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'IN DESIGNING TOOLS WE ARE DESIGNING WAYS OF BEING—WAYS OF BEING WITH MORAL AND ETHICAL IMPORT' (FRIEDMAN AND HENDRY, 2019, P. 1)

INTRODUCTION: WHY TEACHING DESIGN FOR VALUES?

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The process of identifying, interpreting, and implementing societal values in university education is an essential part of responsible innovation and designing for equitable, inclusive, and sustainable societies. While there is now a well-defined and growing body of research on the theory and application of designing for values (or 'value sensitive design'), at present the pedagogical dimension remains underexplored. *Teaching Design for Values: Concepts, Tools and Practices* is a resource for teachers of design-based disciplines who wish to foreground values more explicitly in their classes. With fourteen chapters written by both TU Delft educators and international contributors, the book aims to examine the concepts, methods, and experiences of teaching design for values within a variety of fields, including urbanism, engineering, architecture, artificial intelligence, and industrial design.

Through its multi-disciplinarity, *Teaching Design for Values* proposes an expanded definition of design to encompass a broad range of disciplines and processes that deal generally with 'future-imagining' and 'future-building,' including process management. In doing so, it explores the ways that values may be expressed and analysed in a variety of different pedagogical contexts. This book presents the

results of a two-year project starting in February 2020 with the 'Teaching Design for Values' workshop organised at the Faculty of Architecture and the Built Environment at the TU Delft. This workshop was but a small part of a much broader concern for teaching for values at TU Delft, most notably represented by the **Delft Design for Values Institute**, a cross-faculty platform for the growing number of researchers and educators who put values at the centre of knowledge production and education. As is evident through the work of groups like the Department of Values, Technology, and Innovation (VTI) at the TU Delft Faculty of Technology, Policy, and Management, which brings together expertise from economics, safety science and philosophy, topics like responsible innovation are increasingly essential components of a design education. And for a good reason. Paraphrasing Parvin, values are at the core of design's acceptability, suitability, and sustainability (Parvin, 2018), and fundamental to continued technological innovation. As the VTI group note,

> The choice should not be between foregoing a potentially helpful innovation or pushing it through despite justified concerns. Rather, the responsible innovation approach pays attention to important values, in the design as well as in the implementation of technological innovations, and in the institutions that govern them. (VTI, 2022, no page)

This renewed attention to values in education and research begs the question: *what are values and why are they so important for design and management?*

We often forget that values are about 'valuing' alternatives, choosing options and courses of action. Values inform us about how to lead our lives and about which choices to make, as well as how to value the claims and choices of others. There is no apparent reason why values should not play a role when we 'value' options in design and management. The question must be reformulated. It is not about whether values should play a role in design and management, __values are always consciously or unconsciously implemented__, but rather about *whose* values should be represented, and *how* can the design process make sure the values of a wide range of stakeholders are present. As a growing number of justice advocates would argue, it is also about making sure the values of vulnerable or silent stakeholders are sufficiently given attention to, which is in itself a values-based decision. In this sense, valuing design options has an acutely interpersonal and political nature. Here, the issues of communicative rationality and public justification, discussed by Roberto Rocco in Chapter 2, come to the fore. Of course, individual, or personal values do matter. But it is how we decide to evaluate options collectively, sometimes publicly, in communicative exercises and practices, that matter

perhaps the most, as design and management shift from an authorial paradigm towards a perspective that focuses on co- and collaborative design.

This is in stark opposition to ideas of neutrality in science, largely debunked, but stubbornly persistent in design and engineering education. The neutrality bias is the idea that academics and educators should be 'neutral,' somehow apolitical, and purely 'objective.' This so-called 'view from nowhere' or the 'God Trick' in the words of the philosopher Donna Haraway (1988), is impossible to achieve in reality, as everyone is located *somewhere* (historically, socially, physically, morally, politically, and so on), starting from gendered and racialised human bodies as the first territory of dispute (Haesbaert 2020). This 'view from nowhere' is in itself a bias, as it conceals support or endorsement of the status quo, perpetuating ingrained (and consequently unconscious and implicit) biases. One reason for the neutrality bias in education comes from the epistemological paradigm in the so-called 'hard' sciences. Historically, subjects like physics and mathematics were largely seen as 'neutral,' a concept that is now challenged. Paul Ernest in his book *The Philosophy of Mathematics Education* declares that 'if mathematics is considered 'neutral,' then it can bear no social responsibility', meaning that 'the underparticipation of sectors of the population, such as women; the sense of cultural alienation from mathematics felt by many groups of students; the relationship of mathematics to human affairs such as the transmission of social and political values; its role in the distribution of wealth and power; none of these issues are relevant to mathematics' (Ernest, 199, p. xii). But Ernest sees a big paradigm change in course—what he calls a 'Kuhnian Revolution', after American philosopher of science Thomas Kuhn—as an increasing number of mathematicians and philosophers are challenging the two-thousand-year-old notion of mathematics as 'a body of infallible and objective truth, far removed from the affairs and values of humanity', in favour of a characterisation that is 'fallible, changing, and like any other body of knowledge, the product of human inventiveness' (Ernest, 1991, p. xi).

On the other hand, scientific ethical codes of conduct like the Mertonian norms of 1942 suggest a certain degree of neutrality in concepts like universalism and disinterestedness, particularly connected to the validity of methods and the soundness of results. Disinterestedness, for example, supposes a researcher will not procure personal gain in shaping their methodology or in elaborating results. But being disinterested is very different from being 'neutral.' There is a confusion between disinterestedness and universalism on one hand, concepts connected to values such as scientific integrity, thoroughness, diligence, and a self-critical stance, and on the other hand, the idea that scientists and science itself are, or should be, 'neutral.' Even the very idea of objectivity as truth independent from

individual subjectivity seems to be misunderstood as an impossible detachment from one's socio, cultural and political context.

Ernest proposes looking at science as a 'process of inquiry and coming to know, a continually expanding field of human creation and invention,' (p. xii) limited by our human abilities and senses and circumscribed by our cultural and social environments. In science, concepts like ethics and scientific integrity play a determining role, but the knower is always situated historically, socially, and physically. If one sees science as a dynamic process of inquiry, then education has a completely different character, much closer to understanding the learner as an active and situated agent in knowledge production, not a mere vessel where 'neutral' knowledge is to be poured into. In this sense, David Roberts, Vanessa Zadel, Carolina Quiroga, Elizabeth Arenas, Kees Pieters and other authors in this book all claim for encouraging students to confront their own positionality, and face their own biases, power, and privilege, to be able to reflect and 'value' the choices ahead.

The reflections contained in this book point to several pathways to understanding the 'value of' and the 'values in' design and design education. Salient among these pathways is the realisation that the value of design must be understood broadly, beyond its immediate effects on direct users, to consider how design affects 'health, happiness, democracy, and ecologies,' in the words of Lise Magnier and Charlotte Kobus (chapter 6). This position demands a more systemic, structural, and holistic evaluation of the 'value of' design and its effects on and consequences for distant stakeholders. For example, in understanding how the materials used for a certain product may affect the political and /or ecological stability of countries where those materials are abundant, or the effects of certain digital technologies for individual freedom, privacy and democracy. There is also a realisation that exploring values in design demands 'collective exercises' in which these values may be examined intersubjectively in co-design and communicative exercises. In other words, rather than embedding their own values into design, designers ought to explore the collective and societal values sought by wide coalitions of stakeholders, sometimes beyond the immediate 'vicinity' of design.

There seems to be consensus among a number of authors in this book around the idea of self-exploration of values and the 'self-awakening' of young designers towards the complexity of design for values, including the ideas explored by Elizabeth Arenas and Kees Pieters in chapter three. This is consistent with ideas by the Brazilian philosopher of education Paulo Freire for whom education should be built upon the values and the knowledge of learners as much as the educators, and where educators are also learners (Freire, 2018 (1968)).

1. CONCEPTS

The first section on ‘Concepts’ explores the issues described above. It opens with a critical text by Taylor Stone. Stone investigates the applicability of value sensitive design (VSD) and design for values (DfV) with a focus on urban technologies, but not before highlighting their 'vague articulation of values.' Taylor wishes to investigate 'how can we properly appreciate the value-laden nature of technological innovation within the context of urban planning and design,' and in doing so, explores the values of urban technologies, searching a possible foundation for VSD and DfV, in the appreciation 'that technology and society co-evolve, which will continually change the definition or prioritisation of values.' Taylor goes on to develop an analytic framework in the form of six heuristic principles (principles that enable someone to discover something by themselves) that can be used to reveal values in urban technologies, which the author believes can help advance our understanding of the iterative relationship between technology and design, society, and values. It is this relationship that many of the authors in this book seek to explore using the lens of education.

Next, Roberto Rocco investigates why a reflection on justice ought to be part of a planning and design education, a concern that can be extended to other areas of design practice. Rocco’s argument, following political and moral philosopher Alasdair McIntyre, is that justice is an 'internal and necessary good' for the successful practice of spatial planning, without which it is 'meaningless.' Rocco pursues principles of public reasoning and public justification to argue that spatial planning can only be publicly justified if it delivers just outcomes through just procedures. The author rejects the idea that justice is subjective, instead arguing that different justice claims must be decided through public communicative exercises, of which spatial planning is but an expression. The author fully acknowledges that competing justice claims are often valid in themselves and follows Indian economist and political philosopher Amartya Sen in claiming that competing justice claims can be compared and measured against it other, via public communicative exercises, to deliver justice valuations that allow us to go forward. Rocco reminds the reader, always following Sen, that it is not about delivering perfect justice every time, but about making the world more just today than it was yesterday or increasing justice and decreasing injustice. To discuss these issues in the classroom, Rocco proposes four exercises that address public communicative rationality in justice claims and reminds the reader that 'there is value in listening to the arguments of all the members of a community' so that we can collect all arguments available to be able to make decisions.

The third chapter by Elizabeth Arenas Thomas and Kees Pieters is a powerful plea for designers to reflect upon two main questions: 'Is design ever value free? And whose values shape design?' The authors use the notion of decoloniality to urge designers to understand that 'Western knowledge is hegemonic, it is exported as if universal and as if neutral, and therefore defines design in the modern world according to one set of values.' By ignoring this, designers risk reproducing the existing structures of oppression. The authors seek a 'detachment of the Eurocentric base of power, the disengagement of the logic of modernity and the rise of alternative epistemologies' through the notion of *conscientização*, a pedagogical philosophical concept proposed by Paulo Freire that describes 'the process of self and societal awareness that all educational projects should have at their heart to uncover social, political, and economic injustices.' Thomas' and Pieter's text explicitly acknowledges the political nature of design, thus proposing a decolonial design practice through the construction of design stories though which designers interrogate themselves and their own practices. This process of self-interrogation through practice is what *conscientização* proposes. *Conscientização* is a type of 'self-awakening' though continuous critical interrogation of the world and one's practice in it. In this text, design, society, and values are framed within the great narrative of Western primacy, which the authors challenge and interrogate though their design stories. The text is personal and talks to the reader directly through dialogue boxes that invite readers to interrogate their practices.

Chapter four is by Kees Pieters, also a co-author in the previous chapter. Pieters addresses the urgent subject of values and Artificial Intelligence (AI) by noting that 'the ethical discussions regarding this technology tend to be philosophical or sociological, and only rarely manage to inspire those who are actually shaping this technology.' Pieters sets out to do just that by interrogating AI from a variety of scenarios, pointing at the important limitations to AI currently despite its 'promise of autonomy.' It is this promise of autonomy and its connection with values that deserve most attention in Pieter's text, with all the implications for how AI will, in the future, express values. Pieters has a breakthrough when comparing AI to another kind of semi-autonomous system: the so-called 'free-market,' in which the author sees an implicit belief that 'collective behaviour creates a form of artificial intelligence that supersedes human capabilities.' The implications of this connection cannot be overestimated. It is possible that in the future the belief will arise that AI should not be interfered with or limited, just like neoliberal ideology today asserts that the free market should not be interfered with or limited by governmental action, lest the market will not be able to 'function properly'. Indeed, current blind belief in the laws of the market make one ponder what will

happen when we have yet another ‘value-free’ semi-autonomous system with the promise of infallibility guiding our lives. The author uses this argument to explore the problems of neutrality, objectivity, and universality in science. Pieters proposes an 'intermediate language, a *lingua democratica*, that tries to stay close to the background and training of designers of artificial intelligence, but at the same time invites them to engage in critical reflection on their practices, and the artefacts they design.' Pieters concludes by pondering that 'the ethical reflection that is truly characteristic of AI is likely to be limited, owing to the limited autonomy of current technological artefacts,' which 'puts the ethical accountability squarely in the realm of the designers of those artefacts,' making it urgent 'to stimulate the means of ethical reflection in the early stages of the design process.'

In Chapter 5, Matthew Dennis critiques ethics education for engineering students, who are customarily introduced to the ‘five-systems model’, which introduces different models of ethical evaluation and 'shows how the application of different moral theories affects how we think about design dilemmas'. For the author, these approaches are interpreted by young engineers as 'system of constraint to new and innovative design' prompting engineering students to regard these systems (if not the entire mandatory course itself) with a mixture of boredom and hostility.' The author argues that 'many key ethical topics can be more effectively taught by encouraging students to identify positive ‘ethical exemplars’ of digital well-being from today’s popular culture' to propose a new approach to teaching ethics in engineering, 'one that puts a 21st-century conception of digital well-being at the centre of engineering ethics', giving 'students a unique and powerful access point to the ethical considerations to which their designs should respond'. The chapter sketches 'a process through which students can evaluate existing products and services according to whether they actively promote (or are compatible with) their justified ethical ideals', by asking engineering students to 'justify their choice of ethical exemplars' in a guided step-by-step exercise that involves 4 steps: (i) identification of ethical exemplars, (ii) identification of their character traits, (iii) conversion of those traits to values and finally (iv) translation of values to desired recommendations. This approach resonates with the search for self-reflection and self-awakening sought in other chapters of this book, and uses an innovative, unexpected tool based on current student’s digital experiences to build a framework that allows them to pursue positive ethical examples, rather than feel constrained by them.

The section on concepts closes with a chapter by Lise Magnier and Charlotte Kobus, who challenge the teaching of industrial design fundamentally by pointing out that a focus on economic value has pushed the planet to a tipping point. The authors consider that although it may be argued this focus on efficiency and

economic value has lifted many out of severe poverty, it has also created more inequality and imposed severe burdens on the environment. Magnier and Kobus call on industrial designers to 'do better' and to reflect on the impact of their designs on 'health, happiness, democracy, and ecologies' and the far-reaching consequences of their designs not only for their users and clients. The authors make appeal to Bos-de Vos for whom 'consciously thinking about ‘value’ and ‘values’ in all their meanings might assist designers in opening up discussions about values and interests, address tensions, and increase the probability that those involved can collectively work towards a broadly valued end result'. This ‘collective work’ and discussion on the value and values of design takes us back to public rationality and public justification of those values, and to the idea that the ‘value’ of a design must be assessed far beyond its immediate effects. The authors sketch a pathway for (collective) reflection that takes us into a journey of unpacking, codifying, explaining, and making values explicit in communicative exercises. 'Stimulating students to conduct high-quality dialogues between these collaborating actors might help them resolve these tensions while making them more aware of their own values.'

2. TOOLS

If the first section reminds us why value sensitive design is necessary, and what themes, topics and concerns teachers might address, then section two explains how this can be done. What are the tools and methods that make values knowable and explicit in the design process? How can teachers and students work together to formulate new kinds of knowledge? Through what means can institutions support educators and students in reformulating their curriculums? In this section, four chapters address these questions in the fields of architecture, education studies, management in the built environment and the ethics of technology.

Designing for values at its core requires students and educators to re-evaluate what we already know, to confront the status quo, and to reimagine new ways of thinking and creating. It demands a fundamental reassessment of the canons of knowledge, but also the practice of teaching. In his chapter, David Roberts argues that encouraging students to be aware of their own positionality in their disciplines is a critical aspect of radical pedagogy. Using workshops taught in the UK and Denmark as cases, Roberts examines how the act of debating, drafting, and declaring manifestos offers an opportunity to disrupt the conventions of classical architectural design education, and to make space for students to think otherwise.

'The act of drafting a manifesto involves both working through and working towards ethical principles and situations' writes Roberts. By reading aloud historical architecture manifestos, editing, and re-writing them, first as individuals, then as a collective, students are asked to actively confront existing paradigms and to develop their own responses and opinions in relation to them. Drawing on manifestos from diverse geographical and cultural contexts, the workshops analysed in this chapter encourage students to question their academic heritage and consider other perspectives and ways of knowing. Through this process, Roberts argues, the students learn ideas and methods 'essential to developing ethical built environment practice, from positionality and situatedness, to reflexivity and relationality.' But these exercises don't simply ask students to consider their own place in architectural practice and research. The collective process of saying and writing powerful statements together, as a collective, also subverts the individualising tendencies of the profession and the neoliberal university, giving value to collaboration over competition.

In promoting the teaching of value sensitive design, we explicitly ask educators to adapt the way they teach by positioning values explicitly at the fore. One of the biggest hurdles to institutional change is that it requires simultaneous top down and bottom-up approaches; teachers need to develop new curricula, whilst universities need to offer the time, tools, and resources for them to do so. As Rikke Toft Nørgård, Elisabet Nilsson, Eva Eriksson & Daisy Yoo write in their chapter, this requires a 'double pedagogical framework': a system that teaches the students how to design for values, whilst also educating the teachers how to teach it. Setting out a model for such as system, in the form of the 'VASE Framework', the chapter meticulously details what it takes to develop a pedagogical structure that simultaneously helps develop the 'knowledge, skills and attitudes that students need in order to consider the broader context and implications of design and design processes, and through this the possibility for them to become more responsible designers,' and also enables the teachers to create such a curriculum. The VASE framework is not about telling teachers exactly what to teach, but rather about giving educators an 'inspirational repository of various resources for teachers to explore, experiment with and integrate' in their own specific contexts.

Designed to be used across multiple disciplines, each with its own conception of 'design', they create a system with shareable resources that is adaptable to each context. But in order to provide a framework that works across multiple disciplines, there must, perhaps paradoxically, be a consensus on the core foundations of an education in value sensitive design. For Nørgård et al., this is expressed in the three 'pillars' upon which the entire framework rests: 'Ethics and Values', 'Design and Technology', and 'Designers and Stakeholders'. Through their own educational

design research in a European consortium, the authors recognised these foundations, arguing that they provide the necessary skills and knowledge for students to become responsible designers, whilst also tending to various parts of the design process. Within these areas, teaching activities are specified, with instructions and educational kits including lecture slides, prompts, selected readings and more, which the authors believe enables teaching without too much extra preparation. All of this is available through a digestible and well laid-out online platform.

The process of taxonomising, categorising, diagramming, and mapping emerges as a core methodology in the context of value sensitive design.

As Theo van der Voordt writes in his chapter on the management of buildings and facilities, and Udo Pesch writes in his chapter identifying interventions for responsible technological innovation, by breaking down the design, implementation and use process into stages, students are able to better understand the explicit moments in which values play a bigger role, and how those steps might be adapted or changed. For Van der Voordt, the creation of a taxonomy of added value in corporate real estate helps designers understand where the conflicts and synergies arise between the aim to 'support (…) organisational, individual, and societal objectives, and the costs and sacrifices that are needed to attain the aimed benefits.' Focusing on adding value from the perspective of clients, end users, and other stakeholders, Van der Voordt identifies twelve leading 'value parameters': 'four people related values (satisfaction, image, culture, health and safety), four process and product related values (productivity, adaptability, innovation and creativity, risk), two economic values (cost, and value of assets), and two societal values (sustainability, corporate social responsibility.' Through this process of identifying specific values, Van der Voordt argues that it is possible to show students how to support those values through management choices, and how to measure them. As different values may alternatively conflict or strengthen each other, the purpose is to show students that design processes should not only identify values, but also establish which values to prioritise, and how to operationalise values through design choices. In the educational context, this takes place through applying parameters to specific case studies, as students write accommodation plans for a client in practice.

In the field of technology, Udo Pesch argues that students should go beyond identifying different stakeholder values, and to understand their relationality. In his proposition of the 'Socio-Technical Value Map' as a tool for finding interventions for responsible innovation, Pesch argues for the necessity of context and complexity when teaching value sensitive design. The deep embeddedness of technology in society—as something that is simultaneously produced by and for people and institutions—means that its development must not exist in a vacuum. The explic-

it recognition and uptake of values should be at the core of the design process. But this can only happen if that process is fully and comprehensively understood, or 'mapped.' For Pesch, determining who the stakeholders are and what are the values at play is just the first part of this mapping process; understanding the ways in which those values are subsequently 'designed into' technology is a vital second step. Only by knowing this, can designers engage in the third step of 'intervening' to make technology more ethically sound. Through this mapping exercise, students are encouraged to design in a way that positions technology within its societal context throughout the development process, or, as Pesch puts it, 'to reconstruct a sociotechnical public.' Mapping the technology, stakeholders, values, and possible interventions, is thus a mode of designing with and for values explicitly, rendering the designer more accountable.

3. PRACTICES

The final section 'Practices' describes contemporary situated teaching practices that seek to start or consolidate cultural change. While the first two chapters explore this question in Western Europe—with a particular focus on the Faculty of Architecture and the Built Environment at the TU Delft—the final two chapters, respectively written in Argentina and Peru, incorporate relevant innovations taking place in the Spanish speaking world. Consolidating this desirable transnational perspective, the second chapter combines a international pedagogical initiative which also combines fieldwork and teaching techniques in English and Portuguese. While some of these chapters were originally written in Spanish, we made a conscious effort to incorporate them in the book and encouraged authors to translate their experiences into English. This was so that a much broader readership could have access to experiences in Latin America, as these tend to remain 'in the margins' and be seen as 'exotic,' which defeats the purpose of creating an epistemology beyond Western paradigms, that is both diverse and inclusive.

All cases are (unfortunately, one might argue) examples of 'alternative' practices, which are explicitly and intentionally value centred. They have been envisioned from topics like feminism, ableism, and cultural heritage. They all encourage, albeit from different perspectives, a high degree of learners' involvement. Thus, following ideas by Maja van der Velden and Christina Mörtberg (in van den Hoven et al., 2015, p. 45), these teaching practices could be understood as situation-based ac-

tion that encourages mutual learning, since: 'in doings and actions, individually or collectively with other people and technology, skills and knowledge are shared and gained. Thus, design is always performed somewhere by humans and non-humans; their activities do not take place in isolation but are embodied and situated.'

The four chapters address the fields of architecture, heritage, and urbanism and emphasise the social and material implications of designing for the built environment. This is a topic of the utmost relevance in a world besieged by multiple interconnected challenges while urbanising rapidly, as of course of the utmost interest to the editors of this book. As Professor Lara Schrijver has written, architecture is produced and later reproduces cultural values: 'Historically, architecture is understood to embody values on two levels. On the one hand, there is the unconscious embodiment of the accepted values of a society. On the other, there is the intentional inscription of values that the architect or patron believes should be held.' (Schrijver, in van den Hoven et al., 2015, p. 592).

Following Schrijver, there are two dimensions to explore: the unconscious contemporary societal, cultural and political values that still determine the spatial organisation of buildings, and the role of the built environment as a tool to transmute and transpose those value systems beyond the 'fallacy of physical determinism' conceptualised by Herbert Gans in the 1960s. In this sense, we also understand 'architecture to not only guide our behaviour, but in so doing, to shape our values' (Schrijver in van den Hoven et al., 2015, p. 591). Yet, we could expand Churchill's statement 'First, we shape our buildings and then our buildings shape us' to any designed artefact. As the conceptualisation of value-sensitive design has theorised:

> *...technology and human experience are together, with one shaping the other. In this mutual shaping, we observe that neither moves forward on its own, nor is technology value neutral. Thus, design process matters. For researchers, designers, and engineers, at stake is nothing less than human dignity and just societies. (Friedman & Hendry, 2019, p. 180)*

Thus, in chapter 11, 'More than Half of the Picture', Amy Thomas and María Novas-Ferradás, share their experiences on the 'methodological and epistemological challenges at the encounter of feminism and architectural history at the TU Delft'. Through the specific example of two interlinked courses on Architectural History in the first year's master's track on Architecture, Urbanism and Building Sciences, the authors document the institutional and cultural transformations and struggles that made progressive change in the curriculum possible, and allowed for the explicit focus on 'feminism' achieved in one of the seminars organised. Despite the

risks associated with the experimental character of both curriculums, the case navigates the authors' commitment to 'progress, not perfection' (Friedman & Hendry 2019, p. 17), through advocacy in education, incremental and positive change. This chapter also contributes to documenting feminist activism in the school, and the struggles to make 'more than half the picture' visible.

In chapter 12, Bruno Amaral de Andrade and Ana Roders introduce game-based learning as a novel and innovative method for identifying, discussing, and designing heritage values. Gamified Learning Environments (GLE) have a double function of making citizen participation simultaneously more engaging and more accessible, while encouraging citizens to understand their right to heritage. In this chapter, de Andrade & Roders address the opportunities and challenges of GLEs 'for learning over heritage values and citizen engagement in architectural design' in two courses on heritage in the bachelor's and master's levels in the Architecture track at the TU Delft. De Andrade & Roders explore the immense power and appeal of serious gaming to address 'more complex interconnected social issues', to raise awareness and 'encourage creative expression and critical thinking, integrating data and stories from real contexts'. The advantages of GLEs vastly outweigh the disadvantages, to allow better cognitive development, accessibility, interaction, exploration, representation of physical features and finally design of heritage. All these aspects are explored by de Andrade & Roders in practical and engaging exercises in which students are invited to reflect about heritage values and heritage as a right. For the authors, GLEs are 'successful in supporting students as well as other stakeholders to better understand the cultural significance (values and attributes) of heritage assets in the redesign process.'

In chapter 13, Carolina Quiroga from Argentina introduces the remarkable Feminist Architecture Workshop LINA, a pedagogical experience using inclusive values from a gender-based perspective to challenging design paradigms. LINA is a experience and started to take shape in 2020, during the COVID 19 pandemic, as a 60-hour virtual elective followed by students from several universities around Argentina and a few other countries in Latin America. Through lectures, virtual tours, and practical workshops, LINA boosts a collective construction of knowledge while critically challenging the traditional values that guide spatial design in Latin America. It does so by creating a sisterhood of designers inspired and guided by luminaries of feminist thought and activism in Latin America, such as Argentinian architects Ana Falú and Zaida Muxí. LINA seeks to recover and highlight the political dimension of architecture and includes 'cultural itineraries' that tell the story of the transgender community and LGBTQI+ movements, seeking intersectionality. This experience is akin to a social grassroots movement, in which women

architects around Latin America come together to challenge deep-seated assumptions in architectural design and education. Remarkably, during the process of publication of this volume, the LINA Feminist Architecture Workshop was selected as a finalist at the 12th Iberic-American Architecture and Urbanism Biennial, in the category 'Educational Programmes.'

Vanessa Zadel closes this volume. Zadel leads a unique design studio at the Universidad de Lima, in Peru. In her course, students explore their embodied experience as users of architecture and go further by developing empathy towards people with physical disabilities through a series of practical exercises and experiences that inform them about other ways of experiencing architectural space. This implies at times restricting students' mobility, vision, and hearing, to simulate disability experiences, which is done carefully and with help from organisations that work with people with disabilities. Based on this experience, Vanessa argues that putting oneself in other people's shoes is a key aspect of professional architectural accountability, and asks the reader, rightfully, whether attention to users should be an integral part of architectural education from the outset. The author's experience is beautifully simple but also powerful in creating empathy and a sense of accountability. Reading about her course, one is forced to wonder: why don't we have more experiences like this, and why are users almost an afterthought in many architectural courses? As a result of the course, students gain confidence and awareness in their design decision-making processes and learn how to communicate their designs in a more inclusive way.

To sum up, In our endeavour to discuss the complexity of teaching design for values, we make recourse to Friedman and Hendry, for whom

> *Technology is the result of human imagination—of human beings envisioning alternatives to the status quo and acting upon the environment with the materials at hand to change the conditions of human and non-human life. As a result of this human activity, all technologies to some degree reflect, and reciprocally affect, human values. It is because of this deep-seated relationship that ignoring values in the design process is not a responsible option. At the same time, actively engaging with values in the design process offers creative op*portunities for technical innovation as well as for improving the human condition (Friedman and Hendry, 2019, p. X).

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TU DELFT STUDENTS AT WORK. PHOTO BY R. ROCCO.