Table of Content

Introduction

On Purpose, Tools and Projects: Feeding into Sustainable Development Goals 5 & 10

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Materialising Fairness presents body of work which aims to draw together the topics of 'fairness – gender – design and tech'. With it, we gratefully build on traditions of feminist critiques of design and the relatively young discipline of design philosophy, as well as the very lively contemporary discussions around gender and design, decolonising design and ontological design, amongst others. The volume draws on a small selection of very diverse accounts of practitioners and scholars from Design and Tech, who are engaged with projects that have gender and fairness as a central focus.

As editors we very much value theoretical and rhetorical discussions around gender issues in design and tech, but the goal of this volume is to also provide readers, specifically students, teachers and practitioners, with methods, tools and input from real world and academic projects as well as the lived experiences that accompanies them, so that they may practically guide the readers towards targeted reflection and action relevant to their own settings. We acknowledge that our world is in crisis and that the path to sustainability is formed by many factors, – gender equality being just one important aspect. We do, however, come from a position that sees gender injustices as intrinsically linked to patriarchal and capitalist mechanisms of environmental exploitation and degradation which are deeply connected through inseparable intersectional categories of social exclusion. In line with this conviction the book centres on issues around gender injustice, with a focus on instruments and project reports as well as individual experiences, so that readers interested in aspects of diversity, intersectionality and gender can harness some practical tools that might help them achieve better gender equality outcomes in their work and lives, whilst also building empathy with others. However, as it is relevant to convey the complexity of concepts and questions surrounding any gender projects today – specifically referring to injustice and the interrelationships between social (gender), ecological and economic factors – we are intentionally opening this book with a relatively theory-laden contribution, that prepares the reader conceptually and critically by providing them with a broader historical and scientific background of feminist thought against which fair and inclusive design has to position itself today.

We also feel compelled to give a little more detail on the overall philosophical framework in which this volume is embedded within this introduction. As design

philosophers and design educators, we are acutely aware that everything within the human mantle is designed, – from the chairs we sit on, to the cities we live in, to the systems that govern us, even many aspects of ourselves as social beings. Nature has largely been co-opted into human culture as an assumed neutral resource pit to be exploited as we see fit and just like the rest of the world, design is becoming more and more driven by (digital) technology. Therefore, it is not enough to talk about design only in terms of product or communication design, there is a steady convergence of classic design tasks and research and technical application areas. But from an *observing philosophical standpoint* everything we do, – every creational act, in (technological) design, is an act with moral implication. This is because the results of the actions taken, or the impact of the creations themselves, will inevitably be more or less *right* or *wrong*, in the sense that they contribute *positively* or *negatively* to – peoples' wellbeing, – or that of nature, – or the stability of a society, for example. Whether something is considered *right* or *wrong* is not a neutral judgement but is bound by the ethics and positionality of the judging criterion.

In everyday life, it can often be difficult to take full account of being a moral and specifically fair agent, – to be reflexive of the fact that the things we do have often complex moral dimensions and implications. It can be even more challenging to acknowledge and reflect on this predicament when we are acting in roles bestowed on us due to our training as designers or technologists. Because roles by their nature are to be fulfilled within certain parameters usually not determined by us, and within that there is the potential to not only loose a sense of individual agency, but also to feel relieved of a certain amount of responsibility for our actions whilst in this role. With this book we aim to remind ourselves and to inspire anyone else charged with designing at any scale, to consider that, what we do (or don't do) always has moral implications and that the labour spent to attend to the moral dimensions of our work, does help and is worthwhile, – even if the scale of the task often appears unsurmountable and its baby steps all the way at best. We would specifically like to call to action an enhanced awareness of the way in which gender shapes the design of systems and artefacts and how a lack of having specifiers for ethical, fair behaviour that takes account of these gender dimensions, means an unconscious perpetual re-production of harmful and exclusionary practices solidified in our still mostly man-made environments at the expense of the natural world of which we are part of.

Since it can be difficult to situate oneself definitively within complex and tricky ethical frameworks, it can be helpful to build on existing frameworks that are already being tested and probed in the light of day through the labour of many others. To this extend, the moral framework we are setting out from is ultimately reflected in the SDGs formulated by the UN, specifically calling on SDG number 5 and 10, insofar in one way or another, all contributions of this book pursue to counteract discrimination based on gender through special design interventions and reflections. This includes women and girls but ultimately refers to

all forms of gender discrimination and therefore to all human beings. Design in this book is hereby understood as the means and tools to implement and materialise justice and equality, by counteracting biases and disadvantages people experience in the workplace and in their lives. This is a task the SDGs due to their abstract nature do not provide precise guidance on. However, we also want to place a slightly different emphasis on commitments to morality and sustainability. In this context we opt for the concept of *fairness* rather than for *equality*. Within larger contexts, such as at institutional levels, the idea of equality, equal access and opportunities and thus issues of parity, quite rightly play a major role in gender issues pertinent within the UN framework.

There are however further dimensions to the gender injustices that shape our everyday lives and society as a whole, and it is those we aim to shine further light onto. The concept of fairness is pivotal to those dimensions, because general ideas of justice and equality expressed as universal rules can be limiting when it comes to weighing up full impact of the complexities and intricacies when imbalances and biases play out. In order to navigate through these deep social waters successfully, it helps to consider values such as reasonableness, decency, empathy, and fair treatment rather than just to agree to the sheer compliance with (moral) rules of justice and equality.

We have to acknowledge that people in their roles as designers or engineers or just as consumers often make decisions on the basis of socio-cultural mechanisms they are often not even aware of; – due to tradition, – for the sake of time and energy efficiency, – and of course also out of comfort, humans often act according to taste and habit, both of which are mostly very unreflective companions in our lives. And when we are dealing with gender issues, we are not just talking about equal numbers and equal access to opportunities, we are talking about the hidden, often false and misguided, expectations and ideas about people's supposed dispositions, abilities and incapacities that are incorporated into these habits of thought. As designers we might consider these as 'design scripts' that live in our heads, as much as in our actions, environments and artefacts, and they are passed down to us by our culture, traditions and training. It seems only natural that without conscious intervention, the drivers of design and also (digital) technology, like AI or coding, reproduce existing problematic societal patterns, including inequality, unfairness, restrictions and narrowness of many complex kind. We don't see this primarily as the moral failure of the individual who is designing any particular aspect within our systems, but as a logical consequence of our world being dominated by a patriarchal capitalist system that is built on very narrow normative stereotypes and biases, resistant to change of the norm and traditions that benefit few while exploiting the rest, not just in relation to gender. When we finally arrive at the question as to how to start to disentangle and dismantle such strait jackets of thought and action, and how to materialise change through the creation of different 'design scripts' within the tangible and intangible world, we arrive back at the idea of ontology. Design is what we think

it is, what we agree on *it is*, what we make it *to be*. This means we can, at any given point, change its very nature and the parameters of what its goals should be.

So, we will start back at the beginning, which is to remind ourselves that – what we think, is what we design, and – what we design, is what shapes us back. So, the task is always twofold in every respect. The challenge is to remain alert to our own agency to critically evaluate the traditional structures we are situated within, to dismantle those that don't serve us and to design the tools to create new ones that do.

Framing the complexity of these challenges, Christian Bauer's focus on Ecofeminism and Design seems to be a good starting point for this book. He begins with critical and historical insights into Rawl's 'theory of justice as fairness', also tapping into the idea of intertemporal justice echoed in the sustainable development goals whilst taking account of the need to attend to more-than-human ontologies in design. As he explains, we can no longer ignore how our patriarchal capitalist system is devouring labour, nature and care, and how design as a discipline has been historically a great facilitator of this destruction and continues to be complicit in systems that lead us towards social and environmental dead points. His appeal to designers, – to consider other roles that design can inhabit by taking up the resistance stance that underlies the utopian justice ideas of ecofeminist criticism, is a timely one. He proposes that Ecofeminism does not only present an excellent framework for an intellectual and activist resistance movement in general, but because of its concern with materiality lends itself to be a catalyst for a reflective and reflexive design practice of the future. As an activist stance and as a philosophy, ecofeminism has been lived and re-enlivened by many women from around the world, particularly from the global south. It has also become a broad church for those of any gender identity who have identified the structures of heteropatriarchal capitalism as being central to their own oppression and intrinsically connected to the exploitation of nature. Since this takes shape as crimes against both humanity and against the dignity of Mother Earth, Bauer highlights ecofeminist approaches as a pertinent starting point of a resistance movement for designers, one which emphasizes the relevance of designers awakening in order to escape the clutches of an outdated design system and making values such as sustainability and fairness central goals within what we understand of as 'design'.

The second contribution, by Hannah Jones and Londa Schiebinger, concretely shows what a critical evaluation of our design tools to enable the materialisation of more just and fair outcomes, can actually look like. This second chapter showcases their *Intersectional Design Cards – a collaborative tool developed to support teams in creating radically inclusive products, processes and paradigms*, this equity-based design toolkit offers up concrete design instruments to be used during the design process to take account of gendered and specifically intersectional innovation. Motivated by the idea of tackling social and environmental inequities, specifically in the realm of emerging technologies, this chap-

ter discusses some of the ways in which design has failed in terms of fairness and where/how design can find new opportunities for achieving greater sustainability in terms of society and planet. The discussion includes a review of outcomes when the cards were used in prior trials with students and professionals in the design industry, including from the 'Innovations in Inclusive Design' class at the Hasso Plattner Institute of Design (d.school), Stanford University, US, to inform the creation of intersectional design concepts. As an applied and well-designed toolkit-based intervention, this contribution is both practical and accessible, whilst starting to show how concepts of fairness might be materialised during the design process.

The next article by Valeria Bucchetti, and Fransesca Casnati also deals with the provision and development of tools and highlights the importance of recognising the gendered nature of visual language, ultimately entailing a manifesto for gender sensitive communication in and through design. While the second contribution can basically be understood as an innovation tool in a broader context, applicable for and in multiple design and technological such as engineering situations, this third contribution focuses primarily on the topic of iconic language and thus on empowering tools that need to be reflected on in the context of communication design. At the heart of this lies a critical examination of the domain of visual representation and iconic languages as a possible vehicle of gender representations that can shape individual and collective biographies in both positive and negative ways. It expands to the Manifesto that is meant as an instrument for self-reflection and concrete guidance in daily design practice, supplemented by strategies to bypass stereotypes and clichés and to transform the effects of representations.

In the next article by Franziska Beckert, scientific research and personal lived experience are drawn on together to give lively account of how the problematics of gender inequality materialise in the tech sector. It takes stock of the subordinate role that women continue to play today in the tech industry, despite their influential roles in the histories of tech development. It goes on to highlight how these inequalities and injustices based on gender impact on the development of innovative solutions and lead to the reproduction of stereotypical background assumptions which in turn help perpetuate these inequalities and misrepresentations. Critically, the author does not only question the causes of these unfairness's theoretically but also maps out opportunities for practical transformations that offers a gender-just perspective on the future of programming, making it clear why this matters for all of us.

The last two chapters of this volume are dedicated to projects that although they have been developed within and for educational contexts, they offer much wider potential for application and a much more broadly relevant critique. Both projects are of an exploratory nature that takes account of the difficulty to pinpoint issues of gender within the tangible and intangible of system. Viewed through a feminist lens it becomes clear that the intangible nature of emotions

and embodied knowledge we all carry, must be taken into account in any teaching or educational environment before we can attend to any material changes identified as necessary to further gender equality.

In Griselda Flesner's and Cardna Spartano's account of the re-design of campus space at the University of Buenos Aires Campus, the intangible and embodied desires and demands of students and teachers regarding the need for places for leisure and rest are examined. A feminist lens informs the methodology used to examine new ways of assessing human need on a campus that was designed with the functionalist criteria of the Modern Movement. This highlights that in order to create holistic, human scale environments for study and work, demands for other 'non-productive' uses need to be met. Based on a survey conducted in 2020 that investigated the sensations generated by different spaces on the Campus, the authors' focus demands for an architecture that is sensitive to the needs of the body which are not to be separated from the needs of the mind. This space is opened up by students participating FADU's seminar 'Design and Gender Studies', whose critical design approaches highlight that modernism is a social construct in need of critique by exploring opportunities for the design of university spaces that takes account of the way in which fairness, as an intangible design parameter, can nevertheless be materialised.

Our last contribution by Julia Pierzina takes up a transdisciplinary approach, which is design research led and strongly informed by social sciences, in order to investigate how perceptions of social structures bring gendered norms into being. It acts as a project report as well as a plea to intervene and interfere based on the authors own approach of an *inverse artefact analysis*. The research finds that imitation and an unquestioning stance in relation to lived gender-specific attributions have a far greater impact on the reality of young pupils than for example abstract laws of equality. Thus, the author highlights that problematic gender scripts in the social realm are major factors in need of being tackled by design, and that this must include the material *and* immaterial dimensions of our social environments. Traditionally design centred on the materialisation of artefacts and investigates their material dimensions in order to inform better design solutions, but the author points to the importance of paying attention to the social realm in which such artefacts are handled and being materialised through often gendered presumptions. Inverse artefact analysis presents itself as a productive method or tool, to not only recognise existing structures and understanding patterns and intervening from within by questioning and criticising them, but also to possibly recognise them as an intervention designer. It is all about discovering the subliminal nuances to materialise fairness out of what is immaterialised in our social worlds.

We hope this volume will inspire people in academic and non-academic contexts to make use of the many opportunities and instruments that design gives us to make our world a more inclusive and fairer place and we also hope that through this publication all readers will realise that the question of how we shape

our world is not in the hands of designers alone, but requires an alignment of designers and consumers/clients/people in general with the will to together shape the world for the better. We would like to express our sincere thanks to all the contributors to this volume, not least because the development had to go through many loops and during this process and the foregone research on initiatives it became clear that the efforts put into the topic of gender fairness, particularly in the academic design context and in professional practice, urgently need to be expanded. In this sense, the contributions from individuals and initiatives selected here also serve as beacons that are worth focusing on to inform a better future as we envision it within and beyond the framework of the UN-sustainable development goals aiming to further gender justice. Finally, it is important to us to point out that design today cannot do without an interdisciplinary and transdisciplinary perspective. The design expertise of the authors gathered in this book has been informed by a range of different scientific disciplines, their different regional origins also inspired their specific approaches and diverse styles of representation. For us as editors, this collection is an intentional act also reflecting a challenge of our time, namely to process the diversity of science, regions and life in general to be valued and appreciated within the design practice itself.