building and urban vitality.



Figure 5: Group F2C infographic.

The three groups working in that area suggested various forms of lightweight scaffolding structures and containers capable of expanding vertically to occupy the vacant facade of the neighboring building with 'parasitic' structures. They also put forth diverse proposals on how the open area between buildings could be utilized flexibly for different occasions and weather conditions. The standout aspect of the collaboration with FEUM stakeholders was the students' ability to devise flexible solutions for year-round use of the space, thereby emphasizing the importance of FEUM's activities in maintaining the area's liveliness and urban space utilization.

In the orange section of the map, proposals were made for the group known as Yard Shop: a central hub for graffiti culture in Aarhus that not only sells art supplies and repurposes leftover graffiti paint but also acts as a community center for outdoor sports. Yard Shop prioritized family and community values, as their space is frequented by teenagers, children, parents, and urban sports enthusiasts who engage in basketball, parkour, skateboarding, and street boxing. They sought students' assistance in envisioning diverse uses for the space and showcasing the significance of their activities through it. They hoped to articulate their values and demonstrate the broader community impacts of their presence, particularly when negotiating with the municipality over area usage.

Following discussions with stakeholders, students noted that the fence separating their plot from the train lines symbolized a division. The train company had installed a barbed-wire fence to demarcate and segregate their territory, creating a literal and figurative 'us versus them' scenario. Students detected a conflict between the train company and the (X) users, with the fence serving as a conspicuous marker of this discord. Students opted to engage with the fence as a declaration, contesting this segregation. Rather than positioning the rear of Yard Shop against the fence, students decided to open the façade to the fence, creating open, inviting spaces - an open 'yard' symbolizing a desire for open dialogue and space utilization. They incorporated various references to fence materiality in their design, proposing twisted, flexible, and playful uses of fence materials and fence-like elements.

The three groups working with Yard Shop coalesced around a shared vision for the area, each focusing on detailing a number of unique design proposals. One group suggested movable, playful elements such as green fences and climbable malleable structures that diverse age groups and area users could assemble and use in numerous ways. Another group proposed urban furniture, such as fence dividers or benches made from repurposed graffiti spray cans, which stakeholders had trouble recycling. The final group suggested creating an enlarged version of the shop that could act as a bridge between the

existing shop and the surrounding areas, accomplished by amplifying their structure with movable fence-like panels.

The highlight of the projects for the Yard Shop showed how students understood well the local friction between diverse users of the area and how these frictions materialized in space and design. They also showed a lot of attention to local materials that could be recyclable and repurposed to create urban furniture and playful landscape elements.

Presented in the purple area on the map, students had to make a proposal to the group called UAC: Useful Art for Communities which focused on developing activist projects with individuals and communities advocating for social and environmental justice. By highlighting trust, courage, and co-creation as their main values, UAC wished for design proposals to help them rethink and refurbish their current space to fit their growing needs to host events such as community kitchen, office space, and storage for art materials. The tree groups working with UAC decided to merge their groups and propose one single project. They delivered a very comprehensive analysis of the UAC area and urban context. They created a simple website to share their data collection, which could be accessed through QR codes presented in their nephrographic and comprised several types of urban and material analysis as well as social analysis of the site. They also proposed a simple structure to extend the existing UAC hub, using a wooden frame structure and parts of several reused materials from the site for the façade. During their presentation, they mentioned that because they felt the workshop had a short time for them to propose a detailed structure, they decided to focus on making sure that they were attending to UAC's values of creating trust, courage, and co-creation during the design process, and that they wanted to provide UAC with a good database and an initial sketch that they could use for future development of the project. Although the final product of this group was less detailed and developed than the others, they provided the stakeholders with a rich body of research and a database about the site.

Stakeholders generally provided positive feedback on the students' projects, expressing that they felt heard and that students comprehended their desires, values, and backgrounds. They believed that the projects sparked new ideas on utilizing their spaces and conceiving future designs. However, there were some concerns about shared ownership and responsibility for some of the projects that used shared facilities such as urban furniture or material bank. Stakeholders were uncertain about who would maintain the proposed structures, suggesting a need for further development of collective ownership and shared responsibility proposals. Stakeholders also noted that if students had more time, they would have appreciated more detailed construction plans and further development of proposed structures.

Despite these minor drawbacks, stakeholders found the materials received to be rich and beneficial for negotiation with municipalities and funding applications to improve their workspace and facilities. Interestingly, stakeholders also reported learning new aspects about the area and other (X) partners that they were previously unaware of. They expressed interest in the students' innovative ideas for using the area differently and in the valuable insights students gathered from the site during the process.

Reflecting on the workshop, tutors noted that students who adopted a humble approach, open to rethinking and adjusting their designs based on stakeholders' feedback, ended up with designs that, while perhaps not as aesthetically 'impressive', deeply resonated with the stakeholders. This experience underscores how successful design projects hinge on listening, being flexible, and adaptable to local contexts. As previously discussed, if people feel heard and perceive that the design proposal aligns with their identity, they are likely to form a stronger attachment to it and will be more motivated to engage with and maintain the design.

Student reflections on the workshop's final day were largely positive, with participants expressing satisfaction with their achievements, appreciation for positive feedback from stakeholders, and personal growth in teamwork and leadership. Some temporary negative feelings, such as anxiety or fear related to presentations, were reported by a few participants, but these feelings generally dissipated once the task was completed. Several participants also mentioned fatigue, potentially attributable to the workshop's intensity or scheduling.

After reflection, tutors, students, and stakeholders all wished the workshop would be longer. The participants noted many instances when deep and thought-provoking critical discussions began, but there was insufficient time to translate these insights into designs. With many ambitions and a limited timeframe, translating conceptual ideas and qualitative data into designs could have been more robust. Part of this was my oversight as I intended to provide the students with abundant material, resulting in an over-saturated of information better suited for a longer duration. I also got somewhat carried away with the high expectations of (X) partners, who were keen to extract a lot from the students, and I may have been overly ambitious in the volume of output I asked the students to produce. Upon reflection, I believe the workshop could have benefitted from a stronger emphasis on developing methods with students and stakeholders to translate conceptual ideas into designs, with more time devoted to this process. Despite these shortcomings, participants' feedback about the workshop was overall positive. All groups succeeded in completing their tasks, resulting in a wealth of materials that stakeholders could benefit from. Generally, stakeholders' feedback suggested that what

they gained was not just design ideas, but a new perspective on their own area and actionable ideas that they could use in discussions with other agents.

6.6 Behavioral impacts

The collective student feedback indicated that the workshop's aspects that most impacted their life and professional practice were the importance of linking their professional roles with personal values, teamwork and group discussions, and stakeholder involvement and tangible experience of executing a real-life project. Even one year after the workshop, students mentioned these aspects as the most impactful that contributed to changes in how they approach their architectural practice. Confirming that the methods used during the workshop based on strategies such as emotional connection, identification, and experiential engagement, as explained in the methodology, were indeed effective for long-term behavior change. By fostering interactions with others to cultivate empathy, collaboration, and meaningful engagements where students could integrate their personal interests and personality factors into real-world issues, the workshop created various emotional impacts that promoted change towards responsible architecture.

6.6.1 Emotional impacts of belonging and identification

Students frequently mentioned that group work was a workshop highlight, appreciating the shared sense of goals, effective communication, and openness to ideas. Many students reflected on a general feeling of safety and open sharing, where they felt they could honestly express themselves and felt integral to the group and the process. One student shared: 'I have the feeling that the fellowship I were a part of were very interested in being a team with the same goal. I had a lot of trust to them, and also felt trust being given back.' This insight accentuates the importance of trust-building and establishing a sense of belonging at the foundation of the design process.

One student shared their reflection on how thinking about their values affected them even one year after the workshop: 'The vocalization of values and later process of determining group values helped clarify which aspects of architecture I find important and reflecting on why when arguing for certain points of views, sharpened my understanding of my inherent architectural position.' This insight acknowledged that shared values exercises were essential contributors for these outcomes, highlighting the need for active listening, negotiation, and compromise in the design process.

Moreover, students appreciated the integration of role-playing within architectural roles, recognizing it as an engaging learning experience. Incorporating various roles and prompts during the workshop to encourage each participant to contribute in unique

ways, as well as the shared values exercise and allotted time for discussion, proved instrumental in fostering group cohesion among students. As one student articulated ‘in our fellowship everyone could speak up and defend their ideas. Sometimes this could lead to discussion, but we would come out of this with better ideas’. The role-playing exercise increased self-awareness regarding the participants’ roles and the broader role of an architect in design processes, emphasizing the importance of connecting the architect’s role in the design process with self-identity.

6.6.2 Belonging impacts of real-life stakeholder involvement

Working with real-life situations and engaging with stakeholders enhanced student motivation and maintained their engagement, even during challenging times. They underscored the value of real-life design projects, which involved immersing themselves in the actual project locale, conducting interviews, and accommodating the needs and aspirations of the local community. This hands-on experience affirmed the critical role of such exercises in architectural education.

Students recognized the importance of communication skills in the design process and appreciated the opportunity to collaborate with real stakeholders. Feedback from students highlighted the positive relationships they developed with stakeholders, emphasizing the importance of establishing a rapport and mutual curiosity that acknowledged expectations, and integrating them into the design process. The workshop demonstrated the positive impact of stakeholder engagement on student engagement, critical thinking, and subsequent professional development. Participants highlighted the importance of developing their communication skills for a successful design process. As one student noted: ‘It was a useful workshop because it was real-life. We could actually talk to a physical stakeholder with real wishes. Communication was key in this workshop and is also very important in a design process.’ The emotional connection students created with stakeholders was essential to keep them motivated, critical, and attentive to power relations between stakeholders during the workshop.

In reflecting on their relationship with their stakeholders, all students responded positively, stating that the stakeholders were friendly, open, and supportive. Students enjoyed collaborating with the stakeholders and appreciated their enthusiasm and interest in the projects. Students feedback underscores the importance of mutual curiosity for a positive relationship with stakeholders. One student mentioned: “really friendly, open, heartfull, both sides were very interested, strangers, I really want to them to know them better;” and another student added: ‘We had many good conversations with the stakeholders and they very easy to talk to and get information and thoughts out, so the re-

relationship were based on interest for each other.' From several student remarks, it was evident how establishing a rapport with their stakeholders enabled students to interact with them on an equal footing, thereby facilitating more genuine exchanges. This, in turn, contributed to smoother communication. One student observed: 'communication with laymen stakeholders must be above all, authentic and unpretentious this project was about the team, not the outcome' and another added: 'everything is ok because the stakeholders are also just human'. These insights reveal the impact the workshop had on students' empathy toward other people involved and affected by their design.

Tutors noticed that students appreciated the opportunity to communicate with real stakeholders and feel connected with their neighbors, creating meaningful connections. They observed that face-to-face communication with stakeholders was essential for motivation and a sense of responsibility and that feedback from stakeholders was critical to developing meaningful and practical projects. Tutors also mentioned that students found it inspiring that some stakeholders were hands-on craftspeople, such as carpenters and welders, who possessed skills the students admired and wished to connect with in the future. This, in turn, contributes to stakeholders acting as role models for students, an aspect of education important for fostering engagement.

The students emphasized the importance of intimately engaging with stakeholders, acknowledging their expectations, and integrating them into the design process. This shift towards a local impact focus and a keen interest in site-specific issues had enduring effects, with several students continuing collaborative efforts with local institutions and communities post-workshop. Indeed, this increased stakeholder engagement had profound impacts on students' subsequent work. For instance, one student reflected on this influence, stating, 'I definitely think the participation of stakeholders and the surroundings of a project became more important to me, I ended up doing my bachelor exam about Godsbanen from the perspective of the different stakeholders.' These findings contribute to the existing literature on participatory design and emphasize the significance of stakeholder collaboration in design education. Future workshops and design initiatives can draw upon these insights to foster student engagement, cultivate effective communication skills, and promote sustainable collaboration with stakeholders.

6.6.3 Emotional impacts of shared responsibility

The study identified a notable connection between shared responsibility and student motivation during a workshop. The only day of the workshop where negative sentiments were higher than positives, was when students struggled with a lack of participation from group members. Unfortunately, a mandatory academic activity coincided with the

final three days of the workshop. While some students diligently prepared their work in advance to ease the burden on their team members, others did not. The groups burdened with an excessive workload reported feelings of stress, overwhelm, and demotivation as they grappled with a sense of abandonment and the pressure of completing the tasks alone. In addition, the sense of solitude and the challenge of making decisions alone proved to be a significant hurdle for students to maintain motivation. One student articulated this challenge as: ‘beign almost alone in the group because my other member was sick and making all the final decisions on my own (...) I was feeling a bit alone because many of the members didn’t make many files, so I had to sit with the rest of the material alone’. Some students acknowledged that these challenges were exacerbated by inadequate planning and poor task distribution. One student, who had assumed the role of the Ranger, conceded: ‘a little bit lost because we didn’t know what to do at all time, we should have planned better in the group...plan your day to be effective’. This challenge underscores the significance of strategic planning, equitable distribution of tasks, and shared responsibility in complex design projects. Such elements are crucial to avoid feelings of isolation and loneliness, which in this case, showed to have direct impacts on motivation. Therefore, a fair distribution of responsibility during the workshop showed to directly impact the positive or negative emotional experiences of students and, consequently, their engagement.

6.6.4 Impacts on architectural worldview and values

Findings reveal diverse shifts in students’ awareness of responsibility in architectue, emphasizing stakeholder involvement, sustainability, teamwork, and self-awareness. The analysis highlights the deepened comprehension of responsible architecture, emphasizing community building, critical reflection, and nuanced consideration of potential challenges. In response to the question of whether the workshop had influenced their values and worldviews, students presented diverse reflections. A significant number expressed an enhanced awareness of the importance of stakeholder involvement in the design process, indicating a shift in their understanding of participatory design practices. Some students noted an increased consciousness of sustainability and the role of social and community contexts in architectural projects. The value of effective teamwork and communication was underscored by others, reflecting a deeper appreciation for the importance of negotiation and compromise in architecture. Lastly, several responses highlighted personal growth and self-awareness, particularly relating to the participants’ roles in diverse contexts, the sharpening of their values, and the emphasis on user-focused design. Student’s responses highlighted holism, and how their perspective changed to include social issues as part of sustainability issues. One student shared: ‘It attributed to accentuate culture diversity as part of the city ecology.’

Some students mentioned that the workshop helped them become more critical, sharpen and articulate their values, and understand other people's values and perspectives. One student shared: 'it made me consider other values that I had not thought to put into words myself, but still agreed on.' And other students mentioned: 'I'm a rather stubborn person in general, but I definitely got some positive values regarding teamwork and listening to ideas all the way through before dismissing them. These insights highlight the importance of real stakeholder communication and listening to the development of critical thinking.

At the beginning of the workshop, students were asked to articulate in their logbooks a working definition of responsible architecture, their personal values, and how these intersected with their professional practice. Initial responses underscored sustainable and environmentally conscious design, focusing on material use and carbon emissions. They also emphasized a contextual understanding that includes acknowledging local culture and addressing people's well-being and needs. Future-oriented adaptability, which considers environmental and societal shifts, was also a common theme. Despite these initial responses' broad and general nature, they indicated a holistic comprehension of sustainability in architecture and the sense that personal values could influence professional decisions. However, the initial responses, particularly those related to social issues (ex: 'community focus, enlightenment, education,') were rather broad and lacked specific methods or professional choices.

As the workshop concluded, students revisited their definitions of responsible architecture. The responses fell into similar categories as before, but with a nuanced shift. There was a slightly increased emphasis on community building, user involvement, and context sensitivity. Additionally, a new category emerged: the need for architects to engage in critical reflection and questioning. This evolution in their responses suggested that students recognized the need for architects to continually assess their intentions and the implications of their work. Comparing the initial and final responses, it became clear that while the students' fundamental values and basic understanding of responsible architecture remained constant, their ability to articulate these concepts had evolved. They wrote more in-depth about the complexities of responsible architecture, elaborating on specific values more precisely and recognizing potential future challenges. The final responses were refined, suggesting a deeper understanding and more critical examination of the concepts. The progression from the start to the end of the workshop demonstrated the students' growth in articulating their values and qualitative concepts more effectively and critically. This shift is exemplified by a student's reflection: 'I still define responsible architecture as in the same way as in the beginning. But I became more aware of the difficulties or issues that it brings. I personally consider that the implemen-

tation of participatory design is of high value, but it makes the definition of the term responsible architecture even more complicated, because other individuals have other understandings of it. This could potentially always become a conflict between different members and their interests. Also, the factor of time should be considered, what maybe today seems as a responsible action, could maybe affect bigger problems in the future.' Therefore, the implementation of tools to intertwine students' personal and professional values contributed significantly to fostering a sense of responsibility and honing critical thinking skills and their own understanding of the interconnectedness between their personal values and professional practice. This insight underscored the importance of recognizing how our individual values, narratives, and worldviews impact our professional behavior and design choices.

The workshop revealed to be important to help students develop a holistic approach to the multifaceted nature of sustainability, and that a critical approach is essential to maintain rather than a fixed way to approach design projects. One student shared: 'Responsible Architecture is about being pragmatic and utopic at the same time. It's a complex notion that take into account all parties and actors involved in a project. In order to do architecture as much responsible as possible, we need to question our behavior, our links with others and be conscious that the decision we make are affecting in good or bad way and lean towards the best solution possible as we are aware that we cannot satisfy everyone.' This insight reveals how students develop critical thinking towards their practice which is not focused on fixed ideas of sustainability but in the process of constantly questioning their own process and work.

One year after the workshop, students shared their hopes for the practice of responsible architecture in the future. The following quotes demonstrate two main critical insights that might help the future generation of architects to propose a new architectural culture:

'I hope that we as architects gather the knowledge to be able enter a dialog with entrepreneurs and the building industry, so that we don't concede to building in concrete because that's the only option presented to us. I want architects such as myself to be interested in what architecture is. Not shape, not optimizing budget, but natural lighting, ventilation, transparent tectonics and spaces that people thrive in (to name a few). We can't do that by building closed off, concrete houses filled with technology and cheap facades that don't have a further purpose than hiding the monstrous concrete elements.'

'It's a bit odd to say as an architecture student, but I almost hope that someday, no more new buildings will be produced. I hope that one day, people will be smart enough to

know the we already have enough resources in the world, and we just need to reuse them. My point of view has a lot to do with how the climate crises is right now, and how it will certainly not get better from here. This is only from an architectural point of view, but this change with over-producing and over consuming is an overall problem with humans.’

6.7 Challenges and lessons learned

In reflecting on the issues encountered during the workshop, valuable insights were gained, leading to refinements in the Participatory Design (PD) methods for subsequent workshops. Role-playing proved beneficial in facilitating open discussions among students and promoting individual participation tied to their unique traits and skills. However, the choice of the role-playing theme, Dungeons and Dragons, and the associated roles assigned to some students were points of difficulty, indicating the need for better contextual integration and student-fit roles. Though essential for team coordination, the Bard’s role depended heavily on the individual’s personality traits, further highlighting the importance of aligning roles with students’ identities. Despite the benefits, the role-assignment method demands improvement, especially in connecting students’ architectural understanding and language.

Transitioning from qualitative data into design posed another challenge. Although students initially displayed an eagerness to dive into the designing phase, they later understood the significance of the data collection phase in informing their design decisions and fostering team and stakeholder relationships. The abstract nature of qualitative data and the translation of certain concepts into architectural form posed difficulties, underscoring the need for effective tools, such as the VAR exercise. However, the underuse of the VAR exercise and inadequate tracking of design evolution suggests it must be promoted more and developed collectively. The workshop’s group sizes and decision-making process also presented obstacles. Larger groups struggled with decision-making and balanced contributions, while smaller groups faced workload disparities and motivational issues. The time constraints led to hasty design decisions, prompting a reconsideration of group sizes and the need to present outcomes as starting points, not completed works.

Organizing the workshop amidst COVID-19 restrictions presented considerable challenges, especially with managing a large group of participants, balancing individual engagement, and analyzing extensive data. The constraints prompted a decision to limit future workshops’ size, facilitating deeper engagement and comprehension of processes. Time constraints were another notable factor, with the school’s schedule limiting the du-

ration of the workshop and impeding the translation of critical discussions into designs. Stakeholder interactions were also constrained, affecting some roles more than others and drawing attention to the necessity of equal stakeholder participation. This issue was also reflected in the unequal representation of stakeholders' interests in the projects, affecting power dynamics and decision-making. Moreover, the underrepresentation of more-than-human stakeholders underscored the need to consider all aspects, including social and environmental concerns, equally in the design process.

The workshop's power dynamics highlighted a disparity in stakeholder participation, which affected the incorporation of their input into the projects. Despite anticipating potential imbalance, not every stakeholder could participate equally in all workshop stages; for instance, the main municipal representative could only attend one day. This underscored how essential balanced stakeholder participation is to maintain their interests throughout the project, preventing them from being overshadowed by others. Additionally, representation challenges extended to the more-than-human entities as stakeholders. Students' value expressions during the initial workshop days were evenly split between social/community and environmental aspects. However, due to the emphasis on social elements during the workshop, components such as plants and biodiversity, which had no dedicated representative, were less significantly incorporated into design proposals. Thus, akin to the municipality situation, these 'voiceless' elements lost influence due to a lack of representation in the design process, underlining the critical role of stakeholder representation and participation in decision-making.

6.8 Conclusion

This chapter focused on the transformative effects of relational sustainable behavior strategies employed in the "In Search of Responsible Architecture" participatory design workshop by exploring how various strategies reshaped student perception of an architect's role and responsibility. Through role-playing, task distribution, and alignment of personal values with architectural practice, the workshop facilitated a cooperative learning environment that fostered student engagement. The findings underscore the importance of integrating personal values, fostering holistic thinking, refining interpersonal skills, leveraging qualitative data, and establishing a sense of belonging and responsibility. The study highlights the challenges faced during the workshop, such as stress and emotional struggles, and suggests the need for process refinement to improve communication, workload sharing, and design outcomes. Ultimately, the workshop highlighted the importance of balancing aesthetics, functionality, and social responsibility while drawing attention to how each participant's strengths and weaknesses became instrumental in managing the complex project.

One crucial takeaway was the importance of aligning architectural practice with personal values. The process of openly articulating and harmonizing shared values within the workshop did not alter the students' values per se but sharpened their critical awareness and application of these values in their professional practice. This was instrumental in establishing their position as stakeholders in the design process and integrating their worldview in design decision-making. Therefore, aligning architectural practice with personal values and identity is important in promoting engagement and motivation for sustainable behavior in the long run.

In tandem with this, the workshops shed light on the necessity for holistic thinking, integrating not just technical considerations but also the multifaceted aspects of sustainability. The involvement of social scientists emphasized a comprehensive project perspective, underscoring the importance of social sustainability. Difficulties that surfaced in this participatory process, specifically in managing divergent viewpoints, brought into focus an educational gap, highlighting the importance of refining interpersonal skills essential for effective stakeholder engagement.

The workshop highlighted the significance of qualitative data investment and its conversion into tangible design elements. Students' experiences varied; while some adeptly translated conceptual designs and stakeholder-agreed values into concrete design elements, others struggled with this task. These difficulties caused frustration and complicated communication and negotiation with stakeholders. The VAR exercise, conceived as an experimental tool, aimed to materialize conceptual ideas into specific programmatic elements, spaces, materials, or tectonic articulations. This experiment was fruitful for some students, yet it revealed a need for further refinement in bridging the gap between abstract ideas and practical designs. This discovery underscores the necessity for developing more effective methods and tools for architects to engage with qualitative data.

Working with real-life situations amplified the students' sense of belonging and responsibility. This hands-on engagement with the local community emphasized the value of immersion in the project locale, conducting interviews, and accommodating local needs and aspirations. The practical experience highlighted the importance of building common ground with stakeholders and emphasized the need for patience and openness to feedback in a design context. Though some students faced challenges adjusting their designs to stakeholder feedback, the experience reinforced that successful designs hinge on being flexible and adaptable to local contexts, and valuing the voices of all stakeholders.

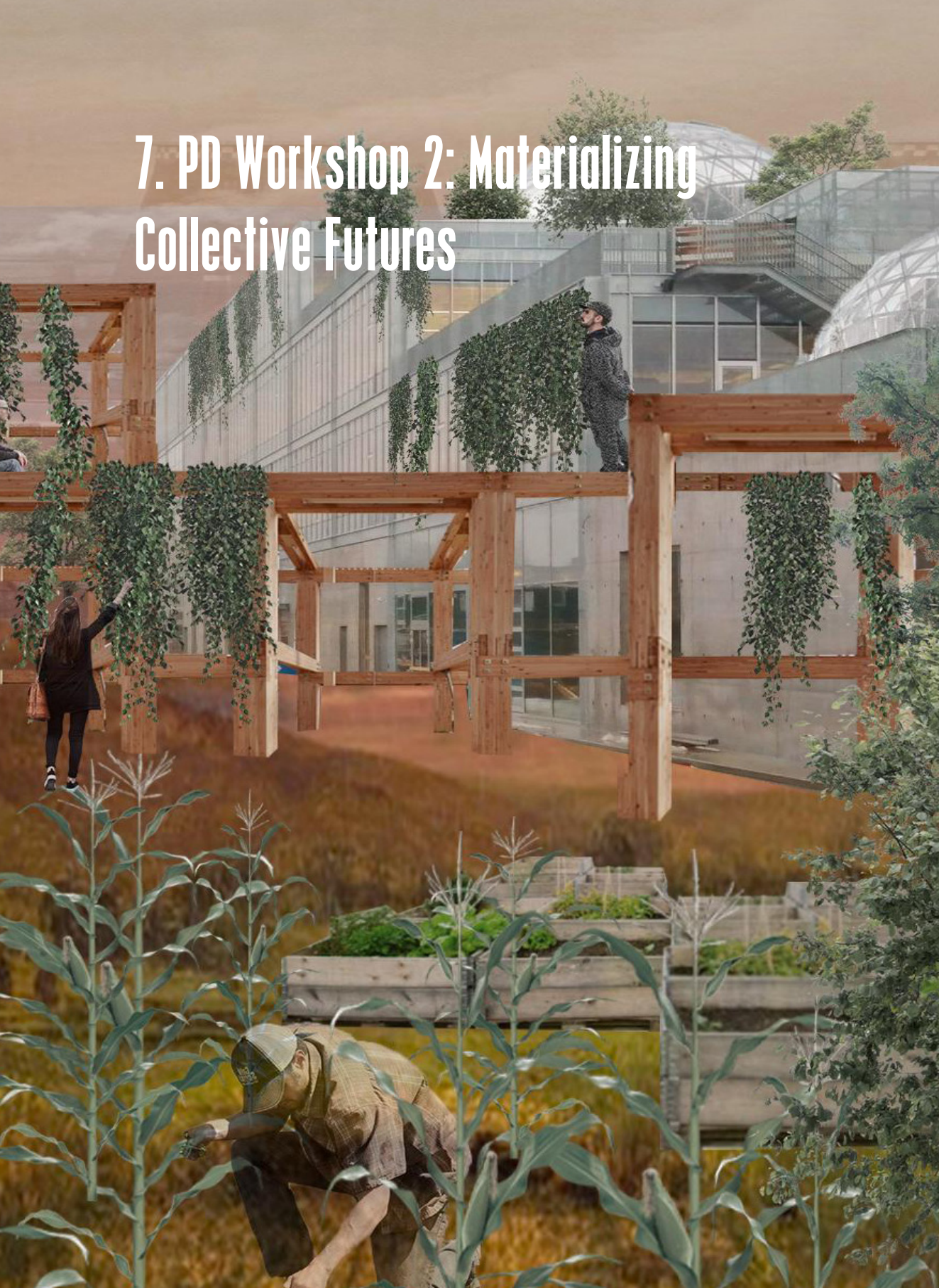
Yet, the challenges of the process were not glossed over. It was acknowledged that stress, fear, and emotional struggles hindered sustainable behavior. Stress emerged from varied factors, including rushed decision-making due to limited timeframes, difficulties in implementing learned methodologies, uneven workload distribution, and personal struggles. The culmination of these factors highlighted the need for refining the process to ensure better communication, workload sharing, and a less rushed design process.

By the workshop's conclusion, students had developed a more nuanced, critically informed understanding of responsible architecture, aided by their increased ability to articulate the relationship between their values and professional decisions more effectively. This evolution reflected the necessity for architects to continuously assess their intentions and the implications of their work, pointing towards the need for a new architectural culture that balances aesthetics, functionality, and social responsibility.



Design output from Materializing Collective Futures workshop. Made by students Anne Kristine Haagen, Khoshal Arghestani, Mathias Vang Christensen from Aarhus Architecture School.

7. PD Workshop 2: Materializing Collective Futures



7.1 Introduction

This chapter details the primary findings and recurring themes from a participatory design workshop (the second PD design experiment in this dissertation) titled, “Materializing Collective Futures.” The workshop was a collaborative effort between the author and PhD colleague, Joel Letkemann, whose work focuses on science fictioning architecture. Combining RA with science fictioning architecture, the workshop was designed to investigate relational sustainable behavior strategies by exploring three main themes for analysis. The first theme, Authorship, encouraged students to shape their work based on personal values. The second theme, Collective Storytelling, engaged students in speculative world-building to create a utopian document called the “Article of Hope” to stimulate open-ended dialogue and envision a future with long-term ecological aspirations that extend beyond the project site. Translation, which balanced community values with practical aspects of architectural projects, and a consideration of power dynamics in design decision-making. To maintain an objective viewpoint, in-depth data— including lecture contents and some graphical design results— have been omitted from the main text, but can be found in Appendix 3. Data analysis was conducted similarly to the previous workshop, using students’ logbooks, group discussions, and participants feedback to evaluate relational sustainable behavior strategies employed. The workshop showcased potential benefits for participatory design in learning environments, by inviting architects to envision future ecological scenarios, fostering empathy and collaboration among stakeholders, and calling for further research on their long-term effects.

7.2 Workshop background and Structure¹

The second participatory design workshop analyzed in this dissertation, “Materializing Collective Futures, “ was conducted online due to COVID-19 restrictions in January 2021. The workshop introduced two frameworks for teaching architecture within the participatory design: Responsible Architecture and science fictioning, which explores how stories about the future are built into the teaching of architecture. With these two frameworks in mind, we created three ways to approach teaching in a participatory design course: ‘Authorship’ encouraged students to think about how their personal values could positively shape their work. ‘Collective Storytelling’ brought in voices that are often left out, such as local community members and more-than-human local ecologies. And ‘Translation’ involves finding a balance between the community’s values and an architectural project’s practical aspects. It was a two-week participatory design work-

¹ Elements of this chapter also appears in the paper: Ricelli Laplace and Joel Peter Weber Letkemann, “Science Fictioning Participatory Design,” in Participatory Design Conference 2022: Volume 1 (PDC 2022: Participatory Design Conference 2022, Newcastle upon Tyne United Kingdom: ACM, 2022), 1–12. - which was published as part of my PhD dissemination.

shop attended by a variety of stakeholders: 16 second-year architecture students, three representatives from the Institute for (X), one representative of the local municipality, two representatives from Aarhus School of Architecture, and more-than-human participants, represented by local biologists and other experts in local plant and animal life. Half of the workshop was set aside for group activities, including stakeholder meetings, lectures, and tutorials, while the remaining half was for independent work. The stakeholders' engagement took multiple forms, including formal presentations, shared discussions, one-on-one dialogues, and informal conversations and site visits. Students were also urged to consider themselves as stakeholders and active participants in shaping the collective future of their school's surroundings, representing not only their own interests but also those of future generations of students.

7.3 Phase 1- Authorship

The first phase of the workshop (days 1-3) introduced the concept of authorship to help students develop their responsibility in crafting a collective future narrative, especially in the sense of 'responder', where students could understand themselves as stakeholders and authors of a local collective narrative to respond to ecological issues of the site. Although each student is an individual, the workshop encouraged them to comprehend how storytelling takes place in a conversational context. Beginning with the first phase, we encouraged students to consciously consider how they were shaping this figure of the author/architect within their project through dialogue, negotiation, and mutual understanding.

Asking who gets to narrate the future is critical to rethink responsibility and sustainable behavior in architectural projects. To encourage reflection on this idea, students were asked the following questions: what authority does an architect hold in a project, and how can they transition this authority into authorship? How can we encourage others to participate in narrating the story? To foster thinking on these questions, students were asked to think of their answers in the context of several distinct stages of authorship within the project: our authorship as tutors, the individual authorship of each student, and the collective authorship involving both students and stakeholders. The authorship phase engages with values explicitly, using intrinsic and collective values as the driving force behind our decision-making and design efforts.

Positionality is an important part of authorship. Beginning with the positionality of the workshop designers, we reflected on our roles as tutors who were both initiators and stakeholders and brought a specific set of values to the project. It was important for us to recognize that we are not neutral parties, nor do we aim to be. Our values, grounded in

an ecological worldview, encompass a dedication to social and environmental welfare, diversity, and inclusion and a desire for continuous reassessment of the discipline we operate within. Transparency about our positionality as authors and how it impacted our decisions while developing the workshop was an important part of our responsibility. Our positionality was communicated to participants through three lectures centered around our own research and values – which we see as inherently interconnected. In exercising our authority, such as by setting up the framework for discussion, we acted as facilitators, trying to limit our interference, although we were occasionally asked to respond to ongoing work.

To address the shortcoming of the previous workshop concerning the lack of representation of some stakeholders such as more-than-humans, we were joined by Professor Stefan Darlan Boris, leader of the LAARCH project, who represented the interests of more-than-human elements. He gave a talk about the unique plants and animals at the site based on his research with biologists. He also pointed out that the site was a historical swamp area that tends to gather water and will likely get wetter due to rising sea levels and climate change. He explained that the local plants that thrive in dry soil might struggle to survive as the climate changes.

Besides this extra attention to more-than-human stakeholders, we designed the workshop in a way that other stakeholders were introduced in the conversation since the start of the workshop, which allowed the students to start interacting and spend more time with them during the workshop. We also tried to balance equality in the time allocation for stakeholder interaction, and emphasized that no stakeholder was less important than the other, and therefore all should be understood as part of the collective authors of the site.

7.3.1 Connecting personal values with professional practice

Students were split into five groups on the first day, each containing three to four members. The first assignment was for them to express the values that shape their personal and professional lives by individually reflecting and making notes in their logbooks. A group discussion of their values followed this. This activity enabled students to identify the areas in which they could apply their values and influence the world, both individually and professionally. The emphasis on values aimed to bolster a student's sense of responsibility and desire to address ecological challenges in the project.

The logbooks revealed that students' values were already strongly influenced by sustainability and community, both of which were mentioned by a majority of the class, as well

as an appreciation of history and context. Reappearing words on the data related to their values were ‘honesty, integrity, and equality.’ The way they connected these values with their professional practice was expressed in diverse ways, such as focusing on thoughtful and sustainable building practices or using inclusive approaches to design that respects individual interests and fosters relationships. They used words such as ‘user-centered design, sustainability, adaptability, and inclusivity’ in design. Students showed a concert to be honest in their work, not just in terms of design and materials but also in how they engage with users and the surrounding context. There’s also a clear focus on creating inclusive, accessible spaces that serve the needs of diverse users. One student noted in their logbooks: ‘I build my life around the belief that true happiness and sense of purpose comes by contributing to our relationships in a positive way through acceptance, tolerance, and community (...) By creating architectural framework for community and safe spaces where people have the option to come together and interact around a common interest’. And another shared: “My determination is to help people through the art of building and sustainability... equality and non-discrimination are an important aspect of my life and my way of thinking... In order to have a future we need to incorporate and preserve our surrounding environment and make it the core of our designs.”. Therefore, students already seemed to have a fairly complex understanding of sustainability issues beyond technical ones. In this sense, instead of focusing on developing ecological worldviews or values, we as tutors focused on helping students see the connection between their values with their professional practice and responsibilities in the PD process.

Student’s reflections showed how this exercise helped students to deepen their understanding of how their worldviews and values can influence design decisions. For example, students reflected that the value of honesty can be translated into architecture that stays honest to existing environment and surroundings, is recognizable to people, and made in a way that people can feel connected to instead of alienated by its shape and materials. Therefore, honesty in architecture meant from them that the result didn’t need to be necessarily fancy but ‘architecture that shows it is a part of something bigger (it’s place, environment)’ and has a clear language to communicate ‘you see what it is, it is honest what it is built of.’ Another example is how some students connected the value of being curious and curiosity, which could be translated into how they approach the existing context. By being curious about local people, involving the users, and exploring already existing materials and resources. Another example was how students relate the value of trust to architecture, where they mentioned that the architect has to be a critical communicator of the user’s desire and build trust by investing in close relations. This also meant investing in small-scale/human-scale architectural solutions: ‘make architecture that are close to you, small scale, architecture that you can feel, work closely to users.’

Therefore, this exercise aided students in articulating how these values guide their practice and helped them identify which motivations come from external sources and which stem from their own convictions. While this was the first time these students had worked on a PD project, initial confusion was reported at the beginning of the first day, we believe that this values exercise helped to augment the students' engagement and motivation: "It was interesting to see everyone's presentations today and see how different and at the same time similar our directions are, even though we work from different values. I have become more involved in the project and look forward to seeing what happens".

After the students reflected on their emerging architectural practice, which is influenced by personal values rather than solely disciplinary norms, we shifted our focus to how they might collaborate. We requested them to express their values concerning their peers in their work groups. Following a mutual exchange of values, they were then tasked with cultivating a collective identity by assigning a name to their group. This self-naming exercise established a shared group identity and required students to reflect on how individual values intersect with those of others. Some names were directly derived from the group's professional aspirations, such as "Ethical Environmentalists" or "Contextual Pragmatism." Other groups based their names on a more abstract set of shared values, for instance, "Con-Pro-Con," derived from the Latin words *confido*, *probitatis*, and *consideratio*, meaning trust, honesty, and consideration respectively.

These exercises pushed the students out of their comfort zone, as they began the workshop discussing topics typically perceived as 'personal' rather than 'professional.' In doing so, it proved useful in unveiling the unconscious processes by which values originating from their life experiences and passions correlate to their professional and design practices. One student shared: "In the beginning of the day, I was a bit skeptical as it all seemed a bit personal talking about our personal values (...) later it made sense in regards to our way of thinking in a design process." These insights highlight how uncommon it was for students to think about the connection between their personal worldview and their professional practice. Furthermore, one student noticed: "...when forming an actual company or entering a company with aspirations and values, one ought to decide if they coincide or not, because it must be rather difficult to work together but in different directions:". This insight shows how this exercise was important for students to recognize the impact of shared values and a common ground between people to maintain a sustainable work-life balance.

7.3.2 Towards Collective Values

After facilitating this initial exercise amongst the students, we prompted them to repeat the process with their stakeholders. Students and stakeholders were encouraged to share their values, to start building a sense of collective, and invite students and stakeholders to think about their shared visions and responsibilities within the collective.

Together with stakeholders, we decided on thematic prompts that were assigned to each student's group, including: Architecture of Equality, Tangible Architecture, Lasting Architecture, Architecture of Togetherness, and Architecture of Common Ground. Each theme offered a perspective on a possible take on Responsible Architecture that stakeholders judged to be useful for the workshop. Although they were not designed to explicitly dictate or overrule the groups' self-expressed values, instead, they were intended to function more as an "optical device" in line with Donna Haraway's concept, serving as a thought stimulator or a lens for seeing beyond the constraints of one's own circumstances². This was to assist students in approaching the stakeholders and the site, using their assigned theme as a foundation for developing a shared worldview. For instance, the theme of 'lasting architecture' evolved to represent something far removed from mere material durability. As the group explored their shared values with stakeholders, they realized that adaptability in response to the community's needs was more vital to 'lasting architecture' than long-lasting materiality. Consequently, they incorporated 'lasting relationships' as a primary goal of lasting architecture, investigating how spaces could be designed to foster long-term relationships among people and with more-than-human actors on site.

Initiating the course in PD with a collective exercise of value sharing and goal setting was challenging for participants. In the beginning, some students expressed frustration due to the "...difficulties connecting all our values". However, this practice of deep listening turned out to be essential for comprehending the stakeholders and the site, and for arriving at a design that stakeholders and students felt was conceived in a conscious, thoughtful, and 'responsible' manner. In this regard, one student shared: "I've learned that even the smallest interventions require a lot of analysis and consideration for the stakeholders", and another added: "How important it is to make an overview of our values and intentions and how it could influence the design, which we always could return to and make sure we are heading in the direction we wanted to." Some students also noted that starting the project by negotiating collective values and balancing 'voices' of stakeholders was an important element of power distribution in the design process, and how architecture share human behavior and vice-versa. On that note, one student shared: 'with the value discussions and how architecture is able to rob the people of

² Natasha Lekes et al., "Influencing Value Priorities and Increasing Well-Being: The Effects of Reflecting on Intrinsic Values," *The Journal of Positive Psychology* 7, no. 3 (May 2012): 249–61.

power and influence, but also the importance of place attachment and how important it is to give people power and ability to shape their own surroundings and have a “voice.” To make the building-people relationship more equal. Architecture shapes us, we all shape the architecture.’ This insight shows the importance of recognizing how shared values and deep listening can impact design decision-making for architects. This type of exercise invites students to relate to others on a personal level, and helps them to develop an alternative type of relationship, architect-client or architect-user. Connecting to the interviews, this method can help develop the architect’s view of local people as specialists, and invite them to use more inclusive approaches to design processes.

This engagement also illuminated instances where deep listening proved to be challenging. In the case of more-than-human site stakeholders, students confronted the difficulty of incorporating local nature as a decision-maker. Consequently, they had to devise various strategies to address this communication dilemma. Some students took an approach to anthropomorphize nature, attempting to understand nature by personifying it, imagining it as a human-like entity with specific needs, values, or rights: “I imagined nature as a person, and how that person might have some values they stand by... Nature is everchanging. It is important to give it space.” Some students took an observational approach, making direct observations of the natural environment as a way to understand its needs and characteristics: “We went to the site and took notice of the environment of the space; how did it rise and fall; how did people move and inhabit it and what materials could be found in the area and used in the construction of our intervention.” And other students highlighted the biodiversity and conservation aspects, emphasizing the importance of maintaining and conserving existing natural features in the area and understanding more-than-human stakeholders from a specialist perspective: ‘We mostly tried to discuss the potentials of the nature for the other stakeholders and not trying to personify the nature as its own stakeholder’ and “Try to maintain the sources and species that live on the current place.” Although there was a strong sense of respect and recognition of the importance of nature, students grappled with the concept of nature as a stakeholder through several strategies, and some struggled to fully conceptualize how nature fits into the traditional stakeholder model. These difficulties highlight a need to develop better methods to include nature and more-than-humans in decision-making processes in architectural practice.

7.3.3 The architect as a stakeholder: reflecting upon responsibilities and roles

To underscore the students’ roles as stakeholders and the significance of their input in the project and decision-making process, we specifically asked students to reflect on their positions as architects. They were asked to contemplate their role as stakeholders

and users of the site, and consider what responsibilities they could assume to contribute positively to our collective future at this location. Thinking about the roles the architect could play in this process, and updating from the previous workshop, we designed fewer roles options since we had smaller working groups, but focused more on connecting the roles descriptions and tasks with architectural language. We encouraged students to work together on their project while also taking individual responsibility for certain roles within the team, and aligned roles to the different phases of the project. We emphasized three roles that the architect could play in a participatory process:

- Architect as Bridge: where students were expected to uphold and develop the connection to community values, while also helping to join together diverse views, desires, and power dynamics among stakeholders.
- Architect as Constructor: where students focus on the physical and technical aspects of the project, which involves turning abstract ideas and qualitative data into a concrete design.
- Architect as Storyteller: where students needed to keep improving the narrative process linked to the project, adjusting it as the project changes and develops based on collective decisions.

Relating to the architect's role as a bridge, some students noted the importance of involving various stakeholders in the decision-making process, such as local inhabitants, nature, and neighboring institutions. They advocated for an inclusive and collaborative approach, ensuring a multitude of interests are considered based on dialogues facilitated by architects. Reflecting upon the role of the architect as a bridge, a student shared: "Give people, the locals and the nature a voice according to how to shape our surroundings. Make them participate in the process and influence it." Concerning the role of the architect as a constructor, students highlighted the importance of employing their architectural skills to translate gathered knowledge into design: "It is very important to understand the stakeholders, but it is also very important to take this knowledge and then make architecture out of the essence." And lastly, reflecting upon the architect's role as a storyteller, the students indicated that for this particular project, they believed that active community engagement was critical. They suggested connecting with the existing community, understanding various stakeholders, and proactively interacting with them to build a shared future at the site. The students emphasized the importance of establishing an inclusive environment and cultivating shared culture and values from which a collective narrative could evolve: "By seeking to interact with the community and culture at this site. We are all people with an interest in art, design, and architecture, so why shouldn't we be able to meet on a common ground based on these values?"

In the previous workshop, the role exercise had a few shortcomings, firstly because some students had difficulty making connecting the Dungeons and Dragons theme with architecture practice, secondly because students forgot their roles as the workshop entered the design phase, and lastly, they also forgot their positions as stakeholders of the site. Therefore, in the updated version of this exercise in the second workshop, we made sure to connect different roles with different phases of the projects, and strengthen the role of students as users and stakeholders of the site. Upon reflection, a student shared: “I can contribute with my own experience of the school and how I think the institution is able to work and develop along institut for X. Next, I can use my so far professional experience of architecture, and how it engages and includes its users.” With feedback from students, we believe that the exercise enabled students to recognize and articulate the importance of their future roles as architects and active students in shaping the site’s future, emphasizing the need for inclusivity, dialogue, and collaboration.

7.4 Phase 2- Storytelling

In the second phase, we employed storytelling as a tool to negotiate stakeholder’s long-term aspirations, diverging from short-term, utilitarian futures. These aspirations were encapsulated in what we labeled the ‘Article of Hope,’ a utopian document that brought together the hopes and worldviews of stakeholders. The intent of this document was not to establish a rigid, fixed vision of the future, but to stimulate an open-ended dialogue, acknowledging that utopia is a practice, not a declaration of finality³. In this phase, we introduced speculative world-building to introduce the science fictioning methodology to the workshop and the ‘article of hope’ exercise, which the students then focused on designing in conversation with stakeholders. In this phase, we elucidated the connection between science fiction and the concept of ‘worlding.’ Similar to works of SF, the ‘Articles of Hope,’ born out of stakeholder participation, do not merely reimagine the site but also embody a new imagining of the world. These visions go beyond the specific confines of the project, enabling the reader to contemplate the broader ecological implications of specific design decisions. To uphold the ‘Article of Hope’s’ adaptability, highlighting its role as a guide rather than a definitive blueprint, we emphasized that the ‘Article of Hope’ is an evolving document, subject to continuous revision. As conversations with stakeholders progressed and the project’s requirements became clearer, students refined their ‘Article of Hope’ thought the workshop.

7.4.1 The Article of Hope

³ Ruth Levitas, *Utopia as Method: The Imaginary Reconstruction of Society* (Houndmills, Basingstoke, Hampshire ; New York: Palgrave Macmillan, 2013).

The ‘Article of Hope’ exercise cultivated a vision of what the site might look like in 50 years. The term ‘article’ was deliberately chosen to not constrain the modes of expression; this could include any form of articulation that harbors elements of future imagination - be it drawings, diagrams, collages, or texts. This exercise leans heavily on modes of expression that are quintessentially science fictional. Like many works in this genre, it makes a possible future visible and imaginable to others in the conversation between stakeholders. The ‘Article of Hope’ is developed by students through multiple iterations in dialogue with other stakeholders, serving as a medium to share hopes for the future and explore the potential implications of each proposed future world. The ‘Article of Hope’ aimed to shift the focus from the immediate needs of individuals to long-term aspirations that can unify a community.

To negotiate the competing interests of various stakeholders, the group ‘Con-Pro-Con’ began by creating an intensified ‘Article of Hope’ for each stakeholder individually. These intermediary visions portray the site in varying ways: as an Edenic paradise overtaken by more-than-human stakeholders, as a proliferation of Institut for (X) ‘s characteristic container and shed architecture, and as a dystopian inversion of the first two images (figure 1). These visions provided a discussion point for stakeholders, helping them to visualize how their ambitions might align or clash with each other. The ‘Articles of Hope’ that emerged from this strategy articulated the tensions between stakeholders. However, the exercise also revealed the possibility of existing power imbalances to the students. They realized that to truly manifest an architecture of equality, each agency must be represented equitably. As one member of the group noted in their logbook: “if it is possible to make the huge school less dominating and let the nature at the site and the Institut for (X) have an important voice?”. This insight became the primary impetus for their subsequent intervention (figure 5).

In the spirit of Haraway’s call to ‘stay with the trouble,’ we underscored the importance of recognizing the project’s historical and material conditions⁴. To facilitate this, we presented possible future changes to the site and the city, urging students to view these changes as sources of inspiration rather than threats. Some potential changes we discussed included rising water levels due to climate change and sea-level rise, shifting habitats for flora and fauna, demographic and cultural transformations due to increased immigration and an aging population, and, more abstractly, changes in technology and infrastructure. Among the various future scenarios, the images depicting potential flooding on the site significantly impacted the students.

4 Donna Jeanne Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, *Experimental Futures: Technological Lives, Scientific Arts, Anthropological Voices* (Durham: Duke University Press, 2016).

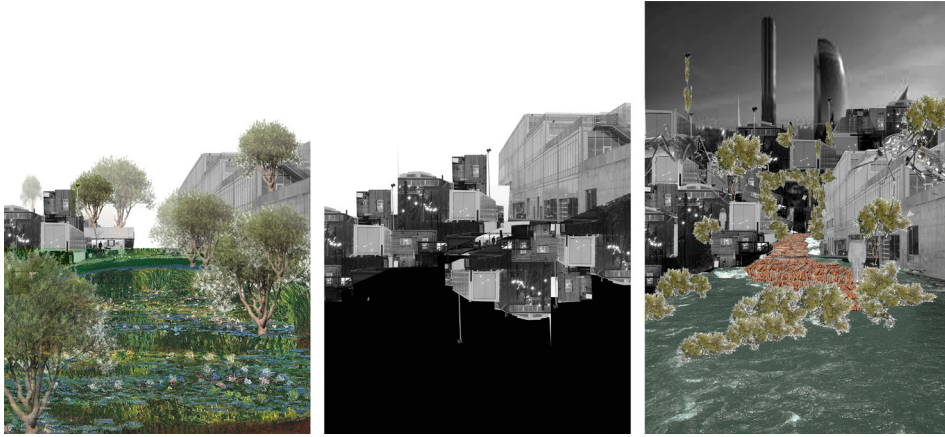


Figure 1: Inicial collages for the *Article of Hope*, from discussions with stakeholders, group ‘Con-Pro-Con’.

These images, derived both from real data and popular culture, appeared to command the students’ attention, possibly because sea level rise represents a tangible change, in contrast to more abstract cultural or societal shifts impacting the site’s ecology. Despite this emphasis on climate change, we noted that such a focus could potentially overshadow other possible avenues of exploration.

Nonetheless, even images that predominantly illustrate the implications of a changing climate can sow the seeds of more compelling possibilities for the site. For Group 1, the prospect of rising sea levels initially prompted them to a radical consideration of the site as water, rather than land, with the several buildings on site becoming islands in a new sea (figure 2). Though it was challenging to perceive this vision as utopian at first, the development of this ‘Article of Hope’ facilitated a discussion about ‘bridging’—both literally and metaphorically—as they continued to refine their ambitions for the site. Their final proposal incorporated a gallery space envisioned as a “bridge”—a shared space connecting Institut for (X) and the school of architecture in both a physical and metaphorical sense.

The focus of proposing new possible worlds, illuminated not only how global issues can inform local design choices, but also how small-scale changes can accumulate and contribute to global change. Reflecting on ‘worlding,’ one student recorded in their logbook: “I felt less afraid of the future and the challenges we will be facing, because for a minute I saw how we are able to change the course we have set for ourselves and build a world that is better than today if we are willing to finally take action to do so rather than keeping

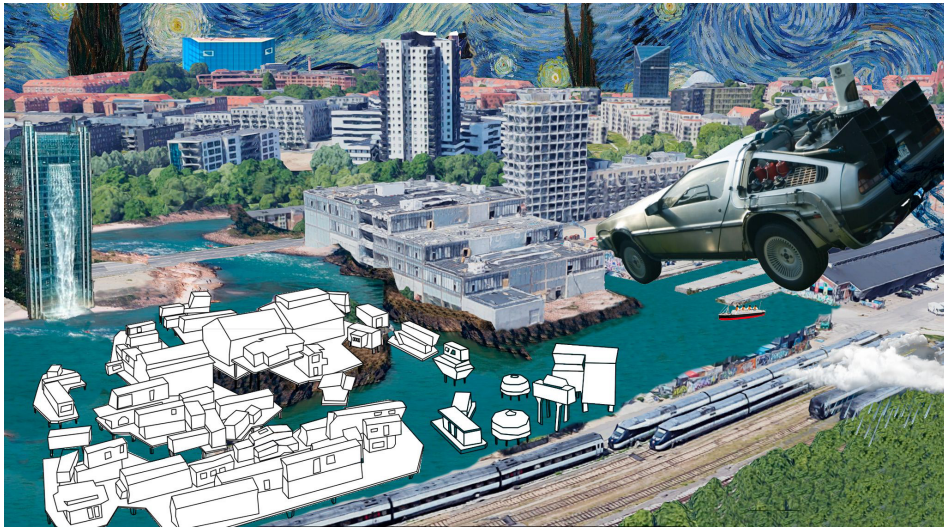


Figure 2: Article of hope from 'Group 1'.

on a direction where we are not actually interested in the destination.” This showed that working collectively to imagine the future from diverse angles and encompassing not only possible catastrophes but also hope, helped students to negotiate anxieties and fears about the future, and feel motivated to find how architecture can take small steps in the present that would help us walk towards the hopeful future we imagine.

7.5 Phase 3 - Translation

The last four days of the workshop were dedicated to the third and final phase, where students had to synthesize the long-term aspirations of all stakeholders and propose an initial step towards actualizing the environment as envisioned in their ‘Article of Hope,’ concretizing the values and hopes that had been cultivated during the preceding stages. This phase was considerably shorter compared to typical design exercises. However, by devoting the first half of the workshop to an understanding of stakeholders’ perspectives, they were able to present design proposals that more fully reflected the ambitions of each stakeholder. For the design phase, we introduced the VAR exercise and had a lecture on materializing architectural concepts focusing on materials and the environmental impacts of material choices. We also had a grasshopper tutorial as a mandatory part of the curriculum, and students were told they could use the program for their design creation if needed. Students were also encouraged to contact stakeholders by themselves during this last phase according to their needs. The final day was dedicated to presentations and feedback from stakeholders, but acknowledging that no architectural

project is ever truly complete, we encouraged students to maintain a sense of openness and adaptability in their designs, leaving room for continued evolution, as futures are imagined and reimaged together by a community.

7.5.1 Value-Action-Design Response

Reviewing lessons from the previous workshop, we updated the VAR exercise and dedicated a full day to helping students to use and develop this tool according to their design projects. We also instructed students on how they could use this tool to explain their project to stakeholders and aid them in negotiation processes. As noted earlier, pro-environmental values were already strongly ingrained among students. This exercise was devised to help students solidify the connection between individual and shared values identified in Phase 1, concepts of the future from Phase 2, and their design proposal in Phase 3. In the VAR exercise, students partitioned their work into three columns (figure 3). The first column captured the values that emerged from their dialogues with stakeholders. Students chose keywords that best encapsulated these values and penned a brief text to explain the significance of each keyword. The second column was devoted to the attitudes and actions they wished their design to encourage in response to the values. Here, the attitudes and actions cultivated within the ‘Articles of Hope’ served to foster dialogue and mutual comprehension during the second phase. The third column saw students beginning to hypothesize how design ideas could correspond to each action. Depending on the desired action, the design response could include references, sketches, or text, with an emphasis on more concrete responses.

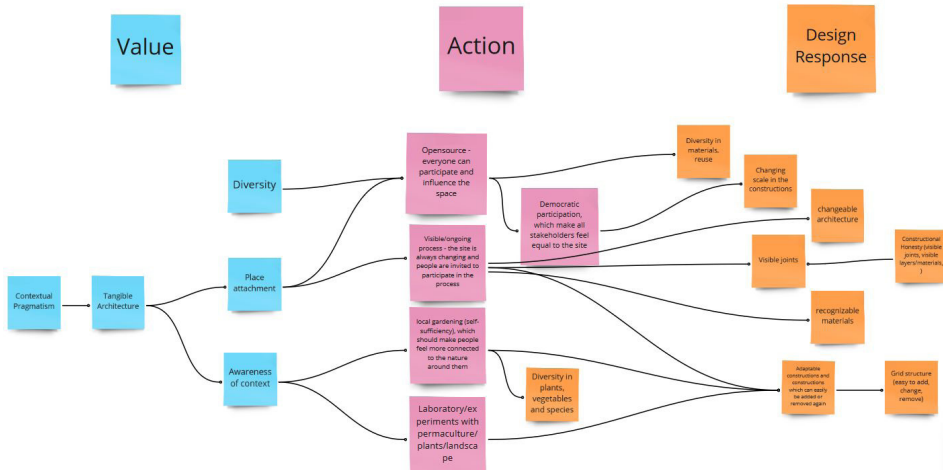


Figure 3: VAR exercise from the group ‘Contextual Pragmatism’. Detailed information is in appendix 3.

This exercise was an experimental attempt to ‘materialize’ conceptual ideas, translating the speculative narrative into an alternative medium - specific programmatic elements, spaces, materials, or tectonic expressions. It proved to be an effective tool for connecting the various phases of the workshop, aiding students in aligning their design proposals with the challenges and values they had delineated for their particular project and maintaining an overview of the shared values and agreements with stakeholders. Upon reflection on this tool, a student noticed: ‘I was very intrigued by the value-action-design exercise. I thought it was a great way of discussing the direction of the design in a group and choose exactly how we want to change the behavior in the site and the way people interact with it. I think it will help us stay on track with our values as we move forward.’ This insight is important for PD projects because many factors can potentially interfere with the collective ‘vision’ that has been established, due to technical contingencies, shifts in priorities, and more. In this sense, the VAR joins the ‘Article of Hope’ as a useful tool to retain focus on stakeholders’ values and visions as they iterate through design proposals, and keep track of the reasoning and methods behind design decisions.

7.5.2 Overview and Final Designs

To provide an overview of the workshop and the implications of the two methodologies, I will present the process and design outcomes of two groups through all three workshop phases. Using the VAR exercise to guide them concerning stakeholders’ hopes and values, students made decisions about their proposal’s spatial needs, material systems, assembly methods, and architectural functions. From the first phase, a group that identified themselves as “Contextual Pragmatism” pinpointed the core values of honesty, communication, and community. Following the collective values discussion with stakeholders focused on the theme of ‘tangible architecture,’ they incorporated concepts of diversity and place attachment. In this context, tangible architecture would imply the use of locally sourced, easily manipulated materials and simple building techniques. This would enable a wide variety of individuals, even those unforeseen, to build or modify it, thereby fostering new attachments to the place.

During the second phase, they recognized a focus on sustainable food production, self-sufficiency, and user collaboration, and were able to discern similar motivations from the perspective of other stakeholders. They employed their ‘Article of Hope’ to envision how the shared spaces between the Aarhus School of Architecture and the Institute for (X) could be utilized by urban farmers in the community, proposing open kitchens and dining areas to exchange food cultures. This exercise allowed them to articulate how values, such as place attachment, could be leveraged to transform the

neighborhood into a food-producing garden, with architectural interventions designed to tend to the gardens and provide spaces for neighbors to share meals together.

Ultimately, during the VAR exercise, they converted ideas into design choices that echoed the values of tangible architecture. They chose simplicity over complex geometries, concentrating on a landscape and an architecture that is understandable and adjustable by stakeholders, both current and future users, which they termed “constructional honesty.” Rather than proposing a specific architecture, they suggested a building module based on the dimensions of readily available materials, establishing an assembly method and several proposed uses that remain open to future development by all community members (figure 4).

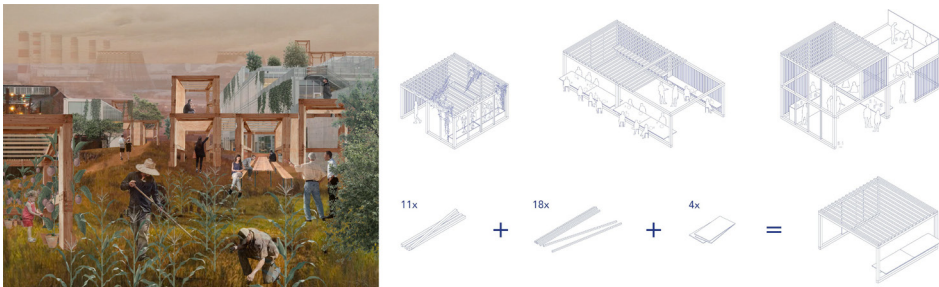


Figure 4: Proposal from group “Contextual Pragmatism”, a tangible community-oriented building method.

In seeking to better understand stakeholders’ values, the group ConProCon identified a potential power imbalance at the site, where the needs of more-than-human stakeholders were underserved. They included ‘consideration’ as one of their values, considering the site’s natural elements, which, while unable to voice opinions, are important stakeholders. One of the students in this group shared: “If we work against nature, we work against ourselves. It is a stakeholder without a “voice” plants, trees and the nature communicate indirectly. Nature has rights like the human rights.” While creating their ‘article of hope’ (figure 1), they realized that each stakeholder must be represented equally for architecture to embody equality. One of them shared: “nature gives equality – it is there for you no matter who you are. For example, to sit under and get a hug from the tree. That is a nice way to think of equality at our site – that nature could give this place equality – it is for everybody.” Through the VAR exercise, they proposed design solutions that balanced this concept of equality for more-than-human stakeholders with the needs of other stakeholders. They visualized nature as a stakeholder that could act as an ‘equalizer’ between the two institutions, linking them with a lightweight structure that allows the organic growth of the plants.

Their design proposal began with literally uplifting the ground, thereby creating a dedicated space for the site's sensitive plant species. This gesture leveraged the more-than-human stakeholder as the organizing principle behind the intervention, defining the scale and the criteria of materialization. Later, they suggested a wooden framework highlighting the site's ecology, evolving with the ongoing nurturing of this ecology (figure 5). This space becomes a 'landscape laboratory,' with each stakeholder responsible for maintaining and utilizing the area. They proposed a structure that adapts as needs shift, maintaining two distinct ecological zones above and below, even when potential flooding poses a risk to the site. This design solution carries the hallmarks of a post-human social contract. It identifies the non-native plants as the most vulnerable stakeholders, positioning them atop a mechanical infrastructure reliant on the continuous care of the other stakeholders.

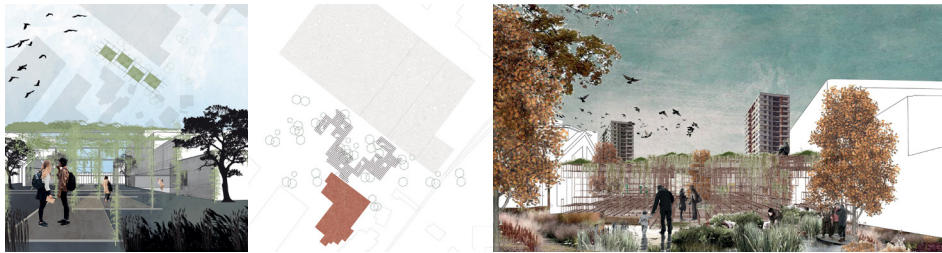


Figure 5: *The Article of Hope* (left) and the final design with a 50-year speculation, from "Con-Pro-Con".

In both group examples, we observe that the sequence of exercises and the evolving understanding throughout the workshop assisted each group in keeping their project's guiding values in focus. They developed mechanisms for idea-sharing with stakeholders, effectively addressing both the short-term impacts and long-term aspirations of the community. Each group managed to strike a balance between the multifaceted demands of the project and a specific architectural system that is not only suitable for the present but also sufficiently adaptable for future needs.

7.6 Conclusion

This chapter explored the results of the second PD workshop of this thesis, combining methodological approaches *from* RA and science fictioning – where students explore their hopes for the site's future with one another and with stakeholders. While the workshop focused on testing an updated version of the relational strategies to sustainable behavior explained in the previous chapter, it also included new tools such as 'worlding' to frame collaboration around ideas of futurity, and ecological aspects of the site. The workshop was attended by various stakeholders: architecture students, representatives

from the Institute for (X), members of the local municipality, and more-than-human participants, represented by local biologists and other experts in local plant and animal life. The workshop uncovered three phases that guided the learning methods: authorship, storytelling, and translation.

In the first phase, students explored authorship and the many authors (human and more-than-humans) that can produce a work of design, as well as power dynamics in design decision-making. From each participant's personal, intrinsic values, we developed into conversations with stakeholders, which asked to create shared values as the starting point of the participatory process. These exercises allowed people to be explicit about their values and worldviews, and articulate common values as their baseline for collaboration. From an analysis of their self-reported logbooks, we believe these exercises helped students understand their motivation and agency in the project and increased their engagement in the process. It helped to reveal the often-unconscious processes through which one's own values are connected to one's design practice, and how this might be productive in one's professional life. The exercises also helped students understand power imbalance issues in decision-making between stakeholders. Finally, we observed that these exercises enhanced student's individual responsibility and desire to respond holistically to issues in the project, and to develop empathy and an awareness of how others are implicated in the design process.

In the second phase, students were able to propose future visions that remained open to continued change together with the ecology of actors on the site. We used science fictional storytelling as a way for stakeholders to communicate their long-term hopes and aspirations for the site. The article of hope that stakeholders create together acts as a guide to future action and decision-making and as a tool to engage stakeholders in imagining future ecological scenarios. The attention to futures meant that each stakeholder's immediate needs and demands were subordinated to farther-ranging hopes for the future that could be imagined together. These hopes became the basis for continued conversation and collaboration between stakeholders. In this way, the article of hope further developed an empathetic relationship between stakeholders as they shared future ambitions. The unique possibilities of speculative storytelling are a way to include actors who otherwise would not necessarily be represented, from the 'silent' voice of more-than-human ecologies on-site to actors on a global scale, such as climate change. Recognizing students' general difficulty during the workshop in including nature as stakeholder, future research could explore more methods to include a greater agency from more-than-human stakeholders in PD and document its impacts on design.

Finally, the course closed with a translation of values and hopes into design proposals for the site. We tested the Value-Action-Design Response exercise, which showed to be a valuable guide to design decision-making, revealing to students how choices in design could never be innocent, but a response aligned with values and future hopes in architecture. While most students successfully translated values to design choices aided by the VAR exercise, further critical exploration and development of this method is needed to facilitate continued stakeholder reflection on materializing conceptual ideas into design choices.

These methods are part of ongoing research, and we have already noted several beneficial outcomes for PD and architectural learning. Further study is needed to understand the long-term effects of the methodologies, especially how they impacted students' future projects and design practice. However, we found that staging exercises to probe each stakeholder's deeply held values and imaginations for the future developed empathy between actors and provoked shared decision-making, becoming the impetus to bridge local and global ecological demands and alternative worldviews, and translate abstract ideas to the specifics of design. While we have documented these methodologies in an educational setting, further research could explore how they impact participatory decision-making in practice.

Rather than the future being imagined as the province of the architect alone, Materializing Collective Futures described a project that asks students to act as the intermediary in negotiating futurity between several stakeholders on a contested site. This negotiation of futurity started with students examining their own motivations for practice by articulating their personal values. These were leveraged in a participatory process of co-creation with stakeholders. Rather than start from the immediate needs of stakeholders, the focus on values and worldview primed students and stakeholders to begin the project by articulating their long-term hopes for their neighborhood. These were captured in the 'article of hope,' a utopian document of each stakeholder's hopes and worldview, articulating utopia as a practice, not a declaration of finality. After the article of hope was used to communicate and synthesize the long-term ambitions of all the stakeholders, and the work of design began, we encouraged students to consider maintaining openness and contingency in the project, realizing that no work of architecture is ever finished as complex, coeval and compossible futures are imagined and reimagined by a community together. As one student's logbook entry reminds us, "everything is impossible until you have imagined it – a nice way to think about the future."



A photograph from the first workshop of the SSA course. Image courtesy by Critical Concrete.

8. The Sustainable—Sustainable Architecture Course



8.1 Introduction

This chapter presents the findings of a study conducted on the postgraduate course ‘Sustainable Sustainable Architecture,’ provided by Critical Concrete (CC) in partnership with Porto Superior School of Art (ESAP) in Porto, Portugal. The one-year-long course was a mixture of online lectures with on-site participatory design workshops. I participated virtually and in person, conducting interviews with students, teachers, course designers, and coordinators. As a comparative study for this thesis, I studied the course’s strategies to impact students’ sustainable behavior. This chapter will focus on exploring strategies that mainly impacted students’ behavior change according to themes that appeared from the data collection. The specific data collection and analysis methods were explained in chapter 4, and the full description of the course’s content, background and transcriptions can be found in appendix 4.

8.2 The SSA course overview

Critical Concrete (CC), a non-profit cultural association established in 2015, is dedicated to sustainable urban design strategies. As part of their commitment, they initiated the ‘Sustainable-Sustainable Architecture’ (SSA) course in 2021 in partnership with The Escola Superior Artística do Porto (ESAP), a non-profit higher education institution in Porto. This year-long postgraduate course adopts a hybrid approach and is delivered on the online learning platform Criti.co. The SSA course amalgamates online, interactive coursework with six weeks of practical construction workshops in Porto. These workshops are held at CC’s headquarters, a historic building that functions as both an educational hub and a living laboratory for hands-on construction. It also serves as a community center, hosting events such as the ‘Repair Festival’ that transforms the space into a dynamic workshop, providing a range of repair services to the community and advocating for sustainable living.

The course, hosted in this interactive environment, fosters an ethos of sustainability focused on inclusive, affordable, and accessible approaches, strongly emphasizing human rights, inclusivity, and democratic participation. It aims to balance theoretical and practical learning, encouraging students to actively engage with their surroundings and apply their academic knowledge to real construction projects.

The curriculum focuses on both material and social sustainability in architecture. It’s designed to equip students with the necessary skills to initiate and manage interdisciplinary construction projects while developing an understanding of the need for environmentally friendly construction principles and a shift in conventional building meth-

ods. The course is divided into two primary sections, focusing on sustainable materials and social sustainability, leading to interdisciplinary learning modules (figure 1). These modules range from technical subjects such as rammed earth construction to social architectural perspectives such as participatory design.

- ▶ Sustainable Construction
- ▶ Natural Building
- ▶ Ecological Cities
- ▶ Social Cities
- ▶ Vernacular Construction
- ▶ Participatory Processes
- ▶ Sustainable-Sustainable Projects
- ▶ Practical Workshop



Figure 1: Learning modules and related courses. Image courtesy by Critical Concrete.

The team contributing to the course comprises practitioners and specialists from diverse fields such as architecture, urban planning, psychology, anthropology, geography, and entrepreneurship. Furthermore, the focus on participatory design, and the workshops developed together with local communities. In this sense, the body of stakeholders in the design process contain students, experts, and locals (figure 2) that interact and exchange knowledge during the design process.



Figure 2: Diagram of the SSA course approach to the design process. Image courtesy by Critical Concrete.

This blend of expertise infuses the course with a holistic perspective on sustainability in architecture. Furthermore, the course promotes using eco-friendly construction methods and natural building materials. It prioritizes low-tech, low-waste applications to teach students how to adapt traditional construction techniques to meet contemporary needs. Additionally, the program heightens awareness of the significance of inclusive and intersectional approaches in urban planning. It stresses community engagement and participatory design, particularly involving populations at risk of social exclusion, and equips students with the necessary frameworks to organize and fund sustainable or social projects.

In the 2021-2022 edition of the SSA program, I interacted with the 24 students from diverse professional and cultural backgrounds that participated. They represented a multitude of professions, from architects, urban planners, and liberal arts professionals, to designers and engineers. These students, ranging from recent graduates to seasoned practitioners, hailed from various continents, including Europe, Asia, South America, North America, and Africa. While some were employees at architectural firms or ran their own studios, others were involved in projects ranging from small-scale interior design to large-scale urban renewal or social housing. Although their familiarity with sustainable architecture varied, their common goal was to deepen their understanding of sustainable architecture and more effectively integrate it into their work. The course's most impactful aspects for students' sustainable behavior are summarized in the following themes.

8.3 Relational strategies

The Sustainable-Sustainable Architecture (SSA) course used several relational strategies for sustainable behavior in online learning and the hands-on construction of real projects and social practices in Porto. In the online part of the course, students had access to primarily pre-recorded materials with interspersed live sessions where students interacted with their peers and course tutors, discussing questions, addressing concerns, or working through assignments.

8.3.1 Connecting course content with personal background

The students mentioned that one of the highlights of the course was the case study tasks that helped students link the theory they learned online with practical examples from their own cultural backgrounds. Tutors asked students to find connections between what they were learning in the classes with local examples from their neighborhoods or countries, focusing on local ecological solutions that apply to their specific environ-

ments to connect between their learning and the environment around them and prompt students to contemplate how they might apply the lessons learned in their own cultural and environmental settings, identifying potential applications and limitations. This exercise helped bridge global issues to local issues, focusing on a praxis approach to balancing theory and application. It also helped students with skills and knowledge that they can leverage in their unique contexts and countries. The goal wasn't to replicate exactly what they've learned in practice but to inspire an alternative mindset and stimulate investigation into locally viable sustainable solutions rooted in their culture.

For instance, Lia mentioned the challenge and fascination of applying learned theories about vernacular architecture to examine and comprehend the structure of buildings around her: 'and then to go to choose a building and to have a look on all that stuff and to really get an idea and dig deeper and deeper and to explore a building differently and to draw them, getting really close to the content.' By focusing on individual case studies made by students themselves, the course highlighted the exploration and understanding of theoretical construction concepts with buildings and places familiar to the students.

Many students mentioned their appreciation of the immediacy of transitioning from theoretical knowledge to practical case studies, and the freedom to select their focus of study, which allowed them to align their academic pursuits with their personal interests. The autonomy and flexibility provided by the course appear to be key aspects of their positive learning experiences, as expressed by Fran: 'It was a very quick jump from what we were taught in the lesson to directly applying it to something that we were quite free to choose by ourselves.' Helen added that she valued the course's structured yet flexible approach, which provided clear guidelines and tasks but allowed for autonomy in when and how they were completed. This element of freedom to manage one's own time, combined with the opportunity for hands-on workshops, contributes significantly to her positive course experience: 'Freedom is not really a feeling, right? But, it feels like it, because we can set our own time and do whatever we want in the meantime. And then come here for the workshop. I really like it.'

Iaza expanded on this by discussing the importance of personalizing one's educational experience. He appreciated the flexibility and individualized approach of the course, and being able to decide the depth of involvement in each course by deciding on your own case studies. He shared: 'I could choose this kind of case study, I could learn this much of, but if I find it interesting, I could dedicate more time for it and learn much more. I like this individual approach to each course, and also learning from each other (...) really allowed me to at least to learn a lot from my colleagues and what they're doing.' Similar to Iaza, other students also shared that seeing case studies from their colleagues with

the same concepts but applied in diverse parts of the world helped them expand their understanding of theory and application, and helped them develop an understanding about sustainability issues globally.

8.3.2 Building community within diversity

One highlight of this approach was when students presented the case studies in live sessions that were focused on knowledge exchange between peers and tutors. Students mentioned feeling inspired by the fascinating diversity in applying similar concepts and tools across diverse backgrounds. The case study methodology greatly enriched the course, offering varied perspectives on common problems. Given the diverse origins of the students, everyone had the chance to learn about distinct types of vernacular architecture, deeply influenced by the availability of natural resources in each region, or differing democratic urban processes, shaped by their specific governmental structures and cultural backgrounds. This exchange encouraged a broader understanding of sustainability practice and fostered an ecological approach to thinking about materials and society in students. Furthermore, it helped students feel connected to others and learn about similar struggles and interests, even if they were from diverse cultures.

Students emphasized the importance of social integration for their engagement with the course. Also, they acknowledged the difficulties experienced during the initial stages of the course due to a lack of established relationships. Students mentioned that the course could have even more time and opportunities for social interactions among people, online and in person, because, according to them, that was when they really learned from each other and had mutual support. One of the students, Greg, admired the collaboration and mutual respect in the online course. He found the interpersonal dynamics and interactions between the students, coming from several parts of the world, to be the most enlightening aspect of the course: *'you've got 25 people from all over the world operating in an environment of respect and cooperation and that's gotta be acknowledged. And we are learning a little bit of technical stuff, but the way we are interacting and, I think that for me has been the most empowering or enlightening aspect of this course.'* This insight reveals that integrating diverse perspectives on sustainability from different cultural backgrounds in learning can be a powerful tool to create feelings of connection and enhance students' motivation.

Another important point students mentioned that made them feel connected was being able to collaborate and exchange between diverse cultural backgrounds. Many students appreciated working with people from diverse cultural backgrounds and learning from each other's unique skills and perspectives. They also expressed that knowing that peo-

ple from all around the world and from diverse backgrounds shares similar feelings, desires, and challenges related to personal and professional challenges they face when it comes to work within the sustainability field in architecture, made them feel less alone. This experience also helped them to feel more engaged and hopeful to find a group of people and experts that shared similar worries and worldviews. Therefore, the cultural exchange and cooperative work environment were crucial aspects of the course. In this regard, Gin, an Iranian architect based in the USA, shared: ‘the most achievements of this workshop that we’re all together from the different backgrounds (...) different culture and the different levels of knowledge.’ Gin also shared that it was very enriching for her to learn not only from the tutors during the course, but from her colleagues, and that this experience of learning from each other helped them to feel closer and connected.

Some students mentioned that the course platforms focused on exchange helped enhance feelings of belonging and connection between people. Iaza, an urban planner from Jordan and currently working in Berlin, mentioned that the time he had with other students through the online seminars and the case study exchanges helped him to feel connected because he realized that people had a lot of values in common, in contrast with a superficial focus on getting a degree: ‘we have so much like mutual interest, interest that it’s for me, creates the added value instead of having it in a course where we’re all sitting to the same curriculum cause we’re being forced to it because we want to have this degree.’ Fran also appreciated the seminar-style sessions, where the lessons were more discussion-based, allowing students to learn from each other rather than just from the instructor. This approach was found to be refreshing compared to conventional top-down teaching methods: ‘at the end we were almost, I felt sometimes we were doing the class by itself, just talking to each other and the teacher was just kind of guiding a little bit or asking questions, but we were learning from each other, more than just one-way, top down way of teaching.’

The culture and community that was built during the course also seemed to make a deep impression, where students mentioned the impact of diversity, the sense of community, the availability and patience of instructors, and cooperation for their experience. The course was lauded for creating a supportive and inclusive environment that allowed students to feel comfortable contributing, collaborating, and learning from each other. This sense of community was evident even though much of the course was online. In conclusion, the flexibility of the course structure and organization and the case studies applied to each student’s situation allowed students to have a sense of freedom and allowed them to connect the content with their personal background, interests, and immediate surroundings. This helped them feel engaged with the course content, bridging theory and practice, and global understanding of sustainability issues with local application. It

also helped them to feel connected with their own surroundings and background and with each other.

8.3.3 Creating responsibility and belonging through praxis

Another notable aspect of the course name is its nod to the program's praxis approach, which emphasizes integrating theoretical concepts and methodologies, they learned on-line with hands-on, collaborative workshops. During the workshop, the students were split into three groups, each charged with a unique project (figure 3), where each team was tasked with taking ownership of their project from inception to completion:

- Team 1 was tasked with carefully deconstructing an exterior wall of the CC building and replacing it with a passive water heating system. This system employed a black outdoor façade to harness solar power for heating water within pumps built inside the insulated wall. This team was composed of Helen, Dia, Sue, and Mari.
- Team 2, the roof team, was challenged with assessing the current roof structure to determine the necessary timber and tile replacements while adding an insulation layer made from wood fiber panels. This team was composed of Fran, Iaza, Lia, Diana, Mark, Neha, and Mila.
- Team 3, the furniture team, utilized a participatory design approach to create furniture for the local community center, honing skills in processing wood from tree trunks to produce outdoor furniture. The students were encouraged to pay close attention to cut efficiency and friction joints to minimize waste. This group was composed of Greg, Gin, Rita, Aki, Jade, and Heri.



Figure 3: From left to right: Teams 1, 2, and 3 working on their respective projects during the first workshop. Image courtesy by Critical Concrete.

By having focus groups conversations with each team during the workshops, what became clear from the data was that the construction workshops provided students the opportunity to apply the theories and concepts learned during the semester to real-world projects, gaining valuable hands-on construction skills and at the same time developing a sense of responsibility and connection with others. Students expressed that the hands-on workshops helped them feel connected to people by focusing on in-person interac-

tions with colleagues, clients, and the local community and by helping others through their design projects. They also discussed the significance of the practical assignments, not only as educational experiences but also as ways to assume responsibility for real-life people and situations. Many students mentioned that doing participatory design projects and interacting with clients and people from the community allowed them to see how design can impact people's lives and help others, reflecting a community-focused mindset and responsibility. This process also helped them feel engaged and hopeful, since it allowed them to see the direct impact of their actions and design projects.

One of the main reasons many students express for joining the SSA course is that they were looking for opportunities to experience real-life projects and do hands-on practical work. They expressed a strong desire for an experiential learning approach as they believe it provides practical skills and experiences that can't be replicated in traditional educational settings. Mari, a young architectural student from Glasgow, shared that in their education: 'there's no real opportunity to do that in the architecture school, like hands-on and real-life situations' and that having the opportunity to engage in real-life projects during the SSA was a highlight of the course for them. Regarding the roof repair project and the bathroom wall experiment, Mari expressed that doing real-life, hands-on work with a client helped them realize their responsibility as an architect: 'the roof that you're doing is someone's roof and you have responsibility of that person's roof. And I mean, architecture is all about responsibility. So even like this wall is more of a research project, but it's still going to be this wall for the bathroom.' Mari highlighted the essence of responsibility in architecture and the impact it can have on someone's life and the impact it has for her to participate in a real-life project instead of only prototyping.

The longing for practical hands-on experience was not only from a professional need but also from a personal need to feel connected to people and the world around them. Many students mentioned being tired from their education or professional practice because, in their experience, their professional engagement was very theoretical and far from people's everyday reality. This made them feel alienated from the world, making it difficult to see a connection between their personal aspirations, their work, and their impact on the world. For example, Helen, an architectural student from the Netherlands, shared that her school was very much focused on sustainability, but only from a technical and theoretical perspective, where she learned many things in theory but had no idea about its implication in real situations: 'I know how to draw them and I have no clue how they were building it. It's like some machine and 'poof'!'. Helen's perspective further emphasizes the importance of practical application in architectural education. She describes her frustration with designing elaborate structures on paper without understanding how they could be constructed in reality. This limited her ability to engage

with the project's finer details. Her comments reinforce the importance of the actual construction process as part of architectural education, providing real-world context to theoretical designs. Similarly, Dia, a Serbian architect, expressed frustration with the theoretical and conceptual nature of her urban planning education. She mentioned that her students and her work always revolved around theoretical concepts, and expressed a desire for more practical knowledge and experience: 'hands on assignment and doing anything that's **real and not just on paper. I missed that experience through the school and I started working and didn't feel really comfortable, we are doing a bunch of stuff because I don't know how that is really done.**'

Students' longing for practical hands-on experience was also connected with a need to feel more connected to their physical bodies. Many students also expressed frustration from working mainly indoors, spending many hours in front of a computer, and far from practical and hands-on activities. They mentioned being demotivated and tired of theoretical and indoor education, far from the world, and therefore chose the SSA course because of its focus on practical knowledge and commitment to real-life situations. Lia, an urban planner from Germany, shared her wish for a break from traditional studies and worked to engage in more hands-on activities, as she believes that this physical involvement will help her better understand her career interests. She appreciates the practical workshop part of the program and the opportunity to explore new skills, showing a desire for a more active work life rather than a desk job: '**I also really enjoyed about this program that it has this practical part, because I really feel this wish to be in my work with my body and also for the future. I think it might be interesting for me to have a mix of these things. I can't really see myself sitting on a computer 40 hours a week.**'

Dia expressed that joining the course was more for personal development than professional necessarily, because she needed to '**get closer to the material, to have a closer idea of sustainability**' where she could feel a better connection between the output of her work and what she produces with her body '**I think a lot of people are also nowadays searching for something they could do with their body or their hands and something they see they produce.**' These insights show how some architects are looking for ways to balance their well-being and personal life with professional life, and how important it is for them to see the impacts of their work and the meaning it creates in the world to keep them motivated in their practice.

While most students mentioned that they had a lot of theory during their previous education and were looking for something hands-on, other students that were working in the field for a longer time and had more practical experiences were looking for a theoretical foundation for knowledge and could also help them support their decision

making in their practice. Fran, an Italian architect based and working in Vietnam, had previously participated in construction workshops, joined the program primarily for the theoretical coursework. Seeing it as a structured graduate program, unlike other practical workshops he'd attended. However, he underscores the value of alternating between theory and practice, and the importance of blending these two aspects in architectural education: 'it's always a bit of a balance (...) I did practical stuff for five years and now, there still need to have some theory behind and some extra knowledge I can learn, so you always go a bit back and forth between the two and this was a nice way of balancing the two aspects in one course.' Therefore, striking a balance between theory and hands-on approaches seems to be something most students were striving for in their practice, and they stressed that this equilibrium provides a more comprehensive understanding of architecture, covering both the conceptual aspects and the practicalities involved in the construction process.

The students' comments illustrate the significance of merging theory and real-life application in architectural engagement. This balanced approach enhances understanding, equips students with practical skills, and bridges the gap between academic knowledge and real-world implementation. It also helps students become more confident and effective in their work by providing a more rounded and realistic view of the architectural field. In this sense, the SSA course allowed them to gain practical knowledge and explore interests outside of conventional educational frameworks. Furthermore, engaging with hands-on approaches and real-life situations enriched their practical skillsets. It helped combat feelings of alienation and demotivation while fostering a connection and responsibility with others and their with own bodies.

8.3.4 Co-learning and non-hierarchical environment

Students were encouraged to teach each other during the workshops in person as soon as they managed a new skill. For example, when an instructor would teach one student how to use specific machines at the wood workshop, this student would be responsible for teaching the others in their group (figure 4). Furthermore, Students were encouraged to come forward with their previous experiences from their education or work (such as construction skills or negotiation skills) and pass them forward to other group members. Combined with a flat hierarchical structure for interactions to happen, these strategies were vital to promoting collaboration and group cohesion between people.



Figure 4: (Left) An experienced student teaches another group member about wood joinery for furniture making. (Right) A tutor and students at wood workshop. Image courtesy by Critical Concrete.

Many students mentioned this was a completely new experience for them. Although some were unsure about their ability to teach others, with time, they became more confident through this experience. They felt they were learning from their peers and responsible for others' development. Rita shared that the responsibility of teaching others about a newly learned machine, for example, was nerve-racking but also empowering, representing a new form of learning for her. Therefore, these small ways in which co-learning was integrated into the course contributed to fostering feelings of connection and responsibility towards others.

Furthermore, the course seemed to impact students' interpersonal and leadership skills. Students highlighted the acquisition of non-hierarchical leadership and communication skills, which has instilled more faith in self-management. They also acquired group organization skills and an understanding of the importance of group dynamics, which can be vital in various participation projects. For example, Greg, an engineer and NGO rural development coordinator from South Africa, shared that he joined the SSA course mainly to learn participatory design practices since he wanted to implement a bottom-up decision-making approach for the social housing project with which he is involved. In this topic, Greg shared: 'I come from a management background where I manage by imposing parameters and restrictions, and I'm not sure that's sustainable (...) I don't believe for a second that sustainability lies in technical detail (...) sustainability is how you expand and en masse (all together) sustainable practice (...) in an environment where there's cooperation and commitment, you stand a chance. And I've seen that here, you know, people from different social backgrounds, committing, cooperating, working together.' His insight showed how the course's non-hierarchical, cooperative environment helped him to understand that sustainability is beyond only technical details and that promoting a free and open setting conducive to collaboration is key for sustainable innovation in architectural projects.

The dialogue with students also revealed that they shared experiences of feeling constrained by hierarchical systems in their work environments, and how the course has enlightened them about alternative ways of managing work and collaborating on projects. For example, Aki, an architect from Japan working in an office specializing in design for children, shared that in the hierarchical work culture where she was inserted, she often felt her autonomy was restricted and didn't feel satisfaction in her design practice. She found the diverse process presented in the course exciting and beneficial, as it seemed to afford more room for individual initiative. But doing participatory and co-creation was a challenge for her, as she was not used to just trying out things without a defined blueprint and directions from a superior.

Greg shared a similar sentiment, noting that he was usually very process-driven and tended to take charge. However, he found that this course helped him trust the process and let it unfold naturally rather than trying to control or expedite it. Greg revealed that he usually operates from the top of a hierarchical structure, which he acknowledged was neither sustainable nor conducive for team development, as it leaves little room for others' input and growth. He expressed his loneliness in this position and hinted at a need for change towards a more participative environment: 'I come from a hierarchical environment where I'm the boss and I lead from the top of a triangle and people follow. And that's not the right way to do it, that's not sustainable because you're not developing people to move with you. And it's lonely at the top there.' He concludes that, sustainability happens when the people involved in the projects learn and continue to develop projects by themselves: 'what is important is that the people involved can replicate it and can have capacity and are learning'.

Jade, who runs his own company in Brazil, resonated with Greg's sentiments, acknowledging the loneliness at the top and the value of seeking others' opinions before making decisions. Both Jade and Greg agreed that a more participative environment would be sustainable, as it fosters learning and growth among all involved. Jade added that every person involved in the process should feel their importance, contributing meaningfully to what they're building together: 'everybody in the process must have the feeling of their importance in the process, not just being part of, but being something that you are building together.' Jade also found the opportunity to collaborate without the barriers of ego and competition, particularly inspiring. He contrasted this positive experience with the often ego-driven and competitive work environment he experienced in Brazil: 'and for me it's been so amazing this opportunity to collaborate with you guys because this is something that I must always have in mind. Because in Brazil we have a fight of egos, it's really hard to work with someone else, it's horrible. because of the competition'.

Jade shared that the collaboration aspect he found in the course made him aspire to be a better person in his work area and his life.

Greg summarized his learning by indicating a shift ‘my position has moved away from the design and the technical detail to the process,’ reflecting a change in perspective towards valuing collaboration and participation over hierarchy. Therefore, the course seems to have fostered in students a deeper understanding and appreciation for non-hierarchical, more inclusive work processes, challenging traditional norms and encouraging autonomy, collaboration, and mutual growth. This approach to architecture contrasted with feelings of loneliness, restriction, and dissatisfaction that they felt previously in their practice.

The students also emphasized the importance of the learning environment at Critical Concrete (CC), contrasting the relaxed and familiar atmosphere with the clean, institutional environment at ESAP. They acknowledged the uniqueness of CC’s setting, feeling it resembled a student association house or a home rather than a traditional office. Students mentioned how this relaxed atmosphere helped them feel at ease and engage with the place and people more easily. Mari shared that they felt at home and that ‘I had this big relief. Critical concrete is really not polished at all. It’s all ramshackle, and like as you go along, and it really embodies this experience. It’s really very comfortable.’ Dia added that she felt an immediate connection to the place and the people, saying that she felt like she had been there before, a feeling she attributed to the energy of the place. Therefore, students highlighted the importance of feeling connected and welcomed to the situational factors for their engagement.

8.4 Holistic and multidisciplinary approaches

The SSA also focused on expanding sustainable architecture beyond materials of technical aspects, integrating social approaches to architecture, explore a range of topics related to the social responsibility inherent in architecture and construction. Community participation played a crucial role in the program and is addressed through courses on ethnographic methods, the psychology of sustainability, and participatory processes. These courses equip students with the tools and strategies necessary to engage with communities while challenging their biases, preconceptions, and current worldviews. The “Social Cities” module also offers courses on militant architecture and social urban movements, exploring the links between sustainability, social justice, housing, and access to public spaces.

Bridging these two areas, the Ecological Urban Development module delves into urban practices and strategies to address current environmental and climate crises. It includes courses on regenerative thinking, circular economy, sustainable urban food systems, water systems, and infrastructure and relates these concepts to democratic engagement. With these interdisciplinary methods and a broad perspective, the SSA course challenged students to appreciate that sustainability isn't merely a technical problem but also a significant social issue. As stated by CC, the course prompts students to view sustainability as a complex network of factors, encompassing the entire span of a project rather than just being the 'icing on the cake.'

Most students also mentioned their appreciation for the multidisciplinary and holistic perspective on the architecture they got from the course. Sue, who is a product and interior designer working in a studio in France, mentioned that she found value in exploring topics beyond traditional architecture and 'to have a very really broad view of the subjects,' and mentioned being presently surprised with the topics such as food systems and militant architecture, for their broader application. Sue also appreciated the blend of research and project that CC works with, such as in areas such as biology to develop sustainable materials, finding it unique among organizations.

Students expressed several ways in which the course helped them to integrate holistic aspects of architecture into their practice, each from diverse perspectives. For example, Helen mentioned that her architectural education in the Netherlands was only focused on high-tech aspects of sustainability, while she was interested in learning also low tech aspects: 'my graduation design was about reuse and I had one year of fight with my teacher cause she was like, we're not gonna reuse. (...) I think it's some, maybe it's even two mindsets, the high tech and low tech and I feel more into the low tech than the high tech.' She mentioned that the course helped her bridge the gap between low-tech theory and discourse with low-tech aspects of sustainability, which was useful for her to advocate for reuse principles in her work with interior design.

Another example is from the architect Mila, working in the United Arab Emirates (UAE). Mila mentioned the issues she noticed in her practice, such as wasteful production processes, and her desire for a more resource-conscious and multidisciplinary approach: 'how we can be more resource conscious and more material conscious, think about alternatives. And I guess it was a lot about aesthetics, which I really started feeling like I need to move away from that as well and start exploring this.' She also mentioned the lack of a holistic process and how this affects the communication between the design and production teams in architectural firms' there's always a clash between the project manager and the architect saying: you don't think about this when you're designing

it.' Mila, as well as many students, mentioned that the multidisciplinary content of the course and the focus on linking theory to practice and linking different stages of the design process from concept to production to hands-on building help them to learn new strategies to be more holistic in their practice.

Many students also highlighted the importance of practical application and hands-on experience to understand the importance of holistic approaches to sustainability. For example, Neha, an architecture student from Gana/UK, shared that the hands-on approach allowed her to see how conceptual design could be materialized and what a design would look like in real life as it adapts according to changes it goes through along the process: 'it allows me to understand what it would actually look like, what I'm thinking about, what it would actually look like in real life, and understand that there might be differences from what I'm thinking and how to go about it in practical aspects.'

The course also impacted the way students understand and deal with materials. Data reveals that students displayed a holistic understanding of practices in handling materials in a circular way, where they referenced the sourcing and usage of materials, the construction techniques, and the importance of waste management. Rita, a Polish/Irish designer, and artist who works with organic and natural materials, shared that she learned how the process of sustainability start from how to order and choose the material, how the process of using the material is attentive to material waste: 'it was sustainable from the outset because of the way that the wood was ordered (...) they were specifically chosen, and we have then marked out how much usable material we get from that (...) what happens with that waste? How is it treated in between?'

The course also helped students recognize sustainability's multidimensional aspect, where students emphasized the complexity of sustainability, highlighting social, economic, and political aspects alongside the more common environmental focus, where sustainable practices should be about involving people. Students mentioned the importance of the participatory design process in sustainable thinking. For example, Heri, an architect from Porto, synthesizes this topic in the group discussion: 'one of the things that I take off the course is the complexity and multidimensional aspect of the concept of sustainability. Greg was talking about the social relation aspect of it and Gin was talking about the construction aspect of it. There's also the economic and political (...) that's for me the biggest eye opener of the course. It's the complexity of the term, the transversality of it.' Within his group's discussion, they concluded that for a project to be sustainable, even if it implements sustainable materials, if 'it doesn't sustain the social relationships and process is not sustainable in itself.' Their perspective emphasized holistic approach-

es in sustainable architecture by valuing exchange in social relations and focusing on sustainability in all stages of the design and construction process.

In conclusion, the course's broad multidisciplinary focus helped students develop a broad and holistic perspective on sustainable architecture that extended beyond traditional concepts. The course facilitated an understanding of sustainability that was not limited to technical aspects, but also emphasized practical application and hands-on experiences. It helped the students adopt a holistic approach to handling materials, encompassing sourcing, usage, construction techniques, and waste management, highlighting integration between disciplines and different stages of the design and construction process. Furthermore, the course highlighted the complexity of sustainability, highlighting its social, economic, and political aspects alongside the environmental focus, expanding the understanding of sustainability to include social relationships.

8.5 Dealing with psycho-social dilemmas in architecture

Similarly to what was discussed in the interviews, the students mentioned that they face several psycho-social dilemmas and challenges in practicing responsible architecture. And they expressed various concerns and potential challenges they may face in implementing what they've learned in their architectural design practice after completing the course. Many students mentioned their struggle to engage with sustainability in their previous studies and professional work. This was due to difficulty changing people's mindsets, dealing with clients or decision-makers that didn't share their views on sustainability, and making them feel isolated in their practice. But they also expressed that the course gave them more knowledge and arguments to advocate for sustainable practices, where they spoke about the significance of gaining confidence in their knowledge and experience.

Students also noticed that changing people's minds to adopt more sustainable solutions is challenging. Gin emphasized the need to incorporate sustainability in both process and final design, a balance that can be difficult to strike. She also underscored the challenge of introducing and pushing for sustainable materials, especially when dealing with teams, clients, and societal norms and regulations that may resist change.

Within this topic, Heri discussed the challenges of implementing his own ideas within a workplace, especially if they differ from the views of his superiors. He suggested using a "Trojan horse" approach, subtly introducing his ideas through work: *'For example, proposing it a round table instead of rectangular one, because it is a rectangle form of a hierarchy, to tops and instead of circular has non-hierarchy. You don't need to explain*

that, you can just propose it and it could be accepted and it's making this place be more equal.' Similar to him, a few students mentioned their frustrations in how they have been trying their ideas to practice more critical sustainable architecture in a non-obvious way as a strategy to avoid conflict with the dominant worldview and practice in their current jobs.

Greg shared that he is currently trying to overcome the difficulty of implementing inclusion within budget gatekeepers. He mentioned that the course had provided him with insights to improve his performance in delivering sustainable housing in a flatter and more inclusive environment: 'My environment has been implementation where in the last two years, I've built three and a half thousand houses. And my focus has been on trying to deliver those houses in a sustainable and an inclusive way (...) And the course has provided me with insight and intuition on how to improve my performance within that environment. (...)' However, he mentioned that while his projects were sustainable regarding materials, he highlighted the exclusivity in his current environment: 'what frustrates me and what has come very clear from the course is that the environment that we live in is exclusive. It is designed by budget gatekeepers that are intent on keeping people out because it's within their financial interest to do that.' His insights highlight a similar issue talked about in the interviews about the limitations of profit-oriented architecture, evident from the data that students from diverse countries face.

Furthermore, some students also expressed their frustrations with 'greenwashing' and the superficiality of some sustainability claims of architectural practices. They shared their frustrations with the lack of authenticity in larger projects and their desire to be more than just compliant and do better in their future work. Diana shares that 'we're doing great job here because in little scale (...) but when you look a bit bigger, it's not always really because you really share the values, it's more like I need to do this then I can put the label that it is greener, you know?' Because of such issues with greenwashing and conflicts between students' values and the values of their workplaces, some students shared that they recently quit their jobs, expressing being disappointed in their architectural practice. For example, Iaza shared about his previous practice: 'you end up doing something very small in a very big process that you sometimes don't believe in or you don't think that's a good thing.' And expressed that before joining the SSA course, he had little perspective for change: 'you feel wrong about it, but you don't have the motivation or the energy to say, no, I don't want this because I don't know if there's anything else that suits what I need.'

Therefore, many students expressed their frustration in working in the field of sustainability due to conflicts in worldviews and having a difficult time negotiating with deci-

sion-makers, and not being able to be themselves and bring their perspectives to their professional lives because they contrasted with the dominant profit-oriented approach of their practices. In that sense, students had difficulty connecting their profession with their identity and values. But they also expressed how the SSA course helped them address this frustration constructively and get skills to deal with this challenge. Students mentioned that the course helped them learn to be patient with their efforts and understand the limitations of perfectionism, stressing the importance of doing what one can at the moment.

An important point mentioned by students was that the course helped them to develop their ability to develop better arguments based on knowledge and good examples that they could use to convince people about sustainable solutions. For example, Diana, an urban planner in Germany who also does sustainability activism, shared her anxiety when dealing with people with a lack of acceptance towards different solutions to sustainability. Since her education, she had difficulty finding teachers who would care about sustainability as she did, and carried this anxiety into her career: *'when I start work also, so like I really feel like anxious about that (...) people don't want to go there because they are not used to it or like it's just putting the effort they don't know why would they do that? Changing people mindset is hard.'* But she shared that the course helped her to have more knowledge to build better arguments to persuade people to see the difference specific sustainable strategies can make in the design impact of projects: *'it helped give me maybe more knowledge, I think I always was trying to get better arguments.'* Her insights show how important it is that architects gain skills to better communicate and advocate for their proposals. The course showed how learning should integrate social sciences and perspectives from architectural professionals to help students develop these skills.

Another important aspect was how the course improved students' confidence by enhancing their personal backgrounds, building community, and providing them with role models. Students felt that the course strengthened their convictions and gave them the confidence to uphold their values in the face of opposition. Neha, in particular, felt significantly more confident and motivated to stand by her principles, acknowledging that she could find like-minded individuals who share her beliefs: *'actually a lot more confident (...) seeing actual examples of people that work in this and believe in what they're doing (...) I think it gives me as more motivation to actually stand by what I would like to do (...) I'm gonna put in my all to do it (...) if no one sees it the way I see it, I know that I am gonna be able to find people that feel the way I do and I'll still go ahead with it. Like I won't just drop it'* Many students shared Neha's sentiment, and some added that they learned to focus on smaller changes where they can see they can make

a difference in order to help them feel motivated in the face of challenges. Heri shared that: 'do little things at a time and knowing that we are not going to change the world (...) it's just a culture that we have to take and to try to improve, always (...) It's just being an optimist-pessimist.' Rita echoed these sentiments and also stressed the importance of working within the system but changing one's behavior to effect change: 'If you can change more than your own activities or more than your own behavior, than you've already done something big (...) I think the pessimism is when you say, okay, I'm out, but the optimism is like, okay, I'm in, but I'm doing this.'

Lastly, students mentioned that an important aspect of the course was how it helped them to address feelings of loneliness and transform them into hope. Mari found the course helpful in breaking her sense of isolation after graduation, when she felt unsure about her next steps. She appreciated the opportunity to engage in dialogue with peers facing similar challenges, finding the space to discuss issues invigorating: 'I didn't know if like a masters in architecture would lead me anywhere like that or even working, and I felt a bit alone as well. And then starting this course and being in a position with like so young people similar and just being able to have the space to talk about these issues. Very motivating and it really broke that sense of loneliness, because I don't feel so isolated in the only one who cares about this thing.' Mari shared that the course helped them to feel less lonely in this endeavor of 'finding themselves' within the field without letting go of what is important for them: 'for me what's important is, I really wanted to exist in this field, not just work, but really be involved in this stuff (...) for me it's actually really about feeling confident in my knowledge and in experience to be able to be sure what I'm doing is in better directions.' Like Mari, many students expressed their concerns in that they were looking for ways to work and exist within the architectural practice while carrying their values and worldviews and what is meaningful to them.

Greg complimented their discussion, highlighting the importance of group support to be able to grow and create change while keeping the optimism and combating loneliness: 'there's lot of opportunity for cooperation amongst like-minded people. And so here we are, all with similar mandates or aspirations, and we can get together and duplicate what we are doing rather than just be working on our own within the system.' Iaza also highlighted that having role models such as the tutors of the course who have their own sustainable business running in quite a radical way gave him hope to continue: 'many of the instructors are practitioners themselves and they give insight of their own work that they really practice (...) I think this is something that I would consider inspiring, that gives me a better attitude towards working again in those fields.' These perspectives show how the course helped students feel hopeful, less lonely, and part of a more extensive network of people who shared similar values and worries as them.

8.6 Impact on students' worldviews and values

A year after the course, students' feedback showed a transformative effect on the participants' worldview and application to architecture. A prominent theme in the responses is the course's impact on the participants' perspectives on sustainable living and design. Some participants recognized the potential of participatory design and its relevance to public spaces, sustainable construction, and energy frugality. They felt a connection with the concept of sustainability at a deeper level, recognizing it not just as a design aesthetic but as an essential self-awareness, showing a connection between their professional practice and their personal life, values, and worldviews.

Their responses highlighted a holistic worldview, where they articulated that architecture should incorporate sustainability, ethical responsibility, and comprehensive impact awareness, addressing social, environmental, and economic dimensions. Their responses also highlighted an extended sense of empathy, where they discussed the ethical obligations architects bear towards the wider community and the relationship to both human and non-human elements in architectural projects. This includes mindful design that respects the pre-existing ecosystem and future generations, ensuring that structures don't negatively impact their surroundings, and fostering a more holistic, non-hierarchical design environment. Regarding collaboration and inclusivity, there is a common desire for the field to open up more, with suggestions for architects to consider their work as part of a wider ecosystem of disciplines. The responses resonate with the desire for participation, cooperation, and inclusivity in the field. Furthermore, there is a sentiment for more people to get involved in residential and urban planning to develop environmentally and socially friendly living environments.

Many respondents also saw the course as an opportunity to explore collective projects and alternative modes of living. This process often resulted in the reevaluation of their life choices. A few students even mentioned that the course gave them the courage to pursue what sustainability meant to them personally, without fear of judgment. An important aspect that contributed to this change was that students got inspired by how The CC place embodies their practice, and 'walk their talk'. It was important for students to be able to dig deeper into the organizational aspect of how CC operates. Students shared they were impressed with CC because it was unusual to find such a successful initiative that practices radical sustainability. Helen admired CC's commitment to growing their projects rather than solely focusing on monetary gain and how CC was highly involved and active in their surroundings.

Many students expressed enthusiasm for learning the operations, organization and running of CC. This curiosity stemmed from their aspiration to effectively run their own enterprises while conducting meaningful and sustainable work. One student, Fran, explicitly conveyed his interest in understanding the management of sustainable organizations, particularly regarding financial stability - an area he struggled with in his own ventures. He focused on understanding how CC oversees monetary matters, funding, and organizational structure.

Along with providing a comprehensive understanding of CC's operational structure, a course was offered on 'starting a sustainable organization.' The ideology behind this approach is promoting a mindset that these kinds of works would not lead to immense wealth. Therefore, if students were to embark on this path, they would need to familiarize themselves with alternative project funding methods to lead comfortable, though not luxurious, lifestyles. The significance of providing students with sustainable organizational role models is noteworthy; it helped students balance economic sustainability with radical, transformative work in their practice.

Lastly, many students shared that the course helped them understand the importance of global collective actions and the small-scale impacts that they could make. The international scope of the course seemed to have allowed students to realize the universality of many architectural challenges and solutions. This shared understanding built a sense of commonality among classmates from varied backgrounds. However, not all experiences were about change, with some participants reporting that the course instead confirmed their beliefs and broadened their understanding of specific topics, giving them a renewed sense of hope and motivation to continue pursuing sustainability in their practice.

8.7 Impact on sustainable behavior

Many students mentioned that stated that most of the content of the course was crucial and applicable in real-life practice, indicating that they learned a wide range of practical skills and theoretical knowledge during the course that they continue to use in their current lives, such as having a holistic, sustainable way of living, using diverse low tech and sustainable materials and construction techniques, problem-solving and leadership skills in architectural projects and communication skills for design decision making and collaboration.

However, not all responses were entirely positive. Some participants expressed mixed feelings, highlighting occasional disappointments and stress due to difficulties integrat-

ing what they learned into their professional life. Some students in their professional work due to geographical, contextual, and practical considerations. For example, concepts such as participatory design and building with natural materials were challenging to apply in specific professional settings or geographic locations, notably in Serbia and the Middle East. This was due to these concepts not being part of the traditional architectural practice in these regions or the constraints of using sustainable materials on larger commercial scales. The concepts of low-tech construction methods and understanding urban water politics were mentioned as crucial, though challenging to apply in the current mainstream construction context or beyond a small scale. Additionally, some individuals faced difficulties applying most of the course content to their current work, especially in traditional office environments. They identified these environments' bureaucratic and formalized nature as barriers to implementing low-tech or participatory approaches.

Despite these ongoing challenges that students have to face to integrate radical sustainable approaches in the current building culture, students mentioned that the course helped them to remain positive as they felt inspired and grateful for having had the opportunity to be part of it. This positive attitude was due to how the course helped create emotional attunement between people, students, and content, as well as between theory and meaningful hands-on impact. This was achieved by creating platforms for gaining knowledge, broadening perspectives, developing ideas to improve cohabitation on the planet, and fostering feelings of safety and curiosity through immersive experiences. Furthermore, students mentioned being happy and feelings connected because they had the opportunity to meet diverse people that shared similar concerns and struggles to practice sustainable architecture. The friendly and non-hierarchical environment of the course contributed to this sense of community and warmth.

8.8 Conclusion

The SSA course offered a comprehensive exploration of sustainability, instilling a sense of shared responsibility and fostering a global community among participants. The course's most impactful features for promoting sustainable behavior included fostering connections, focusing on holistic approaches, and providing tools to navigate psycho-social architectural dilemmas.

Within the theme of connection, the course intertwined students' personal backgrounds, values, and identities with content through a case-study approach. Platforms for exchange and collaboration fostered a sense of global community, enhancing participants' sense of belonging and responsibility. The co-learning format, centered around hands-

on involvement with real communities and local projects, encouraged trust, cooperative work distribution, and reduced feelings of isolation. This boosted the sustainability potential of their projects and fostered an environment of mutual respect and global collaboration. The immediate sense of teamwork, cultural diversity, and mutual assistance amplified feelings of connection and belonging. Moreover, the students emphasized the significance of practical, real-life tasks and peer learning in fostering an inclusive learning environment that bridges diverse backgrounds and skills.

Focusing on holistic and multidisciplinary approaches allowed students to expand their sustainable architecture perspectives beyond traditional concepts. The course fostered an understanding of sustainability that emphasized practical application and hands-on experiences, and extended beyond mere technical aspects. This comprehensive perspective allowed students to adopt a holistic approach to materials handling, encompassing sourcing, usage, construction techniques, and waste management. It integrated disciplines and different stages of the design and construction process. The course illuminated the complexity of sustainability, encompassing its social, economic, and political aspects alongside environmental concerns, expanding the understanding of sustainability to include social relationships.

However, the course was not without its challenges. After the workshop concluded, participants faced disillusionment and frustration when dealing with the gap between theoretical knowledge and its practical application. This highlighted the challenge of implementing radical sustainable practices in the current economic system and building culture. Despite these hurdles, the course was instrumental in inspiring students and providing them with the necessary tools to advocate more assertively for sustainability. Participants felt empowered to make significant changes towards more sustainable practices, thanks to hands-on learning experiences and concrete examples that allowed them to engage physically with sustainability concepts.

Data suggests the course facilitated behavioral change by focusing on dialogue, exchanging ideas, and the inspiration participants gained from peers and teachers. This approach helped combat feelings of isolation often associated with individual work, promoting a sense of community and collective learning. Students emphasized how these methods helped them overcome feelings of alienation and loneliness, enhancing their engagement, connection, and optimism toward sustainability practices. This sense of collective and mutual support helped them tackle professional hardships and nurtured a hopeful, purposeful community practicing radical sustainability. They acknowledged the value of collective efforts for effecting change, reflecting a sense of pragmatic optimism.



Image from the final workshop, students discussing design with FEUM stakeholders. Image by the author.

9. Discussion



9.1 Introduction

This chapter discusses the main findings and overarching themes across research experiments. It discusses the main psycho-social challenges architectural professionals and students encounter when practicing responsible architecture in our current context. It presents relational approaches to practice RA as possible strategies to deal with these challenges. The research implications for architectural education and participatory design are also discussed.

This dissertation explored responsibility as cultivating an architect's ability to respond (response-ability) to current complex psycho-social dilemmas of sustainable behavior in architectural practice. Through diverse research experiments, the study showed that responsible architecture is better practiced when there is an alignment between the response and the ability of an individual or collective, where relational approaches to architecture can help people to cultivate the emotional capacity to deal with psycho-social dilemmas of their profession. These findings offer valuable insights and opportunities for architects to implement long-lasting, sustainable behavior strategies in their design processes.

9.2 Psycho-social challenges in the current profit-oriented building culture

The exploration of environmental psychology and architectural practice in this dissertation focussed on the relationship between personal values, emotional responses, and sustainable behavior. In analyzing challenges faced by architects and students in integrating responsible, sustainable practices into a predominantly profit-driven building culture, it uncovered unconscious practices of emotional distancing and defense mechanisms among architects that lead to a focus on technical solutions rather than critical thinking. One of the study's key findings is the importance of relational approaches, fostering emotional attunement, humility, and stress management, which, as I will show, promotes responsible architectural practices capable of responding to broader ethical and environmental considerations. In light of these findings, I will argue for a significant shift in the current building culture, encouraging collaboration, emotional engagement, and reimagining the architect's role to integrate sustainability into their practice effectively.

Aligned with environmental psychology that shows the connection between what people value and their behavior is full of opposing ideas, mixed feelings, conflicting thoughts¹, and that emotions, feelings, and affects play in environmental engagement,

¹ Lertzman, *Environmental Melancholia*, 24.

enabling or impairing sustainable behavior². Experiments in this thesis showed various ways in which the interaction between people's psychological states and their social structure promoted responsible, sustainable behavior when positive (i.e., feeling connected, having a sense of purpose) or decreased if negative (i.e., fear or anxiety). It also highlighted various methods in which architectural professionals and students can engage with these dilemmas, and finding ways to negotiate them was a central part of promoting responsible, sustainable behavior in architecture. The experiments conducted for this study revealed several emotional challenges experienced by both professionals and students in the architectural field, particularly when attempting to navigate the predominantly profit-oriented building culture. This culture, steeped in competition, ego, and technocratic perspectives, presents a challenging landscape for those striving to integrate responsibility into their practices.

This struggle was substantiated through interviews with professionals in Denmark. They identified four key challenges: firstly, the building industry's profit-driven and conservative focus hampers sustainable innovation due to traditional methods' dominance. Secondly, the phenomenon of green-washing and people-washing reduces sustainability to an economic tool, undermining the broader aspects of social responsibility. Thirdly, the 'starchitecture' culture shifts the focus away from real-world sustainability issues to ego-driven competition, disconnecting architects from societal realities and creating alienation. Lastly, architects' lack of political power and unity curtails their capacity to advocate for sustainable and responsible practices. Such an environment necessitates coping mechanisms, such as emotional distancing, particularly among technocratic individuals. They distance themselves emotionally from the ethical and emotional dilemmas of the profession, allowing them to avoid cognitive dissonance and maintain a semblance of alignment with their professed commitment to sustainability.

Interview data analysis revealed a deep-seated fear among architects to embrace responsible architecture and challenge the prevailing norms in the building industry. This fear stems from various factors, including fear of change, fear of scarcity, and a reluctance to adopt collaborative approaches due to intense competition in the field. Architects often find themselves in paradoxical situations due to market conservatism and a focus on short-term profitability, suppressing their sustainability-driven agendas. The competition-driven mindset and the dominance of the 'starchitecture' culture can sideline critical thinking and hinder the adoption of more holistic approaches to sustainability. A key concern is job security, with architects fearing the loss of their roles to engineers or absorption by construction companies. Fear of collaboration and the competitive cul-

² Kals, Elisabeth, and Jürgen Maes. "Sustainable development and emotions." In *Psychology of sustainable development*, pp. 97-122. Springer, Boston, MA, 2002.

ture counteract the drive towards sustainability and the fostering of innovative thinking. Some architects also express the fear of not building new structures, challenging the traditional roles and identities of the profession. These fears often result in hyperfocus on technical aspects, emotional distancing, and even a deficiency in critical thinking, leading to a lack of critical engagement and conformity to established norms.

Data also showed how the sole focus on technical and technological solutions to sustainability was characterized by emotional distancing, and might be related to defense mechanism response due to several fears presented. For example, data revealed that some professionals might be doing displacement from a more critical response to cultural challenges, instead of questioning the status quo, business, and politics involved in sustainability, they might focus on technical solutions or 'invisible' sustainable responses that do not look different or question the status quo. The fact that most professionals mentioned the need to reduce new construction, but only a few had strategies to convince clients to build less and focused their energy on other strategies that might be less 'threatening' to the architect's professional identity of creating new buildings. Reducing consumption is much more complex, so focusing solely on recycling building materials might serve as a displacement of our anxiety that comes from the idea that we need to reduce building in the first place.

However, emotional distancing only creates a challenging environment, leading to an uncritical acceptance of the status quo. As a result, paradoxical situations arise where architects are aware of issues yet fail to address them effectively. This lack of critical engagement only adds to the difficulties the next generation of architects faces. Students from various countries participating in the SSA course reported feeling isolated due to resistance from teachers and clients, the prevalence of 'green-washing,' and hierarchical structures in workplaces.

These struggles echo among architectural students in the SSA course from diverse countries who faced similar challenges. They struggle with integrating sustainability principles into their work due to resistance from teachers and clients, leading to feelings of isolation. Students are also frustrated with 'green-washing' and the profit-centric culture, hindering their personal values alignment. They find hierarchical systems in architectural workplaces restrict individual initiative and collaboration, impeding participative, non-hierarchical working models. Additionally, students perceive a disconnect between their theoretical education and social realities, and crave more practical experiences to understand architectural design's real-world implications.

Therefore, negative emotions of fear, alienation, and loneliness were found to affect architects' willingness to challenge existing norms in the building industry. The psychological defense mechanisms to deal with these emotions, such as rationalization and emotional distancing, pushed architects towards technical solutions, leading to emotional distancing and a lack of critical thinking, diverging energy away by developing complicated technological fixes or displacing efforts from challenging emotional tasks to less emotional ones while lacking the urgent action needed to change society's course³.

These observations highlight an urgent need for a more substantial support system within the profession and education to address these psycho-social dilemmas. Interviewees noted a notable lack of platforms for architects to discuss these issues openly and a lack of attention to these issues during architectural education. This was also observed in the evident emotional difficulties some students faced during the participatory design workshops, where students grapple with aligning their personal values with their professional practices, developing 'soft' skills for collaborative decision-making, handling criticism, and incorporating more thoughtful approaches into their design processes.

Moreover, the existing building industry culture, often disregards ethical considerations, prioritizing technological solutions to sustainability while ignoring a holistic and socially responsible approach. The literature review further underscored the ethical issues surrounding a paternalistic, technologically-driven approach in architecture, which can create division, instigate feelings of resignation, and raise issues of control and consent.

Data revealed a recurring paradox where architects understand the pressing need for structural change but fear the loss of job opportunities. This dichotomy manifests itself across large, medium, and small firms, creating a question of compatibility between private and sustainable practices. Small practices strive to focus on socially meaningful projects and secure funding to lessen their dependence on private projects. Medium-sized practices take on a small number of key projects where they can practice responsible architecture while dependent on many projects that are business as usual. Whereas larger firms often overly emphasize technological solutions, mainly ignoring social aspects. The dilemmas found in the data raised important questions architects should ask themselves: if we want to deal with climate change, can we survive on good examples of a few small projects while the majority of our projects are still so unsustainable? Or should we find other modes of working and re-focus our efforts?

In contrast, findings from experiments also revealed that some architects and students are looking for and utilizing more relational approaches to deal with difficult emotions

³ Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. *The psychology of environmental problems: Psychology for sustainability*. Psychology press, 2011.

and respond to psycho-social dilemmas. Relational approaches have been shown to foster sustainable behavior through integrating emotional attunement, interpersonal skills, humility, patience, and stress management into architectural practice and education. These methods foster curiosity and relationships, transforming uncomfortable emotions into actions that protect the architects' mental wellbeing and encourage responsible architectural practices. One of the interviewees mentioned, 'you become what you draw' highlighting the connection between compromise and an architect's mental health, which many interviewees cited as an important aspect of having a sustainable working life.

Therefore, relational approaches have shown to be a more comprehensive approach to sustainable architecture, including the people and the architects as stakeholders, transforming them from mere 'users' or 'consumers' to 'makers' of their narratives and choices. These approaches showed to have the potential to promote long-lasting, sustainable behavior, representing a largely unexplored opportunity for designers and architects to implement responsible sustainable behavior strategies in their design processes. Therefore, findings suggested that to practice responsible architecture, the current building culture needs an urgent shift that embraces change, promotes collaboration, and emotional attunement, and reimagines the architects' role to integrate sustainability more effectively into their practice.

9.3 Responses and abilities of relational approaches to sustainable behavior

This study investigated the worldviews, values, and practices of relational approaches as the responses to deal with the psycho-social challenges. Data from the interviews showed how architectural professionals with a relational approach center social responsibility in their work, viewing sustainability as a socio-technical issue requiring changes in human-environment and human-human relationships. They focus on inclusive and participatory design methods, involving stakeholders in decision-making processes to foster sustainable behavior changes. Emphasizing a praxis approach, they address both technical and socio-relational aspects, extending their responsibility beyond green technology toward broader social impacts. Their projects mainly involve educational, community, and cultural centers, using multidisciplinary teams for an integrated approach to sustainability. Key terms characterizing their approach include 'dialogue,' 'involvement,' 'community,' 'critical,' and 'curiosity.'

The relational approach also includes a critical outlook on architectural responsibility, challenging professionals to aim for significant rather than minimal impacts. This involves tackling complexities and dilemmas within projects, rather than simplifying or

compartmentalizing them. It encourages architects to engage deeply and meaningfully with their projects, emphasizing the importance of aligning personal values with professional practices to maintain a sustainable work-life balance. This critical perspective also questions what constitutes 'good architecture,' developing holistic approaches that redefine traditional notions.

The second part of responsibility explored in this dissertation was related to the 'ability' part. This study explored this ability concerning people's emotional capacity to connect their worldviews and values to their behavior. It showed how the interaction between people's psychological states and their social structure can help encourage sustainable behavior when positive (i.e., feeling connected, having a sense of purpose) or decrease if negative (i.e., loneliness and competition).

Aligned with environmental psychology, this study found that people's sustainable behavior is highly impacted by their anxieties, contradictions, meaning-making, affects, and complicated ways in which people engage with environmental challenges⁴. Filling a gap in the literature review on sustainable behavior in design, this study highlighted how unconscious processes and emotional dilemmas highly impact sustainable behavior, because people's behavior is linked to their need to achieve psychological and emotional wellbeing, which inevitably has impacts on ecological and social processes and is part of the inner experiential dimension of human life⁵. In this sense, relational practitioners showed that they develop their ability to respond to psycho-social challenges by focusing on emotional attunement. This emotional attunement pays attention to how people relate to each other and others (by others, including themselves, other people, the environment, and more-than-human actors in the project).

Interviews revealed that emotional attunement showed to be a key aspect of practicing responsible architecture, helping professionals align their personal values, and worldviews with their professional practice. Relational professionals often integrate their personal and professional identities, resulting in a relationship-centric perspective that perceives architecture as a platform for personal growth and societal improvement. They often have clear guidelines on project engagement, understanding their limits, and when to decline projects that don't align with their values. This combination of critical engagement, social responsibility, and emotional attunement forms a relational architecture approach centered on inclusivity, dialogue, power distribution, collaboration, and sustainable behavior change.

4 Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

5 Maiteny, Paul. "The psychodynamics of meaning and action for a sustainable future." *Futures* 32, no. 3-4 (2000): 339-360.

By testing several tools to implement relational approaches in participatory design workshops, data from the workshops revealed that the most impactful tools in student's sustainable behavior were: linking their professional roles with personal values, investing in relationships with teamwork and group discussions, and with stakeholder involvement and tangible experience of executing a real-life project. These tools focused on emotional identification, trust building, feelings of safety and belonging, and feeling connected to others were some of the emotional impacts contributed to significant behavioral changes. Students reported that they have become more critical towards the architectural practice, shaped their values, and increased their motivation to tackle challenges in their profession. Even one year after the workshop, students mentioned these aspects as the most impactful that contributed to changes in how they approach their architectural practice. The workshops also revealed how some students faced such as stress, fear, and loneliness hindered sustainable behavior and motivation. Most of these negative feelings were associated with difficulties with 'soft' skills, such as negotiation and interpersonal skills, or lack of support from group members, which evidences the importance of good relationships for people's motivation. Confirming that the methods used during the workshop based on strategies such as emotional connection, identification, and experiential engagement, as explained in the methodology, were indeed effective for long-term behavior change. By fostering interactions with others to cultivate empathy, collaboration, and meaningful engagements where students could integrate their personal interests and personality factors into real-world issues, the workshop created various emotional impacts that promoted change toward responsible architecture.

Similarly, the SSA course provided various relational tools to instill shared responsibility and cultivate a global community. Data revealed that the course promoted sustainable behavior by fostering connections, emphasizing holistic methods, and aiding in navigating psycho-social challenges in architecture. It linked students' personal aspects with course content via a case-study approach, encouraging a sense of global unity and responsibility. By centering around hands-on community projects, the course format boosted project sustainability, fostered mutual respect, and reduced feelings of isolation, with students stressing the value of practical tasks and peer learning. The course also pushed students to expand their sustainable architecture viewpoints by focusing on holistic and multidisciplinary approaches, integrating several design and construction stages. It also showcased sustainability's complexity, covering its social, economic, political, and environmental dimensions. It facilitated behavioral change by focusing on dialogue and idea exchange, which helped students overcome feelings of loneliness, encouraging community and collective learning. The sense of collective support helped students handle professional difficulties, cultivating a hopeful community practicing radical sustainability and recognizing the power of collective change efforts.

In alignment with the literature review, experiments showed how feelings of fear and stress lead to emotional distancing and hamper responsible action, because feelings of isolation, lack of trust, and suspicion can make the world seem antagonistic, impeding sustainable behavior⁶. Thus, creating a feeling of connection and trust through architectural practice was found as a crucial part of responsible architecture. Relational practitioners deal with this dilemma by investing in emotional attunement and openness, engaging with projects that make them feel connected to people and bring them joy and a sense of meaning. They consciously try to align their practice to their worldviews and values to increase their psychological wellbeing and facilitate sustainable behavior in their practice.

Therefore, this study revealed the urgent need for an architectural, cultural transition from a linear and technocratic to a more relational, holistic, ecological oriented worldview. Unraveling the existing worldviews and values underpinning our architectural practice is vital in addressing sustainable behavior and seeking alternate worldviews and value systems that can guide us towards achieving sustainability. It also highlighted the necessity of linking macro changes and environmental issues to individual and personal experiences, such as people's values, feelings of care, and personal identities. Aligned with an ecological worldview, this thesis found a need to forge relational approaches that can foster emotional alignment between individuals and between people and more-than-human entities, assisting individuals in developing identities not as isolated, self-governing entities but from a core sense of connection and shared identification with other people, life forms, ecosystems, other species, or the planet. Where the design process can be an essential place to explore the optimal contexts for facilitating expressions of care. The following are the main themes of relational approaches to architected that emerged from this study, and that can be used in architectural design processes.

9.3.1 Psychological alignment of worldview-values-practice

Experiments also showed the importance of aligning our architectural practice with personal values, identity, and worldviews to foster a more responsible practice. A worldview is how we make sense of the world around us and the way in which our culture is embodied in our individual practices⁷. To move towards a sustainable future, there is a need for a cultural transition in the worldview of individuals and institutions, rather than for mere technological fixes⁸. Our values, worldviews, and behavior are interlinked

6 Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

7 Alison J. Gray, "Worldviews," *International Psychiatry* 8, no. 3 (August 1, 2011): 58–60.

8 Rachael Beddoe et al., "Overcoming Systemic Roadblocks to Sustainability: The Evolutionary Redesign of Worldviews, Institutions, and Technologies," *Proceedings of the National Academy of Sciences* 106, no.

and influence each other. Therefore, a change in people's worldview means a change in values and can impact behavior.

But the connection between what people value and their behavior is full of opposing ideas, mixed feelings, conflicting thoughts, and the continuous effort to establish a clear and consistent understanding of our own experiences⁸. Experiments showed that many of these dilemmas happen unconsciously or are not discussed openly, and it proposed diverse ways in which architects can negotiate dilemmas by clearly expressing, sharing, and connecting their worldviews and values to their practice. Therefore, this study untangled worldviews and values behind architectural practices to address sustainable behavior and looked for alternative worldviews and values systems that can help us practice responsible architecture.

In the interviews, relational professionals recognized that a professional practice that lacks alignment with personal worldviews and values could lead to stress and compromise ethical standards, leading to an unsustainable professional life. Some professionals shared feeling alienated when they cannot align their personal values with their professional actions, and searched to move to a more value-driven and meaningful practice. This shift often involved reconnecting personal passions and ideologies with their work, where professionals derive their sense of responsible architecture from their upbringing, personal stories and experiences, and role models' influence. This alignment also proved crucial in managing conflicts with clients and stress in practice, and it assists in developing resilience to deal with psychological and social conflicts.

During participatory design workshops, articulating and aligning shared values helped students enhance their critical awareness and apply these values professionally, deepening their understanding of how conceptual ideas, like translating honesty into accessible architecture, can impact design decisions. This enabled students to identify areas where they can use their values to influence their work and the world and strengthened their responsibility to address ecological challenges. The connection of personal values with their roles as architects amplified students' self-awareness of project responsibilities, facilitating teamwork and increasing involvement by tying the project to their individual characteristics, skills, and interests. The process began with developing shared values, enabling clear expression of personal worldviews and providing a collaborative foundation, thus aiding in negotiations and understanding of others' motivations. This served as a platform for idea-sharing with stakeholders, addressing both immediate impacts and long-term community aspirations. Exercises to explore stakeholders' values

8 (February 24, 2009): 2483–89.

9 Lertzman, *Environmental Melancholia*, 24.

and future visions fostered empathy, facilitated shared decision-making, and helped bridge various ecological needs and worldviews. Additionally, value-centered exercises revealed the connection between students' values and their design practice, increasing engagement, enhancing responsibility, and developing empathy and awareness of others' roles in the design process.

In the SSA course, students appreciated how the tools and tasks helped them connect their cultural backgrounds, values, and worldviews with the course's content. By focusing on individual case studies, which students could select according to their interests, the course facilitated the exploration of theoretical construction concepts within familiar buildings, locations, and student's own interests and struggles. This autonomy and flexibility in learning were considered key elements of their positive learning experiences, reinforcing the importance of personalizing one's educational journey. Furthermore, students also highlighted that the course helped them articulate and connect their values and beliefs with a responsible architectural practice, empowering students by strengthening their convictions and boosting their confidence to uphold their values in the face of opposition.

The thesis experiments demonstrated the intrinsic link between design decision-making and the architects' worldviews and values in responsible architecture. By consciously articulating these values and incorporating them into projects, architects could clarify their responsibilities within the project and enhance motivation, social cohesion, and mutual understanding among stakeholders. Value-led participatory design strategies proved instrumental in uncovering unconscious issues, power dynamics, and psycho-social dilemmas throughout the design process. These insights, coupled with emotional attunement and transformative life experiences, encouraged alternative thinking, fostering sustainable behavior. The experiments emphasized that by making unconscious processes related to values and emotions explicit, new values and worldviews could be formed or existing ones linked to practice, further promoting sustainability. Personal values and worldviews, often left unspoken, need to be integrated into our work to facilitate sustainable architectural practice. Shared dilemmas and aspirations can inspire and motivate collective engagement and innovation, countering the pervasive culture of competition in architecture. Engaging with individuals holding different values is not about imposing beliefs, but rather about finding common ground, such as architectural quality, to initiate dialogue and foster emotional attunement. This approach allows us to start from the point of agreement and open up conversations about shared challenges or fears, creating opportunities for sustainable change in the field of architecture.

9.3.2 Social Responsibility in Architecture

The exploration of social responsibility in architecture showed that it could be cultivated and demonstrated through a hands-on praxis approach with participatory action informed by critical thinking. This approach engages people directly, enabling them to learn from their actions and adjust their behavior, thoughts, and feelings. Crucially, such an engagement inspires sustainable behavior, facilitated by an immersive, hands-on approach that promotes personal connection and active participation. This involves architects getting involved in communities and working closely with individuals, thus fighting against alienation and detachment.

In the interviews, architects highlighted the importance of prioritizing social issues within their work, fostering social cohesion, enhancing wellbeing, and promoting fairness. Beyond numerical and technical outcomes, architecture was seen to have more holistic benefits. This philosophy also stressed the need for architects to listen deeply to communities, treating local people as experts and democratizing the design process through collaborative and open-source tools. This perspective underlines the importance of process over product, emphasizing the early design stages. Architects are urged to focus on transformation and renovation, rather than new construction, thereby avoiding over-dimensioned or unnecessary projects and fostering community organization.

The participatory design workshops revealed that the focus on social responsibility created a continued engagement between students and the community even after the workshop through formal and spontaneous collaborations. Several students maintained their relationships with community partners, with some undertaking internships, establishing their own studios at (X), joining local initiatives, and even independently continuing design development with particular groups.

Likewise, students from the SSA course expressed a desire for experiential learning, and the chance to experience real-life, hands-on work. They believed these practical skills and experiences were invaluable and could not be replicated in traditional educational environments. This kind of engagement helped them realize their responsibility as architects, connecting them with people and their physical surroundings. Importantly, it offered a solution to feelings of alienation and a disconnect from everyday realities, fostering a stronger tie between their personal aspirations, their work, and the impact they could make on the world.

Moreover, an emphasis on social responsibility assisted in redefining power dynamics and responsibility among stakeholders in design decision-making. Traditional technical approaches often place power in the hands of technology, potentially leading to frus-

tration and a sense of injustice¹⁰. Such power imbalance might distract from the responsibilities of governments and businesses and could even incite feelings of guilt and frustration that impair sustainable behavior¹¹.

In contrast, the study's focus on social responsibility encouraged stakeholder involvement and participatory decision-making. The distribution of power and responsibility is considered both architects and stakeholders, thereby emphasizing negotiation and partnership for a fairer power distribution among environmental stakeholders¹². This is vital because it introduces the concepts of collective responsibility and power imbalance, which are crucial for fostering sustainable behavior.

The study showed that responsible architecture fosters behavior changes not only at an individual level but also through collective decision-making processes. It highlighted the need to integrate stakeholders to understand design problems from multiple perspectives, and to boost critical thinking and understanding of proposed systems. All of these steps contribute to a sense of agency and empowerment¹³, ultimately promoting social responsibility within architecture. Despite an emerging recognition of the social significance and complexity of design in sustainability, the social potential of it remains largely ignored and under-researched¹⁴, therefore, this study helped to fill the research gap by connecting social and collective responsibility to sustainable behavior in architecture.

9.3.3 Holistic approaches in the design process

Experiments revealed that a holistic design approach focused on a multidisciplinary team and expanded design process is necessary for responsible architecture, because it helps deal with complexity and transform complexity into tangible architectural solutions. Across experiments, it was highlighted the need for architects to invest in developing new methods to make the translation between theoretical knowledge, concepts, and qualitative data to specific design methods and design responses.

10 Olsson, David. "From Technocracy to Democracy: Ways to Promote Democratic Engagement for Just Climate Change Adaptation and Resilience Building." *Sustainability* 14, no. 3 (2022): 1433.

11 Fernandes, Se quiser mudar o mundo.

12 Blake, James. "Overcoming the 'value-action gap' in environmental policy: Tensions between national policy and local experience." *Local environment* 4, no. 3 (1999): 257-278.

13 Hungerford, Harold R., and Trudi L. Volk. "Changing learner behavior through environmental education." *The journal of environmental education* 21, no. 3 (1990): 8-21.

14 Chick, Anne. "Design for social innovation: Emerging principles and approaches." *Iridescent* 2, no. 1 (2012): 78-90.

The survey results indicate that holistic architecture, embodying sustainable behavior, extends beyond the traditional design phase, to encompass pre- and post-design stages. A key element is active stakeholder engagement from the start and continual assessment of the architectural impact on human behavior. This broader perspective transcends the notion of 'green building' to encompass the project's social, historical, and behavioral contexts. It calls for open dialogue and trust-building with all stakeholders, fostering individual growth alongside architectural development. The approach advocates the integration of 'soft' (social sciences) and 'hard' (technical) disciplines, emphasizing the value of multidisciplinary teams who can translate between these fields and apply theoretical concepts in architectural spaces. Embracing complexity and promoting collaboration are encouraged, with the potential to provide architects with more insightful, persuasive justifications for design choices and the orchestration of complexity as a distinguishing characteristic of the profession.

Practitioners advocating for a more relational approach urge for a critical perspective in architecture, confronting complexity with curiosity and openness. They highlight the need for a broader understanding beyond technical aspects, emphasizing the importance of integrating human sciences. Approaches to fostering critical thinking and enabling emotional investment in architecture include encouraging dialogues, engaging people, and promoting multidisciplinary work. When faced with psycho-social dilemmas, these practitioners favor an interdisciplinary approach that leverages social sciences like psychology and sociology to address the fear of change. This involves connecting and educating stakeholders through participatory processes, promoting sustainable methods, and fostering democratic design processes. A key aspect is creating an emotional connection to facilitate discussions, manage disagreements, and encourage collaboration. Interestingly, a challenge highlighted is translating theoretical and complex processes into tangible language for easier comprehension, a necessary step for architects to promote holistic approaches effectively.

The participatory design workshops offered students a challenging but insightful experience in exploring holistic approaches in the design process. Students initially found it challenging to translate qualitative data into concrete designs, emphasizing the need for effective tools and methods to facilitate this transition, such as the Value-Action-Design Response (VAR) exercise. The VAR exercise proved instrumental in materializing conceptual ideas into specific design elements while retaining focus on stakeholder values. However, aligning assigned roles with specific design tasks was problematic, prompting the need for a clearer connection between the design phase and students' roles. Despite these challenges, students were deeply engaged in the process, appreciating real-life situations and the necessity of effective communication skills in the design process.

The workshops also underscored the importance of incorporating a holistic approach, which expands the understanding of sustainability to include social issues. Finally, they highlighted the need for more time and critical exploration in translating complex discussions and conceptual ideas into design choices, acknowledging the critical role of stakeholders' engagement and communication in a successful design process.

The SSA course students commended the multidisciplinary and holistic approach towards architecture, stressing its role in integrating diverse aspects of sustainable practices into their work. They appreciated its broad perspective, especially the course's emphasis on the multi-dimensional nature of sustainability that incorporates not just environmental but also social, economic, and political elements. The course successfully dispelled the notion of sustainability as merely a technical detail in architecture, advocating instead for the inclusion of people in the design process, the practical application of the lessons, and hands-on experiences. It also supported a comprehensive approach to material usage, incorporating sourcing, construction techniques, and waste management. However, despite the positives, students expressed uncertainty and frustration regarding implementing these principles in their professional lives. They identified a gap between theoretical knowledge and its practical application, thus highlighting the need for further research on the feasibility of these practices in the real-world and the effective integration of holistic approaches in the practice of responsible architecture.

These research findings underline the importance of adopting a system thinking approach in design, emphasizing the value of viewing problems through a multidisciplinary, integrative lens that focuses on relationships and the interconnection of actors. However, it also brings the challenge of managing anxieties about high stakes and time pressures with a more thoughtful, mindful engagement with processes and conversations for long-term effectiveness. It stresses the need for implementing empathy and active listening into our daily routines and asks professionals to step out of their comfort zone and expand their focus beyond just physical buildings to include urban policies and decision-making processes. Finally, holistic approaches ask architects to redefine their professional role as facilitators who can bridge the gap between diverse disciplines, orchestrating a team of diverse scientists to develop meaningful spatial projects rather than attempting to be an expert in every field.

9.3.4 Expanding the role and responsibilities of the architect

Experiments in this study suggested that responsible architecture should promote diversifying architects' roles and expanding in design processes while embracing multi-

disciplinary work. By aligning these roles with personal values, aspirations, and skills, architects can feel motivated and find meaning in their work, even amidst challenges.

Interviewees mentioned that the breadth of architecture extends beyond physical constructs and continues to influence long after completion, sometimes not even culminating in a tangible building. Amid increasing climate concerns and resource scarcity, architects must rethink their roles, shifting from creating new structures only to the broader impacts they can have in the profession. But architects face a dilemma between the growing demand for sustainability challenges their traditional roles of creating new edifices: the transition from the product-focused practice to the process-centric approach stirs fear of not fulfilling their professional identity. However, a shift towards areas like the social impact of renovation and community projects could reconcile this discord, enabling architects to create meaningful designs without reliance on new physical structures. This insight suggested a potential where architects can look for creative ways to reconcile the need for sustainability with the desire for creative expression and impact in the architectural field.

Relational practitioners see the potential to broaden the architect's role. They view architects as vital connectors and translators of diverse views, disciplines, and data into design. Instead of merely mimicking engineers, they emphasize the architect's unique ability to bridge gaps and translate theoretical concepts into design, confronting psycho-social dilemmas fearlessly.

In participatory design workshops, students explored their roles as architects within responsible architecture. These roles included architects as bridges connecting people from diverse disciplines, translators turning abstract ideas into concrete designs, and storytellers enhancing the project's narrative process. The focus on architects' roles and responsibilities within the design process allowed the students to align their architectural practice with their personal values, preferences, and skills, facilitating smoother communication and task distribution. Focusing on these roles helped students adjust their responsibilities as the project changed and developed based on collective decisions.

In the SSA course, students valued seeing their tutors practice architecture in diverse ways, thus expanding their understanding of the architect's role. With tutors from varied backgrounds engaging with architecture differently, from mycelium brick-making to psychology applied to urban justice, the students found hope and inspiration to persist with responsible architecture. The exposure to the varied roles of architects nurtured a sense of community, empowering students to uphold their values despite opposition

and helping them to learn to balance their own economic sustainability with radical, transformative work in their practice.

9.3.5 Relationships to create belonging

The experiments demonstrated that using architecture and design processes to foster a sense of belonging led to emotional attunement, increased responsibility, and meaningful connections among individuals. This process diverged from traditional technological sustainable behavior approaches, which focused solely on individual cognition. Instead, this study adopted a relational approach, incorporating both individual and collective aspects influencing psychological states and socio-cultural factors.

Belonging was recognized as a vital need for professionals and students in the architecture field to counter feelings of isolation, stress, and hopelessness. This need was met by cultivating meaningful relationships via inclusive design practices. Curiosity emerged as a crucial element in this process, sparking interest in others' perspectives and facilitating the integration of these viewpoints into architectural projects. This resulted in more robust and inclusive designs.

Pursuing meaningful work that aligns with responsible architecture also played a crucial role in reinforcing personal and professional purpose. This alignment facilitated the creation of meaningful relationships, contributing to a sense of belonging, psychological comfort, and overall wellbeing, connecting practitioners with their work and their personal aspirations to positively impact the world.

The interviews illustrated how relational practitioners cultivated belonging to foster connections during the design process. This approach, achieved through honest dialogues and aligned values, created a sense of closeness with clients, producing meaningful projects. Investment in collective intelligence and shared responsibility among stakeholders encouraged collective behavioral changes toward sustainability. The architectural role then became a bridge and translator between people, particularly vital when representing less powerful groups. Such strategies helped practitioners ease stress, combat alienation, and foster a sense of connection, particularly within smaller practices that recognized the importance of nurturing a sense of belonging within their own offices.

This sense of belonging also played a key role in driving motivation in participatory design and architectural learning. The participatory design workshops showed that students could cultivate a deeper understanding of each other by creating an environment of open sharing, addressing fears and hopes, and building trust among stakeholders.

This connection with real people and actual project sites brought projects to life, underlining the value of hands-on design experiences in architectural education.

Students in the SSA course expressed that this course fostered connection and responsibility through in-person interactions and practical assignments involving real-life situations. Students reported that interacting with stakeholders and site visits significantly boosted their project motivation and optimism. They valued the project's real-world context, which encouraged connection and understanding. Emphasizing the importance of real-life projects, they appreciated the hands-on approach in architectural education that caters to local community needs and fosters a sense of belonging.

Similarly, students from the SSA course expressed feelings of belonging through the course's focus on connection with people and the local community, building a sense of mutual help, and hands-on projects as a way to assume responsibility for real-life people and situations. These experiences allowed students to understand how design can impact people's lives and engendered a community-focused mindset. This process made them feel engaged, hopeful, and aware of the tangible impact of their design projects. The course's inclusive culture and community were also impactful. Notable aspects included diversity, a strong sense of community, availability of patient instructors, and cooperative learning, and immersive workshops were appreciated for promoting feelings of safety and curiosity. Therefore, the students emphasized the value of real-world tasks, cooperation, cultural diversity, and mutual assistance in fostering connection and belonging. They highlighted the importance of an inclusive and practical learning environment that bridges diverse backgrounds and skill sets.

Therefore, investing in relationships and creating a sense of belonging through a deeper inquiry into our true dependence on other people and species helps architects and stakeholders develop a more intelligent, deeper sense of relationship and common identification with others. This process can enhance people's ecological self, where behavior is naturally less intrusive, more sensitive, and less toxic because we appreciate the larger context and care about those whose wellbeing our behavior affects.¹⁵

9.3.6 Developing the capacity to share and listen

Interviewees mentioned how important sharing and partnership were to practice responsible architecture. They emphasized collaboration and open-source knowledge sharing, where architects and the building industry can improve design decisions and collectively practice responsible architecture. This endeavor involves fostering increased

¹⁵ Koger, Susan M., and Deborah DuNann Winter. "The psychology of environmental problems: Psychology for sustainability." (2011).

trust in collective intelligence and distributing responsibility among various stakeholders. Embedding collective responsible behavior in architectural projects is critical for achieving sustainability, and this can be promoted through various tools such as raising awareness, education, empowerment, co-creation, developing critical thinking, and fostering trust relationships. By aligning values and sharing knowledge honestly, architects can encourage users and clients to be more receptive to sustainable solutions. A humble, fearless attitude is also essential, with architects taking the initiative to listen to local experts, invest in dialogue, and empower stakeholders to partake in and continue developing design strategies. This approach can nurture a sense of care and ownership that enhances architectural projects' social and material longevity. Acknowledging the power imbalances inherent in the architectural process is also crucial; architects need to help better distribute power and environmental impact responsibility among various stakeholders, reinforcing the democratic and equitable nature of sustainable architecture.

Several students grappled with exercising patience and active listening during the interactive design workshops. They also found it difficult to accept and implement feedback, reflecting a possible drawback of the prevailing architectural education that often emphasizes decision-making without the necessary precedence of in-depth listening. Numerous students faced obstacles in the preliminary information collection stage and discovered that revising their designs in response to stakeholder feedback could result in a final product that did not completely match their initial expectations.

In contrast, it was observed that students who adopted a modest approach and were open to revising their concepts based on stakeholder feedback ultimately produced designs deeply resonated with the stakeholders. A design that reflects the user's identity and makes them feel understood fosters a stronger connection and motivates them to engage with and maintain the design actively. It became apparent how building a connection with the stakeholders allowed students to communicate with them on an equal level, paving the way for more authentic interactions, productive teamwork, and diverse group discussions. This experience emphasizes the importance of deep listening, negotiation, flexibility, and adaptability to local contexts in ensuring successful design projects.

The SSA course promoted an environment of deep listening, sharing, and partnership through its non-hierarchical and co-learning design, which students greatly appreciated. The course's approach aimed to flatten traditional hierarchical structures, allowing every participant to contribute meaningfully and promote a more participative work environment. The course utilized various platforms such as live sessions, case study presentations, and online forums, allowing students to collaboratively explore course con-

tent, present their work, and engage in enriching discussions. Students were encouraged to share their unique experiences and skills, fostering group cohesion and enriching the learning environment. This approach challenged traditional hierarchical structures, empowering students to contribute meaningfully, and fostering a more participative and satisfying work environment. The course also equipped students with skills in non-hierarchical leadership, self-management, group dynamics, and urban socio-anthropology, crucial for various participation projects. An essential aspect of the course was fostering collaboration without ego and competition, leading to an appreciation of non-hierarchical and inclusive work processes, further encouraging autonomy, collaboration, and mutual growth. The diversity among students, in terms of their cultural backgrounds, significantly enhanced their learning experience, provided a broader perspective, and helped them feel less isolated, knowing that people worldwide shared similar feelings and challenges in the field of sustainability in architecture. Thus, this cultural exchange and cooperative environment were integral to the course's success.

9.3.7 Small local interventions in architecture to create positive affects

The experiments showed the importance of small architectural interventions in fostering sustainable behavior. That's because people need to have enough psychological resources to ensure sustainable behavior when facing challenges, where positive affects, attitude, and emotions are crucial to have plentiful psychological resources^{16,17}. Furthermore, experiments also showed that for architects to shift towards an ecological worldview, it's necessary to make sustainability a personal matter. Architects, thus, should engage with individuals' emotions and experiences by listening, empathizing, and co-creating. The role of affective relationships is essential in the design process, making sure small interventions are carried out with care and attention.

The design process requires emotional attunement with stakeholders, aligning with their values and life stories. It should address challenges, contradictions, and negative feelings, as well as consider potential solutions. The architects' role is to equip people to tackle these challenges, sustain desired behavior, and carry lessons learned to future projects.

The researcher used attention to affect to bring unconscious processes to consciousness, connecting inner human life dimensions with architectural responses. Information can

16 Donovan, Robert. "Theoretical models of behaviour change." *The SAGE handbook of social marketing* (2011): 15-31.

17 Kwasnicka, Dominika, Stephan U. Dombrowski, Martin White, and Falko Sniehotta. "Theoretical explanations for maintenance of behaviour change: a systematic review of behaviour theories." *Health psychology review* 10, no. 3 (2016): 277-296.

trigger emotions and should be explored concerning individuals' childhood experiences, worries, dreams, and anxieties. Understanding these elements can help prevent apathy and despair, and stimulate positive emotional responses.

The importance of small-scale, local projects was demonstrated in participatory design workshops and an SSA course. The design process significantly influenced Students' emotional states, promoting short-term and long-term sustainable behavior. Furthermore, focusing on smaller changes helped students to have a positive emotional response and increased their motivation to face psycho-social challenges because it helped them feel and see where they could make an impact. Furthermore, many students also saw the course as an opportunity to explore collective projects and alternative modes of living, a process that often resulted in the reevaluation of their life choices.

In the interviews, small-scale projects within larger ones were identified as crucial in stimulating sustainable actions. This approach kept all parties interested and motivated, making temporary testing spaces and activities particularly impactful. Observing change in action motivated individuals, fostering collaboration and strengthening overall projects. However, it was noted that as firms grow, holistic and socially responsible approaches can be lost due to the lack of an overarching view. Smaller practices emphasized the importance of creating a sense of belonging within their teams and maintaining a personal connection with clients and stakeholders. The proximity to project sites was also seen as essential to generate feelings of belonging. Hence, the size of a practice plays a critical role in sustainable behavior, reinforcing the need for a commitment to local contexts. The psychology of affects should be used to address sustainability in design projects, because it helps us balance our knowledge of our problems' complexity with a commitment to working diligently on them, especially in local contexts.¹⁸

Therefore, for emotional attunement to happen, it is essential to create intentional contexts in which change can take place. Facilitating a supportive and non-judgmental space focused on dialogue that invites creative participation, that addresses people's anxieties and dilemmas while focusing on solutions, is needed for creative and reparative energies to emerge¹⁹. In this regard, small-scale intentional projects can help create sustainable behavior and support changes brought about by numerous individuals relating, where relationships catalyze change.

9.3.8 A courageous and critical attitude

¹⁸ Winter, Deborah, Susan Koger, Susan M. Koger, and Deborah DuNann Winter. The psychology of environmental problems: Psychology for sustainability. Psychology press, 2011. 216

¹⁹ Lertzman, 150.

Finally, the last theme evident across experiments was the importance of a courageous and critical approach to practicing responsible architecture. Within this theme, professionals and students shared their hopes that the architectural field could develop a collective vision for practicing architecture in a more responsible way.

Interviewees talked about the need to redefine good architecture, and urged architects to adopt a critical approach to their work, viewing sustainability beyond numerical or aesthetic attributes and redefining what constitutes 'good' architecture. It was suggested that a need for a critical practice where architects should focus on aligning professional practice with personal ethics, enhances the collective effort to practice responsible architecture. They urged architects to openly discuss their failures, mistakes, ethics, and moral standards. Such transparency helps balance power and responsibilities in environmental impacts. A non-fear attitude is essential, with architects encouraged to engage, dialogue, search for meaning, and maintain a 'no' strategy when their moral standards don't align with a client's demands. Challenging traditional architectural briefs, proposing creative economic models, and accounting for human behavior are all part of this broader impact.

Similarly, SSA students mentioned several strategies they developed in order to work within the architectural field without compromising their ethical stands. At the same time, many quit their jobs and changed the focus of their architectural careers due to ethical dilemmas. Therefore, architectural students in the study mentioned a need for architects to engage in critical reflection and question design choices and processes. They recognized the need to continually assess their intentions and the implications of their work to practice responsibly. These insights reflected the necessity for architects to continuously assess their intentions and the ethical implications of their work.

9.4 IMPLICATIONS for ARCHITECTURAL EDUCATION AND PARTICIPATORY DESIGN

Although investigating pedagogy was not an intentional part of the research projects, many insights from the experiments appeared that could be valuable for architectural education and participatory design. First, experiments showed the importance of Building relationships with the community and understanding their needs is a crucial first step in an extended design process. The notion underscores this idea of "think before you draw," an important aspect of sustainable behavior in architecture, and resonates with Cole et al. "Building human agency: a timely manifesto"²⁰, that calls for a shift in the design processes, as an opportunity to emphasizing increased public engagement and autonomy over automation to foster a re-humanization of architecture.

²⁰ Cole, Raymond J., Zosia Brown, and Sherry McKay. "Building human agency: a timely manifesto." *Building Research & Information* 38, no. 3 (2010): 339-350. P 341

Incorporating real-life situations and interactions with actual stakeholders in architectural education enhances students' sense of belonging and responsibility. Furthermore, participatory design, grounded on the shared values of stakeholders, proved crucial in shaping sustainable architecture. This approach encourages deep listening, imagination, and taking small steps towards a shared future, necessitating new methods for architectural engagement that promote creative, authentic participation.

However, some students in the participatory process faced challenges due to potential differences in values and viewpoints among the participants. This issue accentuates the gap in architectural education, revealing the need to cultivate interpersonal skills for effective stakeholder engagement and negotiation between people during design processes.

The practice of praxis, a method of applying theories and concepts to design spaces, surfaced as a key element in sustainable behavior. Because knowledge and awareness only do not close the gap between possessing environmental knowledge and practicing ecological actions²¹, hands-on practical approaches and methods to translate knowledge into design proved essential to sustainable behavior. However, translating abstract ideas into concrete designs posed a challenge for some students, prompting architects to use more efficient methods and tools to engage with qualitative data and translate concepts and theories learned into the design.

Finally, sustainable behavior in architectural education can address the ongoing co-creation process that remains responsive to the ever-changing nature of communities and ecosystems. This approach, similar to the concept of "continuing design"²², advocates for a more inclusive, temporally open-ended process. Sustainable behavior isn't about top-down, technological fixes, but involving diverse stakeholders in the design process. This perspective fosters critical thinking, and collective responsibility, viewing stakeholders as co-makers rather than mere users or consumers.

Furthermore, the difficulty of lack of engagement with more-than-human elements in the experiments showed a need for attention towards the interconnectedness between social structures and a network of actors that include not only humans but also biotic and abiotic more-than-human entities. This interconnectedness provides a platform to

21 Harold R. Hungerford and Trudi L. Volk, "Changing Learner Behavior Through Environmental Education," *The Journal of Environmental Education* 21, no. 3 (March 1990): 8–21; Jody M. Hines, Harold R. Hungerford, and Audrey N. Tomera, "Analysis and Synthesis of Research on Responsible Environmental Behavior: A Meta-Analysis," *The Journal of Environmental Education* 18, no. 2 (January 1987): 1–8.

22 Karasti, Helena, and Karen S. Baker. "Infrastructuring for the long-term: Ecological information management." In 37th Annual Hawaii International Conference on System Sciences, 2004. Proceedings of the, vol. 4, pp. 10-pp. IEEE Computer Society, 2004.

enhance the lack of relationships between human and more-than-human elements and constructs an ecological worldview that's democratic and inclusive of all ecological actors.



Image from the final workshop presentation at Institut for (X). Image by the author.

10. Conclusion



10.1 Main findings, research questions and objectives

This dissertation proposes Responsible Architecture (RA) as a critical framework and as a relational tool to address sustainable behavior in the building industry, the personal values of architects and stakeholders concerning the local and global communities they live in, and the current building practices in the architectural field that are profit driven and rely on technocratic and greenwashed ideas if they address environment sustainability. Drawing on insights from environmental psychology, environmental education, critical environmental studies, and participatory design, this dissertation has taken a multidisciplinary approach to examine and investigate sustainable behavior and the barriers to it, paying particular attention to psycho-social factors of the current architectural cultural landscape alongside emotional dilemmas that impact architects' response-ability to our current environmental crisis. Seeing RA as a set of ethical responses (based on the worldviews and values behind an architect's intentions) and abilities (an architect's capacity to action that is mediated by psycho-social dilemmas), this study untangled the relationship between people's worldviews, values, psychological states, social systems, and, ultimately, their behavior. Investigating the relationship between these factors, the research presented here is part of an ongoing discussion that critically engages in examining the current challenges architects face when dealing with some of the most powerful forces in our society, the profit-oriented market development-driven models of the building industry, while positing that urgent radical change in human behavior is needed to alter the course of our society in the face of environmental crisis. Departing from techno-centered and other false solutions to sustainability, Responsible Architecture envisions a paradigm shift in how we practice sustainability in architecture that emphasizes cultivating ecological worldviews and emotional capacity as key to sustainable architectural practice.

I think one of the most significant shifts in my perspective during this research process was how I see sustainable behavior itself and how change can take place. In the beginning, my ideas about sustainable behavior were mainly influenced by how the fields of design, which are close to architecture, were addressing sustainable behavior. But I realized the limitations and risks of this approach, as explained in chapter 2. I was fortunate to meet environmental psychologists and anthropologists during my PhD studies, who helped me to broaden my understanding of sustainable behavior to include deeper and more critical aspects of inquiry, such as the role of emotional, psychological, and social dimensions. Furthermore, reading in the fields of social justice and environmental sociology, helped me to understand that politically charged social dilemmas might also influence sustainable behavior in architecture. Therefore, my perspective of sustainable

behavior and how to research it, changed from a linear and rational approach to a complex and relational approach.

Furthermore, I migrated from seeing the issue of behavior as ‘an individual change’ to seeing it as ‘many individuals relating, where relations create change.’ The thinking that ‘if everyone does their part, we can create change’ transformed into ‘if we change how we relate, we can create change.’ This is the fundamental aspect of the relational approach to sustainable behavior proposed in this study. Therefore, responsible architecture implies that architects can reflect on their ideas and start coordinating actions through exchanges in which others, influence others by connecting with them on a personal level. This is very important because it signals the need for a shift in the architectural culture, from techno-centered worldviews and practices to relational-centered worldviews and practices.

Aligned with this mindset, the experiments in this study explored ways in which architects link their professional practice to their inner personal world, values and affects. Results showed that architectural design processes can be a catalyst for behavior change for all stakeholders involved (including the architect) in the building process. Design processes that focus on relational practices to change modes of thinking and behaving change how we relate to each other and can create new partnerships and collective behavior change by enhancing the connection between people and between humans and more-than-humans. In this way, it offers a way to address psycho-social issues that architects face in an open manner to acknowledge fears and create spaces for emotional attunement. As such, RA contributes to a responsible architectural practice in which success is determined not only by architects or specialists, but by a collective of human and more-than-human actors involved and being impacted by the project.

Within the four diverse experiments conducted with professionals and students in the architectural field, this dissertation showed how sustainable behavior results from architects’ emotional capacity to deal with several intersecting psycho-social challenges they face to practice responsible architecture, across diverse contexts and individual experiences. This emotional capacity is supported by several aspects, such as cultivating ecological worldviews, emotional attunement with professional practice, and psychological alignment between personal and professional values. Furthermore, experiments revealed that this emotional capacity is also dependent on the support of a collective responsible architectural practice, revealing an urgent need for architects to build a common ground from which collective actions to practice responsible architecture can be developed. In this sense, developing a responsible architecture practice requires practitioners to be in constant dialogue with themselves and with others affecting and being

affected by architecture. Therefore, RA, as a relational tool, can assume several forms to accommodate a range of environmental and social problems according to the context.

Using bricolage as a methodology, this study contributes new context-specific methods in the pursuit of understanding and promoting sustainable behavior in architectural engagements. Based on interviews with practitioners, participatory design workshops, and research in educational settings, the main findings of this study contribute to new understandings of sustainable behavior regarding both professionals and students of architecture and contribute to the development of new methods of participatory design and educational learning. While some of the findings are context specific to each experiment, certain themes that appeared cross-experiments were transferred to a level of general validity and broader impacts. The following outline the main research questions and contributions that this dissertation on Responsible Architecture sought to produce:

Research Question: How can relational approaches to sustainable behavior be integrated into the architectural discipline to develop responsible architecture practices?

Grounding the concept of Responsible Architecture in a relational approach to address sustainability and responsibility in the architectural profession, experiments discussed throughout this dissertation have emphasized engaging with people's worldviews, values, and emotional struggles while discussing responsibility in architecture. With the goal of fostering greater personal and cultural transitions towards a more responsible architectural practice, key findings from this study call attention to the importance of Relational Tools as part of RA, which brings unconscious psychological issues to the forefront during the design process. By connecting architects' worldviews and values with emotional attunement between personal and professional life, it creates a space to address responsibility within the context of environmental and social challenges and for architects to deal with cognitive dissonance and psycho-social dilemmas in order to move beyond them into a space of creativity that grows out of engaging authentically with sustainability challenges. As was argued in the literature review, architects' sustainable behavior is influenced by their emotions, anxieties, and values. By reconnecting with their personal experiences, architects can align their worldviews and values with responsible practices. Findings also revealed that relationships for collective change are an important part of RA, which views behavior as a product of relationships. Architects can promote sustainable behavior by coordinating actions through exchanges with others. Importantly, experiments highlight the need for a fairer distribution of responsibility and power in decision-making processes. It emphasizes negotiation and partnerships between stakeholders to enhance collective responsibility. Finally, findings suggest that developing architectural processes that strengthen emotional capacity and psycho-so-

cial abilities are key to dealing with the sustainability challenges that architects face today at individual and professional levels.

Objective 1: To further develop the research link between sustainable behavior studies and architecture

This dissertation found a research and practice gap in sustainable architecture that integrates environmental behavior studies, which, when existent, are largely dominated by top-down and linear behavioral approaches mediated by persuasive technology and energy efficiency. But these approaches ignore research that has shown that people's behavior is impacted by their emotions¹, identity², and values³.

Therefore, this dissertation highlights that relational approaches could offer new insights into alternative modes to promote sustainable behavior that integrates broader psycho-social dimensions of human life into responsible architectural practice. In contrast with approaches that use persuasion, nudging, control or shame, relational approaches to sustainable behavior enable us to meet challenges and others with greater levels of authenticity, empathy, compassion, and emotional attunement. Experiments showed how this could be done in design processes that enhance relationships, connection, belonging, listening, and sharing meaningful personal perspectives.

This dissertation unfolded how unconscious processes such as fears, anxieties, cognitive dissonance, and emotional distancing can impair sustainable behavior in architecture and how emotional attunement can help to bring architects back to potential concerns, desires, hopes and engagement. Untangling architects' psycho-social dilemmas and emotional struggles can help creativity emerge, which is an important element of engagement in dealing with pressing sustainability issues in the profession. Experiments showed how this could be done by creating settings for honest and open sharing about the challenges and emotional difficulties that architects and other stakeholders face in the design practice.

Therefore, this thesis showed the importance of acknowledging and dealing with difficult emotions amongst architects to move from self-defense mechanisms to creative

1 Julie Ann Pooley and Moira O'Connor, "Environmental Education and Attitudes: Emotions and Beliefs Are What Is Needed," *Environment and Behavior* 32, no. 5 (September 2000): 711–23.

2 Ellen van der Werff, Linda Steg, and Kees Keizer, "The Value of Environmental Self-Identity: The Relationship between Biospheric Values, Environmental Self-Identity and Environmental Preferences, Intentions and Behaviour," *Journal of Environmental Psychology* 34 (June 2013): 55–63.

3 P. Wesley Schultz and Lynnette Zelezny, "VALUES AS PREDICTORS OF ENVIRONMENTAL ATTITUDES: EVIDENCE FOR CONSISTENCY ACROSS 14 COUNTRIES," *Journal of Environmental Psychology* 19, no. 3 (September 1999): 255–65,

modes of engagement. In this way, this dissertation showed that including knowledge from the field of psychology that deals with emotional attunement can help architects tune to their concerns and creativity to engage with challenges in the profession in a more authentic and responsible way.

Objective 2: To further develop the concept of responsible architecture and its implications for sustainability in architecture

This dissertation explored how sustainability in architecture was linked with the architect's capacity to deal with the emotional challenges in the current professional scenario. It revealed how negative and overwhelming emotions that architects face leads to emotional distancing and psychological defense mechanism, and hinders behavior change. And that these emotional challenges are a result of a clash between the architect's values and the values of a market-profit-oriented building culture. This clash creates psycho-social dilemmas that evidence how sustainable topics in architecture are politicized and involve people's personal values, triggering emotional responses^{4,5}. Therefore, sustainability in architecture is highly influenced by human emotions, mediated by broader social contexts such as social environments or political systems. In this sense, responsible architecture proposes a new way to achieve sustainability in architecture by developing an architect's emotional resiliency to deal with psycho-social dilemmas and practice sustainable behavior. This is done by investing in relational approaches that promote architects' emotional attunement and alignment of their worldviews and values to their practice.

Furthermore, sustainability has been shown to be linked with a fairer distribution of responsibility and power in decision-making in architectural projects. Because the power to make a significant difference in environmental change is immensely unevenly distributed, placing responsibility in the hand of individuals might take away the focus on governments and business responsibility. Framing responsibility in individuals might then lead to a sense of guilt, frustration, lack of fairness, alienation⁶, and other negative emotions that can impair sustainable behavior. It showed how power imbalance in representation and decision-making can hinder or enhance collective and shared responsibility. Therefore, Responsible architecture emphasizes negotiation and partnerships that

4 McCright, Aaron M., and Riley E. Dunlap. "The politicization of climate change and polarization in the American public's views of global warming, 2001–2010." *The Sociological Quarterly* 52, no. 2 (2011): 155–194.

5 Stokols, Daniel, Shalini Misra, Miryha Gould Runnerstrom, and J. Aaron Hipp. "Psychology in an age of ecological crisis: From personal angst to collective action." *American Psychologist* 64, no. 3 (2009): 181.

6 Renee Lertzman, *Environmental Melancholia: Psychoanalytic Dimensions of Engagement* (London: Routledge, 2017), 149.

involve a fairer distribution of power and responsibility between several stakeholders in the design process, between individuals, collectives and institutions.

Objective 3: To explore new methods to engage with sustainable behavior in architecture

Arguing that sustainable behavior is linked with people's psycho-social ability to deal with sustainability issues, we need to develop architectural processes that can help to strengthen our emotional capacity and psycho-social abilities to deal with the challenges ahead. Hence, this dissertation explored the ways in which responsible architecture can resonate with people's everyday emotions, concerns, and the psycho-social dilemmas they encounter when engaging in responsible action. A few of these methods included participatory processes focused on social responsibility in architecture, holistic and multidisciplinary approaches, exploring alternative roles of the architect in design processes, strategies to create belonging and emotional attunement in the design process, investing in value-led involvement processes, and other strategies elaborated in the discussion. These relational approaches focus on design decisions and knowledge creation built upon collaborative social approaches, conversations, learning experiments, and emotional engagement between actors. This approach was founded on a responsibility to nurture the well-being of humans and more-than-human worlds, by cultivating people's capacity to deal with behavioral dilemmas to practice responsible architecture.

10.2 Methodological contribution

Given the complexity of sustainable behavior, the bricolage methodology highlighted an urgent need to develop and employ multidisciplinary approaches between diverse fields and between diverse settings (professional-educational/theoretical and practical) to engage with sustainability in architecture. The methodology also helped to weave findings from diverse scales, from global context (including literature review and research with students from diverse countries) to local context (with interviews and participatory design workshops in Denmark). Furthermore, the multidisciplinary approach of bricolage helped me to develop a critical theoretical framework to understand sustainable behavior in architecture as well as test several strategies to promote sustainable behavior in architectural learning. Consequently, this research revealed how multidisciplinary methods can significantly advance the theory and practice of sustainable behavior in responsible architecture, contributing substantively to architectural research and practice in the sustainability field.

This research also provided methodological contributions to participatory design in architectural education. Real-life situations incorporated into education, paired with par-

ticipatory design, foster a sense of responsibility and belonging among students, and ultimately drive sustainable architecture. It underscores the need for architects to build strong community relationships and understand stakeholder needs before beginning the design process.

In addition, pedagogical tools such as VAR (Value-Action-Design Response), and methodologies that align participant values with design decision-making processes and workshop methods, contribute to the cultivation of praxis strategies within the architectural domain. These methods facilitate the translation of theoretical concepts into practical design, making sustainable behavior more tangible and achievable in design projects.

A subsequent contribution to architectural education emanated from the alliance with the concept of science fictioning⁷, using the theme of futurity in participatory design to help participants to co-create a shared future based on hope. Adrienne Marie Brown observes that, “all organizing is science fiction,”⁸ underscoring the notion that the collective vision and realization of previously imagined possibilities can shape reality (such as women’s suffrage and the eight-hour workday). Similarly, RA serves not as a final checkpoint, but as a process to facilitate architects in scrutinizing their practice with a more critical lens. This approach can function as a tool that mobilizes individuals to organize collectively to reimagine how the future could be.

10.3 Research limitations

When addressing the complexity of sustainable behavior, it is important to consider the limited capacities of humans to act and think, because no individual human being can master all the environmental knowledge enough to make informed, perfect decisions at all times. We are experiencing things from our socio-cultural standpoints with their own limitations. Therefore, acting from responsibility does not imply the capacity to control the whole system and never do any harm. This would be an overwhelming tremendous task and likely to paralyze our capacity to act. But recognizing that our vulnerability does not exempt us from taking responsibility for our practices, RA frames responsibility in the individual and collective capacity, considering the worldviews, values, and psychological and social challenges people face in their practice. Framing responsibility in this scope can help find our agency and recognize our limits to action.

7 Joel P.W. Letkemann, “Science Fictioning Architectural Pedagogy,” in *Strategies of Design-Driven Research*, ed. Claus Peder Pedersen et al. (Aarhus, Denmark: Aarhus School of Architecture/ARENA/EAAE/ELIA, 2021), 364–83.

8 Walidah Imarisha, *Octavia’s Brood* (Oakland, CA: AK Press, 2015).

RA encompasses many aspects covered in this research, be it from an epistemological perspective, a critical stance against the status quo of sustainable technological practices, or a proposition to guide future relational approaches. However, it runs the danger of simultaneously encompassing everything and thus not being specific enough to distinguish anything. In the process of this research, I found it difficult to balance between the act of giving room for conceptual propositions to be general enough to be applied in diverse contexts whilst also not being too broad, meaning that it might fail to offer concrete prescriptions in particular cases. That being said, suggesting some generalizable solutions from specific experiments findings is an immense undertaking, and I am certain that RA has not escaped the pitfalls of these all-too-familiar shortcomings. However, I also recognize the importance of having an initial framework for thinning and doing that at least attempts to encompass a higher degree of the complexities, plurality, and unpredictability of sustainable behavior and responsible architecture.

I argue that RA has served its purpose in this research in the context of sustainable architecture in Danish practice, and in the context of participatory design and learning experiments demonstrated. But by no means are universally applicable. Moreover, RA is by no means perfect or finished, as this thesis is intended to start the conversation about responsibility and psycho-social dilemmas in architecture that is still in its infancy. It is an ongoing process contributing to the emerging fields of responsible architecture, environmental psychology, and alternative sustainable architectural practices.

In the current age of information, which is characterized by increasing complexity, the relationships that RA seeks to map need to be communicated in a manner that people can relate to and easily understand without oversimplification. It is the biggest challenge of our times as researchers in the field of sustainability to work with immense transdisciplinary complexity while being able to disseminate that knowledge to the broader community. I tried to ensure that the research was as detailed and transparent as possible in navigating through the complexities and addressing the reasons why RA took the form it did as one approach to moving past technological sustainable practices. Issues surrounding ethics and responsibility are incredibly complex, and thus, the ethical components of RA proposition are not without weaknesses and fallacies. It is a task that would benefit from collaboration with people from alternative worldviews, such as indigenous and global south, to extend the Eurocentric aspect and invite other ethical practices.

Moreover, integrating knowledge from social sciences, psychology, and education was challenging as many aspects of these fields were new to me. Working with high levels of disciplinary entanglements made it challenging to regulate the several levels of complexity sufficiently enough to be relevant for this research. For instance, how much transdis-

ciplinary work needs to be synthesized? At what point for the complexity become an unnecessary level of depth that is irrelevant to stakeholders (such as practitioners and educators)? Therefore, it is important to stress that the intention of the RA relational tool is not for architects or stakeholders to create a replica of their corresponding context but as a way to be aware of these complexities at play and as a tool to think with when planning design processes and making design decision in architectural projects.

This research also had significant time limitations. This dissertation was done in the scope of a Danish PhD, which is a three-year educational program, including 840 hours of teaching and research dissemination, as well as participation in the School of Architecture's events and committees. Additionally, the COVID-19 lockdowns highly affected the project's methods and timeline. Many PhD activities had to be postponed and reimagined, and the project was extended for a semester. For example, several interviews and parts of participatory design workshops had to be done online instead of in person. Juggling diverse topics and methods in a holistic and multidisciplinary research approach within these constraints was an ambitious task. Nevertheless, this project was aimed not at perfection in each experiment but at exploring the messy research process, failure, and success of a PhD educational process.

10.4 Summary of findings and contributions from experiments

In this subsection, I present a summary of the key findings and learnings from the past three years, with main research contributions. The following shows a summary of findings from each experiment that impact sustainable behavior in architecture and the practice of RA. And the following section summarizes RA as a critical framework and as a relational tool for practicing sustainable behavior in architecture.

Chapter 5: Interviews with sustainable architecture practitioners in Denmark:

- The biggest challenges professionals in Denmark face to practice RA is related to the profit-oriented and conservative culture in the building industry that focus on speculative architecture based on fast profit and short-term goals. In this scenario, greenwashing and people washing (such as false or superficial engagement processes). As well as the starchitecture culture that focuses on aesthetics, control, power, technology-oriented practices and feed the architectural ego, making it difficult to have a critical perspective on how the architecture profession and the building industry need to change.
- Sustainability is also an issue of democracy, because political decisions can quickly change policies, fund allocation, demands from investors, and democratic deci-

sion-making processes that influence possibilities of sustainable architectural practices.

- Many architects currently feel they lack political power and collective efforts to tackle these challenges and change their profession.
- Many feel alienated in the current starchitecture and profit-oriented culture, and they also face several psychological dilemmas between their personal values and their professional practice. Some architects, especially in technological approaches, displayed fear of challenging the status quo, fear of being replaced by engineers or losing their jobs, and lack of collaboration.
- Fear of not building more and therefore not being 'architect enough' increases while the profession take an unknown turn towards building less.
- While some architects displayed emotional distancing in the face of challenging psycho-social dilemmas they face, others recurred to relational practices to help them deal with these dilemmas and align their practice with their personal values.
- Often, individuals who have a clear understanding of the relationship between their architectural practice and personal life (such as life stories, education, values), displayed a more emotionally attuned professional practice. They do not compartmentalize their personal and professional identities, resulting in a human-centered perspective that reveals their vulnerabilities and deep personal connections with their work. This overarching outlook also allows them to perceive architecture not just as art or a job, but as a platform for building a better world and personal growth, intertwining their ethical stands and practices. In this chapter, I referred to these groups as relational practitioners.
- The relational approaches displayed by these professionals were expressed in several strategies they use in the design process to practice RA, such as holistic and multidisciplinary design processes, focus on social responsibility, inclusion, open sharing and collaboration, power distribution in decision making, collective critical thinking, cultivating curiosity and meaningful relationships, cultivating belonging, capacity to listen and courageous and critical attitude to question the brief, clients, and other stakeholders in architecture projects.
- While displaying emotional connection with other people, relational practitioners lacked a discourse in emotional connection towards more-than-humans. Therefore, data revealed that there might be a gap in architectural professionals in the Danish context when it comes to having an ecological worldview, or a lack of broader empathy that could be extended to not only people, but also towards more-than-human elements in architecture.

Chapters 6 and 7: Participatory design workshops in Aarhus, Denmark:

- PD methods based on creating emotional connection, identification, and experiential engagement have been shown to be effective for students' long-term behavior change, promoting openness and motivation to adhere to new perspectives.
- The workshops created various emotional impacts that promoted change towards responsible architecture by fostering interactions with others to cultivate empathy, collaboration, and meaningful engagements, and students could integrate their personal interests and personality factors into real-world issues. This developed student's critical awareness of how their personal values and worldviews are connected to their professional practice, professional roles, and decision-making.
- Attention to architects' roles in PD served to motivate students due to the autonomy it provided, allowing them to assume roles that resonated with their personalities. This empowered students in the decision-making process and facilitated smoother communication with group members and stakeholders.
- The feeling of belonging enhanced student motivation and maintained their engagement, even during challenging times. PD methods that emphasize trust-building and establishing a sense of belonging at the foundation of the design process, created a sense of collectiveness, teamwork, and shared responsibility.
- Incorporating real-world context and stakeholders in student projects fosters a tangible experience and enhances communication skills. Direct stakeholder interaction motivates students, instills responsibility, and provides essential feedback for meaningful projects. The hands-on approach amplifies the students' sense of belonging and emphasizes the value of local immersion. Even though adapting to stakeholder feedback can be challenging, it reinforces the importance of flexibility, adaptability, and valuing stakeholder input.
- PD processes rooted in shared values and collective decision-making, balance power dynamics in design processes and help architects understand the limitations of their designs without stakeholder consultation. Exercises such as storytelling with the 'article of hope' or shared values with the 'sacred oath' were helpful in connecting collective values and worldviews to the project's immediate needs and long-term aspirations. They showed to be a helpful way for stakeholders to communicate their long-term hopes and aspirations and as a guide to future action and decision-making, where hope became the basis for continued conversation and collaboration between stakeholders. Ultimately, these experiences highlight the necessity of building common ground for successful design.
- Including social scientists and their methodologies in the PD process promoted holistic thinking, considering multifaceted sustainability aspects beyond techni-

cal issues. This approach enhanced students' stakeholder engagement, boosting their communication and negotiation capabilities. Challenges in handling differing viewpoints underscore an educational gap and the need to improve interpersonal and 'soft' skills for sustainable behavior.

- Translating qualitative data such as shared values into tangible design components can be challenging but is crucial for improved communication and negotiation with stakeholders in design decision-making. The VAR (value-action-design response) exercise, an experimental tool from this study, sought to concretize abstract concepts into specific programmatic elements (spaces, materials, or tectonic articulations). Though it served as a valuable guide, it also exposed a need for better methods to bridge the gap between abstract ideas and design elements. This revelation highlights the need for more efficient tools to help architects engage with qualitative data.
- Even though students were concerned about including nature in their projects, they had difficulties doing so when nature was not a stakeholder in the participatory design process. Better results were achieved when more-than-human participants were represented by local biologists and other experts in local plant and animal life. The unique possibilities of speculative storytelling are a way to include actors who otherwise would not necessarily be represented, from the 'silent' voice of more-than-human ecologies on-site to actors on a global scale, such as climate change. Recognizing students' general difficulty during the workshop in including nature as stakeholder, further research is needed to develop methods to include a greater agency from more-than-human stakeholders in PD and document its impacts on design.

Chapter 8: Sustainable-Sustainable Architecture Course in Porto, Portugal:

- Similar to what was discussed in the interviews, students expressed frustration in the sustainability field dominated by profit-dominated approaches. Students face several psycho-social challenges in their practice and education, such as conflicts in worldviews, ethical stands, hierarchical limitations, difficulties negotiating with decision-makers, and resistance to change. These factors often left them feeling demotivated and alienated, struggling to reconcile their profession with their personal identities and values.
- The SSA course, however, equipped them with skills to constructively address these frustrations, encouraging patience and understanding towards the limits of perfectionism. Consequently, they learned the importance of making impactful contribu-

tions in their current capacity, gradually bridging the gap between their personal aspirations, their work, and their impact on the world.

- Merging theory with real-life application in architectural studies significantly enhances students' understanding, practical skills, and bridges the academic-real world divide. Real-life hands-on learning with real communities and local projects, helped students combat feelings of isolation, alienation, and demotivation. The course's praxis approach helped integration of theoretical concepts with hands-on workshops, enabling students to apply learned theories to real-world projects. And created a sense of responsibility, and connection with others, and fostered hope by demonstrating the direct impact of their actions and projects.
- Connecting course content with students' cultural backgrounds created a sense of identity and personal attachment to the learning experience. Individual case studies helped to empower students to apply course content to the local contexts and share their unique perspectives. This exercise also helped them to feel valued in their own cultural identity and interests.
- The co-learning format, and platforms for exchange and collaboration fostered a sense of global community, enhancing the sense of belonging and responsibility among participants. It gave students hope by experiencing that people around the globe share similar concerns and hopes. The course showed how building a community with diverse perspectives in learning can foster a global perspective of sustainability issues and create feelings of belonging. Co-learning with hands-on experiences and tangible examples helped students to make significant strides toward sustainable practices and sparked behavioral change through dialogues and idea exchanges. This approach mitigated the isolation often felt with individual work, fostering a community-centric learning environment.
- Through interdisciplinary methods, SSA broadened students' understanding, highlighting that sustainability is not just a technical dilemma, but also a major social concern. Emphasizing community participation, the program incorporated courses on ethnography, sustainability psychology, and participatory processes, equipping students with the necessary tools to engage with communities and challenge their biases. This expanded the scope of sustainable architecture beyond mere technical aspects, integrating social perspectives to delve into the inherent social responsibility within architecture and construction.
- A few students faced disillusionment and frustration when dealing with the gap between the knowledge and its practical application after the workshop concluded, mainly due to conflicts with the current culture in the building industry. This highlighted the challenge of implementing radical sustainable practices in the current economic system and conservative building culture.

- The course was useful in creating emotional attunement between people, students and content, as well as between theory and meaningful hands-on impact. This was achieved by creating platforms for gaining knowledge, broadening perspectives, developing ideas to improve cohabitation on the planet, and fostering feelings of safety and curiosity through immersive experiences. These methods helped them address feelings of loneliness and transform them into hope, and equipped students with the tools to advocate for sustainability robustly. The course's methods helped students alleviate feelings of alienation, enhance engagement, and foster a hopeful, purposeful community practicing radical sustainability.
- The course proved instrumental in fostering emotional attunement among people, aligning students' personal stories with content, and harmonizing theory with impactful hands-on experiences. This was achieved by establishing platforms for knowledge exchange and idea generation for improved planetary cohabitation, all while promoting safety and curiosity through immersive experiences. The course strategies helped diminish feelings of loneliness and alienation and increased their confidence to uphold their values in the face of opposition. It equipped students with tools for staunch sustainability advocacy by cultivating a hopeful community committed to practicing radical sustainability.

Generalizable findings supported by literature review:

- Dominant approaches to sustainable behavior in architecture are based on a paternalistic mindset, which, besides having ethical implications (such as control and consent), rely on an incomplete understanding of human behavior.
- Sustainable behavior is a holistic and complex phenomenon that is also shaped by the relationship between people's worldviews, values, and psychological and social domains of human culture.
- Negative emotions in response to social/cultural threats and anxieties can trigger psychological defense mechanisms and hinder sustainable behavior.
- Directive and top/down behavior change approaches can create anxiety, fear, or shame and hinder sustainable behavior. Therefore, design processes should be inclusive, where people are not seen as 'users' or 'consumers' but as 'makers' of their own narratives and choices about how they would like to change their behavior.
- To practice RA, we need a cultural transition from a linear and technocratic to a more holistic and ecological worldview in architecture.
- To practice RA, there is a need to connect sustainability issues and macro changes in architecture to individual and personal experiences, such as people's values, emotions, expressions of care, and personal identities.

- The link between people's worldviews, values, and behavior is riddled with contradictions, mixed emotions, conflicting thoughts, and dilemmas. Therefore, the interplay between individuals' psychological states and social structures can enhance sustainable behavior when positive (for example, feeling connected, and having a sense of purpose) or diminish it when negative (for instance, fear, anxiety, and various psychological defense mechanisms).
- Psycho-social dilemmas can be both individual and collective and can pervade psychological states and socio-cultural factors that activate people's psychological defenses, as well as limit individual responsibility amidst power imbalances in participation and decision-making. Therefore, sustainable behavior is as much a political and emotional task as it is an individual and collective one.
- Forging an ecological worldview necessitates fostering emotional alignment between individuals and between people and more-than-human entities, assisting individuals in developing identities not as isolated, self-governing entities but from a core sense of connection and shared identification with other people, life forms, ecosystems, other species, or the planet.

10.5 RA as a critical framework

In the midst of rapidly changing and growing social and climate challenges, humanity is edging towards an irreversible change in the social and environmental fabric that sustains our life on the planet. Thus, Responsible Architecture as a critical framework contributes towards the ongoing paradigm shift that is urgently needed in the building industry to re-envision and re-focus our efforts on what it means to practice responsibility in architecture to address our time's social and environmental issues.

- Responsible Architecture (RA) can help to **catalyze the redefinition of current values and worldviews** within the architectural milieu. This redefinition may involve critiquing and analyzing sustainable architecture and presenting alternative project engagement and practice methods. It advocates for a critical approach to architecture that goes beyond aesthetics and redefines what is considered 'good' architecture. This entails viewing sustainability not just in terms of numerical or aesthetic parameters, but also considering social, environmental, and ethical aspects. This critique encourages architects to partake in a collective endeavor towards responsible architecture, fostering a fearless attitude where they can engage in dialogues, search for meaning, and uphold the courage to reject projects that clash with their moral standards.

- **Cultivating values** of empathy, altruism, honesty, curiosity, openness, and humility in architecture **can help shift the “starchitecture” attitude, and promote a humble and critical approach**, with architects taking the initiative and embodying courage to face opposition. This attitude can help architects challenge building codes, politicians, investors, and confront the emotional roots of their fears of being replaced in case they embrace more critical practices.
- **Honest and open knowledge exchange** that recognizes failures, mistakes, ethical dilemmas, and moral standards **aids in balancing power and environmental responsibilities**. For that, partnerships emphasizing collaboration and open-source knowledge sharing are key, creating a space where architects and the building industry can collectively make decisions and promote responsible architecture. This strategy involves nurturing trust in collective intelligence and evenly distributing responsibility among stakeholders in the building industry.
- **Promote social responsibility within the design process**, by focusing on social cohesion, connectivity, and well-being, while advocating for fair and democratic design processes. Social responsibility highlights the importance of viewing local inhabitants as experts, and investing in a design process based on dialogue and active involvement of these stakeholders. This approach nurtures a sense of ownership and care, extending architectural endeavors’ social and material lifespan. Furthermore, inclusion platforms facilitate collective critical thinking, fostering creativity, and furthering the social responsibility goal.
- **Redistribution of power and responsibility** is key for effecting behavioral change in design processes. Recognizing and rectifying power imbalances inherent in architectural practices are critical steps toward creating more democratic and equitable sustainable architecture. Where people are seen not as users or consumers but as co-creators and makers, where design decision-making for sustainable behavior is made collectively. Architects can foster a democratic design process that uses collaborative and open-source platforms and tools to promote collective critical thinking and distributing responsibilities through individual and collective actions. Embedding collective responsibility in architectural projects is a path to sustainability, achieved through promoting awareness, fostering critical thinking, and establishing trust relationships.
- **Expanding the role and responsibilities of the architect**, where architects are vital connectors and translators of diverse views, disciplines, and data into design. To cope with complex and evolving sustainability challenges in the profession, the architect’s traditional role has to undergo substantial expansion and diversification. This dissertation highlighted a few possible new roles of architects, such as bridges (interconnecting several disciplines and stakeholders), translators (turning abstract

ideas into concrete designs), and storytellers (enriching the project narrative and impacts of architecture). This shift has prompted a movement from a product-focused approach to a process-centric one, where architects can orchestrate diverse inputs and use quantitative and qualitative methods. Yet, a significant dilemma persists as architects are challenged to reconcile their traditional role of creating new edifices with the emerging demand for fewer new constructions and resource scarcity. This insight suggested a potential where architects can look for creative ways to reconcile the need for sustainability with the desire for creative expression and impact in the architectural field.

10.6 RA as a relational tool

This dissertation delineated various relational methods intended to encourage sustainable behavior in architecture. The relational instruments investigated in this thesis serve as flexible strategies that can be used in design processes and potentially benefit architectural collaborations and design decision-making by improving relations. Consequently, RA, along with its critical dimensions, manifests as a relational instrument to engage with other stakeholders and with oneself to promote change.

- **Emotional attunement** has proven to be a fundamental method for professionals to synchronize worldviews, values, and responsibilities within their architectural practices. Individuals who can articulate how their architectural practice is impacted by their personal world (such as emotions, values, life stories, and educational backgrounds) demonstrated greater emotional attunement and psychological resiliency in facing challenges. This understanding enables them to avoid compartmentalizing their personal and professional identities, leading to a human-centered perspective that reveals their vulnerabilities and deep personal connections. This holistic view allows them to see architecture not just as an art or job, but as a platform for personal growth and constructing a better world, intertwining their ethical stances with their practices. These individuals often present clear examples of integrating their values into their projects, demonstrating a deep interplay between their personal lives and professional practice.
- **The psychological alignment of worldview, values, and architectural practice** is critical to fostering sustainable behavior and engagement. By consciously integrating personal values and worldviews into design decision-making, architects can clarify their roles, boost motivation, and encourage mutual understanding among stakeholders. This value-led approach can also uncover unseen issues and power dynamics, promoting transformative thinking and innovative, sustainable practice.

Integrating unvoiced personal values into professional work can inspire collective engagement, countering the competitive culture commonly seen in the field. Engaging with diverse values isn't about dictating beliefs but finding common ground to encourage dialogue and foster emotional attunement, creating avenues for sustainable architectural change.

- **Design process focused on creating relationships** to foster belonging can lead to emotional attunement, increased responsibility, and the development of meaningful relationships. Such a relational approach counters feeling of isolation and stress commonly experienced by architecture professionals and students by promoting inclusivity and curiosity toward others' perspectives. Creating intentional, supportive, non-judgmental spaces that focus on dialogue and solution-seeking can encourage creativity and reparative energies, catalyzing sustainable behavior change through relationship building. These meaningful relationships form a critical part of the design process, contributing to nurturing a sense of belonging and psychological well-being, strengthening the bond between practitioners, their work, and their desire to positively impact the world. Consequently, investing in relationships and fostering a sense of belonging through recognizing our interconnectedness with others and the environment can enhance our ecological self-awareness. This increased consciousness results in more sensitive, less intrusive behavior, reflecting our understanding of our actions' impacts and our genuine care for the welfare of others (including more-than-humans) and the broader ecosystem.
- A **multidisciplinary approach integrating human and technical sciences** where architecture includes pre- and post-design phases, and continual assessment of impacts on human behavior. Architects are now tasked with addressing sustainability from a wider perspective, considering social, historical, and behavioral contexts beyond the 'green building' concept. And focusing less on new construction and more on transformation, renovation, relationships, and organizational change. Investment in multidisciplinary teams, capable of bridging social sciences and technical disciplines, is key, to enabling architects to create informed, compelling, and creative solutions. Architects differentiate themselves by integrating multidisciplinary research into their work, where juggling complexity and transforming it into tangible outcomes can be a hallmark of the profession.
- **Developing the capacity to share and listen**, are key to collaboration and knowledge sharing, allowing architects and the building industry to improve design decisions and implement responsible architectural practices collectively. This involves fostering trust in collective intelligence, co-creation distributing responsibility, and integrating collective responsible behavior in projects to attain sustainability. The emphasis on active listening to local experts, fostering dialogue, and empowering

stakeholders encourages a sense of care and ownership, and bolsters architectural projects' longevity. Importantly, acknowledging and addressing power imbalances inherent in the architectural process aids in the equitable distribution of power and environmental impact responsibility, promoting democratic aspects of RA.

- **Small local architectural interventions** have been shown to play a pivotal role in fostering sustainable behavior by engaging individuals' emotions and experiences. Architects are urged to actively listen, empathize, and co-create, taking care to execute these small interventions attentively. The design process demands emotional attunement with stakeholders, aligning with their values, life stories, challenges, and potential solutions. The research emphasizes tapping into unconscious emotional processes, linking these inner human experiences with architectural responses. By focusing on the successes of smaller changes, people can have a positive emotional response, boosting their motivation to face psycho-social challenges.

10.7 PROSPECTS FOR FUTURE INVESTIGATION

Throughout the course of this dissertation's research, an array of themes surfaced that suggested potential lacunae in both architectural research and praxis. The principal subjects for future exploration are not circumscribed by, but include, the following: Sustainable behaviors examined in conjunction with the architect's relationship with more-than-humans, the assimilation of non-Western perspectives into the implementation of responsible architectural practices, and further development of multidisciplinary methods and collective actions.

Architect's relationship with more-than-humans

The current state of architectural practice reveals a deficit in discourse and implementation surrounding "more-than-human" elements such as nature, flora, and fauna. Even among students, there's a perceptible difficulty in incorporating these elements into their work. This might stem from a waning bond between architects and the more-than-human world, an absence of an ecological worldview, or simply a lack of methods to incorporate these elements into architectural projects.

However, environmental psychology research indicates the vital role of emotional connections between humans and the more-than-human world in driving sustainable behaviors. The "ecological self" concept underpins this theory, suggesting that people's identity isn't separate from the environment but interconnected with ecosystems, other life forms, and the planet⁹. This ecological identity is characterized by cognitive sensi-

⁹ Matthews, Freya. *The ecological self*. Routledge, 2006.

tivity, emotional empathy, and a motivational concern for the well-being of all life forms and ecosystems, encouraging a shared identity and sense of belonging crucial for sustainable action.

Furthermore, being in an unconscious or conscious level, relatedness to more-than-human elements and environments is among the most basic important ingredient of human personality development and psychological existence¹⁰. Enhancing our connection with more-than-human elements contributes to personality development and psychological existence and bridges individual affects and identities with a broader sense of belonging, crucial to human well-being and the unfolding of sustainable relationships.

Therefore, future research could explore the potential of architecture and design to foster empathy towards more-than-humans. It could look into how architecture and design processes can help expand our empathy towards more-than-humans? Which methods can architects use in their design process to include ‘voiceless’ more-than-human elements in their decision-making process while recognizing their agency in architectural projects? By identifying methods that allow architects to incorporate these ‘voiceless’ elements into their decision-making processes, we can strengthen the architects’ emotional resilience and promote responsible architectural practices.

Integrating non-western worldviews

There is an observed lack of an ecological worldview, which is crucial for fostering emotional affinity towards nature and building an “ecological self,” in European architectural discourse and practice. The idea of ecological worldviews and ecological self counters the prevailing Western perspective that nature is inferior and stands in opposition to human existence and, therefore, can be freely used or tamed by technology so its bad effects can be reduced¹¹.

The research suggests the potential benefits of integrating non-Western worldviews, especially Indigenous ones into responsible architectural practices. Indigenous worldviews have long perceived the world and its ecosystems as interconnected and constantly evolving parts of a living system, cooperating rather than competing, where all the elements have to exist to maintain the balance of the system¹². They offer a fresh perspective on the relationships between humans and more-than-human s and among

10 Searles, H. F. (1960). *The nonhuman environment*. Cited by Lertzman, Renee. *Environmental melancholia: Psychoanalytic dimensions of engagement*. Routledge, 2015.

11 Weintrobe, Sally. *Psychological roots of the climate crisis: Neoliberal exceptionalism and the culture of uncare*. Bloomsbury Publishing USA, 2021.

12 Gregory Cajete, *Native Science: Natural Laws of Interdependence*, 1st edition (Santa Fe, N.M: Clear Light Publishers, 2016).

humans themselves, challenging design approaches based on power, control, and technological solutions and promoting a focus on relationships, processes, and emergence.

Future research could explore how architecture can incorporate such alternative worldviews into the design process? How can architects use collaborate and learn from people from alternative worldviews in our design process? This could involve collaboration and learning from individuals holding these worldviews, thereby fostering architects' ecological worldviews through the integration of alternative perspectives in architectural practice. This approach might be a key step towards more responsible architectural practices.

Need for transdisciplinary methods with social sciences

This research underscores the need for a more integrative approach between various disciplines to advance responsible architecture. Emphasis is particularly placed on the role of social sciences - such as psychology, anthropology, and sociology - in aiding architects. These disciplines can help architects articulate the intangible impacts of their projects, refine social and interpersonal skills for effective project negotiation, and enhance stakeholder engagement strategies. Despite these potential benefits, the task of translating abstract concepts from social sciences into concrete designs remains a substantial challenge for architects.

Looking ahead, future research could aim to better integrate social sciences and explore how these disciplines can contribute to responsible architectural practices. This integration calls for developing improved methods and tools that allow architects to engage with qualitative data and translate learned theories and concepts into design. Research could also explore how praxis approaches can be incorporated into the design process to test theoretical concepts in architectural design.

Furthermore, future multidisciplinary research can provide invaluable insights into communicating the intangible and social impacts of responsible architectural projects. Such research will broaden the perspective of architects and provide a more holistic approach to design, ultimately leading to more sustainable and socially-responsible architectural outcomes.

Methods to enhance collective actions

The research highlights the growing recognition among architects of the need for a collective shift towards more responsible architecture. For this transformation to occur, concerted collective actions at the organizational level of architectural associations are

crucial. Actions such as advocating for amendments in building codes to encompass social responsibility, fostering partnerships and knowledge sharing among architects, and unifying the profession to strengthen its influence in decision-making processes within the building industry were identified as necessary steps. However, a gap exists in terms of methods and approaches to turn these needs into actions.

Consequently, future research and practice could investigate effective methods of collective action among architects, focusing on their roles as political agents and the contributions they can make collectively toward responsible architecture. Future research could look into which are the mechanisms stopping architects from coming together as a collective of practitioners and how can we possibly unlock the potential for collective political action? By understanding these challenges and identifying ways to overcome them, the architectural profession can make substantial strides toward embracing a more responsible and sustainable ethos in their practices.

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