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Design Philosophy after the Technology Turn

Edited by

Fernando Secomandi

Peter-Paul Verbeek



DESIGN PHILOSOPHY AFTER
THE TECHNOLOGY TURN

DESIGN PHILOSOPHY AFTER THE TECHNOLOGY TURN

Edited by Fernando Secomandi and Peter-Paul Verbeek

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PREFACE

Design philosophy has undergone a long, occasionally bumpy, yet rewarding journey. In organizing this collection, we set out to explore a field that is richly interdisciplinary and less structured than many others within design or philosophy. Our aim is to solidify a “turn” that has emerged over the past two decades, marked by the increasing prominence of technology as a central theme for advancing design theory and practice. From the outset, our goal is not to provide a definitive field guide to a well-charted domain but instead to embark on a kind of “road trip,” remaining open to surprises and discoveries.

This book was edited during a time of professional transitions for both of us—Peter-Paul stepping into the role of Rector at the University of Amsterdam and Fernando settling in at the Delft University of Technology after relocating from Brazil. To embark on the adventure of organizing this volume, we drew upon our long-standing dialogue and engagement with academic research rooted in the fields of philosophy of technology and design. We are deeply grateful to the authors featured in this work who share similar interests and have joined us on this journey. We also extend our heartfelt thanks to Ken Friedman for his early support of our proposal, Carl Mitcham for his thoughtful feedback on the introductory chapter, and the anonymous referees who reviewed previous drafts.

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Fernando Secomandi
Peter-Paul Verbeek
June 2025

Chapter 1

THE TECHNOLOGY TURN IN DESIGN PHILOSOPHY: A ROAD TRIP

Fernando Secomandi and Peter-Paul Verbeek

Origins

The relationship between design, technology, and philosophy is profound and can be traced back to time immemorial. In Western thought, for example, the Greek myth of Prometheus has been frequently invoked by both ancient and contemporary thinkers to explore central themes of the human condition, including not just creativity and artifice but also mortality, providence, punishment, ecology, and so on. One of the most illustrative accounts for this purpose is found in Plato's *Protagoras* (Plato 1956: 52–3). In this dialogue, Plato recounts how the Titan gods and brothers Epimetheus and Prometheus were given the responsibility to finalize all mortal creatures to be born into the world—then a mixture of “earth and fire”—by equipping each of them with suitable powers. Epimetheus asked his brother to perform the task himself and started distributing special powers among the different creatures, bestowing upon them proper means for comfortable survival. Some got strength and size but not speed; others, smaller creatures, got wings or burrowing abilities. Epimetheus did so in an equitable manner so that “no species should be destroyed.”

Epimetheus (whose name can be translated as “Afterthought”) was not especially astute. When it came time to equip humans, he was puzzled to find out that all available powers had already been spent on the other creatures. Upon inspecting his brother's work, Prometheus (meaning “Forethought”) encountered “man naked, unshod, unbedded and unarmed.” Realizing that the moment had arrived for all creatures to “emerge from within the earth into the daylight” and that humans, in their current state, faced certain extinction, Prometheus took a bold step. He stole the “skill in the arts, together with fire,” from the Olympian gods Hephaestus and Athena and gifted these transformative powers to humans.

In Plato's version of this myth, then, not only is technology—symbolized by skill in the arts and fire—an extraordinary *human* power but humans themselves are *designed* (van de Poel et al. 2024). Although Protagoras describes this sort of

craft-based activity as belonging to a distant past, we can still recognize several central features that resonate with our modern understanding of design, including form-giving, envisioning, functionality, division of labor, material constraints, ingenuity, failure, ethical judgment, and more.

Going beyond the myth's supernatural dimension, however, we argue that the control and use of fire was not simply “discovered” by humans as a natural gift from the gods. Rather, it emerged from the intentional rearrangement of given objects in the environment to create something new for practical purposes. In short, the technology of fire was *designed* by humans (see Nelson and Stolterman 2003).

Based on archeological evidence available to us today, fire—having been invented at least around 1.0 million years ago (Mya) (Berna et al. 2012)—is probably not the earliest technology ever created. Instead, the oldest known technologies are the *Oldowan* and *Lomekwi* stone tools, respectively dated to 2.9 and 3.3 Mya (Harmand et al. 2015; Plummer et al. 2023). In fact, the ability to create and use such lithic technology is one of the criteria paleoanthropologists use to distinguish *hominins* (the group from which we, *Homo sapiens*, evolved) from other *hominids* (which include all Great Apes).

However, it would be mistaken to assert a strong sense of human exceptionality based solely on toolmaking ability. *Oldowan* artifacts have been found near fossils of *Paranthropus*, a different genus within the *hominins*, suggesting that our direct ancestors in the genus *Homo* might not have been the only toolmakers (Plummer et al. 2023). Interestingly, wild capuchin monkeys in *Serra da Capivara* National Park, Brazil, use stones to crack open food items, unintentionally creating flakes similar in form to those produced millions of years ago by extinct *hominins* (Proffitt et al. 2016). Because these leftover flakes have varied over the last 3,000 years (Falótico et al. 2019), these monkeys may currently be undergoing a “lithic revolution” akin to the one associated with our own hominization process in the past.

Most importantly, several other animals have been observed creating tools or demonstrating some form of technological knowledge (Shew 2017). Ravens, for example, can construct compound tools when faced with novel food-gathering challenges in experimental settings (Bayern et al. 2018). Nonetheless, humans continue to exhibit a far greater range of technological possibilities, adapting to their environments and evolving recursively alongside their artifactual creations (Ihde and Malafouris 2019).

The moral of this origin story is that the genesis of technologies through design constitutes a fundamental part of human becoming. We are “artificial by nature,” as Helmuth Plessner once stated (see Mul 2014). Alternatively, we might say that *humans are technologically mediated beings by design*. This idea is central to Tomás Maldonado's ([1970] 2022) conception of design as *progettazione* (translated from Italian as “design planning” in the English edition, [1972] 2019). *Progettazione* entails the concrete projection of our consciousness, shaping the world into a *human* world and making it inseparable from our self-realization as human

beings. Tony Fry ([1999] 2020) later expressed a similar idea: when we design technologies, we create an artificial world; in using those technologies, we are reflexively shaped by our designs.

This ongoing project of world- and self-making, we argue, is not limited to individuals shaping discrete pieces of hardware. It extends to broader “sociotechnical systems” (see, e.g., Vermaas et al. 2011), which include nontechnical elements co-constructed by diverse agents (e.g., institutional rules and regulations), as well as to “more-than-human assemblages” (see, e.g., Wakkary 2021), which can be significantly influenced by the agency of nonhuman living beings or even non-living things.

Given this realization, it is intriguing why technological design was so devalued by ancient Western philosophers as a source of genuine knowledge and understanding (see Scharff and Dusek 2014; Vallor 2022a). Whereas it may be true, as Richard Buchanan (2009: 411) remarked, that “all of the terms and distinctions employed in the discussion of design [...] in the twentieth century were already invented and the subject of debate in the ancient world,” it took an extended period—encompassing both the ancient and medieval eras—before technology and design began to be viewed more positively in the early modern period (Ihde 1993; Maldonado [1976] 1991). Indeed, only after the dramatic transformations brought about by modern industrialization did these phenomena gradually emerge as deserving of greater philosophical attention (Mitcham 1994). It is no coincidence that the historiographies of both design and the philosophy of technology identify the Industrial Revolution as a turning point for the consolidation of these disciplinary fields. This does not imply that long-standing vernacular design practices (i.e., those that are non-scientized, non-professionalized), such as “unselfconscious” architecture (Alexander 1964) or “non-pedigreed” architecture (Rudofsky 1964), ceased to exist from that moment on.

To conclude, while technology and design can be considered anthropological constants, their manifestations and interpretations have changed significantly since industrialization. Any examination of the present, the past, or the future today is inevitably shaped by our experiences in modern societies profoundly transformed by industrial design. Any serious philosophical investigation, then, must recognize how our ways of thinking and making have been—and will continue to be—shaped by design. This is where our journey into design philosophy begins—with landmarks, turns, and dead ends—leading to the pathways offered by the contributions in this collection.

Landmarks

Inquiring about technology as a central theme in design philosophy raises the question of what qualifies, in the first place, as a philosophy *of* design. In our view, answering this question requires identifying instances where design

has been a central topic, rather than a background concern, in philosophical investigations. Notably, few philosophers in history have explored this theme until very recently, as evidenced by the absence of an entry on “design” in virtually all philosophical encyclopedias and dictionaries. Extremely rare are such examples as Max Bense at the Ulm School of Design in Germany (see Betts 2004) and Enrique Dussel at the Division of Sciences and Arts for Design of the *Universidad Autónoma Metropolitana* in Mexico (see Nascimento 2023). These professionally trained philosophers brought their reflections on technology to bear on design practice and education, yet their contributions remain little discussed in the specialized literature.

At the same time, many other scholars and influential thinkers, with or without a background in the design disciplines, have developed philosophical insights into design. Many of these writings have been collected in edited volumes such as Benton et al. (1975), Thackara (1988), Gorman (2003), Clark and Brody (2009), and Willis (2019), among others. The books organized by the “Chicago group” (Margolin 1989; Buchanan and Margolin 1995; Margolin and Buchanan 1995; Buchanan, Doordan, and Margolin 2010), as well as the journals *Design Issues* and *Design Studies* generally, stand out for regularly featuring work on design philosophy, sometimes contributed by trained philosophers.

Then, there are those occasions where design philosophy becomes thematic. Per Galle edited a special issue, “Philosophy of Design” (2002) for *Design Studies*, and led the Centre for Philosophy and Design (CEPHAD) of the Danish Design School. The center organized a dedicated conference (Galle 2010) and published other relevant documents, including a bibliography that is unfortunately outdated since the center’s dissolution in 2012 (CEPHAD, n.d.). Tony Fry, Anne-Marie Willis, and Clive Dilnot founded the journal *Design Philosophy Papers*, which, from 2003 to 2017, promoted greater engagement with philosophy within the design field. Pieter Vermaas and colleagues also contributed two edited volumes, incorporating a range of disciplines and perspectives (Vermaas et al. 2011; Vermaas and Vial 2018).

In the last decade or so, the field of design philosophy has been further strengthened through the publication of several books (e.g., Marenko and Brassett 2015; Parsons 2015; D’Anjou 2021; Guersenzvaig 2021; Tassinari and Staszowski 2021; Mareis, Greiner-Petter, and Renner 2022; Dixon 2023b) and journal articles (e.g., Beckett 2017; Dixon 2023a; Ozkaramanli and Nagenborg 2024; Song and Jun 2025). This list is not intended as a comprehensive overview and indeed omits work disseminated within some disciplinary subfields (e.g., human-computer interaction) and in languages other than English. Our purpose is simply to highlight that, in most of these otherwise significant philosophical analyses, technology often remains peripheral or only implicitly addressed (exceptions include Secomandi 2013; Redström and Wiltse 2018; Vial 2019; Fry [1999] 2020; Wakkary 2021).

Design philosophy does not automatically prioritize technology as a focal point for generating novel insights. This unspecificity, on the one hand, reflects

the breadth of possible philosophical perspectives on design. On the other hand, it results from the way technology has long been relegated to the margins in much of philosophy's history—just like design. In fact, the philosophy of technology only consolidated as a distinct disciplinary field around the 1970s and 1980s, at least within North Atlantic and Anglophone academic circles. This relatively late-arriving subfield is still widely regarded as young and developing (Scharff and Dusek 2014; Vallor 2022a).

At the same time, the growing attention to technology among philosophers does not necessarily correlate with a profusion of new knowledge about design. Most leading philosophers of technology—even those frequently lauded by design researchers, like Albert Borgmann and Don Ihde—have approached design only in an unsystematic and tangential manner within their primary areas of interest (a notable exception being Vilém Flusser 2019).

In contrast, a look at the histories of architecture, engineering, and industrial design reveals the significant influence of philosophy on some pioneering figures of the modern movement in the late nineteenth and early twentieth centuries. Figures like William Morris, Henry van de Velde, and Peter Behrens come to mind—members of a well-educated class who drew on the philosophical ideas of their time to influence public debates about the cultural and societal impacts of industrial technology. These are largely absent from the literature on the philosophy of technology, though they do appear in Buchanan (2009), Dorrestijn and Verbeek (2013), and a few other sources.

When discussing design's philosophical roots, we cannot overlook the contributions of Maldonado, a towering figure in late-modern design scholarship with profound erudition in the philosophy of technology. Through several writings still unavailable in English, Maldonado firmly situates industrial design within a centuries-long developmental trajectory of a “technological culture” (Riccini 2008). In *Disegno industriale: un riesame* (Industrial Design: A Re-Examination) (Maldonado [1976] 1991), he particularly delineates several philosophical presuppositions for the emergence of the discipline. One of the developmental lines he identifies involves the elucidation of the system needs–production–commodity by political economists, from Smith and Ricardo to Hegel and Marx. In the same book, Maldonado maps out other lines no less influenced by philosophy, such as the protofunctionalists in England, Italy, and Germany, who linked the notion of an object's beauty to utility and function, and the Russian constructivists, who sought to infuse industrial production with artistic creativity to revolutionize material culture under socialism.

Later, in *Tecnica e cultura: il dibattito tedesco fra Bismarck e Weimar* (Technics and Culture: The German Debate between Bismarck and Weimar) (1979), Maldonado underscores the significance of “activist designers,” such as the modernist pioneers mentioned above, whose theoretical contributions, grounded in concrete practices, helped to challenge the longstanding philosophical dichotomy between “technics” and “culture” and the depreciation of the former in favor of the latter. Finally, in *Ancora la tecnica: un 'tour d'horizon'* (Technics

Again: A “Tour d’Horizon”) (1998), an expansive essay reviewing the philosophy of technology from Eberhard Zschimmer to Bruno Latour, he concludes: “Since the 1930s, thanks to the presence of industrial design, technical objects have also been incorporated, and rightly so, into our cultural universe.”

Hence, it is no exaggeration to say that, by elevating the cultural value of industrially produced goods, design has played a pivotal role over the past century or so in making technology a subject worthy of philosophical investigation in the first place.

Turns

Despite its diversity and lack of a rigid canon, design philosophy has been shaped by dominant perspectives at different points of its development. One such moment occurred as design philosophy was consolidating under the influence of the *Design Methods* movement that gained momentum around the 1960s and 1970s. Researchers who spearheaded this movement drew primarily from the philosophy of science’s conceptual framework to address philosophical questions about design (see Jacques and Powell 1981; Cross 1984; Roozenburg and Eekels 1995; Hubka and Eder 1996; Friedman 1997; Grand and Jonas 2012). Their overall ambition was to instill philosophical rigor into design, aiming to establish its scientific credentials as a distinct endeavor, separate from more established sciences. This *demarcationist* approach closely mirrors what was initially pursued in the field of engineering, both “internally” by practitioners and “externally” by philosophers (see Downey and Lucena 1995).

The advent of constructionist approaches to science and technology in the 1980s, represented by the Social Construction of Technology approach (SCOT) and Actor-Network Theory (ANT), soon altered this scenario. Ethnographic studies on engineering design by scholars such as Louis Bucciarelli (1994), Kathryn Henderson (1999), Dominique Vink (2003), and others introduced sociological and historical explanations for the generation of facts and artifacts, thereby contesting the dominant postpositivist standpoints coming from the philosophy of science. Nevertheless, the philosophy-of-science framing of design philosophy continues to motivate lively debate, which is increasingly becoming limited to the domain of engineering (see, e.g., Meijers 2009; Michelfelder and Doorn 2021). Franssen et al. (2023) offer a particularly forceful defense of this type of design philosophy, advocating for a philosophical analysis of technology that maintains a “continuity with the philosophy of science” and is grounded exclusively in the practice of engineering design.

In this volume, we draw attention to another turn in design philosophy that has taken shape over the past two decades. This moment is characterized by the emergence of technology as a central theme of investigation, with philosophical perspectives arising directly from the philosophy of technology proper. We use the term “proper” to emphasize the autonomy this subfield of philosophy has established, setting it apart from earlier approaches that sought to reduce

technological practices to mere “applied science,” thereby subordinating their study to that of scientific practices (see, e.g., Mitcham 1994; Dusek 2006).

Notably, the impetus for a more technology-oriented design philosophy gained particular momentum in the Netherlands, where two distinct approaches emerged from its technical universities, both seeking to announce an “empirical turn” in the philosophy of technology (Achterhuis 1997; English translation 2001; Kroes and Meijers 2001): the Delft and Twente Schools. At the time, there was a broadly shared conviction that the philosophy of technology needed to engage more directly with actual technological developments and practices in order to establish a more robust foundation. The Delft School, rooted in analytic philosophy, focused primarily on the engineering design process and its sociotechnical creations. In contrast, the Twente School, drawing more heavily on the continental philosophical tradition, emphasized the broader social implications of technologies, including the potential for integrating these insights into industrial design (Verbeek 2022).

Overall, the empirical turn unveiled a new landscape for the philosophy of technology, with design itself emerging as a prominent feature. Both the Delft and the Twente Schools focused their attention on this topic while moving into the rapidly expanding field of technology ethics. This progression spurred developments in key areas: on the one hand, practical ethics, such as “ethical technology assessment” and “responsible design” (van de Poel and Royakkers 2011); on the other, the analysis of the moral significance of technologies (Verbeek 2011; Kroes and Verbeek 2014) and the ways in which emerging technologies disrupt conceptual and ethical frameworks (van de Poel et al. 2023).

We do not mean to imply that philosophers were the sole contributors to the recent turn toward technology in design philosophy. However, never before have they engaged so extensively with design as they have in the wake of the empirical turn in the philosophy of technology. As a result, recently edited volumes in this area consistently feature design as a central theme, whether in individual chapters or in entire sections (e.g., Friis, Pedersen, and Hendricks 2013; Kaplan 2017; Pitt and Shew 2018; Vallor 2022b). Moreover, philosophers are increasingly collaborating with designers on joint research projects and participating in the same academic events, such as the *Philosophy of Human-Technology Relations* conferences, first organized in 2018 at the University of Twente (Verbeek 2018), and the “Ethics in/of/for Design” theme track at the Design Research Society 2024 conference (Ozkaramanli, Ferrarello, and Laursen 2024). While we may not have yet reached the point where philosophy education routinely includes time in workshops, soldering, and hands-on prototyping, this convergence between fields suggests we are closer to that reality than ever before.

Animated by this convergence, the notion of a “turn” has since been repeated in different guises. Verbeek (2011) proposed an *ethical* turn in the philosophy of technology, entailing the philosophical “accompaniment” of design to embed morality in technological artifacts. This perspective aligns with the *design* turn in applied ethics articulated by van den Hoven (2017). Similarly, Dorrestijn and Eggink (2018) called for a *practical* turn, emphasizing the application of philosophical insight into design methods and tools.

Writing in the late 1990s, Maldonado (1998) warned of a widening rift throughout the twentieth century between “mediated” and “immediate” engagements with technology—that is, technology as a matter of discourse versus technology as a lived experience of production and use. The recent technology turn in design philosophy, however, appears to be helping to bridge this gap.

Dead Ends

One of the main catalysts for design philosophy in present times is undoubtedly the perceived threat of ecological collapse due to climate change caused by industrial patterns of technological development. As one of the latest scientific assessments indicates, with high confidence levels, human activity has been the primary driver of global warming over the past two centuries (IPCC 2023). In the last century, greenhouse gas emissions from fossil fuel combustion and industrial processes have become the dominant contributors to global warming, with this influence accelerating at an unprecedented rate in the past fifty years. The negative impacts of these anthropogenic factors include climatic hazards such as floods and droughts, species extinction, irreversible ecosystem damage, heatwave-related deaths, and food and water insecurity. These effects disproportionately impact vulnerable populations and systems, often in regions that have historically contributed the least to global warming.

Technology, as it has developed since the Industrial Revolution—initially in England, later spreading across Europe and being exported globally through Western colonialism—is deeply entangled with the problem of climate change, and so is design. A seminal call for designers to attend to the unsustainability of human-environment relations from a philosophical standpoint came from Maldonado in the early 1970s in his *Design, Nature, & Revolution* ([1972] 2019). More recently, proponents of “ontological design” (Fry [1999] 2020) and “pluriversal design” (Escobar 2018) have reiterated many of Maldonado’s insights and concerns, further emphasizing the importance of decolonizing design by recognizing the diverse Indigenous ways of relating to the environment displaced by European colonizers.

Attentive readers will notice a divergence between these perspectives regarding technology’s potential to help humans design their way out of environmental catastrophe. While Maldonado maintained a hopeful, albeit critical, stance, the prevailing tone today is notably more pessimistic. One could argue that this shift is justified by the increasing awareness of the techno-human drivers of environmental degradation, along with the perception of widespread inaction and the exacerbation of these issues. We suggest, however, that the divergence is also rooted in the differing philosophical foundations of their ideas.

Fry has significantly shaped contemporary thinking on technology within sustainable and decolonial design discourses through a series of influential monographs (2009; 2011; 2012; [1999] 2020; 2025). Drawing from a wide range of philosophers, he offers a nuanced analysis of technology that merits more

detailed attention than the available space allows. Ultimately, his perspective is largely influenced by Martin Heidegger's later works (see Heidegger 1977). Fry conceives of technology primarily as the result of modern European technical rationality, with the dominant design approach serving as an expression of a Eurocentric project spread globally through capitalism and neocolonialism. As humans advance in their instrumental creations, they increasingly artificialize the world, contributing to the condition of "unsustainability." This represents a negation of nature through design that "defutures"—in other words, inevitably forecloses alternative future possibilities. In modern design, defuturing becomes problematic for the environment because technology presents the world as an infinite resource for human purposes. The particular danger of modern technology is that it can assume "a life of its own," neutralizing human power to redirect design actions in ways that would preserve the environment's capacity to sustain life.

Maldonado, on the other hand, draws mainly from Hegelian Marxism and critical theory, viewing technology as an object in the dialectical movement where humans project their consciousness into the world and are reflexively transformed by their concrete realizations. While he acknowledges that this process can lead to human *alienation*, he does not categorically condemn modern technology. What is required for design to address the environmental crisis effectively, according to him, is not a rejection of technology but the development of a "critical consciousness of technical processuality" to avoid both technocratic and nihilistic design approaches.

While we agree that modern technology and design have significantly contributed to the present environmental crisis, we challenge the prevailing distrust of technology that characterizes some contemporary ontological and pluriversal strands of design philosophy. It might be possible to counter such distrust by invoking the same critiques of technological nostalgia, romanticism, and dystopia that have been leveled against Heidegger in the past (see Achterhuis 2001). However, our approach is different. We contend that what the current debate crucially needs is a recovery of a Hegelian insight: that the formation of human self-consciousness leads to genuine freedom only when it is recognized by an opposite and equally self-conscious being.

This principle of *mutual recognition* has been largely overlooked by contemporary philosophers of technology—from postphenomenologists to critical theorists—even by Maldonado himself. Flusser stands out as one of the few philosophers to have hinted at the essentially intersubjective nature of design. In his essay "Design: Obstacle for/to the Removal of Obstacles" (Flusser 1999: 58–61), he argues that objects of use are those that help "get other objects out of the way" and observes how, as such, they are "mediations (media) between myself and other people." According to Flusser, the responsibility of design is to "give form" to objects that are "projected into the path of other people" so that "those coming after me can use them to continue and at the same time avoid being obstructed as much as possible."

The persistent habit of referring to the dominant technology of a given age as if it embodies a singular, homogeneous agency and indelible progress—"the

best that humanity has achieved”—tends to obscure the fundamentally collective, often contested, and potentially fallible nature of design. For more discerning philosophical analyses, we must decapitalize and pluralize the “Human” in discussions of human-technology relations, just as the empirical turn in the philosophy of technology replaced the monolithic concept of “Technology” with a more diverse notion of “technologies.” This shift does not imply disregarding shared humanist values but rather acknowledges the coexistence of multiple technology-mediated modes of being human in the world. After all, each time an individual or group designs a new technology, others are present to either adopt or resist it, contributing to the never-ending dialectic of hominization. When we overlook these others, we risk undervaluing alternative techno-human trajectories that, though sometimes more progressive, may have been sidelined or rendered obsolete through design.

In sum, humans are technologically mediated beings by design, *for and by an other* (see Secomandi and van Amstel 2025). Only by forgetting this can we be led to fear modern technology as if it possessed autonomous powers, as many Heideggerians would have it. Álvaro Vieira Pinto (2005) exposed the dangers of this mistaken belief with striking clarity through his concept of the “scarecrow of technology.” He argued that this is an ideology imposed by oppressors to imbue technology with an ominous character, deterring subaltern classes from seeking to master it, thereby obscuring not only the human agency behind its oppressive power but also its potential for revolutionary change. He reminds us that

behind technology there is always another man, the one who conceived it, set it up as a social institution, became its owner and appropriates the good results produced. In this way, it will never be technique, which is nobody, that will dominate man, but another man. In fact, what a social group does with technology is set up the structure of domination.

(Vieira Pinto 2005: 397)

On top of that, more can be said about Heidegger’s attack on technology. In light of the publication of his *Black Notebooks* and the recent scrutiny of his lingering antisemitism (e.g., Di Cesare 2018), it is difficult to avoid the conclusion that he approached modern technology as *the* embodiment of cold, calculative thinking and the “machinations” of “world-Judaism,” which he accused of having the task of “uprooting all beings from Being.” For Heidegger, the *difference* introduced by technology, which reveals the world and humans themselves as “standing-reserve,” is not only the “supreme danger” but also an *irreconcilable otherness*. Although in his last interview he mentioned that modern technology would need to be somehow “sublated” in a Hegelian sense (Heidegger 1981), his politics regarding technology is a non-dialectical, exclusionary one premised on the belief that certain determinate groups “behind” it can be selectively discarded. This selectivity is precisely what allows him to then turn things around and associate modern technology with the perpetration of Nazi atrocities while omitting the actual humans who planned and executed them. Hence, his observation that

agriculture as a “mechanized food industry” was essentially equivalent to the “production of corpses in gas chambers and extermination camps” (Heidegger 2012: 27), while morally grotesque and profoundly misguided, is not logically inconsistent.

Going back to Hegel, who wrote at a time when social inequities produced by industrial capitalism were becoming increasingly evident, it is true that he did not explain how human self-consciousnesses could coexist freely under the mediation of modern technology. However, his hints at this possibility were not entirely overlooked by someone like Karl Marx. In his 1844 text “Comments on James Mill,” in particular, Marx draws on the Hegelian concept of mutual recognition and outlines a vision for an unalienated mode of production, where the exchange of objectified labor mediates between individual humans and their “species,” or “communal nature” (Marx and Engels 1975: 227–8). His concern was not with eliminating modern technology but with ensuring that, in the communist state, the object of one’s labor would be a “free manifestation of life,” confirmed by the “love” of the other.

Because Marx initially wrote that industrial development was a necessary step toward the eventual overthrow of capitalism, he has long been accused of supporting limitless growth and expansion. However, recent analyses of his later studies of natural science and ethnology reveal how aware Marx was of the ecological impacts of industry under capitalism, including the depletion of soils and the exploitation of colonized peoples (see Saito 2017).

Decolonial design researchers today push back against a Eurocentric project driven by technoscientific capitalism, seeking to reclaim more affective, collective, and sustainable ways of practicing design (e.g., Albarrán González 2022; Tunstall 2023; Botero et al. 2024; Ortega Pallanez 2024). They may still find powerful allies in the late Marx, as well as in a lineage of Marxist design scholarship—running through William Morris, Hannes Meyer, and Gui Bonsiepe, among others—similarly aimed at human emancipation, though not by rejecting modern technology. The truth is that “modern design” has always encompassed multiple, often conflicting modernisms. Treating it as a monolith and dismissing it as a totalitarian project that destabilizes natural and social systems is both historically inaccurate and intellectually unproductive.

As we should have known since ancient times, technology is a distinctive aspect of human nature that enables us to transform our environment and live in equality with other beings. The “design fault” of Epimetheus and the “technology theft” by Prometheus—mythical missteps of gods we can never become—do not imply that we are inherently flawed creatures. As self-consciously technologically produced beings, we must rely on our “afterthinking” to recognize that the present ecological crisis is partly caused by our extraordinary technological capacity to create artifacts that persist longer in use and evolve over time. We must also rely on our “forethinking” to ensure that the world-transforming technologies we create do not become obstacles in the path of collective survival on this planet.

Speculations aimed at counteracting our current unsustainable trajectory by flirting with a “design-less” existence of the nonmoderns (e.g., Escobar

2018: 213–16) have already been rebutted for their political conservatism in maintaining the status quo:

Politically speaking, the revolutionary sense of dissent is really only attainable through design. Dissent that rejects hope in design is nothing but a subtle form of consent [...] devoid of design, dissent with empty hands, is not particularly dangerous to the forces of consent. The discussion of nondesign is an intellectual luxury of consumer society, a prerogative of well-to-do peoples, the rhetorical pomp of peoples saturated with goods and services. Peoples submerged in indigence and need cannot permit themselves that luxury. For them the will to survive is identical to the will to design, because for them, designing means supplying themselves with the basic weapons against the repressive hostility of indigence.

(Maldonado [1972] 2019: 30)

Humans design technology to not go extinct. Our ecological dilemma is that some people design it to advance their own humanity and secure their future at the expense of others. Blind faith in a technology-free future can only sap hope for a revolution by design; that, indeed, would be a dead end.

Pathways

The works in this volume aim to pave the way for the future of design philosophy following the technology turn. These pathways reveal new connections, potential directions, and nearly forgotten territories.

Ilpo Koskinen, Brian Dixon, Peter Gall Krogh, and Maarik Mäkelä begin by providing an overview of an extensive corpus of doctoral-level “constructive design research” informed by philosophical insights. They characterize these influences as broadly falling under pragmatism, phenomenology, and Marxism. The authors identify various types of technological objects—ranging from prototypes to spaces and services—addressed in these works, which represent efforts to “design things philosophically” from alternative perspectives. They envision a future step where design becomes even more ingrained in the practice of philosophical inquiry.

While the corpus these authors draw upon is predominantly from Northern Europe, the following chapter presents an example of how philosophy can influence design within the Global South. Frederick van Amstel, Rodrigo F. Gonzatto, and Carmen Saito offer one of the first in-depth examinations available in English of the philosophy of technology by the Brazilian thinker Álvaro Vieira Pinto. They relate Vieira Pinto’s critical take on Heidegger and his allegiance to a Hegelian Marxist perspective to contemporary decolonial design scholarship. In addition, the authors advance their understanding of how design can manifest a “coloniality of making,” signaling the unequal global distribution of “thinking” and “making” labor in design.

In a sense, the above authors demonstrate how the making of technological artifacts can already encapsulate a world—or perhaps many contradicting worlds. Vincent Blok, in contrast, critiques design practices for their excessive focus on artifacts while neglecting the broader context in which they are embedded. He specifically challenges the Value Sensitive Design (VSD) methodology, proposing an “ecological phenomenological” perspective that integrates both the “physical” level of technologies with the “metaphysical” world embedding them. Blok applies this perspective to design by discussing an interconnected set of digital technologies created as a digital twin of planet Earth.

Digital technology and VSD reappear in the following chapter by Michael Nagenborg. Instead of the classical distinction between the physical and the metaphysical, Nagenborg frames the design question in terms of the dichotomy of “empirical/applied” versus “theoretical/pure” philosophy. He examines an Internet-of-Things 3D-printed bridge partially implemented in Amsterdam during an interdisciplinary project. Nagenborg contrasts the VSD and Research through Design (RtD) methodologies, highlighting the latter’s strengths. He then proposes an approach to “empirical philosophy” that overcomes the limitations of both “applied” and “application-oriented” philosophical approaches to design.

Nagenborg’s succinct comparison of these related approaches observes how this debate gained momentum in the philosophy of technology following developments in applied ethics, yet he does not elaborate upon them. In the next two chapters, ethics becomes the central theme. Ariel Guersenzvaig and Alger Sans Pinillos address moral decision-making amid the uncertainties professionals face when bridging intended and actual uses in technology design. They differentiate between the “code of ethics” and “regulative ideal” approaches, advancing a conceptual framework grounded in “abductive reasoning” to support the latter, which they end up favoring for the current state of the design profession.

In the second ethics-focused chapter, Wouter Eggink and Steven Dorrestijn expand on a historical overview of the philosophy of technology and advocate for a follow-up “practical turn.” This approach emphasizes applying philosophical knowledge to real-world design practices. Drawing on their own frameworks and tools used in university courses to help students integrate ethics into addressing broad societal challenges, they propose that the practical turn might also involve cultivating a “designerly way of doing philosophy.”

Moving beyond ethics and into politics, Jordi Viader Guerrero, Dmitry Muravyov, Olya Kudina, and Nazli Cila similarly examine philosophy through design practices carried out in educational settings. They report on a card-based workshop involving students and researchers from the humanities, social sciences, and technology disciplines. This workshop explored how “material” and “conceptual” work can intertwine in producing knowledge about the role of artificial intelligence in democratic societies. The authors highlight how co-creative efforts to merge philosophy and design can incorporate sensory and visual means—such as pictorials and exhibits—beyond the merely “textual” and “discursive.”

This provides a fitting segue into the final chapters, which address arts and aesthetics. In the first of these chapters, Leonardo Marques Kussler and Marcos

Namba Beccari argue that addressing the “subtle algorithmic control” encroaching upon modern life requires the deliberate design of “disobedient forms of life.” Drawing on Foucauldian concepts of “governmentality,” “power,” and “counter-conduct,” they critique the obedience that can be ingrained in design practices, particularly user-centered design. As an alternative, they advocate for critical reflection based on “in-person,” “corporeal,” and “performative” approaches, exemplified by the cases included in their analysis.

While these authors propose an escape from digital technology through the situatedness of the “body” in experiencing design, the final chapter, by Annie Kurz, Gabriel Brasil, and Franey Nogueira, presents another way forward by embracing human embodiment within the virtual realm. Their focus on digital fashion—manifested in gaming, social media, and other online contexts—combines Don Ihde’s phenomenological philosophy with Elena Esposito’s account of modern fashion. Merging Ihde’s concept of “technological multistability” with Esposito’s notion of the “madness of fashion,” they conclude that digital fashion design operates the “mediation of madness” by creating rapidly alternating, paradoxically accumulative variations on virtual embodiments that are experienced as a “world of novelty,” contributing to the shaping of human identity.

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Chapter 2

TOWARD CONSTRUCTIVE DESIGN PHILOSOPHY?

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Introduction: Philosophy in the Context of Designing

This chapter explores whether it is possible to “design things philosophically” and perhaps even have “the design of philosophy.” In seeking to answer this question, we turn to a specific strand of design—namely, constructive design research, a body of research in which design things—including prototypes, surfaces, objects, spaces, services, virtual objects, as well as strategic and social processes—are turned into vehicles of knowledge (see Koskinen et al. 2011; Krogh and Koskinen 2020; Wakkary 2021). The chapter asks whether there is a specific constructive design philosophy and, if it exists, how it shapes design practice. Design has been an object of philosophical inquiry in many recent studies (e.g., Kroes et al. 2008; Vermaas and Vial 2018; Dixon 2020), but in contrast, this chapter explores philosophy in the context of actual designing. We hope to identify insights which professional philosophers could use to advance their discipline.

By “philosophy,” we try to capture philosophical traditions that shape the creative acts of constructive design research, which is our specific focus of attention. Research about how philosophical ideas function within these acts has, to date, been limited. There have been some recent advances in relation to designers’ concept of knowledge in this context (Krogh and Koskinen 2020; 2022) and some discussion of the philosophic bearings of such work (Dixon 2023a). However, there has only been limited consideration of the possible philosophical basis of the design act. As one example, Dixon has recently presented an argument for a “philosophy through design” aligning with the pragmatism of John Dewey (Dixon 2023b). Such arguments are important for, as Carl Mitcham (1986) has pointed out, every man-made thing is an embodiment of human values that give a material form to problems that can also be studied philosophically.

In another context, Mitcham (1994) draws a useful line between a humanities philosophy of technology that sees technology from an external perspective and interprets it in terms of its meaning to society and an engineering philosophy that focuses on nature and technology as such and takes an internal perspective. In

the context of design, this distinction raises the question of how designers relate to philosophy, externally or internally. In contrast to these two perspectives, this chapter follows Franssen et al. (2023: 5), who suggest that technology is “constituted by the processes centering on and involving both dimensions.” This chapter sees philosophical ideas as constitutive elements in design research rather than design practice proper. It does not claim that philosophical ideas are the only theoretical forces that shape design practice; design is also shaped by art, the social sciences, the humanities, engineering, the sciences, to highlight just a few influences. Philosophy is, nonetheless, important in design research, and design researchers routinely study philosophical sources, as this chapter will amply show, which suggests that to understand design, we may need to take its philosophical underpinnings seriously, regardless of whether they are explicit or implicit.

The methodical precedent of the chapter is laboratory studies of science that, once seen as barely more than interesting sociological forays in the margins of the philosophy of science, have entered their accepted forms of argumentation to an extent in which some philosophers have lamented the fact that the field has collapsed into sociology (Schmid 2018). Schmid’s statement probably exaggerates the order of things, but it also contains a kernel of truth; with this chapter, we wish to offer steps toward pushing design into philosophy, if not similar, at least in an analogical manner. Following Schmid (2018) and Verbeek (2022), this chapter approaches philosophy empirically in the spirit of Kuhn and the laboratory studies of Latour, Lynch, and others (Kuhn and Hacking 2012; for laboratory studies, see, for example, Latour and Woolgar [1979] 2013; Lynch 1993). In contrast to many laboratory studies, however, our focus is on concepts and conceptual currents rather than equipment, experimental protocols, or the organizational substratum that makes research possible. The method is explication rather than historical or ethnographic.

Corpus

The chapter builds on a corpus of doctoral-level design studies collected from several mostly Northern European countries. Most of the early work was conducted in computer science and industrial design. Later, the main focus of the work has shifted to sustainable design, craft, and textile design. Most of these studies have built something: product prototypes, service prototypes, organizational prototypes, and system prototypes. Thus, the corpus has had a constructive approach; for example, we exclude historical studies with no connections to design practice. In January 2024, the corpus consisted of 114 dissertations. Almost every thesis in the corpus was written by a student with a background in design, and every thesis describes at least one design piece that has been used as a vehicle for creating knowledge. The corpus is available from the corresponding author on request.

The use of the term “corpus” is from Annie Gentes, who has defined corpus as a group of texts that belong to the same genre (2017: 90–1). Theses in a corpus are

stylistically, narratively, and visually similar and use similar textual strategies. We have studied doctoral dissertations because doctoral students must be explicit in their theoretical and methodological choices, including philosophical references.

The corpus was divided into primary and secondary categories depending on how well the authors knew them. The primary corpus consisted of thirty-eight theses which we classified first into three philosophical categories: Marxist, pragmatist, and phenomenological (including postphenomenological). A closer analysis examined each category in detail to learn how philosophical ideas were used in the category. This step required close theoretical and philosophical contextualization of the thesis. We second tested this categorization against the secondary corpus of eighty-two theses. At this stage, the chapter found its starting point, the observation that in the context of design construction (rather than argumentation), philosophical ideas are transformed and merged. The third step validated the classification by analyzing theses whose authors came from outside Northwestern Europe to test the framework against a horizon of cultural variation.

Philosophy, Reflection, and the Designer's Body

A typical constructive design thesis consists of a question, a theoretical section that examines literature and design cases relevant to the topic, a section that develops a framework that will guide design work, a methods section, a design case or several cases, and finally a section that consists of conclusions and discussion. The main difference to any thesis is that the cases are design pieces rather than data or close examination of arguments and their structure. A case that has become exemplary is Joep Frens's *Designing for Rich Interaction* (2006), which asked whether it is possible to develop user interfaces for digital devices that would not assume cognitive processes in making sense of these devices.

For his thesis, Frens studied the literature on design and human-computer interaction (HCI) and analyzed cases of digital devices that dominated the market around 2000–5, like cameras, music players, and mobile phones: the user was to use buttons to navigate menus that consisted of items that used semantic meanings that were selected to help the user to, for instance, take a photograph when there was little light. Frens wanted to show that an alternative was possible, arriving at an approach he referred to as “rich interaction,” which utilized embodied processes for navigation. He proposed a framework that specified the concept of rich interaction and then developed several camera interfaces that increasingly relied on bodily actions to control these cameras. For instance, if you wanted to delete an image, one of his variations used a simple shake-down gesture to “drop” an image to the trash instead of leading the user through a process that used words that ultimately led to a similar result. His hypothesis was that the rich interaction cameras he built would be preferred by the users.

Frens tested his hypothesis in a laboratory-like setting. He built a small laboratory, recruited university students to use his cameras, ran them through a

series of tasks in the laboratory, and measured changes in preferences with two questionnaires, one administered before the laboratory, another administered after it. He analyzed his data with standard statistical techniques like t-tests and analysis of variance and learned that while some parts of his data provided support for his rich interaction hypothesis, there were many issues that complicated the theoretical relationship.

The corpus has dozens of cases in which designers have followed a scientific protocol similar to Frens's, although most test their ideas in the field with qualitative or co-design methods. There is, however, a different strategy which sits beside this: a group of theses in the corpus can be seen to step outside the bounds of this protocol by taking a philosophical rather than a scientific path. In these theses, designers build on philosophical sources that introduce new methods and methodologies to explore concepts that are often hard to capture with scientific methods or with methods from the social sciences.

A good example is Maarit Mäkelä (2003), whose work primarily built on practice but referred to philosophical constructs in advancing practice. She explored the female experience in a series of three ceramic exhibitions. She studied the results and the feedback retrospectively after each exhibition and used these findings in building the next exhibition. In these studies, she used a variety of sources from feminism, eco-philosophy, poetry, art and art criticism, philosophical aesthetics, sociology, and history. Her main philosophical sources were Luce Irigaray, Judith Butler, the Finnish feminist philosopher Sara Heinämaa, Donna Haraway, Julia Kristeva, and Teresa de Lauretis. These sources helped her to theorize female experience in the context of memory, the body, motherhood, fiction, and society, including stereotypes. The outcomes were reflected in her ceramic pieces that explored media images of women (first exhibition), the body (second exhibition), and the maternal line of the family (third exhibition). The overall philosophical thrust of her work was phenomenological, but mostly indirectly, and she used many other sources to investigate specific research questions. The thread that gave direction to her work was, however, a ceramic practice that provided her with focus and milestones (see Mäkelä 2007).

Philosophical sources opened intuition, feelings, and personal bodily experiences as objects to Mäkelä. Philosophical ideas opened self-reflection as a method for her. These ideas also had other consequences. For example, there was no way to externally validate whether her ideas were right or wrong; their validity depended on the richness of her argumentation and novelty in probing the ideas that she was developing. Validity for her shifted from external evidence to internal, non-observable aspects of her existence and to the ways in which she was able to capture her existence into artworks and words that followed the artworks. Her contribution became a matter of conceptual innovation and novelty of insight as illustrated in the *mélange* of design and reflection.

A recent example of a design-led philosophical agenda emerged in Bilge Aktaş's doctoral thesis (2020). She used the practice of *feltng* to understand human-material interaction, and she was interested in how the use of a particular material actively affects the processes of making things. Her framework had two layers.

A research layer captured experiential knowledge and reflective making in a manner similar to Mäkelä, but she also added the concept of material agency. An outer layer of the model consisted of theories that fed into these studies: embodied cognition to experiential, craft theories to reflective, and material engagement theory to material agency (Aktaş 2020: 22). Her main concept was Malafouris's (2013) notion of material agency which captures how materials alter thoughts and practices and prompt a need to find ways to accommodate them, but she expands Malafouris's cognitivism by seeing making as a way of gaining a new and respectful relationship to the material engagement with context (Aktaş 2020: 43).

Such work can, of course, be criticized. The main problem is that the perspectives offered are still bound to an experiencing subject—it is the human being that ultimately construes the pragmatist mind, or as a Husserlian phenomenologist might say, transcendental ego. Yet, these two cases show that technology is connected to a rich set of circumstances in the design process. Mäkelä and Aktaş have used technology to create artifacts that, by themselves, are technologies that give people things they can use for their purposes, but technology is a condition that makes their work possible. They also create artifacts that are technologies of their own that, furthermore, enable other technologies (as for fermentation in ceramic containers). Both designers also experiment with several technologies in the path toward these artifacts. These remarks finally show how philosophical ideas may turn into physical realities that form the context in which we live. The boundaries between philosophy, technology, artifacts, and the designers' personalities are blurred in the process of becoming.

If this is an acceptable argument, it may have interesting implications. These inquiries that follow can be read as experimental and material explorations of the meaning of the original philosophical concepts. It is hard, however, if not impossible, to say which one drives the design practice, and even harder to say what are the future things that these mediated relationships enable, especially in contexts outside the designers' control, as Ihde (2006) has suggested. For philosophers of technology, this opens the possibility to overpass the distinction between a humanistic and an engineering philosophy of technology proposed by Mitcham (1994). Perhaps a design perspective in the philosophy of technology can surpass Mitcham's distinction and bring the two together by shifting the unit of analysis to the design act from societal or technical factors. The following section studies how three key philosophical strands, pragmatism, phenomenology, and Marxism, have shaped the design act.

Pragmatism: Materiality and Social Action

The current philosophical mainstream in industrial and interaction design theses is likely pragmatist, building in particular on the work of John Dewey (Dixon 2020). Pragmatism and design have a relationship stretching back to at least as far as the 1930s in the United States, where Dewey was involved in the framing of design curricula (Findeli 1990) and where his work later acted

as a key reference point in the development of approaches to human-computer interaction (Buchanan 2009). Continuing this legacy, over the last four decades, design scholars in the United States and Europe have turned their attention to pragmatism as a potential theoretical resource. In this, referencing has often been indirect, drawn forth through the theoretical efforts of those operating in other disciplines.

Though Dewey is central here, he seldom focused on technology directly. Rather, his technological references tended to be broad-based—for example, positioning language as a “tool of tools” or registering general social and political concerns. While contemporary philosophers have contextualized his technological insights in relation to his broader philosophy (Hickman 1990), these readings have not yet received significant attention in design. Rather, the focus has been directly largely on the areas of: user experience (Forlizzi and Ford 2000; McCarthy and Wright 2004), community-based political agency in the context of participatory design (LeDantec 2016), and understanding of how design knowledge operates in practice (Steen 2013). Each can be seen to form a distinct research agenda within the field.

With the rise of these agendas, pragmatism’s influence in European design research circles has grown in recent years. This is especially so in relation to community-based political agency in the context of participatory design (e.g., Binder et al. 2011; Björgvinsson et al. 2012). An example of doctoral work in this area is Sissel Olander’s *Network Labs*, which, drawing on Dewey’s publics concept, aimed to interweave design and anthropological perspectives to develop approaches to convening democratic engagements linking citizens to their local governing institutions (Olander 2015).

Our cases here, however, hone in on pragmatism’s influence in the areas of user experience design and design knowledge. The first case—Peter Dalsgaard’s *Designing Engaging Interactive Environments: A Pragmatist Perspective* (2009)—relates both perspectives, looking at both how designers design as well as user experience in the context of developing immersive environments.

Dalsgaard produces both practical and theoretical outcomes. Practically, this includes five interactive design prototypes and installations, which are each seen to both inform and challenge hypotheses on design and use. Further, a series of specialist techniques are developed in order to support the process, including inspirational cards and a reflective mapping approach. Theoretically, a pragmatist perspective is presented, which aims to support the design of immersive environments as well as understand their use.

In developing the framework, Dalsgaard draws on the work of both Dewey and Donald Schön, linking the latter’s theory of reflective practice to Dewey’s work on inquiry.¹ Dalsgaard draws on the work of the Dewey scholar Larry Hickman to link inquiry to technology. He also lines up a further series of pragmatist-informed concepts (e.g., the notion of the situation) and highlights the alignments between pragmatism and interaction design. In this, particular emphasis is placed on the commitment to situated practice, experimentation, and transformation, as well as the broad potential of experience (Hickman 1990: 78–9).

Another pragmatist case is Martin Ludvigsen's *Designing for Social Interactions* (2006), which also attends to experiential concerns in the context of interactive environments. Ludvigsen presents his work as research through design, producing a series of interactive prototypes in the contexts of urban tourist experience, a community library setting, and domestic situations. He was interested in how the social situation shifts from unfocused interaction, where people do their own things, to collective action, where they work together to make his prototypes work. In designing for this shift, he followed the American interaction sociologist Erving Goffman, whose work was in line with pragmatism, and references Richard Shusterman's *Pragmatist Aesthetics* (1992), which offers a situational, embodied perspective on aesthetics. This, in turn, led him to read the aesthetic work of the German philosopher Alexander Baumgarten (see Kjørup 1999), where perspective is seen to offer a means of interconnecting aesthetics and logic—loosely aligned to science and art, respectively—through the idea of a continuum of conceptual clarity. Following Baumgartner, Ludvigsen argued that logical thinking and aesthetic sensitivity move in the same direction toward greater conceptual clarity and that aesthetic sensitivity should be seen as “equal—not subordinate—to logic and traditional scientific thinking” (Ludvigsen 2006: 95–7). These theoretical resources mediated his relationship to design, forming an informed version of the Husserlian transcendental ego.

Theory, in fact, became a form of technology in his work. This, we can argue, is just as Dewey himself would have it. As has been argued by Dixon (2023b; and forthcoming), Dewey's vision for a pragmatist reworking of philosophy pivoted on empirical problem-solving. Such a vision was possible because of pragmatism's epistemological-methodological continuity—whereby to know, we must act. From this perspective, Melles (2008) has argued that pragmatism is design's natural epistemology. It is our view that it might also offer one of the clearest routes to what we will call the “design of philosophy,” a possibility we explore in Discussion.

Phenomenology: From Analysis to Interaction with Material Things

Another philosophical tradition that has inspired work in the corpus is phenomenology. This tradition has been particularly popular in craft research theses that have usually focused on explicating the constitution of lived experience and the mind. Another area in which phenomenology has inspired work is human-computer interaction (HCI) in which it has spawned numerous frameworks that have criticized cognitive and rationalistic ideas and pushed HCI toward exploring embodied and tangible action, movement and interaction, aesthetics and interaction, social robotics, and mediated social interaction (see Deckers 2013: 13). Its basic message has often been that the body is important and should not be neglected in design. Many ideas in this literature are “impure” in that they weave together strands of thinking from pragmatism and phenomenology (Dourish 2001) and also sometimes from hermeneutics and the late Wittgenstein (Hallnäs and Redström 2006).

Phenomenological ideas have guided design in many ways. For example, in architecture, it has inspired a novel way to understand why scale models of buildings matter. In the context of scale models, the architect Pallasmaa provides a particularly lucid example of eidetic variation:

Drawings and models have the double purpose of facilitating the design process itself and mediating ideas to others ... The three-dimensional material model speaks to the hand and the body as powerfully as to the eye, and the very process of constructing a model simulates the process of construction ... *The architect moves about freely in the imagined structure, however large and complex it may be, as if walking in a building and touching all its surfaces and sensing their materiality and texture.* This is an intimacy that is surely difficult, if not impossible, to simulate through computer-aided means of modelling and simulation.

(Pallasmaa 2009: 58–60, italics added)

Inspired by Pallasmaa, the Australian-British architect Glenn Murcutt described in December 2019 in Sydney how he taught his students an approach to land. He sent students camping for a few days on the plot they were to design. They had to observe the environment: the behavior of the sun, shadows, water, and wind, as well as birds and other life. After internalizing the plot, they were allowed to start capturing their feelings with watercolors to externalize feelings and moods before the first rough sketches. Only then were they allowed to imagine people, sketch, and architectural references. For these two architects, phenomenology is a hermeneutical tool capturing the finer aspects of being-in-the-world to guide the professional process that ultimately transcends the ordinary lifeworld of *das Mann*, the man on the street.²

Phenomenology has been brought into design construction as well. A particularly pertinent example is Eva Deckers (2013), whose design work was inspired by Merleau-Ponty's early phenomenology, James Gibson's ecological psychology, and Charles Lenay's (2010) phenomenology of indirect perception. Deckers's goal was to investigate if and how to design for perceptive qualities in systems of interactive products. Her intent was to design textiles that would leave a trace of our presence that could be felt by others when we are not present. Following a pilot study, her main study was *PeR*, short for "perception rug" (Deckers 2013: 146). It was a carpet with integrated sensing and actuating capabilities able to detect the touch of the person and a light body behaves on the surface of the rug:

The light body follows your touch. A little change in the algorithm means that the light body follows your touch at a humble distance and shyly moves away from your hand when you directly touch it ... Moreover the dynamic qualities and appearance of the light body are easily altered: for example a big and slow body influences the interaction tremendously compared to a small and quick body. The light body is sensitive to contextual noise: for example when two conductive threads touch each other, this influences the input. "Reflect Contextual Noise" in

this case amends the behavior of the light body and the interaction. The person tends to caress the light body when it does not follow, resolving the contextual noise.

(Deckers 2013: 146, an error in the original corrected)

An improved version, *PeR+*, was sensitive to the touch of as well as to the pressure. Integrating two sensors meant that the carpet could differentiate between being gently stroked and being hit (Deckers 2013: 159).

It is important to see that instead of seeing textiles as communication, Deckers was interested in how we perceive the presence of these other people when interacting with her textiles and how people who perceive our traces perceive us as previous users—that is, how intelligent textiles can create an intersubjective “perceptual crossing” in which people are aware of others’ presence indirectly. Her goal was to design a system that becomes meaningful to its users and to show that the users’ activity becomes meaningful to the system (Deckers 2013: xvi).

Deckers’s study was a pivotal attempt to bring phenomenology into design construction. First, she tackled the ways in which technology mediates bodily perception and creates connections between human beings. The modality of perception she studied was bodily—her devices made us feel the presence of another person through touch and pressure rather than digital images, videos, or language, as in social media. Second, her study suggests an even more exciting vision. What if perceptual crossings are ubiquitous, and shape the way in which we constitute our experience and make it available for others through our existence? Namely, *PeR* captured our behaviors and connected them technically, but all our actions leave marks on many things: saggy sofas, tiles on the floor in the museum, desk, keyboard, garden, graffiti on bus seats, design choices, the margins of our books, and so on. As we interact with these things, we gain an insight into them and also into people who have interacted with them.

Our observations in this section are, of course, but a skim of the top of phenomenology. Still, they are enough to show that phenomenology has found its way into design in many ways. Most references are to the classics: Husserl, Heidegger and Merleau-Ponty rather than the cutting-edge philosophical research. Also, the level of referencing remains high; references to these philosophers do not go deep into their oeuvre. But even then, phenomenology has shaped the corpus in many ways. We can cautiously suggest that there has been a shift in how exactly phenomenological ideas have been interwoven with design. Only twenty years ago, these ideas were mostly straightforward applications of philosophical ideas to design. With a new batch of researchers like Deckers, however, the line between phenomenology and design has become blurred, and it has become unclear where one ends and the other starts. Perhaps this literature has started to show how design could become philosophical; that is, we could see design as a site of new philosophical knowledge that may even have seeds for a new form of philosophy of technology and materiality that gives insights into the inevitable materiality of human existence, as postphenomenology suggests (Wakkary 2021; Verbeek 2022).

Marxism: Unions, Exploitation, and Activism

A third philosophical tradition in the corpus is Marxism. Its impact has mostly been through Scandinavian participatory design and Vygotskian activity theory and, more recently, through a Foucauldian understanding of power as a productive agent. The underlying thrust is a vision of conflict at the foundation of society, and designers need to support acts of resistance to exploitation.

Perhaps the best-known designer who has been building on philosophical ideas is the Swedish information scientist and interaction designer Pelle Ehn, whose doctoral thesis from 1988 described the background of two research projects that became foundational in what is known as participatory design. In his thesis, Ehn described two projects, *DEMOS* and *UTOPIA*. These projects tried to develop computerized systems with trade unions to counter desktop publishing and graphical interfaces that were moving power to management. Their purpose was to introduce democracy inside the factory (Ehn 1988: 247).

From the very beginning, the participatory approach developed a distinct ethic that tried to avoid overturning power relationships and falling into the trap of turning former masters into slaves (Freire 2007). As Morten Kyng, Ehn's colleague from the early years of participatory design, notes, these designers added a social constructionist approach as a complement to a Marxist view of society:

The theoretical inspiration for our work comes from two sources: one functioning as auxiliary subject and related to a Marxist view of society and forces of change, including areas such as industrial sociology and pedagogy, and represented by writers such as Braverman, Freire and Negt, and another, which can be labelled social construction—as opposed to the mechanistic foundations of most computer science—including areas such as hermeneutics, and represented by writers such as Heidegger, Polanyi and Wittgenstein, and interpretations, elaborations and supplements by Dreyfus and Dreyfus, Suchman and Winograd & Flores.

(Kyng 1995: 20, publication years for quoted authors removed for clarity)

These projects have left a long methodical legacy to design literature. The early participatory projects were based on blueprints, flow diagrams, and phase charts. The new methods of the *UTOPIA* project were things like cardboard computers designed together with graphic workers. They have achieved a paradigmatic status among the user-centered design community. Unlike the early methods, these new methods were close to the workers' language games (Ehn 1988).

Participatory design was a product of the polarized politics of post-war Europe. By the end of the eighties, it was, however, increasingly clear that society does not fall nicely into the two camps of capitalists and socialists. Instead, the Marxist spirit has faded into a Foucauldian interpretation of ubiquitous, productive power that has no clear center. Research has shifted to new issues.

For example, there is a body of work that has explored the position of creative work. Björgvinsson and Severson (Björgvinsson et al. 2012; Björgvinsson and

Severson 2014: 174–84) review a series of studies that have explored public co-productions in the cultural sector of Malmö, Sweden. Creativity, ingenuity, and imagination have become important economic drivers, but highly skilled creative workers are usually badly paid, have little autonomy, and create products that are commodified and contribute to the wealth of the owners. In Malmö, the establishment of the university in 1998 led to the establishment of living labs that worked on the borderline of cultural commons and private property. These structures helped to produce movies, websites like the Pirate Bay, forms of crowd-funding, and grassroots journalism for the cultural commons rather than contributed to capitalism.

The participatory spirit has turned into activism. For example, von Busch (2008) explored hacktivism as a form of resistance through the media theorist McKenzie Wark, among others. For Wark,

hacking is a new class struggle, succeeding the industrial one described by Marx ... According to Wark ... *in today's information society we have a new working class that Wark calls a hacker class. It is a class of workers that creates and handles information and is becoming, just like its precursors, dispossessed of its production and culture, for example the culture of sharing. This happens through various forms of private property management forms, such as copyrights, trademarks and patents* ... For Wark the hackers are thus the proletarians of the information society, or factory workers in the “creative industries.” Over this hacker class rules a vectorialist class. It controls the vectors along which information is abstracted, and appropriates what was once common property ... their work is transformed into intellectual property.

(Busch 2008: 79–80, italics added)

Among the small acts of resistance that could question exploitation in the foundations of the fashion industry are hacking, craftivism, shopdropping (you drop things to shop in contrast to shoplifting), and hacking-couture. Von Busch also explores liberation theology as a source for rethinking the relationship between society and design. These molecular revolutions (Guattari 1984) are consequences of small networked and overlapping resistant acts (von Busch 2008: 75).

Are these acts enough, or are they reifying the existing order of things, opium for the masses, as a hard-liner Marxist perspective would say? Perhaps both. Guattari's molecular change is certainly not enough to initiate a revolution that would replace the capitalist system with a communist system. Yet, the last two decades have witnessed major social forces that have created a need to find new means to change society without revolution as a precondition. Molecular changes may have ripple effects that may ultimately lead to more significant changes. In the absence of forces like trade unions, constructing and supporting molecular change may be the best designers can do.

As our remarks suggest, Marxism has had a significant footprint in design. It has inspired several approaches that have deep roots in design practice. Perhaps these practical tools that support molecular changes are the most interesting

contribution of design to Marxism. They are weapons of the weak, but they also give designers ways to bypass the capitalist system and, maybe, empower people by turning the material world into a place of resistance.

Discussion: Toward a Design of Philosophy?

This chapter has explored the relationship between design and philosophy in a corpus of 114 doctoral theses. Specifically, its focus has been constructive design research in which design itself is treated as an activity that creates knowledge (see Koskinen et al. 2011; Krogh and Koskinen 2022). Philosophical sources are common in the corpus, but there have been few analyses about the ways in which these sources have been used. These uses have been the topic of the chapter, which has specifically tried to learn whether we can see a line between “design things philosophically” and “the design of philosophy” and how this line is drawn in the corpus.

We can start with the first part of the distinction. How does philosophy shape design practice? If the analysis brought forward here is correct, this relationship has several facets. In the corpus, it serves as an inspiration but also as a critique of scientific theories and concepts. For example, philosophical ideas gave Aktaş (2020, 2022) a reliable guideline to critique and expand cognitive theories of design for forgetting the designer’s body as a source of design knowledge. It has also widened the notion of context to the social basis of memory, language, and experience, as in Mäkelä (2003). It has provided tools to explore the meaning of material in human interaction, as in Deckers (2013), and it has provided tools for critiquing the society at large, from finding allies from trade unions in the 1970s to finding marginalized groups to empower in the new century, as in von Busch (2008). Philosophy has given design distance from intellectualist ideas, decentered design from an individual to a community of humans and nonhumans, and provided a novel ethics based on care and responsibility to it (Ihde 2006; Johnson 2007; Fletcher et al. 2019).

We can also suggest cautiously that in some cases, design may give philosophers new tools to understand how design explorations have become a nascent form of the “design of philosophy.” First, in our discussions of pragmatism, we were able to see how specific philosophical concepts—for example, “experience”—have been explored in the context of constructive design research. This has been shown to yield a novel form of Deweyan technological inquiry from Dalsgaard and a perspective on how designers give form to aesthetic concepts from Ludvigsen. As it stands these concepts are situated entirely in the field of design with no direct philosophical claims. There is, nonetheless, the potential for this to happen, as we cover below. Second, in discussing phenomenology, we have seen rudiments of a new concept of materiality that connects human beings to the material environment. This insight, if taken seriously, could perhaps lead to a new discipline of meaningful materiality that sees our relationship with things around us in philosophical terms and gets methods for experimenting and playing with it from

design. Third, in our discussion of Marxism, we have seen how designers have created tools to advance political causes through activism.

We expected to find philosophical concepts applied to design and few, if any, efforts to contribute to philosophy. Yet, to our surprise, a closer examination showed that in applying philosophical concepts, designers may also have introduced tools of thinking that may go beyond the usual boundaries of philosophy. If this is the case, we may be witnessing early signs of the “design of philosophy,” in which design can and actually already has contributed to philosophy. Perhaps these are some rudiments that can take us beyond designing things philosophically to the design of philosophy, possibly by complementing the empirical turn in the philosophy of technology as proposed by Verbeek (2022) with a design turn in the same discipline.

In fact, we would like to propose envisaging three such rudiments. The *first* rudiment would center on the structuring of collaborative endeavors between design researchers and philosophers, both of technology as well as other subject areas, whether through the examination of the structures of specific concepts or by refining what has been developed. There are initial studies along this vein in the corpus. For example, Benjamin (2023) used constructive design research as a framework for postphenomenological artificial intelligence. The *second* rudiment suggests that design would do well to introduce committed instruction in philosophy at the graduate level and, indeed, below. With a stronger philosophic baseline, practitioners might be better equipped to not only understand the wider meaning of their work. Equally, they might yield new insights from existing constructive design research, as well as carry such work in new directions within their own doctoral work.

The *third* rudiment is more interesting. This chapter has studied philosophy in the context of constructive design research. Because of the nature of this branch of design, it has a close affinity with Mitcham’s (1994) engineering philosophy of design. Yet, as this chapter has shown, it introduces themes he saw typical to the humanistic philosophy of design in that designers we have studied have made societal and cultural themes constantly relevant and consequential in their work. For example, Mäkelä’s work deals with gender identities in a social context, phenomenology with bodily experience, and participatory design with politics. If this is true, design may provide a midway between Mitcham’s two philosophies. Perhaps philosophers could study design as applied philosophy by observing it in the design activity.

The third rudiment may raise yet another philosophical possibility. From a postphenomenological perspective (see Verbeek 2011), philosophy is for designers a technology on its own. If we see philosophy as a technology, not as a bodiless discourse of immaterial minds but as a discourse that has a human and a material base that maintains and stabilizes it, it gains solidity that makes it attractive to designers. It opens their eyes to novel design possibilities, helps them to position themselves vis-à-vis other designers, and creates communities that turn these possibilities into almost factual parts of design. If this observation is acceptable, philosophers could perhaps study design as applied philosophy not

by observing it from the outside but from concepts they are familiar with. Another possibility of potential interest to philosophers is that it shows that philosophical ideas are sometimes built into things people encounter, interact with, use, and misuse. Again, for empirically minded philosophers (Verbeek 2022), design can become another resource for advancing their understanding of how philosophy takes effect in the material world.

Aligning to the latter possibility, Dixon (2023b: 78) foresees the potential emergence of a “designer philosopher,” a figure who designs in relation to and with respect to philosophy. Such a suggestion may seem grandiose, but our efforts demonstrate that the prospect is there, if only nascent. If constructive design research can give this idea further form, it will come by working to carefully trace the vague trajectories the field has given rise to date to create a map to reveal the design of philosophy as it *is* and perhaps later to answer the broader question of what it *might* be is our collective, disciplinary responsibility.

Notes

- 1 As is well-known Schön drew heavily on Dewey ([1934] 2005), noting his theory of inquiry as a key source of inspiration. This, however, is under-referenced. Dewey is only cited once in *The Reflective Practitioner*, but Schön is somewhat clearer elsewhere about his sourcing (see Schön 1992).
- 2 When writing this chapter, it seemed to us that “being-in-the-world” is used in design literature in a straightforward way similar to “environment” in the social sciences and von Üxküll’s semiotics: we have not found Heidegger’s existentialist overtones of finity, death, and busyness in the face of anxiety in his *Being and Time* from the corpus.

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Chapter 3

COLONIALITY OF MAKING IN DESIGN PHILOSOPHY

Frederick M. C. van Amstel, Rodrigo F. Gonzatto, and Carmem Saito

Introduction

Philosophy has long pursued freedom, envisioning humanity beyond and throughout oppressive conditions and inspiring political action. Yet, philosophers rarely examine their own conditions and positionality to situate their contributions. Anticolonial philosophers addressed this gap, demonstrating that philosophy is always tied to the societies they stem from, no matter how atemporal or universal they claim to be (Nkrumah 1964). Since then, the question of who writes what, with what interests, at what human costs, and, in sum, how philosophy is concretely *made* is gradually becoming more relevant not just in philosophy but also in other fields.

In this chapter, we bring forth the work of Álvaro Vieira Pinto (1909–87), a Brazilian philosopher who emphasized the existential situation of making philosophy. According to his view, philosophical rigor depends on the critical consciousness of the material, collective, and external determinants of the philosopher's thoughts. Similar to Kwame Nkrumah, Frantz Fanon, José Carlos Mariátegui, and other anticolonial philosophers, Vieira Pinto believed that an engaged philosophy could be useful to work out the colonial legacies of underdeveloped worlds like Africa, Latin America, and the Caribbean. Building on this legacy, this chapter articulates a specific concept derived from Vieira Pinto's work—the coloniality of making—as a potential contribution to design philosophy.

Anticolonial thought is known in design philosophy through authors such as Madina Tlostanova, Ahmed Ansari, Arturo Escobar, and others who engaged with the Modernity/Coloniality Group (M/C), a collective of Latin American and Caribbean scholars, most of them based in the United States, who identified several concepts of coloniality. One of its major figures, Aníbal Quijano, picking up the earlier work of José Carlos Mariátegui ([1928] 1971), developed the concepts of coloniality of power (Quijano 2000) and coloniality of knowledge (Quijano 2007).

With the first concept, Quijano analyzed the geopolitical divide between former metropolises and colonies, and with the second, he took issue with the role of academic knowledge in justifying such a divide. Expanding that work, Nelson Maldonado-Torres (2007) identified the coloniality of being, and María Lugones identified the coloniality of gender (2010).

While each form of coloniality sustains an aspect of the European modernity existential project imposed on new worlds, decoloniality is the elusive attitude of suspecting and defying European cannons while establishing another. The M/C group successfully posed the concept of “decoloniality” as an “epistemological decolonization” of knowledge (Quijano 2007), effectively replacing the older “anticolonial” for the fashionable “decolonial” adjective. The quest for the decolonial reached out to other fields, including design philosophy. While the term “decolonization” has been subsequently flattened by cooptation in many fields (Abdulla and Vieira de Oliveira 2023), in design philosophy, decoloniality remains associated with resistance to colonialism and its aftermath (Setiawan 2022).

Arturo Escobar, a prominent anthropologist in the M/C group, was perhaps the first to propose a design philosophy based on decoloniality. In an earlier draft of his book *Designs for the Pluriverse* (Escobar 2012; 2018), he introduces a decolonial approach to ontological design—a design philosophy concept laid by Anne-Marie Willis (2006) and Tony Fry (2013). According to Fry (2013: 7), “ontological design is the third naturalized, unnatural ‘evolutionary’ agency” of human beings or “the indivisible relation between the formation of the world of human fabrication and the making of mankind itself.” Building on Heidegger’s ([1954] 1977) philosophy of technology and Winograd and Flores (1986) as well as Fry’s (1999; 2013) interpretations of it, Escobar (2018) suggested that to counter coloniality in design philosophy, designers must refrain from universalizing projects, such as developing technologies for many worlds. Instead, they should focus on one world at a time, respecting what the world’s community aspires to design for themselves.

Fry and Escobar see modern technology as a threat to the coexistence of humans and non-humans in the so-called pluriverse, a world of many worlds. Both authors had a lasting impact on how technology is framed in design philosophy. Reflecting on Escobar’s (2011) earlier criticism of modern technology, Pereira and Gillett (2014: 114) wonder if “in a colonial context, the modernist [design] emphasis on new technologies and industrial processes could serve another purpose; rather than standardizing and thus improving social conditions, it could maintain cultural difference and reinforce colonial power relations.” About this, Fry and Kalantidou (2014: 186) have no doubts: “Technology was always a means employed by coloniality in all its incarnations. It has never ceased to be so.” Decolonizing design, in decolonial design philosophy, means, first and foremost, relinquishing the instrumental rationality behind modern technology. This idea is echoed by Maria Tlostanova (2017: 58), who writes: “In contrast with the predominant exclusively functionalist and over-rational technocratic design models, a decolonial design would have to address more carefully and critically the realm of affect, and hence aesthesis understood in a particular way.”

The decolonial turn in design has brought up a call for alter/native philosophies of technology (Ansari 2018; 2019; 2020) next to the search for a new design aesthetics (Tlostanova 2017; Angelon and van Amstel 2021). For some authors, by giving form to technology, designers weaved modernity and coloniality into everyday life, creating a superior appeal to the colonial aesthetic: “Among such aesthetic trends and principles, one could name the beauty of utility, the organic ideal, relational aesthetics, and boutique multiculturalism with its appropriation or commercialization of difference” (Tlostanova 2017: 53). For other authors, by questioning the form of technology, designers opened up space for endangered practices like Indigenous and ancestral technologies/aesthetics replaced by the modern. In this perspective, “decoloniality is rooted in non-capitalist practices that already existed in many areas in the pre-modern era,” like catering to the “communal” (Setiawan 2022: 186).

These two perspectives converged in designing pre-modern, non-modern, alter-modern, or trans-modern technologies (e.g., Cruz 2021; Velasco-Herrejón et al. 2022; Mu 2024) as if being against modern technology was an undisputed consensus in Latin American and Caribbean philosophy of technology. In a contradictory process of citation politics, M/C investigators—and, by relying on their work, design scholars—did not engage with many authors outside of their circle (as observed by Rivera Cusicanqui 2012), particularly with the Brazilians (Ballestrin 2013). In an interview, Escobar (2020) went as far as to state that decolonial thought was arriving late in Brazil.

Countering the coloniality of knowledge that produced such disintegration, van Amstel (2023) proposed the concept of coloniality of making to enable a productive dialogue between the M/C canon and Vieira Pinto’s philosophy of technology, probably unknown to this group. Based on this initial work, we characterized the coloniality of making as a relational quality generated by colonial systems, *trajectories*, the accumulated pathways of colonial divisions of labor (Saito et al. 2023) as well as the *projectories*, the accumulated projects (or plans) of overcoming that (Botter et al. 2024; Saito et al. 2024). In past work, we defined the coloniality of making as “a set of ideological, cultural, political and market processes that operate to identify, categorize and hierarchize different practices of making, in order to prioritize the forms of making that are of interest to the Global North over the making practices of the Global South” (Saito et al. 2024). Here, we contextualize this definition within the broader philosophical system it arose from and relate to current themes in design philosophy. We do that in the hopes of promoting the integration of Latin American and Caribbean thought in this field.

Our main source is *O conceito de tecnologia* (The Concept of Technology) (2005a,b), a lengthy analysis of the relevance of industrialization, cybernetics, futurology, information, technical reasoning, artificial intelligence, and development policies in underdeveloped nations like Brazil completed by Álvaro Vieira Pinto in 1973. This work touches upon many of M/C group’s themes, but it differs in some regards, mainly in his position against Heidegger’s ([1954] 1977) philosophy of technology. For Vieira Pinto, technology doesn’t have an

inherent alienating essence that puts humanity against humanity; technology is interconnected with the human attempt to make work less strenuous and enable new forms of social coexistence. Only in specific historical circumstances does technology become an oppressive endeavor. To avoid technology-mediated oppression, Vieira Pinto explored democratic means of funding, designing, controlling, using, replacing, and nationalizing technology development.

O conceito de tecnologia was discovered and published not until eighteen years after Vieira Pinto's death. At the time of its writing (1970–3), Vieira Pinto was under tight surveillance and persecution by the civil-military dictatorship that took over Brazil from 1964 to 1989. He lived his last days in seclusion with his wife Maria Aparecida Fernandes Vieira Pinto (see Gonzatto et al. 2024) in their apartment in Rio de Janeiro after returning from political exile in Yugoslavia (1964–5) and Chile (1965–8). Researchers in many fields have tried to revert this historical erasure and demonstrate Vieira Pinto's relevance to contemporary issues. Paulo Freire is perhaps the most known. In his widely cited *Pedagogy of the Oppressed* (1970), Freire built upon several concepts crafted by Vieira Pinto ([1960] 2020a; 2020b): critical consciousness, being more fully human, limit-situation, and others (see Gonzatto 2018 for a summary of their exchanges and potential implications of their shared views for human-computer interaction).

The Design & Oppression Network recovered these trajectories and connected them to emerging projectories in decolonial design philosophy, such as ontological and pluriversal design (Serpa et al. 2022; Mazzarotto et al. 2023), establishing an anticolonial design alter/native.¹ The oppression studies of design that emerged from this move (van Amstel et al. 2023) opened up possibilities to integrate the aesthetics of the oppressed in the arts (Boal 2006) and the technology of the oppressed in Science and Technology Studies (STS) (Nemer 2022). Vieira Pinto's philosophy lays down the existential and dialectical foundations shared by these related proposals, thus being increasingly sought as a source of theoretical guidance in the oppression studies of design.

This chapter is organized as follows. First, we explain Vieira Pinto's concept of technology and being in the making, which are the philosophical antecedents of the coloniality of making concept. From that, we work out a more complete definition of this concept while relating it to design theories and practices. Finally, we prospect an anticolonial design philosophy that can mend the separation between thinking and making that is so characteristic of this form of coloniality.

The Question Concerning Technology in the Global South

Vieira Pinto's distinctive perspective on technology was deeply informed by his personal and professional experience. The early loss of his mother to cancer spurred him to explore a career in science and technology. He pursued a degree in medicine and later physics and mathematics. For a decade, he worked as an X-ray lab researcher, where he conducted research on atomic and nuclear energy (Gonzatto and Merkle 2017). His gradual turn to philosophy solidified with the

invitation to teach mathematical logic at the University of the Federal District, now Rio de Janeiro State University (UERJ). Later on, during the 1950s and 1960s, Vieira Pinto served as director of philosophy at the Higher Institute of Brazilian Studies (ISEB), a government-funded think tank that aimed to analyze and create national development ideologies.

Influenced by United Nations' Economic Commission for Latin America and the Caribbean (ECLAC), Vieira Pinto (2020a) conceptualized underdevelopment as an oppression that afflicted nations that had been or were being subjected to colonialism, which we now call the Global South. In tune with ECLAC's import substitution industrialization strategy, he speculated that designing alter/native techniques could open historical paths toward autonomous development. Technique, in Vieira Pinto, "is a manifestation of humans' vital capacity to produce their being, which is therefore inseparable from all the acts they perform" (2005a: 155). For this reason, every technique is not just a "production good" that can change the world but also a "consumption good" that can change the human (Vieira Pinto 2005a). Given that, technique always implies an expected change in humans and their worlds, and, as such, it is charged with interests.

Like many Brazilian intellectuals of his time, Vieira Pinto joined the Integralism nationalist movement in the 1930s until it bends toward fascism by the end of that decade (Freitas 1998). Since then, his intellectual orientation gradually leaned toward Marxism. He hosted and engaged in many philosophical debates on this matter at ISEB. When the US-backed civil-military dictatorship took over the country in 1964, ISEB was cracked down, and he was persecuted. During his exile in Chile, he worked for the Latin American and Caribbean Demographic Center (CELADE), an ECLAC division, where he wrote a book on the existential situation of being a scientist in underdeveloped nations (Vieira Pinto 1969) and another on the existential issues of demography (Vieira Pinto 1973).

After his return to Brazil in 1968, Vieira Pinto was forbidden to teach and appear publicly. Lacking a steady income, he anonymously translated to Portuguese dozens of books on science, technology, psychology and sociology. While doing these translations and reviewing some of his previous works (e.g., Vieira Pinto [1957] 2022), Vieira Pinto (2005a,b) noticed the continuing influence of Heidegger's ideas, particularly his essay "The Question Concerning Technology" (Heidegger [1954] 1977) and concluded that the German existentialist view on technology to Latin America was counterproductive.

For Heidegger (1977), modern technology structures the perception of the world by reducing it to a "standing reserve," a collection of resources. The world is henceforth perceived in terms of utility and functionality. By interacting with the world in this way, humans get accustomed to framing everything in their world as a means to their ends—even other humans. At some point, humanity is tricked into consuming humanity to produce humanity, which does not yield any progress. Heidegger believed that modern society should rely more on art and poetry than technology to disclose the world in a noninstrumental way.

Vieira Pinto (2020a,b), too, acknowledged the power of the arts to unveil the world, yet he conceded that only popular artists identified with the interest

of the masses could avoid aesthetic elitism. In his view, art and poetry are not opposites of technology but rather possible elements of technology or even a ludic technology. Technology, for him, is a human process of alternating between being subject and object of their world-producing activities, that is, an existential trait rather than an existential threat. Just because there is a temporary moment of objectification does not imply that technology leads to oppression. Oppression emerges precisely when the alternation is interrupted, and subject and object roles are fixated and divided among different human bodies. Hence, his focus is on how technique is produced, in which existential situation, for what purposes, and for whom. The question concerning technology was not something to be essentially feared or avoided, as Heidegger framed it. Humanity-consuming technology is a contradiction that emerges from particular designs, not from the universal design of technology. Any technology in human history could be designed either to oppress a specific human group or to liberate all humans from extenuating work. Thus, technology cannot be framed as an independent actor or thing, remarked Vieira Pinto. Rather, technology is an essential existential aspect of being human in society, and every society has its own views of technology (Vieira Pinto 2005a). Thus, the Heideggerian question of “modern technology” should be recontextualized as a question of capitalism and its inherent uneven development.

Contemporary scholars of the philosophy of technology, such as Yuk Hui (2020), conceptualize technology in a similar way. In this chapter and through the reclaiming of Vieira Pinto’s works, we inadvertently respond to Hui’s call to “re-articulating the concept of technics by resituating it within the geographical milieu, culture and thinking” (2020: 66) where it arose. The question of technology that Heidegger (1977) was concerned with, therefore, must be situated in a particular world he was thinking from and within. The question is not about the technology’s inherent biases; it is about who imparts and who benefits from such biases. In the classist (for a while Nazi) society in which Heidegger lived, the dominating class—the oppressors—controlled the technology and reverted to their core purpose of perfecting the labor exploitation of the dominated class—the oppressed. In Vieira Pinto’s (2005a) view, Heidegger’s, but also Oswald Spengler’s, criticism of technology appeared only after the Nazi techno-authoritarian enterprise fell down, as if over-reliance on technology was the reason why the regime failed to persevere, not the German classist society that mismanaged the Great Depression’s impact on that nation throughout the 1930s.

Vieira Pinto’s first dialectical demonstration is that the world in which human beings live is socially produced by humans themselves (Vieira Pinto 2020b). Therefore, there is no world outside of human society. Everything we call the world, everything we think is the world, even things we have not yet directly encountered, is already a human world, not a natural one, because they are concepts in addition to beings. In his Hegelian revival, Vieira Pinto (1969) assumed that when humans think about something, that thing is already part of their world. If that is so, there is no point in opposing a natural and an artificial world like Herbert Simon (1969) proposed in his design philosophy. This division is only useful to those who want

to control human worlds as if they were natural worlds while denying to do so—like colonialist and imperialist enterprises.

A Philosophy of Being in the Making

Before writing his thousand-page treatise on technology in 1973, Vieira Pinto published *Consciência e realidade nacional* (Consciousness and National Reality), also in two volumes in 1960. In this work, he explored existentialism, Hegelianism, and Marxism to analyze the Brazilian national reality of the 1950s, beginning with the immediate circumstances around his body as a philosopher and ending with the courageous attempt to produce an original philosophical system (compiled by Barcat 2024). Reflecting on what we would now call his positionality, he wrote:

Only when we think concretely, and dramatically, about the circumstances in which we belong, that we feel the need to denounce the deceit of having a general notion of the world. We discovered this by reversing the terms of the classic existential formula [being-in-the-world, *In-der-Welt-sein*], as a result of the split between the two meanings we were referring to [between the *ser* and *estar* verbs, in Portuguese]. We now know that the being [*ser*] that I am allowed to be in the world, that is, who I am able to realize in the world, is based on my standing [*estar*] in the world. It is, therefore, from a situation that I make myself into being who I am.

(Vieira Pinto 2020b: 140–1)

Taking advantage of the two words in Portuguese that correspond to “being” in English—*ser* and *estar*—Vieira Pinto (2020a) noticed that the essence of human beings is *being in the making*, that is, constantly moving from who they are (*ser*) to where they stand (*estar*) in the world. Existence is, thus, produced by this dialectical essence. Vieira Pinto wanted to engage with European existentialist philosophy in a critical way. It’s not just a question of recognizing that the human being is situated in a world but of dealing with (or recognizing oneself as alienated from) the contradictions implied in producing this being. In this formulation, the world is not an existential situation that provides a strange feeling of *thrownness* like Heidegger ([1927] 2002) described it but a particularly material world (e.g., Brazil, Germany, etc.) that constitutes being through its own making. Human beings, as collectives, make themselves out of their worlds to stand in their worlds (*ex-sistere*, the Latin origins of the verb to exist), but by doing so, they also make their worlds stand *for* them as their collective existence. Vieira Pinto parsed this Hegelian-Heideggerian ontology through the critical lens of Marx, drawing attention to the disparities in the material conditions for the production of existence, that is, of worlds made differently.

One specific concept became very useful to foreground such disparities: handiness. Heidegger (2002) formulated it to explain the process of unveiling the

world in everyday life.² The primary mode of handiness is practical (*zuhandenheit*): a person acts with the artifacts available without experiencing a subject-object distinction. The reflective mode of handiness (*vorhandenheit*) only appears when the artifact breaks down, becomes difficult to operate, or turns into a theoretical challenge. Vieira Pinto added a third mode of handiness to Heidegger's conceptualization, which for him was the primary one: work (Gonzatto 2014; 2018). Before an artifact could be put into practice, society would need to produce it through organized activity. Hence, shifting from the practical to the theoretical mode of handiness was not enough to overcome the peril of modern technology, as Heidegger suggested. Saving humanity from humanity required developing the overall conditions for the production of (workers') existence so they could also have free time to produce ludic technologies like poetry, art, and other sophisticated ways of unveiling the world.

When looking critically at such conditions in the world he inhabited and produced, Vieira Pinto had to come to terms with the colonial past of Brazil, Latin America, and the Caribbean. He first got attracted to the aforementioned philosophies because they dealt with the fundamental issue in that existential situation—the need to overcome underdevelopment:

The philosophy of existence, precisely because it has always been a cultural product of the dominant center, has until now been concerned, among other things, with speculating on Nothingness, which shows that it is not interested in anything, let alone changing human's real situation. But the philosophy of existence, considered from the point of view of the philosopher from the peripheral world, reveals that, on this side, man is in the presence of Everything he needs to do to realize himself existentially; therefore, the essence of the human situation, "to make," stands out more clearly. Only by making what needs to be made, it is possible for man, and more particularly for man in underdeveloped regions, to realize his being. Now, "what needs to be made," in this second case, consists of nothing other than materially changing the circumstance in which he lives, in other words, promoting national development.

(Vieira Pinto 2020a: 70)

Thinking with Marx, Vieira Pinto understood work as a world-making: "The philosophy we need to cultivate is this: the one that places the highest value on human creative effort, the work, as a factor in changing the world" (Vieira Pinto 2020a: 68). Thus, he became less attracted to the discussion on the thought of thought pushed by philosophers like Descartes, Kant, Hegel, and Heidegger. He discovered that the thought of making and the making of thought were much more relevant to his existential situation: "It is what we need to make that we should focus on; making as a chore" (Vieira Pinto 2020a: 355).³ Formerly colonized people needed to accumulate work in technology and social development to exist and think autonomously. In a deep sense, this accumulation required understanding how, when, where, and through which means humans make themselves:

Making manifests an aspect of man's existence and, therefore, an inseparable character of his reality, which only subsists by "making," primarily by fulfilling the first and most important of the "makings," or chores, the making of oneself. To think that the cessation of making is possible, to imagine a state of human existence in which there will be no more "making," is tantamount to declaring extinct the species of rational beings characterized by the obligation to make themselves, by the production of existence, by creating the implements, instruments, machines, ideas and artistic goods with which they carry out the mediation that allows them to "make themselves" within material nature.

(Vieira Pinto 2005a: 433)

His finding that human being is a *being in the making* led him to formulate an anticolonial, dialectical, and existentialist philosophy akin to Mariátegui's ([1928] 1971), Fanon's ([1961] 1963), and Nkrumah's (1964). In this philosophy, the lack of a human essence and the unfinished state of being human proclaimed by existentialists (Vieira Pinto 2020a) was extended to collective beings—worlds and nations—by the imposition (or uncritical appropriation) of existentialist philosophy to the underdeveloped world. Hence, the underdeveloped world looked unfinished and lacking something that could only come from the developed world: the material conditions for existence, including modern philosophy and modern technology. Hence, people living there needed to make themselves out of the making that came from the outside world. And, by doing so, they rarely felt good enough to make themselves out of what they had already made. Everything made in the metropolis was considered better than what was made in the colony, including the human beings born and trained there. This is what Vieira Pinto (2020a) called *metropolitanism*, a cultural hierarchization of world-making activities that closely resembles the colonialities discussed by M/C authors. Europe set this hierarchy by making itself in relation to other worlds as a ready-made world, and at the same time, made Indigenous worlds appear as "worlds-to-be-made" (Botter et al. 2024), as if Indigenous people did not make a fully human world.

In the colonizers' view, colonies should not make anything, as they are supposed to provide natural resources, including human resources, often treated as work animals. This prejudice against different ways of world-making and, thus, of being human led to the destruction of peoples, lands, and cultures—sometimes much more advanced than the European counterparts in special regards. Indigenous people still refer to those worlds as *Abya Yala*, *Turtle Island*, *Pindorama*, and other names to emphasize the difference from the over-imposed America. For contemporary Europeans, the negative impacts of colonization could be overcome if these worlds join their planetary effort—inspired by Heidegger (1977) and other philosophers who criticized humanity's instrumental relationship with their world—to reach sustainable development, a proposal received with suspicion in former colonies. As Tony Fry (2013) has argued in design philosophy, ideas like degrowth and zeroing carbon emissions do not have the power to counter the European mode of development unless they are combined with decolonizing and

repairing the historical damage caused to Indigenous worlds. Hence the growing interest in design philosophy to criticize and overcome sustainable development.

Ontological design is probably one of the most promising concepts to avoid the trap of sustainable development in design philosophy. In Tony Fry's (2013) version of it, ontological design is key to the shift from the current state of (un)sustainability toward Sustainment, his grand vision of a new era of human evolution that would reaffirm its natural relationships with the world. Building upon Fry, Arturo Escobar (2018: 133) writes that ontological design "avoids defuturing into objects and reveals technology's contribution to unsustainability. It brings together imagination and technology ontologically, and it tackles head-on the anthropogenesis of technicity." Despite their differences, these authors agree that ontological design is about countering the modern in modern technology by redesigning technology in a way that technology actively redesigns modernity out of humans.

Vieira Pinto never used the term "ontological design," but his philosophy of technology includes an ontological understanding of modern technology that considers its imbrication with the historical processes of colonizing in a similar way. He located the contradiction of technology within the modernity existential project, which claimed exclusivity—as if there was only one way for humanity to exist and to know its existence. When the European White man, who has split his sense of self into a thinker versus a doer, a designer versus a maker, declared, "I think, therefore I [know who I] am," he downplayed the actions that made that thought even possible. Enslaving Indigenous people and forcefully removing Africans to work in the colonies became a trivial activity because these were not considered to be thinkers. Hence, they did not exist or know anything. The division between thinking and existence poised by Rene Descartes philosophically justified colonization as much as it still justifies the present-day capitalist work hierarchy, where some work is deemed more scientific than others (Vieira Pinto 1969).

For example, over generations, Indigenous peoples living in the Amazon have accumulated knowledge of local medicinal plants. Still, this work is considered less scientific than the work of a foreign pharmaceutical industry worker who visits these communities, collects their knowledge, and isolates the active principles to turn them into manufactured drugs. The Global North's work is seen as more scientific than the Indigenous and, therefore, deserving intellectual property and capital accumulation. This distinction can be attributed to the international and colonial division of labor; however, it can also be attributed to the ontological design of the modernity existential project.

Coloniality of Making

Given this philosophical backdrop, we can redefine the coloniality of making as the relational quality produced by the ontological design of modernity's existential project. The main characteristic of the coloniality of making is maintaining an underdeveloped making, which neither recognizes itself nor is recognized by

others as sufficiently developed. Existential projects that produce this quality typically separate physically (and geographically) thinking from making activities. Hence, underdeveloped work is not thought through and through but misrecognized as half-made. As for developed work, it is misrecognized as not made at all, only designed by thought. Such misrecognition is expressed in everyday language through specific words like *gambiarra* (in Brazil), *rasquache* (in Mexico), and *malicia indigena* (in Colombia), among others. The negative connotation of these words is the visible contact of the international division of ontological design established by colonization. Nevertheless, these same words, when properly reworked as positive concepts, can become alter/native universals to design (van Amstel 2023) and design by other names (Gutiérrez Borrero 2021) in the philosophies of design.

The universal form of design historically replaced or controlled these particular forms of making into being. The foundational strategy was to split design from making, separating these activities across the firm, nation, and world. A split process requires a split collective worker body, in other words, handpower and brainpower apart (*mão de obra* and *cabeça de obra* in Vieira Pinto's creative use of Portuguese). There are some bodies who intellectually devise, sketch, plan, and specify and other bodies who manually build, construct, or execute the design. Designers' *making through thinking* is not-making, whereas a maker's *thinking through making* is not-design. The manual origin of design is unveiled only when such coloniality is seen as an advantage by the consumer (Saito et al. 2024), as when the product label distinguishes what is "designed in X" (somewhere in the Global North) and "made in Y" (elsewhere in the Global South), or when manual labor becomes an added value: "carefully handmade by Z" (typically an assemblage of Global South workers located in the Global North).

The embodied distribution of thinking and making is also masked by design methodologies that claim a small portion of the historical task of making goods. Pre-packaged problem-solving design thinking methods, frameworks, or toolkits typically include a minor making task in the "make," "prototype," or "act" phases. These phases rarely aim at anticipating the fabrication or implementation *ahead* of design but to "evaluate" or "proof" the thought *behind* the design, sometimes with users from the Global South. The inherently colonialist aspect of design thinking has long been criticized by Pedro Vieira de Oliveira and his colleagues from the Decolonizing Design Group:

Such a pre-packaging and systematization of complexity in terms that might be tackled by a single approach of "making" or "thinking through making" assumes a "solvability" which is immediately assigned to a mode of shaping the world into a certain "order": designing (which places practices stemming from industrial development as its starting point).

(Schultz et al., 2018: 93)

Characterizing making as part of (design) thinking, as Brian Dixon (2023) does in his pragmatic design philosophy, is not enough to counter the coloniality of

making, even if it helps to conceptually bridge the gap. Most of the thinking keeps being made in the Global North, and most of the making continues to be thought in the Global South. Instead of promoting participatory design on the shop floor where these workers are—like done in the Scandinavia of fifty years ago (Ehn 1988)—contemporary *design thinking* (Juelsbo et al. 2017) cannot help but recommend designers to “think with their hands,” play with construction materials, draw by hand, assemble building block toys, configure 3D printers, program electronic boards, and similar activities that challenge neither the local nor the international division of labor.

Due to the coloniality of making, design thinking is so proud of its higher making that it does not recognize the lower making that makes design thinking even possible in the first place. This hierarchy between a higher and a lower form of making has profound consequences for geopolitical relationships. In sociotechnical imaginaries, for instance, the *world made with seemingly less thought* is seen as apocalyptic, polluted, and ugly. For instance, scenes captured in Hong Kong (Global South) are shown in the movie *Blade Runner* (1982) as the impending future of cities like New York (Global North). The ideology of the future (Gonzatto et al. 2013; van Amstel and Gonzatto 2021) behind such dystopias aims to justify development aids in underdeveloped worlds and sustainable development in the developed world so that the future remains in good hands. Vieira Pinto called that operation the “domestication of the future” (Vieira Pinto 2005b). The practice of *futuring* identified by Tony Fry (1999: 147), “to secure and extend time in the face of the defuturing momentum of unsustainability,” falls somewhat into that critique. By emphasizing “learning how to design from the future to the present” (Fry 1999: 147), *futuring* domesticates defuturing by designing existential time as human resource rather than human historicity (see van Amstel and Gonzatto 2021).

Through such ideological operations, the underdeveloped world *thought through making* is reduced to a bunch of meaningless things, without art, poetics, and *techné*, but, on the other hand, full of problems that the developed world can solve. The coloniality of making leads the underdeveloped people to think that the solutions to their problems are always in another place, in another time, but never here and now. For example, Brazilians imported transgenic corn in the 1990s after being persuaded that this could end hunger in the nation. The result was the opposite of it. The rapid spread of Genetically Modified Organisms (GMOs) seeds in Brazil correlates with the hunger rise of the 2020s. Massive corn production enabled ultra-processed corn products, which are less nutritious than locally produced food. An alter/native developmental path would have been to explore the sixty-plus varieties of corn that Indigenous people have selected over centuries to adapt to the Latin America and the Caribbean soil and environment. The coloniality of making downgrades Indigenous designs so that capital and knowledge accumulation in the underdeveloped world becomes harder. In contrast, designs coming from foreign metropolitan nations, like GMOs, are introduced to these worlds as gifts from gods (Vieira Pinto 2020a: 108).

Due to this mystification of reality—which Vieira Pinto called “the ideology of technique” (2005a)—coloniality of making renders Indigenous worlds appear natural, raw, nondesigned, and devoid of knowledge. Whereas the colonizers’ worlds appear as artificial, well-designed, human-made, or made in collaboration with more-than-humans. The colonized is persuaded to believe they can only make a great world if they import design practices and production technology from the metropolis. Their externally shaped self-image is that of nondesigners, designers without technique, or ad hoc design technicians, as if they were not already designing their means of existence.

In this state of affairs, the apparent way out of oppression is, in fact, a lure. As much as the underdeveloped world tries to become like the developed world by importing people, theories, and products, the difference between worlds becomes more acute. As van Amstel (2023: 66) puts it: “By securing value through ideology, policy, and market strategies, developed nations design themselves out of underdeveloped nations’ making.” Associated with the coloniality of knowledge that elevates *know-how*, the coloniality of making generates an academic way of designing—design research—which includes, among many advanced colonial practices, doing ethnographic field studies in the underdeveloped world to understand cultural differences and, with that understanding, avoid possible resistances to the metropolitan exports, policies, and strategies.

Design research carries within itself the fundamental contradiction of the coloniality of making: the negation of the project inherent in all making, including and especially making into being—as if merely using things to produce existence did not require an existential project of its own (Gonzatto 2018). In addition to being *userized* (Gonzatto and van Amstel 2022) and racialized, the underdeveloped being is also gendered (Lugones 2010), falling into the domestic sphere and, therefore, considered to involve less reflection than work done outside the home. As for Latin American and Caribbean women like Maria Aparecida Fernandes Vieira Pinto, whose contributions to her husband’s philosophy were recently recognized by Gonzatto and colleagues (2024), thinking is not enough to exist; they also need to make into being what others do not want them to be. This is similar to underdeveloped nations that hold a greater responsibility to domestic rather than foreign affairs. In both cases, the being *made through thinking* of developed men is considered superior to the being *thought through making* of underdeveloped women. Here the coloniality of gender intertwines with the colonialities of making and knowledge in several layers.

The basic distinction put forth by the coloniality of making is between bodies that can project themselves into the world and those that cannot and must resort to being projected by others. A body that can project itself is called a (cosmopolitan, metropolitan, or global) designer; one that cannot is called a (colonial or local) user. These inferior bodies are not expected to evolve beyond what is expected from using their bodies; they must remain in that state of not being fully their own, hence, not designing their bodies. Design establishes the underlying oppression by introducing several layers of what Bonsiepe (1999) called an *interface* between users, user goals, and the tools to achieve them. According

to Vieira Pinto (2020a), becoming aware of these mediations is fundamental to knowing ourselves, understanding what we are made of, who we are, and how we can become otherwise.

Toward Anticolonial Design Philosophies

The recognition of the world-that-is-made behind the world-to-be-made reveals the historical axis that goes from the pathways we made through our journeys to the projects we intend to make, from what Botter and colleagues (2024), inspired by Vieira Pinto and other authors, called *trajectories* and *projectories* in their prospective design philosophy. Vieira Pinto's philosophy of technology implies that no individual, people, or culture, at any time, lack technique—and it is from this existential understanding of technique that autonomous forms of design can be developed. In practice, this entails engaging with the old and new techniques of each era while avoiding adopting them naively.

The coloniality of making is a specific concept formed out of Vieira Pinto's philosophy of technology. It is an example of what is possible to get from going through his extensive philosophical system (Barcat 2024) and weaving connections with contemporary debates. Like many philosophers who *thought through making* Global South worlds, Vieira Pinto's contributions remain to be appreciated by the Global North. The present research concludes that studying Vieira Pinto can add nuance to the Modernity/Coloniality groups' understandings of technology and locate the oppressor behind modern technology. Then, technology—modern or not—can be understood as a possible and desirable material of decoloniality instead of something to be avoided or kept under tight control. This opens up new possibilities for the critical development of plural-universal, or pluriversal technologies (Velasco-Herrejón et al. 2022).

The coloniality of making fits well within the framework devised by Maldonado-Torres (2007) to articulate the coloniality of power, knowledge, and being. Coloniality of making unveils the objective aspect of the coloniality of being, or how the colonized self (the wretched *damné* of Fanon) is barred from making it into being out of its own negativity—the capacity to negate the natural being and become a cultural being, that is, a fully formed human (Hegel [1807] 2019). Instead, the colonized is forced to accept the colonizer's negativity toward them, which is devastating. Notwithstanding, through decolonizing efforts, the colonized can negate that external negation—which is often mediated by an oppressive technology—and, thus, affirm (and internally negate) the positivity of their being (Fanon [1961] 1963). While regaining the “ontological and historical vocation to be more fully human” (Freire 1970: 55), the colonized make into being who they need to be by negating oppressive uses of technology while affirming liberating ones (Vieira Pinto 2005a,b).

Similarly, the coloniality of making sheds light on the coloniality of gender (Lugones 2010), on how domestic spaces are expected to only be suitable for thinking through making. As for power (Quijano 2000), the coloniality of making

demonstrates how it is concretely made from interpersonal and institutional relationships. As a result of the disconnection between power and its source, the manual aspect of intellectual labor is disregarded and delegated to less powerful others. Thus, the coloniality of making also overlaps with the coloniality of knowledge (Quijano 2000), as they are intertwined in the alienation of labor and technology. This is just a glimpse of the potential overlaps and relationships between forms of colonialities.

From such overlaps, an essential question emerges: what is the kind of freedom produced by a design philosophy? In critical dialogue with existentialism, Vieira Pinto states that “only when consciousness externalizes itself by engaging in the realization of a making into being free project, it is possible to call it free” (2020b: 171). Freedom is not a *sine qua non* condition of being human, as Sartre and other existentialists believed. In Vieira Pinto, humans are not condemned to be free but have to make their freedom by performing free acts that are “liberators of their country, and therefore creators of superior historical situations” (Vieira Pinto 2020b: 272). From this, we can concur that design philosophy can counterpose the coloniality of making insofar as making free acts becomes an integral part of what Johan Redström (2017) calls making design theory. A design philosophy that claims to be anticolonial must engage in making alter/native things (van Amstel 2023) instead of staying at the privileged social production of free thought (or free speech).

As part of anticolonial existential projects, design is no longer a barrier to liberation. From an intellectual activity (design thinking) that controls or indulges manual activity (design making), design becomes, thus, a dialectical action that mediates between thinking and making. Sometimes, thinking becomes a means to making, and at other times, making becomes a means to thinking. The anticolonial design *praxis* is, therefore, characterized by *thinking through making* as much as by *making through thinking*. These actions are integrated into each other and occur within the same body in the same locality. Ultimately, despite this apparent complexity, neither thinking, making, nor designing is the final goal. The goal of the liberating existential project discussed here is becoming more fully human (Vieira Pinto 2020b), which is the ontological vocation of all human beings (Freire 1970). The question concerning technology for an anticolonial design philosophy is: whose existences and freedoms are at stake in, by, and through this and that design?

Notes

- 1 Distinguishing decolonial, anticolonial, postcolonial, and pluriversal designs is beyond the scope of this chapter. See Winschiers-Theophilus and colleagues (2025) for a historical approach to these strands as they appear in participatory design.
- 2 Handiness has been picked up by several design philosophies, including design as interface (Bonsiepe 1999), participatory design (Ehn 1988), ontological design (Winograd and Flores 1986; Willis 2006; Fry 2013), underdeveloped

interaction design (van Amstel and Gonzatto 2021), and prospective design (Botter et al. 2024) to name just a few. By calling it handiness, we follow Gonzatto and Merkle (2016)'s translation of Vieira Pinto's *amanualidade* (2020a) as an attempt to gather all interpretations of this human existential trait into a single concept.

- 3 Vieira Pinto explored all possible meanings of the Portuguese word *fazer*: doing, realizing, making, and making-of. Sometimes, he posed *fazer* next to the similar word *afazer*, to add a reflective layer to his argument. In the quotes of his work herein presented, we have translated *afazer* as “chores” and *fazer* as “making” instead of the common translation “task” and “doing.” This choice is in tune with Vieira Pinto's emphasis on *fazer* as a dimension of work. His reflective concept of *fazer-se ser* is lost in translations that reduce *fazer* to merely “doing” (e.g., Vieira Pinto 2022). Here, we translate this conjugation as “making into being.” Despite playing with existing words, Vieira Pinto did not rely on foreign language words, coined neologisms, nor gave peculiar meanings to existing words to make his philosophy of being, unlike German philosophers. Instead, he preferred to offer lengthy descriptions through simple vocabulary and intricate argumentation. His choice is a deliberate alter/native to the existentialist writing style. About that, he once wrote: “Heidegger is the king of the philosophical pun. His thoughts cover the entire universe of calembur, a pastime that the philosopher practices both by making use of the facilities accidentally offered by the language itself and by those he discovers on archaeological expeditions to the world of dead languages” (Vieira Pinto 2005b: 232–3).

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Chapter 4

TOWARD A DESIGN PHILOSOPHY THAT STUDIES THE DESIGN OF ARTIFACTS AND THE WORLD IN WHICH THEY ARE EMBEDDED: THE CASE OF DIGITAL TWINS

Vincent Blok

Introduction

The digital revolution confronts us with the fact that technological design does not only concern artifacts but the redesign of the World. The European Commission invests, for example, in the design of a digital twin of planet Earth, called *Destination Earth* or, in short, *DestinE*, that can predict the effects of climate change and the impact of adaptation and mitigation strategies (European Commission 2023).¹ A digital twin is a real-time realistic digital model, replica, or representation of a physical entity (Korenhof et al. 2022), ranging from a tomato to the human immune system and from a city center to planet Earth. As a digital twin, the ambition of *DestinE* is to be a one-to-one re-presentation of the physical Earth that can predict the effects of climate change and the impact of adaptation and mitigation strategies. It not only designs a virtual world beyond the physical world we experience in our daily lives, just like the virtual world of games and social media. Digital technologies like digital twins also redesign the *physical* world in which we live and act. If the ambition of *DestinE* is to “represent a real breakthrough in terms of accuracy, local detail, access-to-information speed and interactivity” (European Commission 2023), then the assumption is not only that the digital twin of planet Earth is data-driven but that also the physical Earth is data-driven, fully accessible via algorithms and integrally re-presented by the digital twin.

On the one hand, a digital twin of planet Earth seems to change nothing at the physical level of the planet on which we live and act. At the same time, the Earth appears in a new way, namely as “rich observational datasets” (European Commission 2023). The “accurate” simulation of planet Earth by *DestinE* is said to be informed by “rich observational datasets” of the Earth, which implies

the redesign of the basic structure of our understanding of the meaning of the World as a whole, namely as data-driven. In this redesign of the World, the physical and the virtual increasingly fuse. Only because of this fusion a digital twin of planet Earth can claim to be an “accurate” “one-to-one” “representation” of the physical Earth, can claim to be able to predict the real impact of climate change on the planet, based on digital models, and can claim to test solutions to address climate change virtually before new mitigation and adaptation strategies are established in practice. In this regard, a digital twin of planet Earth is not merely a passive representation but actually redesigns the World in which we live and act.

The example of *DestinE* shows that digital twins already raise philosophical questions about the nature of the model and the nature of causality that is assumed in digital twins. In this chapter, we want to focus on another aspect that is related to the *design* of digital technologies. The example of *DestinE* shows that the design of digital technologies not only involves a broad range of new digital artifacts that are interconnected through the Internet-of-Things but the redesign of the meaning of the World as a whole. We speak about a digital World with capital “W,” meaning that digitalization is not so much a characteristic of physical entities we encounter in the world, like the shape of a robot arm or the material the computer in front of me is made from, but rather concerns a meta-physical structure that characterizes the whole of being as computational data, affecting the meaning of our human existence and acting out in the World. This raises not only the question of where this redesign of the World came from but also what this redesign of the World precisely entails.²

Contemporary design philosophers and philosophers of technology have the tendency, however, to neglect this phenomenon of the digital World in their research and to focus on individual technological artifacts, ranging from the artificial Womb to ChatGPT and from Google Glass to fire hydrants. On the one hand, they have good reasons to engage in an empirical or practical turn in design philosophy. The previous generation of philosophers, like Martin Heidegger and Jacques Ellul, tended to abstract from concrete technologies and concentrate on Technology in general, while it is concrete technological design that raises ethical concerns and calls for Value Sensitive Design. On the other hand, empirical or practical turn philosophers run the risk of throwing the baby out with the bathwater if they limit themselves to the inscription of social values in the design of new artifacts. The example of the digital World that is presupposed in the design of *DestinE* shows that there are phenomena beyond the level of technological artifacts like the datafication, instrumentalization, or commodification of all domains of life, sometimes framed as dataism and pancomputationalism, that raises societal concerns as well and deserves dedicated reflection by design philosophers and philosophers of technology as well.

In this chapter, we engage in an ecological phenomenology of the redesign of the World in the digital age in order to show why the consideration of the redesign of the World in the digital age is relevant for contemporary design philosophies

and philosophies of technology (section “A New Critical Perspective for Design Philosophies”), and how design philosophers can research both the design of concrete artifacts and the World in which they are embedded in an integrated manner (section “An Ecological Phenomenology of the Redesign of the World in the Digital Age”). Based on our findings, we propose to study design at the physical level of artifacts, the processual level of invention and evolution, and the metaphysical level of the redesign of the World in an integrated manner. In order to set the stage, however, we first ask why contemporary design philosophies—and we take Value Sensitive Design as a case in point—are not able to move beyond the artifact level of design and are not able to study the World in which these designs are embedded (section “The Inability of Contemporary Design Thinking (Value Sensitive Design) to Reflect on the Redesign of the World”).

The Inability of Contemporary Design Thinking (Value Sensitive Design) to Reflect on the Redesign of the World

In line with the call for an empirical or practical turn in the philosophy of technology, design philosophers focus on designed artifacts and processes in their work. Glenn Parsons, for instance, defines design as “the intentional solution of a problem, by the creation of plans for a new sort of thing” (Parsons 2016: 11). Although design philosophers open various and sometimes competing perspectives on design, for instance the idea that artifact design “crucially involves the construction and communication of a use plan” (Houkes 2008: 37), that the design of the artifact “depends both on what it was designed for and on what it is being used for” (Fransen 2008: 21), or even questions “the notion that a designer can design into a technology, its purposes and uses” (Ihde 2008: 51), they do not question the assumption that design primarily concerns concrete artifacts and processes.

In the field of Value Sensitive Design (VSD), for instance, the point of departure is found in the design of computer technologies, and the question is raised about how we can account for human values in the design of these systems (Friedman 1996). VSD is an umbrella term for a broad range of approaches that show that societal values are often unintentionally imparted in the design process of new and emerging technologies, and call for the deliberate embedding of desired values in design (Simon 2017). They share the idea that values can be expressed and embedded in technological design, that the embedding of values in design is morally significant, and that the consideration of values is required in the early phases of the design process (van den Hoven 2013).

If VSD critically reflects on the design process and intends to inscribe *societal* values in the design of artifacts, do design philosophers then not already move beyond the individual artifacts and acknowledge the World in which the design of new technologies is embedded? VSD acknowledges that values are not merely inscribed in the design of artifacts but often lead to new sociotechnical realities

(Brey 2010). And yet, the acknowledgment that new technological design can lead to new sociotechnical realities does not mean that contemporary design philosophers consider the redesign of the World by digital technologies like digital twins, which we introduced in the previous section.

First, even if design philosophies like VSD argue that the design of new artifacts can lead to new sociotechnical realities, they do not sufficiently reflect on the nature of this new reality due to their focus on projected values. Values are defined as something that “a person or group of people consider important in life” (Friedman et al. 2006: 349), but in fact, there is no consensus about socially shared judgments about our living and acting in the World, nor about the best way to achieve this. For one, the inscription of justice in design means that technologies prevent prejudices or disadvantages for underprivileged groups. For others, justice requires a more critical consideration of the neoliberal economic system as a background of technological design and call for political limits. VSD is already criticized because of its implicit or explicit *projection* of particular values, while others are ignored (Le Dantec et al. 2009). Such a projection of particular values leads to working definitions of a specific set of projected values like human welfare, privacy, and trust (Friedman and Hendry 2019) but shies away from fundamental ethical discussions about the nature of values like justice and freedom that constitute our living and acting in the World. This might explain why VSD is criticized for lacking moral commitment and the need for an ethical theory, for instance, a virtue ethics approach (Reijers and Gordijn 2019).

VSD also shies away from the fact that the projection of values in the new design depends on the structural power dynamics in the world in which we live and act (Jacobs et al. 2021). Power imbalances are especially at stake in the case of disruptive technologies like AI, synthetic biology, and geoengineering because of the different values involved by conflicting voices in society. VSD does acknowledge power dynamics and engages stakeholders in co-design (Friedman and Hendry 2019), but because of the focus on the projection of values as an output of design, the power dynamics in the *process* of value projection are insufficiently taken into account. The projection of values in design is the product of a process of contestation and is embedded in power dynamics, which can even undermine the claim of value *sensitivity*. On the one hand, the projection of social values is informed by powerful actors like economic actors that adhere to a specific concept of value—economic value—and operationalize social values accordingly in economic terms or market logic that competes with the social logic (Lubberink et al. 2019). This might explain why VSD is criticized for its inability to theoretically distinguish between stakeholder interests and moral values (Manders-Huits 2011; Jacobs and Hultgren 2021). On the other hand, the projection of social values and their operationalization is always *objectifying* values and can, therefore, not do justice to the *process* of contestation (Popa et al. 2021), the *plurality* of values (Popa et al. 2023), and the power dynamics behind the contested values that constitute the World in which we live and act (Wang and Blok 2025). The first reason why

VSD is unable to reflect on the redesign of the World is because of its focus on projected values.

It is indeed the case that fundamental ethical discussions about the nature of values, the contestation of values, and the power dynamics are challenging to adopt in the concrete design of artifacts, but this does not mean that design philosophers should not extend their reflection to these areas of concern. Concrete designs like digital biomedicine and AI can only function in a social world of contested values and power dynamics, and it is the disruption of the social world by digital designs that raises societal concerns, for instance, regarding the consequences for the labor market, political manipulation, and post-truth. It is not sufficient to acknowledge that design can lead to new sociotechnical realities while limiting oneself to the adoption of projected values in the (re)design of digital technologies. Design philosophers should at least *extend* their reflection to the process of projection that constitutes the World in which we live and act, as VSD is embedded in this World.

Second, instead of accepting the power dynamics behind the process of value projection and value pluralism as a fundamental limitation of the ambition to achieve value sensitivity in design, VSD focuses on specific values that are considered to be *relevant* for the specific design and only to the extent that they can be *operationalized* in the design. In fact, they adopt a pragmatic judgment of values as “what is important to people in their lives, with a focus on ethics and morality” (Friedman and Hendry 2019: 31), based on their efficacy to serve particular design purposes. They argue for “progress, not perfection” (Friedman and Hendry 2019: 55). For this reason, VSD can successfully identify transparency or privacy issues in the design of a new app and call for privacy by design approaches while neglecting structural issues like the fact that private human experiences become publicly available as commodities for economic exchange in times of surveillance capitalism (Zuboff 2019); while VSD can adopt design requirements regarding privacy in the design of Google Glass or Facebook, the companies behind these technologies still benefit from the public availability of private human experiences as commodity for economic exchange. This example shows already that even if VSD acknowledges that values inscribed in design often lead to new sociotechnical realities, their point of departure and the ultimate goal is to redesign artifacts at the micro-level, not the sociotechnical realities in which they are embedded. But as long as we extrapolate from the micro-level of privacy issues in design to the macro-level of the sociotechnical reality they might lead to, we *quantitatively* generalize based on the projected values that are pragmatically inscribed in the design of artifacts while neglecting the *qualitative* difference between privacy issues in the design of an artifact and the societal disruption that is at stake in surveillance capitalism, that is, the redesign of the World in which we live and act.³ It is such a qualitative shift, which is at stake in the redesign of the World of data in the digital age, that is not accessible via a quantitative extrapolation based on pragmatically projected values inscribed in design; the digital World is not the totality of digital technologies in our society, as digitalization concerns both the physical and the

virtual, as the example of *DestinE* made clear. The second reason why VSD is not able to consider the societal disruption involved in redesigning the World in the digital age is that their point of departure is the micro-level of the design of the artifact and that they limit themselves to the pragmatic inscription of values that are considered to be relevant and operationalizable in the design of the artifact. However valuable such considerations might be for design practices, it cannot account for the qualitative shift of the design of the digital World in which these designs are embedded, like the datafication of all aspects of human and nonhuman life, which raises societal concerns as well.

The third reason why VSD is not able to consider the redesign of the World in the digital age is their assumption regarding the nature of design. Research by Donia and Shaw (2021) has shown that VSD assumes high designer agency, that is, adheres to the assumption that the human is the primary agent in design. This is confirmed by the idea that VSD assumes that the designer is *in control* of the process of embedding values in design in an early stage of the process (van den Hoven 2013). We can question whether the human agent is, in fact, the primary subject of design. The history of innovation shows that design is not only determined by human agents but primarily by previous stages of development, interdependencies with other technological developments, as well as by intrinsic universal tendencies that are independent of humanity but are operationalized in concrete designs in relation to particular cultural and environmental settings (Stiegler 1998; Simondon 2017). Likewise, the human subject is not the primary agent that redesigns the sociotechnical reality (Blok 2022b), as the World in which we live and act is creatively destructed by a succession of interrelated inventions (Blok 2023c). The third reason why VSD is not able to consider the redesign of the World is because of its anthropocentric conceptualization of design as a controlled process that misses the very nature of technological evolution. The human is not the primary subject of the redesign of the World, as the human is rather *immersed* in the emergence of the digital World, as we will see in the next section.

Although design philosophies like VSD claim to be reflexive, they uncritically testify of a very particular understanding of human living and acting in the World. In fact, their orientation on the micro-level of the design of technologies, their pragmatist judgment of values, and assumption of human control show a liberal faith in technological progress that stresses the individual characteristics of particular technologies as an object of design, which can be redesigned and controlled by the designer as a human subject. With this, they adhere willingly or unwillingly to a paradigm of makeability. Although they acknowledge that design can lead to new sociotechnical realities, they are not able to sufficiently reflect on these structural issues because of their pragmatic orientation on projected values in the (re)design of technologies. Although it is indeed difficult to address these structural issues in the concrete design of artifacts, as they are not limited to the technical object and cannot be controlled by the human subject alone, that doesn't mean that design philosophers, especially if they want to make design value sensitive, should extend their reflection to these issues that constitute the World in which we live and act.

An Ecological Phenomenology of the Redesign of the World in the Digital Age

In this section, we extend the scope of design philosophies beyond the micro-level of digital technologies to the World in which these designs are embedded, in order to show why this World is relevant to consider in contemporary design philosophy and philosophy of technology. In order to get access to this World, we should, on the one hand, not renounce the micro-level of digital technologies like classical philosophers of technology (Heidegger 2000), as these designs provide our access point to the digital World we are interested in (Blok 2024). In order to get access to this World, we should, on the other hand, not quantitatively extrapolate from the description of the content of the design of digital technologies to the world of data as a general category. Rather than descriptive generalizations, we engage in a hermeneutics of the presuppositions that are taken for granted in the design of these technologies, like digital twins. This enables us to articulate the qualitative meaning of the taken-for-granted World of data. In this hermeneutic phenomenology of technological design, we are not so much interested in the materiality of these physical artifacts (Ihde 2022) but in the ecosystem in which these designs are embedded and that might be disrupted by these designs. In order to make sense of this digital World, we ask questions like: What is the content sense of the ecosystem in which *DestinE* is embedded? What is the relational sense of the interconnectedness and interdependency of *DestinE* and the ecosystem of other designs, as well as the natural and built environment? What is the meaning of human living and acting in this ecosystem in which *DestinE* is developed and used? While we developed this Ecological Phenomenological approach in an earlier contribution (Blok 2024), we apply this method to the case of *DestinE* in order to show the World of data in the digital age and its relevance to the contemporary philosophy of design.

Design in the Digital Age Does Not Only Concern an Artifact but an Ecosystem of Interconnected Technologies

An ecological phenomenology of technological design starts with a concrete digital design like *DestinE* and articulates how such a tool to predict the effects of climate change and the impact of adaptation and mitigation strategies mediates our experience of the World in which we live and act. A first observation is that in the digital age, we do not so much encounter digital technologies like digital twins as singular design, as they consist of a range of interconnected and interdependent technologies like sensors to collect data, data processing, sequencing and modeling techniques, and so on, that inform interconnected technological ecosystems like *DestinE*.

Design in the Digital Age Presupposes a Particular Design of the Basic Structure of the World in Which We Live and Act

The invention of technological ecosystems like *DestinE* is, on the one hand, a new-to-the-world innovation. It adds a new design to the inventory of the world without changing anything at the physical level of the planet on which we live and

act. On the other hand, the successful operation of digital designs like a digital twin of planet Earth presupposes that the basic structure of the Earth consists of data and appears as “rich observational datasets” (European Commission 2023). For instance, if a digital twin of planet Earth claims to represent the physical Earth with high accuracy, local detail, and interactivity (European Commission 2023), what is assumed then is not only that the digital twin of planet Earth is data-driven but also that the physical Earth itself is data-driven, fully accessible via algorithms and integrally represented by the digital twin; only because the physical world is data-driven and accessible via data-driven technologies, *DestinE* can claim to be this accurate representation and successfully predict climate mitigation strategies. A second observation is, therefore, that digital designs are not only new-to-the-world innovations but presuppose a particular design of the basic structure of the World in which we live and act.

The World of Data Does Not Concern a Characteristic of Physical Entities in the World but a Meta-Physical Structure

The data-drivenness of the physical planet and of the design of the digital twin of the planet is not so much a characteristic of physical entities we encounter in the world, like the material a robot arm is made from or the color a robot is made of. A third observation is that data rather characterizes the whole of being as computational information that each and every design and use of digital technologies presupposes. We call this whole the World of data with capital W, meaning that data is not a physical entity we encounter in the world but rather concerns a meta-physical structure that is presupposed in the design and use of each and every digital technology.⁴

The World of Data Does Not Exist Next to the Physical World but Presupposes the Redesign of the Basic Structure World as a Whole

This World of data is not a new phenomenon next to the existing world in which we live and act. The World of data supports the functioning of digital devices like digital twins that adapt the environment of the device to their functioning; for example, a digital twin of planet Earth is dependent on data for its functioning, and at the same time, the digital device adapts the physical Earth system *as* a dataset to its functioning in order to accurately re-present the original.⁵ With this, it becomes clear that the World of data does not emerge next to the existing world in which we live and act because the digital design (*DestinE*) *adapts* the physical world (planet Earth) to its functioning, redesigns the basic structure of our understanding of the World as whole, namely as data-driven. In this redesign of the World, the physical and the virtual increasingly fuse. This is not necessarily a bad thing because only due to this homogenization between the physical and the virtual world, *DestinE* can claim to be an “accurate” “one-to-one” “representation” of the physical Earth, can claim to be able to predict the real impact of climate change on the Earth system, and can claim to test solutions to address climate change virtually

before new mitigation and adaptation strategies are established in practice. A fourth observation is that the design of digital technologies presupposes not only a digital world next to the physical world but the reconfiguration and homogenization of the basic structure of our understanding of the World in which we live and act.

The Presupposition of the World of Data Is Not a Hypothesis but Always Already Taken for Granted in Each and Every Hypothesis Regarding Digital Design

A fifth observation is that this presupposition of the World of data is not a *hypothesis* posed by the designer. For example, when we consider the design of *DestinE* as a predictive model, the data-drivenness of *DestinE* is not something we can directly perceive if we look at the artifact. And yet, the World of data is perceived indirectly in the design of data-driven technologies, as predictive models like *DestinE* use techniques to find patterns in the data that enable the system to learn and predict accurately. In this process of modeling and learning, the World as a homogeneous dataspace is already self-evidently *assumed*. This assumption of the World of data is not a hypothesis that can be tested—we cannot “proof” that the Earth consists of “data,” rather than “materiality”—but is self-evidently taken for granted in each design of digital technologies. While the claimed accuracy of *DestinE* to predict the impact of climate mitigation strategies is still a hypothesis that has to be tested and will lead to further improvements in its design, the redesign of the World of data is not such a hypothesis but is in a way already taken for granted in each and every hypothesis of a predictive model or supervised learning technique. While we can test any design of a predictive modeling or supervised learning algorithm, the assumption of the World as a homogeneous dataspace doesn’t have to be proven; it *shows itself from itself*.

The Taken-for-Granted World Is Constituted by the Circularity between the Dependency of Digital Designs on Data for Its Functioning and the Adaptation of the Physical to Their Functioning

It is not the case that the human subject is the designer of the World of data. The designer of predictive models like *DestinE* presupposes the World of data, and is also him- or herself subject to this World, as also the human appears as dataset in the digital twin of the human immune system. We can question the anthropocentric orientation of the role of the designer in the design of the World of data if we consider the sense of the relation between the physical world and the digital world in the design of *DestinE*. If digital technologies like *DestinE* are, on the one hand, *dependent* on the input of planet Earth as a rich dataset, and on the other hand, *adapt* planet Earth to its functioning, then the digital design of planet Earth and the physical Earth are interconnected and interdependent. On the one hand, *DestinE* is *grounded* in the World of data that provides the Earth *as* dataset that can provide feedback to the digital model and is, in this way, incorporated into the training process. On the other hand, *DestinE* *founds* the World of data by *adapting* the Earth *as* dataset to the functioning of the digital device. A sixth

observation concerns this circularity between the dependency of *DestinE* on data for its functioning and the adaptation of planet Earth to its functioning, which results in the mutual alignment, convergence, and even conflation of *DestinE* and planet Earth. The physical Earth provides the data for the digital twin of planet Earth, which becomes, in turn, the measure and norm for the adaptation and mitigation strategies to address climate change in the physical Earth. This alignment of the World as a dataset for algorithmic computation extends beyond the technological design like *DestinE*, but concerns the World of data in the digital age.

The World of Data Is Not Designed Overnight but Emerges in the Course of History

A seventh observation is that this World of data is not of all times but has emerged in the course of history as a qualitative new structure of reality due to the innovation, evolution, and adoption of digital technologies. While in previous times, the World consisted of relatively stable and discrete substances or natural objects that were structured by dichotomies like physical versus virtual, natural versus technological, and human versus nonhuman, in the World of data, these dichotomies erode in the homogeneity and mobility of data as a substrate of all material entities we encounter in the world, whether as a substrate of biochemical or electric algorithms or as a substrate of human or artificial intelligence. The shift from the World as a discrete dichotomous set of substances to the World as a homogeneous and mobile dataset does not happen overnight. It is constituted by the circularity between the grounding and founding of the World of data. The design of digital technologies like *DestinE* is, on the one hand, grounded in the World of data, as their functioning presupposes reality as a dataset. At the same time, it is only by the establishment and dissemination of these technologies in the world that the World of data is *founded*. Through the circularity between the founding of the World of data by digital technologies and their grounding in this World, the World of data and digital technologies mutually align and constitute the World situation today (Blok 2023b).⁶

In the Digital Age, the World as Material Substantiality Is Replaced by the World of Data

This brings us to an eighth observation. The relational sense of the interrelated technologies, human and nonhuman actors are characterized by the *virtuality* of the World of data, in contrast with the materiality of substances or objects in previous times. This becomes clear if we consider that in the World of data, it is hard to distinguish between offline and online realities, as was still possible in twentieth-century science fiction movies like *The Matrix*, in which the virtual world of the Matrix still remained embedded in a physical world in which the human provided the energy to run the system. In the process of the datafication of the World, data gets a new relational sense of the virtual World in contrast to the material substantiality of the World in previous times. What is at stake in this process is not a blending of the physical and virtual but a transformation of the

World into an ecosystem or datasphere in which there seems to be no room for the acknowledgment of the materiality of physical objects (Bostrom 2013), leading to an im-materialist or mentalist philosophical position. It is in this way, that the fusion of online and offline in today's world is no longer science fiction.

With the Emergence of the World of Data, the Meaning of Human Existence Shifts toward the Homo Virtualis

A ninth observation is that this transformation of the World as data not only concerns beings in the world but also shifts our understanding of the meaning of human living and acting in the World. Human categories like the spatiality and temporality of our living and acting in the World change, as we seem to be no longer dependent on physical proximity, location, and embodiment for our existence. Our natural voice is, for instance, no longer dependent on embodiment, as a digital clone can digitally compensate for the internal vibrations and resonances in our chest.

This transformation of the human identity in the virtual world goes further than the idea that social media constitute our identity. In our engagement with digital designs like *DestinE*, a particular understanding of the meaning of human existence is assumed that determines how both *DestinE* and the Earth appear. On the one hand, also the human appears primarily as a dataset like any other entity we encounter in the world, for instance, as dataset for the digital twin of the human immune system. On the other hand, the human becomes primarily the data processor in this virtual World of data, the *homo virtualis* who trains, processes, and acts upon the data (Blok 2023a).

The ecological phenomenology of technological design reveals that design extends beyond the micro-level of artifacts—or what we classically call the *physical* level of analysis of beings in the world—and involves a disruptive redesign of the World in which we live and act—or what we classically call the *meta-physical* level of analysis. Further, this redesign concerns both a historical process of technological evolution and an outcome of this process. Because the design of digital technologies is related to the redesign of the World in which we live and act, the empirical turn of contemporary philosophies of design and philosophy of technology should be accompanied by a *processual* turn and a *metaphysical* turn, to consider the full phenomenon and impact of design. Based on the phenomenological analysis of the design of *DestinE*, we propose to study design at the physical level of artifacts, the processual level of invention and evolution, and at the metaphysical level of the redesign of the World in an integrated manner.

A New Critical Perspective for Design Philosophies

This proposal enables design philosophers to move beyond the perspective of the artifact and reconnect their research with broader societal phenomena that raise a broader set of critical issues. In the context of this chapter, we cannot provide a full critical review of the disruptive redesign of the World by digital technologies

but limit ourselves to three critical issues that are opened by our phenomenology of the redesign of the World by digital twins like *DestinE*.

We have seen that the design of digital technologies involves the disruptive redesign of the World in which we live and act, in which classical dichotomies like physical versus virtual erode in favor of the homogeneity and mobility of data as a substrate of all material entities in the World. Many designers working on digital technologies like digital twins uncritically assume that their algorithmic computations have full access to the physical reality without reflection on the convergence of the physical and the virtual in the World of data that has to be assumed prior to their operations. The same holds for philosophers like Baudrillard (1994), who argue that in the postmodern age, there is no difference anymore between the map and the territory that is represented by the map. It is indeed the case that a digital twin like *DestinE* consists of a continuous process of real-time feedback between the physical Earth and the digital twin of the Earth that leads to the adaptation of the environment of the design to its functioning—it constitutes the World of data as its environment—while this functioning of the twin is at the same time dependent on the World of data for its functioning. In the mutual alignment of the physical and virtual world, nothing is *given* anymore as territory (planet Earth) to be *represented* by the map (*DestinE*), but a hybrid Earth is brought firmly to a stand. And yet, the previous section provided sufficient reason to question this convergence.

First of all, if the design of digital technologies like *DestinE* presupposes the World of data, but this World of data is historically contingent, as it is at the same time founded by the invention, evolution, and dissemination of digital technologies, then it is possible to question the validity of this presupposition. The congruency between the physical and the virtual in the World of data is not a *given* but is grounded and founded by the innovation, evolution, and dissemination of the design of digital technologies like *DestinE*. With this, we can question the assumption that the world actually consists of computational data and instead argue that the World in which we live and act is *reduced* by digital technologies in favor of the homogeneity and mobility of data as a substrate of all material entities we encounter in the world, including ourselves.

On the one hand, it is precisely the experience of such a reduction that informs societal concerns regarding the objectivation and instrumentalization of all aspects of life by digital technologies. While design philosophies tend to neglect these types of concerns beyond the micro-level of the designed artifact, our proposal is to study design at the physical level of artifacts, the processual level of invention and evolution, and the metaphysical level of the redesign of the World in an integrated manner. This does not mean, on the other hand, that we play off the everyday life experience against the digital world of data, as was common in classical philosophy of the twentieth century. We cannot deny that the use of social media, E-books, and AI-driven helpdesks shows that digital technologies mediate our everyday experience. The proposal enables us to study both the design of digital technology and the redesign of the World in an integrated manner, and to consider broader social-ethical concerns in the design, for instance, whether the

datafication of all aspects of life is legitimate or should be limited because digital technologies are not able to acknowledge the fundamental difference between the physical and the virtual World.

As a concrete example, we can think of the design of *DestinE*. If the design of digital technologies adapts their environment as a condition for their functioning, for example, the adaptation of planet Earth as a dataset for the functioning of *DestinE*, the nature of this adaptation enables us to question the claim of representation of the physical Earth by the virtual Earth. If the available datasets regarding planet Earth are limited, then the design of the digital twin implies that the physical Earth conforms to the twin. *DestinE* does presuppose not only the congruency of real-life climate impacts on the Earth and its digital representations but the digital twin of the mitigation strategies guides our understanding of the real-life mitigation strategies without any concern about the adaptation of the physical Earth to its digital representation. This guidance is not neutral but becomes the norm for our understanding of planet Earth to the extent that only the available data of the physical Earth—weather data, and so on—are taken into consideration, while everything that resists algorithmic computation, like qualitative aspects that cannot be captured in binary numeral systems, the spatial and temporal plurality of social-political systems, the constitution of meaning, and so on is neglected as irrelevant. We can even question the principal accessibility of planet Earth. The Earth systems' complexity and unpredictability might turn out to be noncomputable and “analog” in principle. It also might turn out that the computer power currently available is insufficient to compute the complexity of the Earth system. Our knowledge of the Earth system is principally limited, as the Earth system is an eruptive, uncertain floating and wandering planet that always potentially disrupts the digital world and withdraws its management and control, as the term “planet” (*planetes*) suggests.

Notions like adaptation, representation, and emulation show already that the convergence between the physical and the virtual that is presupposed by digital technologies can be questioned and is, in fact, limited by a principal difference between the two. It is these type of questions about the nature and limits of the World of data that is presupposed in the design of digital technologies, which raises societal concerns and requires philosophical reflection.

Second, if the design of digital technologies emulates and rivals the physical entity they represent, their adaptation of the environment, in fact, introduces a supplement or surplus beyond this original (Derrida 1976). Although the relation between the physical entity and the digital twin is assumed to be a neutral and transparent representation, the twin does not actually represent the physical entity in a neutral way (Korenhof et al. 2022). The design of the digital twin involves selection processes, for instance, which data is seen as relevant in the big dataset that is available. This selection process is not neutral and might inform a biased twin. The design of the digital twin also involves interpretation processes that are dependent on the goals of the particular twin; *DestinE*, for instance, claims to be a representation of the Earth system as such, but as a European project, it primarily intends to serve the European policy agenda regarding sustainable

growth (Korenhof et al. 2023). The design of the digital twin also involves the translation of a physical entity, ranging from a tomato to planet Earth in a digital representation. It can be expected that issues like power dynamics and competing ethical and economic interests inform these selection, interpretation, and translation processes, as *DestinE*, for instance, tests climate mitigation strategies virtually and informs real-life policymaking.

Notions like selection, interpretation, and translation already show that the convergence between the physical and the virtual that is presupposed by digital technologies involves a *process* of convergence that might be the product of power dynamics and can be questioned. What is considered to be relevant in the twin? Whose interests are adopted in the twin? What is the role of the plurality of political and social views and values to be adopted in the twin? These questions show why we have to extend the domain of ethics of technology by engaging in fundamental philosophical research. We should not only focus on ethical issues like privacy, discrimination, and welfare in digital technologies like facial recognition or milking robots. Societal resistance against these technologies is also informed by more profound concerns about surveillance capitalism, enslaving consumerism, or the industrialization of all domains of human life. Ethics of design should integrate critical reflections on the power dynamics behind the selection, interpretation, and translation processes in the development of these designs.

Third, the limits of the convergence between the physical and the virtual can become concrete if we consider that digital technologies like *DestinE* constitute the virtual World of data and are at the same still time-dependent on the biosphere of the physical Earth for their functioning. The Earth is the location to source scarce materials to build the hardware and energy to run the software, provides the environment in which the required data centers can be built, functions as a dumping ground for waste materials and CO₂ emissions produced by these data centers, etc. Every digital operation by *DestinE* consumes energy and externalizes greenhouse gas emissions to the environment. This environment is not part of the virtual World of data but the physical Earth as a condition of possibility of every digital World. In this regard, we can argue that it is an ecological fallacy to argue that the territory ceases to exist in the postmodern age, as the biosphere of planet Earth is the condition of possibility of every digital World.

For the purpose of this chapter, we leave a further discussion of the difference between the physical Earth as condition of possibility of the digital World, which I have articulated in another contribution (Blok 2023c). More important is to show that a broader concept of design opens also new perspectives on the implications and impacts of design. Design philosophies and philosophers of technology are sometimes criticized because they tend to take the material conditions of the biosphere of planet Earth for granted, which provides the scarce materials, the fuels, and the dumping ground for our technologies (Winner 2013), while climate change requires philosophers of technology to engage in a “terrestrial turn” in order to consider the planetary context in which these technologies emerge and function (Lemmens et al. 2017). The proposal we developed in this chapter enables us to move beyond the micro-level of the design of digital technologies and to

consider the redesign of the World, as well as the ecosystems of planet Earth as condition of possibility of each and every design.

A broader concept of design does not only lead to a fundamental criticism of the redesign of the World by the design of digital technologies. It can also open new avenues for design. For example, the interconnectedness of the design of digital technologies in the Internet-of-Things can open a critical perspective on the anthropocentric orientation toward human and economic values in the design of *DestinE* and can inform a *bio-centered* conceptualization of digital twins. The shift from human-centered to bio-centered digital twins of planet Earth is urgent because current research often neglects the biosphere of planet Earth, in general, and the enormous amount of energy that is required for the use of *DestinE* and the CO₂ emissions that accompany its data processing activities, in particular.

Conclusion

In this chapter, we criticized design philosophies in general and VSD in particular for their inability to consider the World in which the design of digital technologies is embedded and which is disrupted by these technologies. We subsequently explored the relation between the design of digital technologies and the World of data, based on the case of a digital twin of planet Earth—*DestinE*—and considered the relevance of this level of analysis for design philosophy. We showed how the design of digital technologies at the micro-level contributes to the convergence of the physical Earth and the virtual Earth and constitutes the World of data. In this way, it became clear that the digital revolution involves the emergence of a new World of data in which the physical and the virtual increasingly fuse. Concrete design, like a digital twin of planet Earth, can only function in a social and natural world of contested values and power dynamics, and it is the disruption of the social and natural world by digital designs that raises societal concerns, for instance, regarding the instrumentalization of all domains of human life, surveillance capitalism, etc.

Based on this analysis, we proposed to study design at the physical level of artifacts, the processual level of invention and evolution, and the metaphysical level of the redesign of the World in an integrated manner. These three dimensions of design can be used as heuristic tools to reveal the right information that is relevant for design philosophers and philosophers of technology. Because design philosophies tend to neglect these phenomena, while it is precisely this broader phenomenon that raises societal concerns, the first function of the three dimensions is to reveal the phenomena that design philosophies and philosophers of technology should take into account. The second function of the three dimensions is to open a new critical perspective on the impacts of the design of digital technologies beyond the societal values that are imparted in the design process of new and emerging technologies. We limited ourselves to three critical issues that a broader consideration of the three dimensions of design reveals.

With the introduction of three dimensions of design, we aim to build on the important work of design philosophies like VSD while extending its scope in order to enrich contemporary debates in the philosophy of design and the philosophy of technology. The aim of our proposal is to enable philosophers of technology and designers to critically consider broader phenomena like digitalization, dataism, and surveillance that concern the World as a whole in their reflection on concrete design practices that co-constitute this World.

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Notes

- 1 The description and analysis of the example of *DestinE* in this chapter is derived from an earlier contribution (Blok 2023a).
- 2 While we concentrated on the question how new and emerging technologies can impact the design of the World in earlier work (Blok 2023a; 2023b), in this contribution, we concentrate on the question what this redesign of the World in the digital age entails.
- 3 Classical philosophers of technology like Jacques Ellul are criticized because they abstract from concrete technologies and develop monolithic notions like *technique* (Ellul 1964). A question for future research remains whether the “abstractness” of such philosophies of technology can be explained by their methodological orientation on quantitative extrapolation and generalization, leading to “monolithic” concepts like *technique*.
- 4 Because the World of data is not a characteristic of physical entities, we do not have access to this World by *transcending* from the physical to the meta-physical. Rather, this requires the transduction of the ontological structure in which each and every physical artifact is grounded (Blok 2024).
- 5 This idea is inspired by an ontological reading of the work of Gilbert Simondon (2017). Simondon himself is primarily interested in the mechanology of the

technological evolution in which technical objects emerge and evolve in their associated milieu like the natural environment or the laboratory. I further develop this idea toward an ontology of innovation in which technical objects emerge and co-evolve with the World as a whole, that is conditioned by the Earth as material condition of possibility of every World (Blok 2023c).

- 6 I speak of a qualitative new structure of the World to indicate that the grounding and founding of the World of data emerges in history but cannot be reduced to a gradual historical process. I don't want to imply any progressive or regressive tendency in the emergence of a new World. The particular understanding of history that fits the emergence of the World in World history is up to future research. The notion of *DestinE* can already give an indication in the right direction for future research, as it raises the question of what is meant by the *destination*, the *destiny* at stake in *DestinE*. If a digital twin like *DestinE* consists in a continuous process of feedback between the physical Earth and the digital twin of the Earth, then this destiny is not something *given* upfront but only *destined* in the circular movement between the physical Earth and the twin, in which they grow together, align, and conflate in the end.

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Chapter 5

BUILDING BRIDGES: EMPIRICAL PHILOSOPHY (OF TECHNOLOGY) AND RESEARCH THROUGH DESIGN

Michael Nagenborg

Introduction

In this chapter, I propose Research through Design (RtD) as a mode of inquiry, which creates a potential opening for developing an approach to Empirical Philosophy that goes beyond Applied and Application-Oriented Philosophy. The chapter is based on my experience within an interdisciplinary research project based on the RtD approach of Schofield and his colleagues (Schofield, Whitelaw, and Kirk 2017). I will pay special attention to the philosophy of technology and the philosophy of the city since my research lies at the intersection of these two philosophical domains.

Thus, the chapter will also contribute to the methodological discussion on how to do philosophy in trans-and interdisciplinary projects. In the context of this chapter, “interdisciplinary research” refers to research conducted by researchers from different academic disciplines. In contrast, “transdisciplinary research” is marked by collaboration with nonacademic researchers and stakeholders. I acknowledge that these definitions may not be perfect. Still, since there is no shortage of attempts to define inter- and transdisciplinary (e.g., Klein 2010), I would like to be open about my position. For the following inquiry, the most important point is that academic disciplines are commonly characterized by specific methods. Following Klein (2010), interdisciplinary research, which aims to go beyond encyclopedic multi-disciplinarity, is marked by developing a shared method. Yet, philosophers commonly do not claim to have a method but would use somewhat softer terminology and speak of “approaches,” “frameworks,” or “schools,” if they make such commitments at all. While we refer to “logic” or “hermeneutics” as philosophical methods, they are distinct from scientific or design methods. As we will see, the challenge is connected to our understanding of “empirical research” and the downplaying of the application process in the tradition of Applied Philosophy. For now, I would like to emphasize that it is not

obvious how philosophy can become part of interdisciplinary research without a common method. Another important aspect of interdisciplinary research concerns the criteria needed to determine the degree to which a collaboration is successful. I will try to answer the question from the perspective of philosophy.

Surprisingly, these questions are not widely discussed in philosophy, although philosophers frequently participate in interdisciplinary research projects. The need to include ethics almost seems to be taken for granted by now; and, in general, philosophers seem to be content with the view “that philosophical discourses provide the researcher with the conceptual tools to refine research questions, frame arguments, challenge pre-conceived ideas, and test hypotheses” (Fahie and Dunne 2021: 3). However, these assumptions do not answer the question: What philosophy as a discipline has to gain through interdisciplinary research? The same applies to Value Sensitive Design (VSD) and similar approaches in which philosophers engage in translating values into design requirements (van de Poel 2013). The common distinction between “philosophy of technology” and “ethics of technology” also does not help to raise questions like, “what can we learn about the technology when applying ethical insights?”

The following chapter consists of three parts. In the first section, you will find a brief description of the project “BRIdging Data in the Build Environment” (*BRIDE*), which was concerned with designing an Internet of Things (IoT)-enabled, 3D-printed bridge in Amsterdam. I wrote this section from the research team’s perspective at the University of Twente. This section and the rest of the chapter mainly refer to Sage Cammers-Goodwin’s PhD project (Cammers-Goodwin 2023) and the thesis project of Naomi van Stralen. In the second part of the chapter, I introduce the distinction between Philosophy, Applied Philosophy, Application-oriented philosophy, and Empirical Philosophy. In the third part, I suggest that Research through Design (RtD) presents good opportunities for moving beyond the model of “Applied Philosophy.”

Background of the Case Study: The BRIDE Project

The *BRIDE* project aimed at engaging in the design and construction of an IoT-enabled, 3D-printed bridge in Amsterdam. Running from 2018 to 2023, the project faced delays primarily due to the Covid-19 pandemic, which postponed the bridge’s placement until 2021. As a result, we shifted our focus from the production process to developing the data infrastructure, despite what the project title suggests.

Over ninety sensors were affixed under the bridge and then covered with protective plating to enable a digital twin of the bridge. While the sensors were foremost meant to study the bridge’s health, they also allowed us to monitor human behavior on the bridge in a privacy-sensitive way. However, we couldn’t acquire any behavioral data while the bridge was placed on site since we could not obtain the required legal permission on time. In all honesty, we need to acknowledge

that the project did fail in this central aspect. However, we still learned a lot about smart urban infrastructures while working on the project.

As I argue later, we need to consider success criteria for Empirical Philosophy. I propose to focus on the knowledge gained in the process rather than meeting external goals (in our case, the monitoring of human behavior on the bridge).

Applied, Application-Oriented, and Empirical Philosophy

In the following section, I will develop my approach to Empirical Philosophy, which builds upon and goes beyond a particular understanding of Applied Philosophy and Application-Oriented Philosophy. It would be outside the scope of the chapter to present a full overview of the discussion on the nature of Applied Philosophy/Ethics or Empirical Philosophy. However, I hope the brief introduction to the different concepts makes my approach more plausible.

From Applied Philosophy to Application-Oriented Philosophy

Applied Ethics is the best-known variant of Applied Philosophy and is commonly understood as applying findings from normative ethics to real-life cases. As I have argued elsewhere (Nagenborg 2014), what makes ethics (or philosophy) applied is the idea of addressing questions outside the philosophical discourse. Thus, Applied Philosophy does not only use case studies to illustrate a philosophical argument but promises to answer a question (or parts of a question) raised by members of the public or in other disciplines.

The word “applied” suggests that something to be applied exists independently from and before the process of application. To stick with the example of “Applied Ethics,” the terminology suggests that Normative Ethics precedes Applied Ethics. To put it boldly, Kant needed to write his books first before we could apply a Kantian approach. While Applied Ethics is often considered a success story, it remains a domain with little prestige because the simplistic idea of “application” implies that Applied Ethics does not add new insights to the knowledge generated within Normative Ethics; application remains a one-way street. I want to challenge the idea that the process of application adds nothing new for two reasons:

1. Application is not a simple process since it requires us to identify the particularities of a case while relying on a generalizable framework. It is a hermeneutic task. On the one hand, we may have to abstract from particular aspects to make a particular case fit a general framework. On the other hand, we need to be careful not to force a particular case to fit a general framework. At the very least, we will learn something about the relationship between the general and the particular: namely, the particular phenomenon fits nicely within the general framework. In other cases, we may learn that certain aspects do not fit and must be accounted for. Or that there is no fit at all, which may lead us to consider a different or new general framework.

This means, importantly, that new knowledge emerges in the process of application.

2. Philosophical writings and talks tend to focus on the results rather than how the scholar arrived at a particular idea. That is not to say that we do not build arguments. Yet, these arguments are already part of a solution, which typically is not developed within the chapter. Thus, the actual process of doing philosophy remains invisible in most philosophical writings. For example, we may have discussed some of our arguments with colleagues. Yet, we will hardly document such discussions in writing other than including someone—or a group—in the “acknowledgment section.” I want to claim that philosophy is prone to blackboxing to hide its inner workings and neglect the praxis of doing theoretical work. In the case of Applied Philosophy, we tend to make “application” look like a simple and straightforward process. We do not communicate how we have chosen our cases or decided to apply a particular framework for a given case. We are far from discussing how the case shapes the theoretical frameworks and vice versa. The discussions on techno-moral change (Swierstra, Stemerding, and Boenink 2009) and social disruptive technologies (Van de Poel et al. 2023) are notable counterexamples. Yet, it remains a very limited discussion within the philosophy of technology.

Therefore, I prefer to speak of Application-Oriented Philosophy instead of Applied Philosophy to overcome the false dichotomy of “doing philosophy (proper)” and “(merely) applying philosophy.” Application-Oriented Philosophy refers to doing philosophy to address a specific challenge. At times, we may find a way to constructively contribute to meeting the challenge, but—hopefully—we will always contribute to philosophy.¹

From Application-Oriented Philosophy to Empirical Philosophy

Peter-Paul Verbeek suggested taking “actual technologies and technological developments as a starting point for philosophical analysis” to arrive at a “philosophy ‘from’ technology” (Verbeek 2016). I want to suggest a slightly different route, which is more aligned with the philosophy of the city. As James Conlon (1999) puts it in his work on “Cities and the Place of Philosophy”: “Philosophy has acquired the reputation of being ethereal and abstract, but if its paradigm is the Socratic dialogue, it was born amidst the bustle of the agora, born on the busiest corner of a great city. Socrates began his philosophical work by abandoning astronomy and turning his intention instead to the human diversity collected in the agora.” What makes a difference here is that scholars like Conlon do not claim to do philosophy “from” the city but “in” the city.

The idea of doing philosophy in a project that aims to develop specific outcomes is promising, especially for projects like *BRIDE*, where the philosophers are invited to reflect upon the project while informing the design process. In this context, “empirical” signals that philosophy is not only concerned with answering questions raised by the project partners and other stakeholders but also may intervene in

developing a new technology. In this respect, it goes beyond Applied Philosophy and Application-Oriented Philosophy.

At first glance, Empirical Philosophy may look like an oxymoron. After all, philosophy is often defined in contrast to the empirical sciences. Yet, there are reasons to challenge the concept of such a conventional understanding of “empirical.” On a fundamental level, Hermann Schmitz demonstrated that the idea of philosophy as a nonempirical discipline builds on a reductionist understanding of the “empirical,” which is rooted in Western body/mind dualism (Schmitz, Müllan, and Slaby 2011). In this respect, Empirical Philosophy is not about mimicking natural sciences but acknowledging the practice of doing philosophy as embodied subjects in a specific sociocultural context. Philosophy does not happen in a vacuum, yet the way the results of philosophical research are often presented makes them appear as if free-floating minds wrote them. I do not want to suggest that we all must adopt (auto-)ethnographic methods or embrace a phenomenological vocabulary. However, we should acknowledge that our research is undertaken under specific sociocultural, political, and material circumstances. Once we accept the need to reflect upon these conditions of our works, we should be more open to the idea of Empirical Philosophy.

To avoid misunderstandings: I do not claim that Empirical Philosophy is the only way of doing philosophy. There is nothing wrong with focusing on questions that arise within the philosophical debate. However, there is no need to delineate the borders of philosophy alongside the empirical/theoretical divide. I would rather love to reclaim the empirical (broadly understood) from the sciences, which seem content with a narrow understanding of the empirical.

Integrative Approaches to Philosophy and Design

The interest of philosophers (of technology) in design is relatively new. An early example of the interaction between the disciplines was the conference “Discovering Design” in Chicago in 1990, which led to an edited volume with the same name published in 1995 (Buchanan and Margolin 1995). The book features contributions by Albert Borgmann, Langdon Winner, and Carl Mitcham. The late interest, of course, also has to do with the general increased interest in technology (or technologies) in the field of contemporary philosophy since the 1960s (Franssen, Lokhorst, and van de Poel 2024).

The “empirical turn” in the philosophy of technology relates to overcoming the idea of capital “t” Technology as a monolithic force and focusing more on how technologies (lowercase “t” and in plural) come into being. However, while the empirical turn emphasizes the “Centrality of Design to Technology” (Franssen, Lokhorst, and van de Poel 2024), the focus is more on the practice of engineering rather than designing. (In the Dutch context, there might be a simple explanation for the bias toward “engineering” since philosophers of technology often work at technical universities, which lean toward the engineering disciplines.)

At first glance, Value Sensitive Design (VSD), rooted in Human-Interaction Design, looks like a notable exception.² Yet, VSD has become more and more of a

distinct methodology in itself, which does not have an easy fit with the practice of designers (Ozkaramanli and Nagenborg 2024). From a philosopher's perspective, VSD can also be understood as yet another form of Applied Ethics, where the role of philosophy is reduced to determining which values are at stake and how to address tensions between values.

From my perspective, the lack of interaction between the philosophy of technology and design seems like a missed opportunity, given the interest in where stuff comes from in philosophy after the empirical turn and the emphasis on designerly ways of knowing in Design, which also goes beyond the idea of "mere" application of pre-existing knowledge. For example, Nigel Cross (2006) argues in his seminal paper that "designers tackle 'ill-defined' problem" and use their skills "to both 'read' and 'write' in 'object languages.'" Thus, there is a clear overlap when it comes to what Don Ihde has called "material hermeneutics" (Ihde 2021) between philosophy (of technology) and design, an interest in the art of reading and interpreting objects. Along similar lines, Richard Buchanan (1995) argued about the central role of the poetics and rhetorics in design: the "poetics of products" here refers to the "study of products as they are," which echoes Cross' idea of reading objects. In contrast, the "rhetorics of products" refers to the study of "how products come to be as vehicles of arguments and persuasion about the desirable qualities of private and public life" (Buchanan 1995). By focusing on the rhetorics, Buchanan not only arrives at a position that is distinct from Cross' approach, which still connects "design" to "science." He also underlines the importance of discourse in design practices, which opens opportunities for interdisciplinary collaboration: "Designers deal with matters of choice, with things that could be other than they are. The essential nature of design calls for both the process and the results of Design to be open to debate and disagreement. Designers deal with possible worlds and with opinions about what the parts and the whole of the human environment should be" (Buchanan 1995). As I have argued elsewhere (Nagenborg 2014), making and justifying choices as part of the design process is where philosophy and design can meet and how VSD becomes a promising opportunity. However, even greater opportunities arise if we consider designing not only in terms of developing artifacts but also as a way to produce knowledge.

Research through Design and Empirical Philosophy

We combined Value Sensitive Design and Research through Design (RtD) in the *BRIDE* project. The main reason for the decision was the openness of RtD and the joint interest in understanding the emerging technology of the IoT-enabled, 3D-printed bridge. In the end, the project was not very suitable for RtD because the bridge did not offer enough opportunities to explore alternatives. Yet, it turned out that being embedded in the development project and doing philosophy of technology "in" the project (like doing philosophy "in" the city) was insightful.

The distinction between "research about design," "research for design," and "research through design" (Zimmerman, Stolterman, and Forlizzi 2010) helps us understand why combining VSD and RtD has quite some potential. Following

Frayling (1993), Zimmermann et al. consider “research for design” as generating knowledge to improve design practices (Frayling 1993). I argue that VSD typically is “research for design” because—on a methodological level—it helps to explain how designing and designs are value-laden and how we can design for values. It also gives designers insights into the relevant values and potential tensions between them. Thus, VSD aims foremost to improve design practices while—by and large—sticking to the Applied Philosophy paradigm, where the application process remains a one-way street.

In contrast, RtD emphasizes the production of knowledge in the design process, which concerns “uncovering important relationships between phenomena in the near and speculative future” (Zimmerman, Stolterman, and Forlizzi 2010) and, therefore, allows researchers to be more attentive to the rhetorics of design and to be open to discussions on desirable design outcomes. Given the focus on producing knowledge about the context and the emerging design, RtD supports a philosophical approach that goes beyond “mere” application but can enter a dialogue where philosophers have a chance not only to explore different meanings of emerging technologies but to actively shape the design process, which in turn may result in new insights.

One of *BRIDE*’s original guiding ideas was, for example, to design for “cityness.” Cityness is a concept introduced by Saskia Sassen (2010) to address the specific and desirable qualities of urban spaces, especially outside the Western context. We adopted the concept because it promises to explore the integration of IoT technologies into urban spaces without being limited by the traditional ideas of the Western city. At the same time, we hoped to better grasp the desirable qualities of urban spaces by working on a concrete project in a specific local context (the RtD-aspect) to translate our findings into design requirements (the VSD-aspect). As an iterative process, this process might have led to learning about what we are designing (the bridge) and what we are designing for (cityness). Sadly, the circumstances of the pandemic did not allow us to realize the original research plan. However, before the pandemic hit us, we got a short glimpse into the opportunities when we learned from a local community meeting that the residents were far less concerned about the bridge’s data acquisition capabilities than the number of tourists the bridge might attract. Why does this matter? In the philosophical literature, IoT technologies in urban spaces are often considered smart (city) technologies, and the smart city literature is mainly focused on what makes a city “smart,” that is, the data collection on the one hand and the use of artificial intelligence on the other hand. There is far less attention to the “mundane” urban environment, the brick-and-mortar reality. Therefore, the focus on density in the community meeting was a good reminder for us as researchers not only to pay attention to the data side but also to address the concrete uses and the multiplicity of meanings of the artifact in the urban setting. In this case, there was a notable tension between the municipality, which commissioned the bridge to bring a different type of visitor to the neighborhood, and the people living in the neighborhood, who wanted to reduce the number of visitors. To translate these findings into our original research agenda, we had to recognize that cityness—

understood as the desirable quality of urban spaces—may very well include a sense of ownership of the place and a balanced idea of density.

Could the shift from data to place, from informational privacy to density, happen within our project without adopting an RtD framework? Probably yes. At least, I have already written about the materiality of smart city technologies and the need to think about spatial solutions in an earlier paper (Nagenborg 2020). However, there is not only the risk of adopting the dominant perspective in the current literature but also the need to make choices in one's own research design. These choices are often not visible in philosophical inquiries. In response to our empirical findings, we had to choose between how to capture “cityness,” and we could make these choices visible. We also learned about an aspect that mattered to the local community, which provided us with yet another entry point for exploring the meaning of smart city technologies with people using the artifact.

The focus on knowledge production, of understanding what design could do in a specific situation, as well as the insights gained in the process of designing, also means that, at least from the perspective of philosophy, the success of a collaboration should be measured in terms of insights gained and less in realizing a good design. This aspect also sets RtD apart from VSD, where we want to arrive at an improved design product. However, even if the design process may not lead to a definitive result, it still may lead to valuable insights.

To take a final example from the *BRIDE* project, early on, we identified the challenge to inform the general public about the capabilities of the bridge. Ultimately, the bridge's owner decided to place a QR code on the bridge, which linked to a webpage. This clearly was not our desired solution because not everybody might be able or willing to use a QR code. Yet, as Cammers-Goodwin (2023) has put it, “the past two and a half years working with the bridge has given us collateral knowledge as well as research through design insights relating to ... increasing data visibility and transparency in public space.” By “collateral knowledge,” Cammers-Goodwin refers to the things learned in passing while being involved in a project. Such collateral knowledge is not trivial and is a reminder that philosophy does not take place in a vacuum. For example, we learned a lot from the struggles of our commercial partners to obtain the right permits to place and operate the bridge. We are not in the position to say if this is mostly due to the lack of transparency on the administration's side or if our partners lacked the relevant local knowledge. However, we definitely learned that even in Amsterdam, “smart cities” are not frictionless utopias.

Discussion and Conclusion

In this chapter, I have argued that RtD offers good opportunities for interdisciplinary collaborations between philosophy and design. On the one hand, it helps to structure the philosophical work. On the other hand, RtD supports an approach which goes beyond “application” because of the emphasis on knowing

and understanding rather than producing artifacts. Thus, it helps philosophy go beyond “research for design,” which is typical when applying VSD.

Since the chapter is my reflection on a particular project, I do not want to claim that engaging in RtD is the only or even the best way of doing Empirical Philosophy in the sense of doing philosophy *in* technology. For example, *Philosophy through Design* (Belle, Dijk, and Eggink 2019) invites philosophers and designers to use design research to express, further develop, and explore philosophical ideas. However, the approach also requires philosophical inquiry to lead, which was not the case in the *BRIDE* project.

I also do not want to suggest that Empirical Philosophy is the only way of doing philosophy. Yet, we should be aware that the rejection of Empirical Philosophy as philosophy should not be based on a narrow understanding of what is considered as empirical. Rather than striving for a pure philosophy, I would like to reclaim the empirical from the so-called empirical sciences.

Finally, we also need to be aware of the limitations of the suggested approach. For example, going with the flow of a project may not go well with the common expectations of the structure of a PhD thesis. In our particular case, it clearly helped that Cammers-Goodwin did a paper-based thesis. Hence, such an approach remains risky and requires some flexibility from the supervisors and PhD candidates.

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Notes

- 1 The term “application-oriented ethics” has been introduced in the German debate (*anwendungsorientierte Ethik*) to emphasize the process of the hermeneutical work of applying ethics in a specific context. As critiques in the German debate have pointed out, this change in wording does not resolve the challenge completely because it still does not do justice to the complexity of the application process (Düwell, Hübenthal, and Werner 2006). Yet, for now, I find the deviation from the all-to-common term helpful in creating a critical distance and reflecting upon what “applied” entails.
- 2 I use VSD as an umbrella term for various approaches which build on and echo Batay Friedman’s work.

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Chapter 6

BEYOND CODES OF ETHICS: REGULATIVE IDEALS AS ETHICAL SCAFFOLDING FOR THE DESIGN PROFESSION

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Taking as a premise that moral reflection must be an integral part of professional practice, in this chapter we explore how designers can be normatively guided by a set of internalized principles, known as regulative ideals, without relying on declarative rules such as codes of ethics.

We seek to offer an overarching perspective on professional moral decision-making and conduct that integrates normative, motivational, cognitive, and contextual elements. We set out to substantiate the claim in the following sections that regulative ideals—integrating normative dispositions as well as individual and collective commitments—are what prompt the recognition of morally salient issues, motivate professional designers to act rightly and virtuously, and guide their moral reasoning.

Introduction

In their landmark empirical studies on organizational ethics programs, Weaver and Treviño (1999) distinguish between a compliance orientation, emphasizing rule-following, and a values orientation, which revolves around the potential for employees to be committed to ethical ideals. This distinction serves as the backdrop for the two normative artifacts that will be examined in this chapter: codes of ethics and regulative ideals.¹

Codes of ethics generally belong to a compliance orientation. At its simplest, a code is a document that lays down norms for forbidden, required, or recommended behavior, such as “Designers will try to minimise waste” (WDO n.d.: 3). Codes can serve as a guide to moral problems, temptations, and pitfalls common in practice, offering guidance to respond effectively (Whitbeck 2011: 96). They also increase accountability to the outside world (Van de Poel and Royakkers 2011: 34) and play an important role in education (2011: 62).

Conversely, regulative ideals—that is, internalized normative dispositions based on a shared conception of the good (Oakley and Cocking 2001: 25–31)—can be mapped to values orientation. The thrust of this notion is that a good professional has internalized a conception of the proper means and ends of their profession and uses these as guidelines to ensure that their decisions and actions are aligned with those means and ends. Professionals can evaluate their actions and the resulting outcomes against those ideals attuning their behavior accordingly. In short, a regulative ideal is a cognitive resource that steers, that is, *regulates*, action toward excellence.

We have more to say below about both codes and regulative ideals in Sections “Codes of Ethics: Usefulness and Caveats” and “Regulative Ideals as a Foundation for Professional Ethics”, respectively, but we will now pause for some terminological clarifications.

Let us start with *design*. Besides encompassing notions of form, aesthetics, and functionality, design is strategically connected to the conception and planning of the human-made world. We understand it broadly and primarily as an activity and a discipline concerned with the prefiguration and reconfiguration of the material and immaterial infrastructures that mediate our beings and doings (Guersenzvaig 2021: 4–8). Design profoundly affects our everyday lives by transforming our individual and collective cosmovisions (see, e.g., Nelson and Stolterman 2014; Guersenzvaig 2021; Sans Pinillos 2023a).

While design is uncontroversially seen as a universal type of human capability (Guersenzvaig 2021: 27–8), this general understanding can be contrasted with a more restricted “expert” perspective, which applies to “those who are specifically qualified and have acquired special tools for designing” (Manzini 2015: 37). In this light, we reserve the term “designer” for this group of expert individuals who constitute the design profession.² A designer is, for our purposes, someone who belongs to a group of “professionally qualified people in the same discipline. All of whom negotiate with, and participate in, a mutually understood discourse” (Tovey 2012: 5). The term refers to design luminaries such as Naoto Fukasawa and Ray Eames, as well as to the many anonymous individuals working at or for design firms and departments worldwide, within a diverse range of organizations such as banks, manufacturing companies, media outlets, government agencies, and NGOs. They design—and this enumeration is not exhaustive—products, environments, services, and communicative artifacts, but they also engage in open-ended design processes in areas such as urban and policy design.

Design can also be viewed as a *practice* in a full-bodied sense (Guersenzvaig 2022). Following MacIntyre (2007), a practice is a specific type of socially established cooperative human activity, with its own methods, vocabularies, disputes, traditions, rewards, and standards of excellence, which are specific to it. Practices are not isolated pursuits but activities embedded in a larger social context—in this case, a profession—that coalesce around an organizing purpose (a *telos*).

But what are *professions*? For our purposes, professions are occupations that aim to promote, ensure, or safeguard some aspects of others’ well-being (Bayles 1981; Whitbeck 2011). Merely serving others’ wishes is insufficient to count as a

profession because a profession must help people “attain certain goods that play a crucial strategic role in living a flourishing life as a human being” (Oakley and Cocking 2001: 79). In this manner, professions can be rightly considered “moral projects” in themselves (Carr 2000: 28–31). Relatedly, our understanding of design, which revolves around the conception and planning of the human-made world, plausibly supports considering it a profession, as the discipline can play a pivotal role in people’s lives and flourishing (for a comprehensive discussion, see Guersenzvaig 2021: 19–119). Designers are thus involved from the outset in matters of genuine ethical concern, if only because, as Verbeek (2011: 90) puts it, “designing is ‘materializing morality.’”

Codes of Ethics: Usefulness and Caveats

Ladd (1998: 211) famously called codes of ethics an “intellectual and moral absurdity,” arguing that they could lead practitioners to prioritize meeting the minimum requirements rather than striving for excellence. He contended that rigidly enforcing principles on others contradicts ethics itself by eroding autonomy. However, Ladd confuses some key aspects of deontology and ethics in general. Anyone familiar with codes knows that their inherent indeterminacy and ambiguity require any moral agent to exercise at least a minimum of critical judgment to transform dispositions into actions. Along this line, Van de Poel and Royakkers (2011: 61) convincingly suggest that “the code is maybe better considered as a set of guidelines that helps judge cases than as a set of strict prescriptive rules.”

Nevertheless, important caveats remain. Without rehashing the discussion,³ we want to highlight a significant limitation: codes are ineffective when they are “not embedded in and do not arise from a robust field of professional ethics” (DeMartino 2013: 168). Hence, the problem with codes of ethics lies not in contradicting ethics itself, as Ladd posits, but in whether they are substantively connected to the professional practice they seek to guide.

In this light, codes make sense in established professions, such as nursing or engineering, where a tradition has had the time to produce a robust ethical foundation that underpins the code. Yet, the matter is less clear with newer professions. Echoing Aristotle, Carl Mitcham (1995: 183) affirms that one “cannot articulate and reflect on what one does not already have. Ethics cannot come from on high, as it were, to articulate guidelines for action.”⁴ Design is a new profession, and while it already exhibits a strong critical tradition, its ethical foundations *qua* professional practice are still far from being robust (Guersenzvaig 2021: 101–3, 123–5). In line with this, we urge caution with the development of declarative prohibitions and prescriptions for design ethics. If not inserted within a tradition that facilitates the integration of duties and obligations into everyday design practice, drawing up a code would be putting the cart before the horse.

What is more, many studies show that codes are ineffective and are routinely ignored (Gilman 2005; McNamara et al. 2018; Moore 2021). Research by social psychologists indicates that such moral guidance tends to be ineffective because

wrongdoers often fail to recognize the ethical issues at stake (Boatright 2013: 150). This recognition cannot be triggered by an allegiance to a code because noticing is a pre-reflective ability developed by practice. Indeed, one cannot simply *will* to notice moral saliency.

Granted, these limitations do not invalidate codes in principle but do indicate that they are insufficient on their own. Their practical value is contingent on how well they are embedded in a tradition, and their legitimacy depends on how they are underpinned by the practice's underlying normative principles.

Regulative ideals and codes are thus not *necessarily* antagonistic or alternative approaches. Whether or not they are compatible depends on the code's engagement with the underlying normative professional principles embodied in regulative ideals. When the contents of a code reflect the characteristic means and ends of the profession, the code's prescriptions and recommendations are likely to be *contained*, in the regulative ideals, meaning the guidance they offer is compatible.

Regulative Ideals as a Foundation for Professional Ethics

Regulative ideals enable the professional to devise and assess hypothetical courses of action and produce a selective response without requiring declarative rules. Regulative ideals consist of standards of correctness (for guidance and assessment along the lines of right and wrong) as well as standards of excellence (embodied in virtues and values) that govern actions and motivations "beyond the merely correct or incorrect" (Oakley and Cocking 2001: 27). These standards guide action and simultaneously provide a benchmark against which actions can be assessed, allowing a person is "to adjust their motivation and conduct so that it conforms—or at least does not conflict—with that standard" (Oakley and Cocking 2001: 44).

Consider a designer with internalized normative dispositions on accessibility—catering to all people regardless of age, physical ability, or other factors—working on a design project such as a museum building. Guided by this regulative ideal, they would attune their behavior and motivations to seek the design of accessible spaces and reject inaccessible ones. However, favoring ramps and basic accessibility features represents a standard of correctness, which is just one facet of the regulative ideal. Striving for excellence, the designer⁵ would also seek to address accessibility in relation to contextual considerations going beyond mere correctness, such as the museum's sociocultural significance, the expectations of visitors, institutional demands, and so on.

Moreover, scaffolded by an intimate knowledge of the proper means and ends of the profession, the regulative ideal leads the designer to a broader moral exploration of the project. In our case, they might question the all too common "medical model of disability" which views disabled people as "patients" with "handicaps" or "impairments." This questioning, for instance, might shift the focus from merely ensuring accessibility by providing a secondary entrance fitted with a ramp to considering the disabling conditions present in society—for example, the intrinsic injustice of a main entrance that is not accessible to all—as the true

problems to tackle. By adopting a “social model of disability,” the designer would emphasize what design and society can and should do to adjust and fully integrate everyone (Shew 2023: 31).

Furthermore, while we could establish basic standards of correctness related to accessibility, such as “include ramps and elevators in multi-story buildings,” standards of excellence are more elusive to pin down because they are directly related to the contextual decisions for which situated reasoning is indispensable—reasoning which, by definition, cannot be explicitly codified beforehand. Take an externally codified rule such as “consider the needs of all potential users, including those with different abilities” (WDO, n.d.: 2). Although this prescription can hardly be disputed, on its own, it is little more than an abstract rule. It is its internalization in the form of a regulative ideal—a process through which normative principles become embedded in moral decision-making—that actually enables designers to understand the context and nuances of a situation and respond accordingly.

The key role of internalization is underscored in Dreyfus and Dreyfus’ (2004) phenomenological model of ethical expertise, which outlines a multi-stage progression from a novice’s nonsituational application of general rules to an expert’s seamless adaptation of actions to situational demands. Certainly, the designer may not be fully aware of the content of the regulative ideal, which nonetheless guides their thinking and acting in an “ethics of situated involvement” (2004: 251). Consider how the regulative ideals we have about friendship might go unnoticed but still guide our relationships with our friends; we need not *consciously entertain* these ideals when interacting with them. Similarly, our account does not require the conscious entertaining of regulative ideals *during* design activity; on the contrary, we see the operationalization of internalized dispositions as an indication of expert skill.

To converge on a design specification, designers must make a hermeneutic effort to materialize all sorts of conflicting demands and claims from stakeholders and design participants—technical, ethical, aesthetic, functional, legal, and so on. Writing about architectural design, Lucius Burckhardt (2020: 105–6) argues that some of these imperatives “can be reconciled easily while others conflict intractably. To solve one little problem perfectly gives rise always to several more.” This realization echoes the model of design as co-evolution of problem and solution (Maher et al. 1996; Dorst and Cross 2001), which underscores the interconnectedness and reciprocal influence between problem and solution spaces. We posit that regulative ideals offer a promising avenue for exploring this co-evolution, as their teleological nature affords the open-ended ethical exploration required by design.

To intensify uncertainty, ethical problems in design continuously evolve—first in the mind of the designer or design team and then in the *technological mediations* of perception and action (Ihde 1990) that arise when designs are deployed in the world as artifacts. We explore this theme next.

Uncertainty as the Backdrop for Design Decisions

Design is irremediably fraught because of its open-ended potentialities, which extend even after a project's completion. Of course, during a project, any thoughtful designer would actively try to anticipate future uses to assess its potential effects through techniques such as scenario-based design and technology assessments (see Verbeek 2011: 90–119). However, designers are not diviners and cannot contemplate *all* possible uses of their in-design artifacts. First, because human rationality is cognitively and informationally *bounded*, as Herbert Simon (1957: 198) famously pointed out. Second, because “any design will have unforeseen mediating effects” (Dorrestijn and Verbeek 2013: 45). It is in the interaction between people and things that actual uses are defined.

To go even further, some of the designer's most critical challenges may involve ethical one-off problems concerning future situations that, to reiterate, may or may not occur.⁶ In addition, when assessing, for instance, inclusivity, designers must consider that the meaning of the notion itself might evolve and that some claims and entitlements have yet to appear, which their products and services will also need to accommodate. Designers must, therefore, manage a high degree of inherent uncertainty.

Multistability and Uncertainty

While designers may attempt to detect and prevent (potential) negative effects, any pre-launch ethical assessment of a design proposal is only notional and temporary. Full prognosis is impossible in principle because of the phenomenon of “multistability,” which refers to the “different trajectories of use” any product can have (Ihde 1999: 47). Design solutions often exceed the designer's intent, displaying possibilities beyond those originally intended. Their actual effects start to become clear only after implementation. Potential uses remain open and undetermined—latent, as it were. For instance, dating apps that were initially designed and marketed to enable people to find a date can be used for entrapment and abuse (Gewirtz-Meydan et al. 2024). Ihde argues that these possibilities aren't solely determined during the design stage or by the product's properties but by users and their uses within specific cultural and political contexts. This is not to say that a design can adopt *any* trajectory but only *some* trajectories (Ihde 1999; De Boer 2023); indeed, one could use a car as a mobile office while parked in a scenic spot, but not as an instrument to comb one's hair.

To refer to the misleading sense of control designers experience amidst this intrinsic open-endedness, Ihde speaks of the “designer fallacy” for “the notion that a designer can design into a technology, its purposes, and uses” (Ihde 2008: 51). Along this line, Verbeek (2011: 95) asserts that “there is no unequivocal relationship between the activities of designers and the mediating role of the technologies they are designing.” Indeed, the consumption, adoption, and use of design artifacts have repeatedly been shown not to be passive undertakings but

dynamic processes in which people interact with artifacts in ways that may not align with the designers' original intentions.

Unforeseen negative outcomes epitomize the epistemic insufficiency under which designers operate. Uncertainty management becomes, therefore, strategic in design practice. To be precise, we understand uncertainty as a gradual cognitive condition inherent in ampliative epistemic processes because of their contingent condition. *Mild* uncertainty arises from unknown information that is manageable within existing epistemic frameworks and does not cause anomalous ignorance. In contrast, *severe* uncertainty involves crucial missing information that disrupts usual epistemic approaches (Sans Pinillos and Magnani 2022).

Severe uncertainty is exacerbated in design, given that it arises as an inherent property of a future state of affairs. Because multistability makes unintended effects unavoidable in principle, we argue that design problems can be more productively addressed by considering them as ethical problems from the outset, along with considerations of form and functionality. This means integrating axiological information—pertaining to values, ethics, and moral judgments—to solve a problem that initially appears merely technical. The ethical perspective helps us understand that some problems do not admit definitive solutions and must necessarily be considered as works in progress. Any (re)solution is inherently contestable and time-bound, and regulative ideals could suggest strategies to navigate this circumstance when we encounter it.

Because designed artifacts acquire morality both through their planning and subsequent use, artifacts act as moral mediators, offering opportunities for action as ecological facts (Sans Pinillos 2023b: 7). To reiterate, design decisions, though frequently driven by technical concerns, often have ethical repercussions. Take choosing the most cost-effective road design. Here, considering the road's environmental impact (a moral question) can motivate us to redefine what constitutes an acceptable cost (a seemingly technical issue). In this sense, mediators are cognitive models and systems from which agents generate strategies for perceiving, conceptualizing, and acting in the environment. To exemplify, consider how fetal ultrasound embodies morality and helps constitute moral subjectivity by shaping perceptions about whether the fetus is healthy or diseased. This, in turn, constitutes the fetus as a prospective patient, a daughter, and so on, thereby influencing action (Verbeek 2008).

Managing uncertainty by creatively grappling with it does not mean attempting to eradicate it by straitjacketing users. Doing so is not a sensible course of action, which might become unjustifiably coercive and undermine the transformative purposes that people bestow upon artifacts—for example, using virtual-reality technology in therapy sessions to treat phobias. In other words, we are not advocating for “neutral” designs that grant users supposed total freedom, as this would also be an untenable goal. Rather, we are joining the call to “find a way out of the repeated ethical dilemma between coercing human behavior on the one hand and fostering human freedom on the other” (Dorrestijn and Verbeek 2013: 45). Freedom, it's worth noting, need not be seen “as the absence of influences on

people, but as a practice of shaping one's life in interaction with these influences" (Dorrestijn and Verbeek 2013: 46).

Spuriously reducing uncertainty by attempting to contrivedly limit multistability—for instance, by disabling product features that are not used in the “right way”—leads to an unbalanced reconciliation between goals and ends and between freedom and control. Interfering unidirectionally with how users live their lives can lead to the erosion of the transformative power of design. Contrarily, conceiving and planning the human-made world thoughtfully and meaningfully unlocks creative possibilities by integrating design into the normative structures of the practices it seeks to enhance without overwhelming and colonizing them. Uncertainty can thus lead to professional excellence when navigated to create forms of freedom that enable a person “to relate to what determines him or her” (Verbeek 2011: 60) and to promote what design can be at its best: a practice committed to expanding people's capabilities, empowering them to flourish individually and collectively as human beings (Guersenzvaig 2021: 185–96).

Expanding capabilities—that is, the real “opportunities to do what [people] value and be the kind of person they want to be” (Robeyns 2017: 9)—requires appropriate comprehension of how design and technology can be meaningfully integrated into people's ways of living. This “may, in the end, be more about the interplay between technological mediation and creative appropriation than about the struggle between domination and freedom,” as argued by Dorrestijn and Verbeek (2013: 54). However, comprehension alone is not sufficient; we also need motivation to act upon it, which we will explore in Section “Professionalism as Aspiration.”

Practical Wisdom in Design

In addition to the open-endedness of use trajectories, the inadequacy of one-size-fits-all rules is evident when contrasted with “wicked problems” (Rittel and Webber 1973) and problems in “complex” and “chaotic” contexts (Snowden and Boone 2007). These problems, such as the climate emergency or educational equity, are marked by uncertainty, interconnectedness, unpredictability, and a lack of clear solutions, requiring adaptive, iterative approaches and collaborative efforts involving multiple stakeholders. However, this intractability does not entail that a designer must throw up their hands and do nothing. It only highlights the paramount relevance of their professional moral judgment, which calls for *practical wisdom*.

Traditionally, virtuous character (*ēthos*, ἦθος) has been associated with practical wisdom or prudence (*phronesis*, φρόνησις), which is not the kind that can be compiled and formulated in a code. *Phronesis* is the practical intellectual wisdom of converting true beliefs into knowledge that provides the right reasons for action. Acknowledging a disconnect between codes of ethics and (instructional) design practice, Moore and Tillberg-Webb (2023) frame professional ethics around three key activities: reflection, interrogation, and design. We draw from their account to elaborate on *designerly* practical wisdom and regulative ideals, which become relevant when a situation demands contextual understanding.

Reflection, for our purposes, mainly refers to *reflection-in-action*, the process that allows designers to shape and reshape their work while actively engaged in it (Schön 1983: 49–69). It goes beyond mere trial and error as it is intentionally performed, often even before an error or problem occurs. Reflection is called upon when the designer detects a surprising event or something not going according to plan. The designer then reassesses and eventually revises or reframes their understanding of the problem. Practical wisdom provides the ability to think about “what admits of being otherwise” (Aristotle 2011: EN 1140b25–30) and to discern what should or should not be done.

Interrogation is crucial in the development of regulative ideals, as it involves critical questioning with an ethical focus. This process requires examining the means, purposes, and effects of design, as well as their evolving nature. It also entails understanding various perspectives on design and technology, along with the complex relationships between artifacts, societies, and cultures.

Importantly, practical wisdom is not merely about discerning but also about seeking to act upon that discernment (Aristotle 2011: 1143a5–10). *Design* functions as a theory of action for addressing ethical challenges requiring practical solutions. In this sense, design can reframe a situation so that a moral question becomes a trade-off between alternative courses of action and conflicting demands, requiring the comparison of incomparable values to produce a selective response that fleshes out the reflection and interrogation. Consider, for example, the design of a tablet arm chair. Guided by regulative ideals about inclusivity and ergonomics, the designer would realize that it must accommodate both right- and left-handed users. They might attempt to situationally integrate considerations of health, safety, and inclusivity into calculations of cost-efficiency, which arise when an inclusive tablet armchair becomes more expensive to produce than one suited only for the right-handed.

As a less mundane example, consider smart cradles that generate soothing vibrations, sounds, and movements, purportedly helping babies sleep better and cry less without parental intervention. Any thoughtful designer would agree that improving baby sleep is desirable, but also that good parenting calls for “attending to and meeting the needs of the particular others for whom we take responsibility” (Held 2006: 10). A designer guided by regulative ideals would go beyond assessing the issue through mere utilitarian metrics such as hours of sleep, to include the analysis of the technological mediation of the bond between babies and their parents, and how this mediation might affect their very lives. Even broader normative considerations regarding child-rearing might thus be relevant when creating a sketch or a model of a (smart) cradle.

Verbeek (2011: 94) emphasizes “the quality of the *practices* that are introduced by the mediating technologies and [...] the implications of technological mediations for the kinds of lives we are living and the kinds of subjects we become.” In line with this “life-ethical approach,” we posit that reflection and interrogation guided by regulative ideals exceed obligations and instrumental calculations. Rather, they are concerned with how design mediates action and perception, how it shapes us as human beings, and how it affects the very moral goods that are pursued and

obtained—or perhaps eroded and concealed—in the practices within which the outcomes of design are embedded.

Design activity, as a transformative force for constructing new ways of experiencing and understanding the world, can, in this manner, be normatively guided by regulative ideals. They foster the practical wisdom necessary to navigate the uncertainty, instability, uniqueness, and value conflicts characteristic of design problems.

Regulative Ideals as Ethical Scaffolding

We have shown that regulative ideals can sufficiently justify decisions normatively, but can they effectively prompt designers to act accordingly? This is crucial because the point of knowing how to behave is acting upon that knowledge. Section “Professionalism as Aspiration” addresses this question by looking at the role played by personal investment and professional aspiration. Section “Abduction” ties our account together by examining the role of abductive reasoning in explaining how regulative ideals scaffold moral reasoning.

Professionalism as Aspiration

Before considering whether regulative ideals can effectively motivate designers to take action, a terminological clarification is needed. A distinction is often made between *normative* and *motivating* reasons (Alvarez 2018). Normative reasons are the considerations that exist for individuals to take action—reasons that favor or justify an action. Motivating reasons, on the other hand, are those for which an agent actually acts and represent the considerations that *drive* an agent to take a specific course of action.

Despite the distinction, the same reason may be both motivating and normative simultaneously. When this happens, we colloquially say that somebody had *good reasons* for having acted the way they did. We want to claim that this occurs with regulative ideals. Consider designing for accessibility: the ideal functions both as a normative justification for design decisions and as a motivational force that pushes a project forward in the intended direction.

The issue of motivation requires unpacking. Harry Frankfurt (1999: 110–1) teaches us that because we identify with what we care about, when our object of care is harmed, we experience it as a personal loss. Conversely, when our object of care flourishes, we see it as a personal gain. Responsible designers who are invested in the profession and its excellence seek to promote and ensure certain strategic professional goods because *designing well matters to them personally*. Caring about something consists of *guiding oneself* by reference to what one cares about (1999). Accordingly, designing responsibly plays a key part in the designer’s own quest to live the good life. Irrespective of duty, this provides motivating reasons and drives the designer to act according to professional regulative ideals (Guersenzvaig and Ventura 2024).

In this manner, regulative ideals are linked to both an external dimension of responsibility (e.g., ensuring accessibility for all users) and an internal dimension related to self-formation. For the committed professional, enacting professional responsibility plays a strategic role in the continuous renegotiations about how to be and act toward others that constitute their identity (Guersenzvaig and Ventura 2024). The notion of regulative ideals shows a plausible way in which acting ethically can go beyond being an abstract desire but an aspiration that is both reasonable and worth pursuing. Our personal and professional lives are intertwined in our own *narrative quest* as persons (cf. MacIntyre 2007: 219–21). Further discussion is warranted, but space constraints apply (for a detailed analysis, refer to Guersenzvaig and Ventura 2024).

Relatedly, Callard (2018) explores the transformative nature of aspiration and its action-guiding impact. Aspiration is defined as “the rational process by which we work to care about (or love, or value, or desire ...) something ... [it] is the distinctive form of agency directed at the acquisition of values” (2018: 4–5). The thrust of her argument is that, through the process of aspiring, people not only set goals but also acquire new values that shape the trajectory of their lives. According to Callard, the dynamic interplay between setting objectives and cultivating a set of values is central to one’s identity.

We posited earlier that ethical expertise is linked to internalizing regulative ideals. A designer comes to value, say, accessibility, not simply by wanting to be ethical; instead, they “work to achieve that result” (2018: 5). We propose that designers set aspirational objectives and internalize professional values by engaging in an exploration through, for instance, attending design school, having conversations with mentors, peers, and clients, listening to inspirational talks, and reading books (even a code of ethics!). The exploration is both relational and, crucially, one of self-discovery, in which designers, as *members of a practice*, refine their individual and collective understanding of what holds genuine significance and should, consequently, guide their actions.

So, how is this “working toward” carried out? Callard engages the notion of proleptic reasoning. She defines it as “a reason by which an agent grasps, in an incomplete and anticipatory way, the reason that she will act on once her pursuit is successful” (2018: 87–8). Proleptic reasons are provisional because they reflect the temporariness of the agent’s knowledge and development, allowing the agent to be rational even under imperfect knowledge. An individual can act rationally without the need for declarative knowledge and without explicitly understanding and envisioning a target. Callard explains: “rationality cannot require accurate foreknowledge of the good your rational action will bring you. [...] you can act rationally even if your antecedent conception of the good for the sake of which you act is not quite on target” (2018: 72).

Callard proposes assessing our actions through the lens of our future selves: “I suggest we imagine my past self as looking forward, trying to live up to the person she hopes to become” (2018: 113). In line with this, we posit that regulative ideals are often expressed by designers asking themselves questions about what choices are compatible with desirable aspects of their identity and about the pursuit

of what purposes are compatible with the *telos* of the practice they are committed to. For instance, by exploring questions like “Could I bear to be the sort of person who can do that?” (May 1996: 11).

Building on the notion of proleptic reasons, as presented by Callard, we will now turn to how regulative ideals work based on abductive reasoning.

Abduction

Linking abductive reasoning to decision-making in design is not new. Several authors have used abduction to explain the synthesis process and, more specifically, the generation of new ideas (e.g., Roozenburg 1993; Kolko 2010; Koskela et al. 2018). Here we apply this notion to professional ethics.

Abduction can be understood as a nonarbitrary inferential process involving hypothesis formulation and selection. Its function is to manage novel factual experiences by generating hypothetical reasoning that indicates new courses of action (Sans Pinillos 2023b). It is triggered by novel or anomalous situations or phenomena perceived as puzzling because classical epistemic resources cannot address them. Therefore, its validity lies in its plausibility in determining courses of action (Gabbay and Woods 2005).

Novelty causes uncertainty, and abduction captures the adaptation process during problem framing. The concept of abduction, as articulated by Peirce’s analysis (1958: CP 5.14–40), involves the idea of inference rooted in the acquisition of experiential knowledge (Peirce 1958: CP 5.348), building upon philosophical insights regarding reasoning processes. Therefore, abduction’s commitment to truth-finding must be considered sporadic; its primary function is knowledge-enhancing: it is a process by which reliable knowledge is transformed into new and exciting propositions in the form of hypotheses that point to new truths for reasons parallel to epistemological ones (Magnani 2017: 90).

We use the so-called “Eco-Cognitive” model of abduction to situate reasoning within the framework of contextually embodied cognition (Magnani 2009). This model is based on a naturalized conception of thinking that integrates body and environment and characterizes the processes that articulate hypothetical reasoning as a situated cognitive resource. This model is useful for our purposes because it integrates at the sociocultural scale, where perception is related to habits through abduction (Cannizzaro and Anderson 2016). Since human affairs are always ethically framed and do not always have clear or predetermined goals, the resources for acquiring and distributing information involve varied negotiations based on constant hypothetical openness. On the one hand, the reason for this is that there is not always a resolution in sight, and, on the other hand, any “solution” could be beneficial to some and harmful to others. The value plurality of contemporary life forces us to always maintain a certain tentativeness regarding the plausibility of the hypotheses generated. Therefore, the adaptability of hypotheses is mixed with our predisposition to act according to our interpretations (Sans Pinillos 2023b). Considering this, it might be more effective to rethink the hypothesis entirely

rather than trying to amend it to forcibly control the proliferation of unintended uses and their effects, as discussed in Section “Multistability and Uncertainty.”

Abduction is the mechanism by which one can correctly conceptualize how designers make the best use of the available cognitive resources as a function of the project and the context as a multimodal system based on a constant openness inference. Its dynamics meet the permutation requirements of reasoning situatedness-optimization (Magnani 2017: 139), wherein the same object can play different roles in the research process, depending on the objectives and priorities set by the agents.

Then, an abductive explanation of how information that at first would seem disconnected from the designer’s project becomes revealing and exciting to manage those conflicts that cannot be solved but need constant attention. In this sense, abduction explains how value issues and emotional factors play a role that declarative *know-that*, as opposed to tacit *know-how*, cannot reach. We posit that regulative ideals, as a form of implicit, experiential knowledge, can normatively guide ethical design activity in a way that is superior to declarative codes because regulative ideals incorporate the motivational aspects, which codes lack, related to professional commitments and personal attachments into the inferential process. Discussing scientific discovery, in line with Frankfurt and Callard above, Polanyi (2009: 75–6) underscores the paramount importance of personal investment in what is often called creative problem-solving:

[L]ooking *forward* before the event, the act of discovery appears personal and indeterminate. It starts with the solitary intimations of a problem, of bits and pieces here and there which seem to offer clues to something hidden. They look like fragments of a yet unknown coherent whole. This tentative vision must turn into a personal obsession; for a problem that does not worry us is no problem: there is no drive in it, it does not exist. This obsession, which spurs and guides us, *is* about something that no one can tell: its content is undefinable, indeterminate, strictly personal. Indeed, the process by which it will be brought to light will be acknowledged as a discovery precisely because it could not have been achieved by any persistence in applying explicit rules to given facts.

Along these lines, the relevance of value matters for factual ones and vice versa (Putnam 2002) must be highlighted because abduction does not refer to any particular fact having a bearing on deciding on an ethical or technical aspect of the project. Moreover, the cognitive strategies of ethical order that we identify with regulative ideals offer a parallel but relatable framework for nonethical issues. The difference is that the solution here will not be merely a product of technical rationality but fundamentally of ethical and reflective practice, where the practitioner “identifies both the ends to be sought and the means to be employed” (Schön 1983: 165). This bestows an axiological dimension upon *any* design project and, in this way, it is not that ethics is placed at the service of design but rather that the rightful place that ethical issues have for the design profession is recognized.

Anticipation Based on Abductive Cognition

We see proleptic reasoning—looking ahead and considering future implications in the present context—driven by abduction as a genuine designerly strategy for anticipating and managing yet-to-emerge ethical conflicts by adopting future-oriented perspectives that take the form of expectations. The plausibility of these expectations relies on seeing past experiences in the light of current ones and vice versa (Sans Pinillos 2024). These prospective positions are formed from dreams, desires, emotions, feelings, musings, hunches, and information gleaned from a myriad of sources. They are then guided by regulative ideals and translated into actions. In other words, possible futures are conceived through the efforts and actions of agents—that is, designers. This underscores how their moral character constitutes a central pillar for design decisions.

From this perspective, anticipation allows designers to imagine “how things *will* be” (based on estimating plausibility) and “how they *could* be” (based on imagination and the conception of preferred futures) (Sans Pinillos 2024). Therefore, anticipation is a system of modeling possible future scenarios so that the foundation of anticipation is a prediction based on the agent’s explicit expectations (Poli 2012).

Every person maintains a narrative with their environment that depends on how their biography relates to the structures and histories of their society (Sans Pinillos 2023b). The sum and interaction of the experiences of each of these narratives is *social reality*, which is a product of the relationship between microscopic personal worlds and macroscopic social structures (Brewer 2004). These allow the unique memory of each agent to be presented from different scenarios and perspectives (Nelson and Fivush 2020), for example, imagining oneself in a possible future.

The ability of designers to present themselves and others from different perspectives is used in the form of techniques such as speculative prototyping and user journeys. These anticipations, guided by regulative ideals, allow the designer to interrogate themselves about possible futures in the present, in a process described by Schön (1984: 132): “‘What if I did this?’ where ‘this’ is a move whose consequences and implications [the designer] traces in the virtual world of a drawing or model.”

For anticipatory insights to be relevant, they must be repeatedly corroborated by experience. Therefore, the designer has to combine the information that experience has given them to pose a possible future in the present. The designer performs estimative reasoning based on experience, bringing axiological information into the design project to hypothesize a possible future and determine courses of action to realize it by seeking to create new opportunities. This forecast is based on epistemological considerations and prospective positions that allow changing present conditions.

Anticipation is plagued by uncertainty about facts, values, and their interactions. Thus, strategies such as expertise-based forecasting and scenario-based ideation allow designers to anticipate what they want to happen and what they want to

avoid by iteratively assessing the possible futures they envision through mental simulations, sketches, and models. Schön (1983: 79) illustrates this back-and-forth dynamic between designers and their designs: “He shapes the situation in accordance with his initial appreciation of it, the situation ‘talks back,’ and he responds to the situation’s back-talk.”

For example, when designers are asked by their project commissioners to intervene through their designs to discourage sleeping rough, they could achieve this by fitting armrests onto public benches. It might be only after envisioning use cases involving homeless people that concerns related to social inclusion and human rights arise. In some cases, there might be no prompts for ethical reflection until design conjectures have been produced because “Designing triggers awareness of new criteria for design: problem-solving triggers problem-setting” (Schön 1984: 182).

Closing Remarks

Design is a journey of ethical inquiry, not a monoculture. There will inevitably be conflicting vantage points on the right and the good. A tension arises when a practice relies on shared views on ends and means that give it coherence and unity while simultaneously striving to foster an environment that encourages pluralism. In this section, we explore this tension by entertaining only a few considerations within the space we have left. We first sketch some minimal conditions for regulative ideals and conclude by reflecting on ethical guidance amid value plurality.

Minimal Conditions for Regulative Ideals

How can we determine—albeit presumptively—whether an individual’s motivating reasons could also be considered normative reasons congruent with professional regulative ideals? This is important because it would help establish whether personal reasons might also possess a profession-wide normative validity that, *prima facie*, would fully or partially legitimize decisions before fellow practitioners. Considering that regulative ideals are grounded on shared notions of the good and the right structured by the profession’s *telos*, we posit that personal—motivating—reasons are congruent with a regulative ideal when they roughly align with these shared notions, as characteristically understood by peers.

We propose the following test to ascertain whether individual motivating reasons are minimally congruent with a regulative ideal: when confronted with an explanation from Designer A, an impartial Designer B, doing a charitable interpretation, must consider A’s explanation as coherent and *prima facie* normatively justified. In other words, if B were able to see sufficient normative reasons in A’s explanation for having acted the way they did, then we would have a *prima facie* valid regulative ideal at work. In other words, the minimal condition is

that an impartial proficient practitioner can discern *prima facie* normative reasons in an explanation provided by another practitioner. This is a threshold criterion.

To exemplify, any proficient designer would likely consider an explanation from Designer A that alludes to the minimalistic use of materials for achieving more sustainable practices as a coherent and *prima facie* reasonable justification. When presented with A's explanation, Designer B, drawing on their professional expertise and knowledge, should be able to understand A's reasoning and say, "I see what A was trying to do and why."

Thus, the reasons embodied in regulative ideals could be explained by the designer externalizing some justification for their actions, namely, the reasons that favored their choices in their own view. Smith (1987: 38–9) points out that motivating reasons have "the minimal justificatory role possible: the role of justifying from the perspective of the value that that very reason embodies." Reasons—both motivating and normative—could be provided *ex-post* as clarifications, which could function as legitimate explanations to test "whether individual intuitive reasons are also generally valid and collectively acceptable" (Flyvbjerg 2001: 80).

This is not to stipulate that a *prima facie* collectively acceptable normative reason must be endorsed and followed in practice by *all* practitioners. Such a requirement would be implausible. The impartial practitioner B might reasonably—and even substantively—disagree with the content of the principles put forward by A in their explanation. Yet, even if B, for instance, disdains minimalism and believes that "less is a bore" rather than "less is more," they would still have to acknowledge the normative coherence of A's minimalism, however mistaken they may consider it.⁷

Toward "Agonistic" Guidance for Design

That the normative power of regulative ideals is conferred collectively does not mean professions are homogeneous venues without internal disputes. On the contrary, modern professions are dialogical spaces about ends and goods. Along these lines and following some design scholars (Björgvinsson et al. 2012; DiSalvo 2022), we view design as "agonistic." Agonism conceives contemporary public life as characteristically defined by ongoing processes of disagreement and contestation (Mouffe 2000). The initial framing and the development of any design project are highly contingent on and severely affected by personal, institutional, and social values and knowledge. It is precisely this very multiplicity of conflicting demands that call for ethical reasoning to produce *agonistic* selective responses.

The scaffold for professional ethics offered by regulative ideals facilitates reflection and action by embodying ethical principles shared—albeit agonistically—among practitioners. At the same time, it promotes consistency and reduces arbitrariness by offering intersubjective guidelines and evaluative benchmarks, that is, standards of correctness and excellence that transcend individual preferences and inclinations. Importantly, these guidelines and benchmarks deal not only with

the artifactual dimension of design and its repercussions but also with how the designers themselves engage with the practice. Regulative ideals thus pertain to how individuals develop and manifest their personal and professional identity, as well as how they enact individual and collective narratives (Guersenzvaig and Ventura 2024).

In this context, a dialogical engagement with a code could facilitate a debate about the means and ends of the profession by externalizing the regulative ideals professionals already possess. An interesting case in this direction is the “Designer’s Oath project,” which aims to collaboratively create a code of ethics to prompt discourse about ethics among designers (Dempsey and Taylor 2015).

To recap, we have conceptualized the designer as an agent grappling with and navigating design’s ineradicable uncertainty, which is compounded by multistability. Regulative ideals fit well with the open-ended mediating role of artifacts by providing both a norm and a benchmark against which the application of the norm can be assessed. By doing so, regulative ideals scaffold the anticipation of the intended mediations in a way rules cannot, fostering the imagination required to assess the morality of what does not yet exist. Furthermore, they provide the flexibility that allows designers to reason ethically under organizational, informational, and cognitive constraints. We have introduced abduction as the cognitive tool that handles the intrinsic uncertainty of design by structuring hypothetical reasoning and serving as a heuristic for decision-making in complex situations. The flexibility and internalized situatedness of abductive reasoning underpinned by regulative ideals offer robust guidance. Along this line, we have argued that regulative ideals foster the emergence of ethical considerations that raise the bar regarding the morality of design activities.

Admittedly, codes of ethics embedded in an ethical tradition can offer valuable guidance to novice practitioners and be useful for educational purposes by externalizing some of the tacit ethical know-how designers possess. They can also facilitate and structure normative debates in design. Yet, we have raised serious doubts about the extent to which they actually offer any guidance to designers already equipped with regulative ideals. If these doubts are reasonable and our arguments persuasive, then the limited capacity of codes to guide expert ethical decision-making underscores the ontological and practical primacy of regulative ideals over codified rules.

Notes

- 1 Codes of ethics and regulative ideals can also roughly be mapped to two alternative perspectives on (professional) ethics: deontology and virtue ethics. This distinction deserves further elaboration, but we shall not pursue the matter here.
- 2 It is evident that professional design covers a very broad spectrum of disciplines, which could justify speaking of design professions in the plural form. Be that as it may, this issue is not central to our interests and we leave it aside.

- 3 For a comprehensive treatment of objections raised against codes, see Van de Poel and Royakkers (2011: 43–53).
- 4 Ladd (1998: 217–18) makes a related point when he writes that an association of professionals “cannot authoritatively establish ethical principles or prescribed guidelines for the conduct of its members as if it were creating an ethics!”
- 5 Throughout the text, we use the phrase “the designer” as shorthand for “the designers who fit the description provided.” While we obviously assume that these designers to which we refer are not an exception, the phrase does not imply *all designers* in general.
- 6 Other critical challenges relate to organizational constraints and designers lacking the effective power to tackle their ethical concerns. We thank Fredrik Matheson for pointing this out. This topic, however related, falls outside the scope of this chapter but was tackled by one of us elsewhere (Guersenzvaig and Ventura 2024).
- 7 Less is a bore is Robert Venturi’s witty response to Van der Rohe’s “Less Is More” maxim.

Ethics declaration

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Chapter 7

DESIGN × PHILOSOPHY: A PRACTICAL TURN IN THE PHILOSOPHY OF TECHNOLOGY

Wouter Eggink and Steven Dorrestijn

Introduction

In this chapter, we will elaborate on how philosophy and design can meet by way of the application of tools from the philosophy of technology in the practice of design. We will discuss how this meeting may be mutually beneficial and how it may improve the practice of designing as well as philosophical thinking about technology and design.

We consider that the application of philosophical tools in design means a “practical turn” in the philosophy of technology and design (Eggink and Dorrestijn 2018a). We see this as a further development of the so-called “empirical turn” (Achterhuis 2001; Verbeek 2005), which was a turn toward case studies about innovation, implementation, and use of concrete technologies. Making the philosophy of technology practical in design is, therefore, our answer to the question: “What comes after the technology turn?”

As our approach is clearly rooted with one foot in design theory and practice, it is, as such, also an answer to the question of where to go with design philosophy. One could characterize the practical turn as both “designing things philosophically” (seen from the design research perspective by testing philosophical frameworks in real life) and “a designerly way of doing philosophy” (reflecting back on the implications for philosophy of technology from the design cases).

With the introduction of the term “practical turn” in 2018 (Eggink and Dorrestijn 2018b), we explicated how the collaboration between design research and the philosophy of technology that we started in 2014 (Eggink 2014; Stam and Eggink 2014) could be profitable for both disciplines. From case studies where the philosophy of technology theories and methods were applied in a design context, we argued how these projects profited from a more reflexive perspective. We analyzed the cases again to show how the philosophy of technology also benefits from collaboration as these design projects prompt philosophical reflections about

technology. Applying philosophical theories in concrete design practice means putting the philosophy of technology to the test. The design of actual things thus provides a laboratory for testing and developing philosophical frameworks in real life. From mere thinking and talking philosophy of technology proceeds to action: philosophy of technology not just with the head but also with the hands.

In the following we will first give an account of such a practical turn by positioning it in the history, as it were turn by turn, of the philosophy of technology. Next, we will present our way of making the practical turn by means of philosophical and ethical tools and tracks for design. Then we describe two cases as examples of how design may improve by the use of philosophical tools, as well as what the philosophy of technology gains from a practical turn. We end with conclusions and discussions.

Philosophy of Technology, Turn by Turn

The notion of a practical turn in the philosophy of technology refers to the periodization and development of the philosophy of technology, especially the so-called “empirical turn” in the past few decennia. What are these periods and turns? To explain this, we will sketch our view on the historical trajectory of dominant views on technology leading to a practical turn at the present. We begin by introducing the notion of technical mediation as it plays an important role in our approach to the philosophy of technology here in the historical positioning as well as further on in the practical turn.

Figures of Technical Mediation

Central, in our view, is the notion of technical mediation. Technology always has an impact. Besides the intended and desired impact, there are always unintended and undesired effects. This is too easily left out of the picture in a common view of technology as a neutral tool. An important insight in the philosophy of technology is, therefore, that one should also examine technical means by themselves, regardless for a moment of what they are intended for by humans. This approach leads to a fresh look at what a technical means is, its relationships to humans, and the effects it can have (on humans, on society, on the environment). This topic of a technical means’ mode of being and effects is referred to as “technical mediation” (or technological mediation).

This term is used by quite a few philosophers of technology (McLuhan and McLuhan 1988; Latour 1992; Ihde 1993; Feenberg 2002; Verbeek 2005; Hubig 2013) who all investigate how technology is a mediator that forms and transforms the human way of being and living. Most of the time, they consider that there can be a variety of meanings and effects of technology and that there are always good as well as bad sides to the changes brought by technology. As such, this use of the notion of technical mediation is mainly connected to the recent philosophy

of technology. In earlier stages of the philosophy of technology the term was not used so explicitly. Still, it is interesting to look back and ask the question of how one can describe earlier philosophical analysis of technology in terms of technical mediation. If human existence has always been marked and influenced by technology, then the question for the history of the philosophy of technology is: What are the different “figures of technical mediation” that people and scholars of different times have recognized, analyzed, and brought to the fore?

This leads us to see three main figures of technical mediation: a utopian, a dystopian, and an ambivalent view on technology. These are three understandings and evaluations of technology. While these competing views were present at the same time, still there is a historical development of what was the most dominant view in a certain period. We will sketch this development.

Early: Utopian Hope of Perfect Life for Everybody

Technology has become an important topic in philosophy today. This is, however, a relatively recent development. For a long time, technology was a topic for craftsmanship and exact science. Still, one can speak of an early philosophy of technology, in the wake of the Scientific and Industrial Revolution in the modern West. This early philosophy of technology views technology mostly in a utopian spirit of progress that leads human life from a precarious state toward completeness. Ernst Kapp (1877) was the first to use the phrase “philosophy of technology” in the title of a book in which a theory was elaborated of how technologies are projections of capacities of their human inventors. In his view, the hammer was a projection of the fist, and the saw was a projection of the teeth. The telegraph system could be seen as a projection of the neural network. In an advertising campaign from 1948, the Dutch State Company for Post, Telegraph, and Telephone (PTT) even issued a poster with the text “*Wat het zenuwstelsel is voor de mens, is PTT voor de gemeenschap*” (“What the nervous system is to humans, PTT is to the community”).

Technology also figured in the theory by Marx and Engels of a spiritual superstructure which is determined by the material-economic base of society. Their concern was that most people do not profit from the advancements in production. Technology itself was not questioned. Philosophy of technology in the early beginnings saw technology as the obvious and necessary means for the completion of human existence; the ethical challenge was how everybody could benefit.

While technology remained a marginal topic in philosophy, the optimistic, utopian view on technology became, however, also expressed in projects by engineers, writers, and governors. These ideals are prominent in the socialist-inspired design movement of that same period (Bekaert 2005; Wilk et al. 2006). The architects and designers of Modernism firmly believed that by radically embracing new technologies, a new utopia could be engineered (Le Corbusier 1923; Benton 2006). We will come back to utopian currents in design in our presentation of design cases later in this text.

Classical: Dystopian Fear of Technology Taking Control

With the spread of technology during the twentieth century also the dangerous impacts of technology on humans, society, and the environment became more manifest. This became a major topic in the work of prominent philosophers, such as Martin Heidegger, Herbert Marcuse, Jacques Ellul, and Lewis Mumford. In this period of “classical philosophy of technology” the ethical estimation of technology reversed from utopian to dystopian. What if social inequality was a problem inherent to technology itself? In the twentieth century, the Marxist struggle was no longer between classes of people but between humanity on the one side and all the technology accumulated into a system gone out of control on the other side. The most emblematic event was the explosion of the two nuclear bombs in Japan. From this, suddenly an awareness struck that humanity had produced a technology that—instead of being at the service of society—was so dangerous and powerful that it could even annihilate mankind. The dominant view in classical philosophy of technology was that technology threatened to get out of control and threaten humanity, with a strong ethical call for a limit to the rush of technology.

Empirical Turn: Ambivalent Views on Technical Mediation

From the 1970s onward, new approaches were developed with more detailed, differentiated, and ambivalent views on technology. This new wave is characterized by a revaluation of the concrete adventures of humans and technology as opposed to the abstract and generalizing claims of before. This concreteness was then reflected in the term “empirical turn” (Achterhuis 2001; Verbeek 2005). To break out of the framework of technology as a massive and dangerous system, philosophers of technology began to incorporate more case studies and collaboration with historians, sociologists, and anthropologists (in the new field of Science and Technology Studies). Don Ihde (1990; 1993) analyzed the variety of relations between humans, technology, and the world. Bruno Latour (1992) began to describe how technical products give a twist to our way of living under the general assumption that humans and technology cannot be separated but co-shape each other. Donna Haraway (1991) thought that our merger with technology has long made us cyborgs and that this makes that we need new ideas about the human being, concerning gender for example. The contemporary philosophy of technology now acknowledges the fusion and interdependency of technology and human life and concedes that any technology will always have both good and negative consequences.

Further Turns?

An advantage of the empirical style of philosophical analysis is the focus on concrete products in everyday life, which appeared refreshing compared to the generalizing and abstract analysis of before. The debunking of abstract and

essentialist ideas about technology meant a kind of liberation from the dystopian, fatalistic sentiment in classical philosophy of technology. It also opened the way for technology assessment approaches for the government of technology in society (Rip, Misa, and Schot 1995; Grunwald 2011; Kuhlmann 2012).

A disadvantage, as Langdon Winner (1993) consented, for example, was that the ethical urgency of before was largely lost. The approaches of empirical description taken by Latour, Ihde, or Haraway were explicitly directed against generalizing philosophical claims and were turning away from the style of a warning call against a dystopian apocalypse. However, other proponents of the empirical turn aimed to renew rather than oppose the classical studies. Albert Borgmann (1984) built upon Heidegger's work but with more concrete suggestions for meaningful engagement with modern technology. And the critical theory of technology by Andrew Feenberg (2002) explored the possibility of alternative technology and structural change of society, better tuned to social values.

Currently, we see a variety of initiatives to explore and develop again the deeper critical and ethical potential of the philosophy of technology after the empirical turn. Robert Scharff (2012) questioned if empirical philosophy of technology does not suffer from "too much concreteness" and promotes a reappraisal of the work of the likes of Auguste Comte (1798–1857) and Martin Heidegger (1889–1976). That means, in our periodization, a turning back to the history of both early and classical philosophy of technology. Others plea for a stronger political dimension with a revaluation of resistance and societal change (e.g., Rao et al. 2015). There has been an increase in engineering ethics studies and, recently, an appeal for an axiological turn (Kroes and Meijers 2016). Even Latour, who so strongly promoted the descriptive empirical approach, has, in his later works (2012), been expanding his approach with a profound philosophical framework with a prominent place for the notion of values. All in all, there is a reconsideration of more critical stances: an "ethical turn" (Brey 2010; Verbeek 2010).

Practical Turn

At this point, we want to bring to the fore a different branch for further development of the contemporary empirical philosophy of technology, namely a practical turn. The empirical turn led to instant practical success with Technology Assessment and the governance of innovation. However, another obvious way to make the philosophy of technology practical seems to be the collaboration of philosophy and design. Peter-Paul Verbeek (2010) proposed that philosophers may "accompany" technology development. Verbeek suggests an approach where philosophers do not act as ethical border guards who say "yes" or "no" to new innovations, but where instead they collaborate in the design process, adding philosophical and ethical reflection, and aim to contribute to better designs.

The practical turn toward philosophical tools for design at the same time also relates to the concerns of the ethical turn. A practical philosophy of technology is not only about description and understanding but is ethically engaged and

aims at change and design improvements. However, ethics, in the practical turn, does not mean a return to a dystopian view of technology and an ethical stance against any further influence of technology on humans. A practical turn suits the contemporary view of ambivalent technology in which there are no predefined and overarching answers to what is good and what is not (as in the utopian and dystopian views).

Such considerations about the (ethical) justification in theory of the philosophical accompaniment of technology design are important, but what does it actually mean in practice?

Philosophy in Design Practice: Tools and Tracks

What is a good method for bringing philosophy of technology and design together? Our approach is to translate philosophical insights into tools applicable in design practice. The use of tools is common in design research and design methodology, especially in the current of “design thinking.” While in philosophy such tools are less common, they do exist; well-known examples are methods for Moral Deliberation and Socratic Dialogue. In these philosophical tools, the focus is on values and interests. For our purpose, we are especially interested in tools which lean on philosophy and ethics of technology and design.

A tool that we ourselves have developed and used most prominently is the *Product Impact Tool* (Dorrestijn 2012; Dorrestijn and Eggink 2014; Dorrestijn 2020). We also are developing new tools, such as the *Ethical Readiness Check*. Many others are also working toward tools addressing philosophical, societal, and ethical issues in design. We have a collaboration, for example, with the *CTA-Toolbox* (Konrad, Rip, and Schulze Greiving 2017). Verbeek and Tijink have elaborated the *Guidance Ethics Approach*. Related is also the development of assessment tools for privacy and ethics in the context of digitalization and artificial intelligence.

In our own approach, we consider a tool as follows. In terms of content, such a tool is a diagram, model, or framework with a theoretical insight about ethics and technology that helps initiate reflection. In addition to the theoretical input, a tool often comes with a format for a session for applying the theoretical insight, usually interactive with a group. In classes or working groups, the teacher or discussion leader is also an important part of running a session.

The approach is to develop tools that are compact and handy so that they are easy to take up and apply. Together they make up a toolbox. Our approach to such a toolbox is, however, that by applying separate tools after one another, we bring about an integral ethical or philosophical track (Eggink and Dorrestijn 2020). We develop such tracks for research projects and for innovation in companies and organizations. Moreover, in our program *TechWise*, we apply the same approach of tools building up for a track to education about ethics and technology (Eggink et al. 2022a).

As a summary, we will introduce the idea of an ethical parallel track for innovation as well as the *Ethical Readiness Check* and *Product Impact Tool*.

Ethical Parallel Track for Innovation

Ethical or societal concerns are a foremost reason for making philosophy practical in design. Improving creativity in design may be another contribution of philosophy in design (Eggink et al. 2022b). Moreover, the two roles may go together, especially in an approach of ethical accompaniment of design in practice. In the context of responsible design, we call our framework for integrating a series of tools in design an *Ethical Parallel Track*.

We consider that ethics should be an integral part of the innovation process. This may not always be fully realizable, as the expertise, attention, time, and workforce are not always available. To still get as far as possible with the integration of ethics, we aim to make available a series of tools for interventions that can be carried out in the different phases of an innovation process (Figure 7.1).

The notion of a parallel track is meant to express, on the one hand, that ethics runs all along technology development, from beginning to end. On the other hand, the notion of a parallel track keeps the connection loose in order to allow to search for the right balance between full integration of ethics and easy and modular applicability.

If we consider technology design as a process with a number of steps, represented by the top bar in the diagram, then the bottom bar represents the ethical parallel track. It is broadly divided into three stages. The ethical process accompanies technical development, but we have it begin earlier and run ahead longer. While a design process starts with a problem statement, the ethical process should take a step back from there and broaden the problem statement to an exploration of societal demand and public values. On the other end, technical development is finished with the introduction in society, but for ethics, this means the beginning of an important phase of societal embedding and the occurrence of side effects.

The ethical parallel trajectory approach strives where possible for ethical adjustments to innovations. Even if actual design improvement in the short term cannot be guaranteed, the exercise of ethical reflection about the innovations does

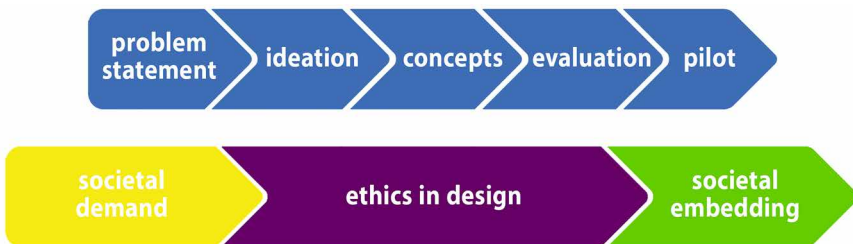


Figure 7.1 An ethical parallel track for innovation, pictured alongside a generalized process, adapted from Roozenburg and Eekels (1991).

seem to promise ethical professionalization in the organization with “guaranteed” results in the longer term.

The framework is flexible; it allows for the integration of all kinds of tools. We will here present two tools that we ourselves have been developing and using most often: *Ethical Readiness Check* and *Product Impact Tool*.

Ethical Readiness Check

In order to offer an accessible tool in which the connection between the impact and the ethics of technology is more upfront, we have developed a concise tool in the form of a short list of deliberation questions about means and ends. The terminology of ethical readiness ties in with the Technology Readiness Levels commonly used in technology development to indicate how far an innovation has progressed (Olechowski, Eppinger, and Joglekar 2015). The *Ethical Readiness Check* consists essentially of two basic questions in terms of the ends and means of a technical innovation. These two questions are unfolded into sub-questions which further stimulate to reflect on different aspects relating to ends and means (Figure 7.2).

Inspiration for this approach stems from an analysis by Latour (2002) on technical mediation, agency, and ethics in terms of ends and means, and from the analytics of ends and means in ethical action theory (Hübner 2010). The scheme of means and ends is very simple and familiar in the basis. It represents a basic idea of technology as the means for goals determined by ethics. However, ultimately the relationships between ends and means, and between ethics and technology are much more complex; that is what the approach of technical mediation is all about. These questions are a low-threshold but powerful way to start reflection about this.



Figure 7.2 *Ethical Readiness Check*. Adapted from: <https://productimpacttool.org/en/ethical-readiness-check-means-ends/>.

Whether an innovation is ethically mature depends on both the technology itself and the application of the technology. The questions on ends and means ensure that both those aspects are addressed. The last questions about the effects of technology can be supported with the analysis of impacts through the Product Impact Tool.

Product Impact Tool

The *Product Impact Tool* is an elaboration of technical mediation made practical with a model that is applicable to design and ethical reflection. The model at the heart of the *Product Impact Tool* expresses how people are surrounded and influenced by technology from all sides (Figure 7.3). In the center is a human figure. The quadrants around it show four levels of interaction between humans and technology. Divided into those quadrants, the model provides an overview of twelve types of impact of technology on people.

The quadrants to the right represent physical interaction (to-the-hand) and cognitive interaction (before-the-eye), which are the most concrete and recognizable for designers (compare to ergonomics and interaction design).

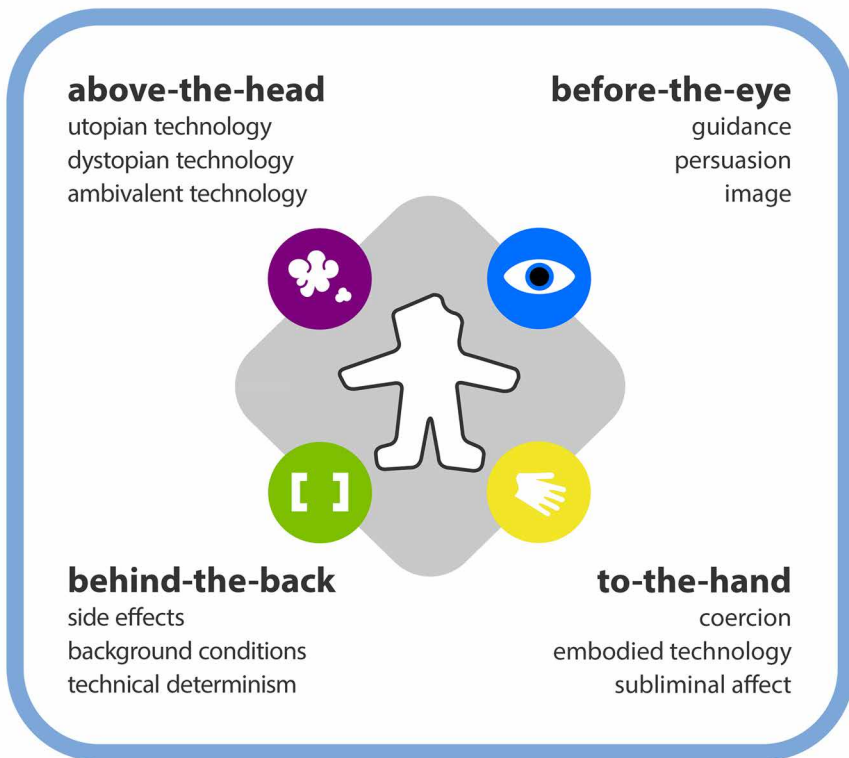


Figure 7.3 The *Product Impact Tool* model.

Table 7.1 Use of the Product Impact Tool in the different stages of an ethical parallel track

Anticipating impact	Designing impact	Evaluating impact
Exploring possible impacts and side effects of technology from the beginning of an innovation process (Raub, Dorrestijn, and Eggink 2018).	Deliberately implementing the types of impact as design strategies in order to bring about desired values and behaviors (Dorrestijn and Eggink 2014).	Analyzing the actual effects of an innovation for an ethical assessment (Dorrestijn 2017).

Physical impacts can be “hard,” like when someone is forced to sit up straight in a Protestant church bench, which is called *coercion*.

The impact can also be softer, like when the user is seduced or *persuaded* by advertisements to act in a certain way (before-the-eye). An example would be the health warnings by deterring pictures on tobacco packaging. The contrast is big with the pictures used before, of cowboys, for example. The cowboy was employed to build a positive image. The *image* of products is important for the adoption of products because it mediates if and how people identify with it.

The interaction can also be only indirect (behind-the-back). Think of how a central heating that allows humans to live in colder climates functions silently as a *background condition*. Or think of *side effects*. In this quadrant, we find examples that often come from the history of technology, sociology, or economics.

The last quadrant (above-the-head) is the place for *utopian*, *dystopian*, and *ambivalent technology*. These are the figures of technical mediation from our historical overview of the philosophy of technology. These are more general claims about technology *in abstracto*, conclusions about all concrete examples of technologies from the other three quadrants taken together.

So much for a concise overview of several of the total of twelve types of impact. In the web version (productimpacttool.org), you can navigate through the model. You will find explanations of the modes of action and types of impact. Moreover, five concrete examples are given for every type of impact. It is a characteristic of the *Product Impact Tool* that it brings together insights from different domains, from design, social sciences, as well as philosophy. It allows for bridging the gap between analysis and intervention and translates the perspective of technical mediation to types of interaction and impact that are applicable in design practice. In the cases to come we will refer back to especially *utopian technology* and *image*.

The *Product Impact Tool* can be used at different stages of the innovation process as part of an ethical parallel track (Table 7.1).

In Practice: Design Cases

In two design cases, we will show how the practical turn in the philosophy of technology can inform design from two rather opposite perspectives. The first one is based on responsible design as literally responding to a societal question (Eggink et al. 2020)—in other words, the social and ethical equivalent of market-pull. The

second design case is an example of exploring the consequences of technological innovation analogous to technology-push.

In both cases, the design results presented are from a one-week educational design project hosted by Wouter Eggink with fourteen design students from Antwerp University. In the project, the third-year bachelor students applied several approaches related to design and philosophy of technology. The week started with a general explanation of mediation theory (Verbeek 2015) and how it can be applied in design by analyzing human-product relations (Eggink 2014). We then explored different strategies for designing human-product relations by the concept of “utopian design” (Dorrestijn and Verbeek 2013) and, in the second part of the project, the students analyzed the consequences of their design proposals with the use of the aforementioned *Product Impact Tool*. Selected design proposals were then elaborated and presented in a poster exhibition and some mock-ups. After an initial ideation phase, the students chose one of the design case topics to work on.

Gender-Neutral Toilet Facilities (Design Case 1)

In the first design case, we present and discuss a design exercise based on a societal issue. In this case, it is the redesign of gender-neutral toilet facilities. Figures 7.4 and 7.6 show two examples of the presented design results, which we will discuss further.

The designs were based on the theory of utopian design that was presented in the workshop with an exercise on day two. In this theory, Dorrestijn and Verbeek (2013) discuss the legacy of historical design movements that were

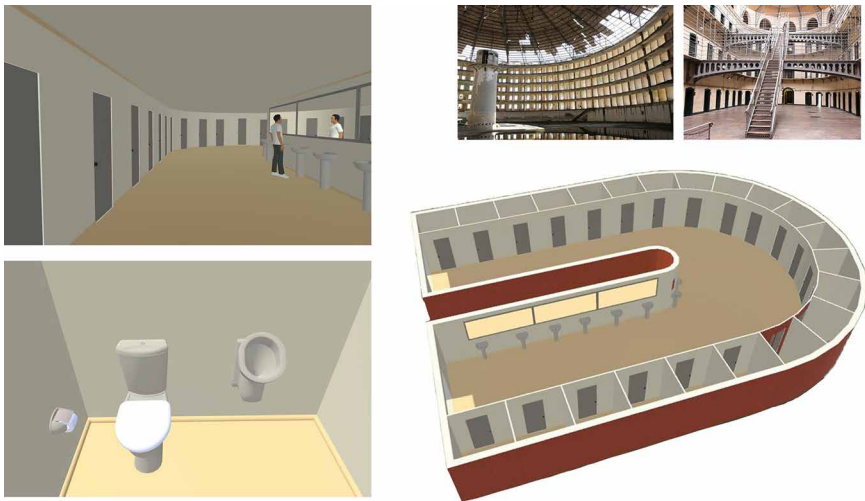


Figure 7.4 Gender-neutral toilet configuration design according to the Socially Functionalistic Utopia, inspired by the Panopticon. By Nathan Buyk, Dries Goossens, and Enya De Raedemaeker.

especially concerned with a belief in the use of technology for social improvement and societal change. They discern four of these movements, respectively called a “Restorative Utopia” (from the Arts and Crafts movement), a “Socially Functionalistic Utopia” (represented by early Modernism), “Technology-at-a-Human-Scale Utopia” (inspired by late Modernism), and a “Diversity-of-Lifestyles Utopia” (rooted in Postmodernism).

To make the students acquainted with these representations of technical mediation—and show that they are still heavily represented in contemporary society—the students were sent out to the streets to look for illustrative examples first (Figure 7.5).

The design in Figure 7.4 is based on the Socially Functionalistic Utopia, which is characterized by the embrace of the technical possibilities of the industrial age for realizing social goals (Dorrestijn and Verbeek 2013). The architects and designers of the modernist period, in which the socially functionalistic is rooted, strongly believed that if they designed the environment clean, efficient, and honest, the people would behave accordingly. The accompanying perspective on humans was, therefore, one of radical equality and transparency. For their toilet design, the students were further inspired by the *Panopticon*, the famous prison design where all inmates could be watched from the central watchtower at all times (Figure 7.4, top-right). The radical equality of the utopian vision is then reflected in the radical uniformity of the design. The consequence is that there is no (gender) choice to make, and the transparency of the “panopticonic” shape makes this equality also visible to everyone who is visiting the premises. To contribute to the functionalistic atmosphere, each cubicle is identical and equipped with both a water closet and a urinal to cater to the physique of the user. The design is also devoid of any ornament so as not to distract from the function and to prevent any type of identification on a personal level.

The design in Figure 7.6 was based on the Diversity-of-Lifestyles Utopia and is exactly what it says: adhering to a diversity of lifestyles. As such, it is a celebration of “differentness” as opposed to the radical “sameness” of the socially functionalistic design. Postmodernist design is an appropriate inspiration source for this, as it



Figure 7.5 Utopian representations of technical mediation in the wild, from left to right: Restorative, Socially Functionalistic, Technology-at-a-Human-Scale, and Diversity-of-Lifestyles. By Lara van Oppens, Reneé Sommen, Julie Smeets, and Elien Wille.



Figure 7.6 Gender-neutral toilet configuration design following the Diversity-of-Lifestyles Utopia. By Nathan Buyk, Dries Goossens, and Enya De Raedemaeker.

has a large track record of being unruly (Eggink 2011). The colors applied in the design are reminiscent of the rainbow flag and all its variants that are used to express the LGBTQ+ community. As such, the design offers ample possibilities for personal identification and individual choice. The possibility to choose is also incorporated in the detailing. The washbasins, for instance, are located at different heights, and the mirrors above them fancy different frames.

Design Improvements by Use of Philosophy of Technology?

The two design proposals discussed above show how radically different implementations of the concept of neutrality can be. Does “gender-neutral” mean that everyone should be treated exactly the same, or does it mean that everyone has the right to be addressed as their individual self? This shows, among other things, how the design implementations of the utopian design perspectives are possibly steering our way of identity forming. Just as the utopian design movements on which they were inspired were eager to steer society in a desired direction (Dorrestijn and Verbeek 2013). Reflecting back on the practical application of the philosophical theory, it is obvious that a complicated and often contested concept like “gender-neutral” should not merely be regulated by a change of signage alone, as this has limitations, even if the signage is well-considered (Witman 2023). We found, for instance, a nice depiction of the “spectrum” of gender in a sign at the toilets of a restaurant in Deventer, the Netherlands, that used the “endless” sign to interconnect the classical male and female pictograms (Figure 7.7, left). This is a very sympathetic way of expressing that anybody is welcome; however, it has no use in the functionality of the toilet facilities behind it. The “instrumental” pictograms found at the toilet facilities of a museum (Figure 7.7, mid-left), depicting a water



Figure 7.7 Left two images: signage used for depicting gender-neutral toilets at a restaurant and at a museum. Right two images: different designs for gender-neutral toilet pictograms. By graphic design agency Ontwerpstudio Mijksenaar (Witman 2023).

closet and a urinal, are the opposite. Often, the problem is “solved” with a pictogram of a human with both male- and female characteristics (Figure 7.7, mid-right). This is, however, still not inclusive for people who consider themselves nonbinary (Denz and Eggink 2019). The specific version in this image looks also like a split-person. To avoid this, designers of signage are leaning toward abandoning the depiction of humans at all, focusing on the objects of use (Figure 7.7, far-right). Solely depicting a water closet, however, also reduces the social aspect, literally dehumanizing the environment. A problematic effect that is mirrored in the Panopticon-inspired design proposal. There the perspective is utopian from the organizational point of view, as in the original concept of Jeremy Bentham’s prison design, continuous surveillance would lead to self-discipline. From the user perspective, however, the dystopian association with the loss of privacy, being dehumanized and reduced to an object of surveillance, is more dominant.

In our design case, the practical implementation of the more radical representations of technical mediation in actual design proposals opens up the discussion about human values and personal identity. Because the proposed environments can be seen as a materialization of the underlying principles, these designs act as triggers for thinking about how we relate to each other. This influence of the environment is not only physical in the sense that it directs us in a certain movement or functional use. It also influences our perspective on diversity and, therefore, how we think about each other. Thus, the practical-philosophical “thinking exercise” of the design project reveals a lot about some problematic aspects of gender-neutral toilets. As such, the designs are articulating the underlying issues in society, rather than solving the problem. With these articulations, more conscious design decisions can be made, and moreover, with the insights derived from that, the designers have better agency over the responsibility that they have toward users and society.

Wonderberries (*Design Case 2*)

In design case two, we present and discuss a philosophy of technology-inspired design exercise from a technology innovation perspective. It is a typical workshop in line with *TechWise*, our tool and workshop-based education in the ethics of

technology. *Wonderberries* are little pills that shift your taste. Although not a typical technology, like a tool, machine, or computer, this is still a “technology.” It is very interesting because it is considered somewhat controversial, and it is suited for hands-on experimentation. In the workshop, we asked the students to create packaging for the product after an extensive tasting session with a range of sour and also sweet edibles (Eggink et al. 2022b). One can imagine that it makes a difference if one presents these tablets in a medicine-like blister, in a sachet that resembles sweets, or like a party drug with a smiley embossed.

The assignment to design a packaging does not in itself involve any theoretical instruction, but implicitly it does refer to *ends* and *means*. For, the choice of packaging requires one to decide what to communicate about this strange pill, to choose what purpose one thinks it can or should serve. Moreover, the communication of the envisioned purpose by the design will also involve technical mediation, types of product impact: *image* most obviously, as well as possibly *persuasion* and *guidance*. The choice of a design of the package and of a purpose for the pill also may reveal a vision on technology: *utopian*, *dystopian*, or *ambivalent*. In a group discussion about the resulting design, these topics from the philosophy of technology can be highlighted and explicated.

The design proposal in Figure 7.8 presents the *Wonderberries* as a “taste-enhancer.” Based on mediation theory (Verbeek 2015), the students interpreted the technology as something that changes “how we see the world.” The pills enable new experiences in everyday life, like a mild version of drugs and alcohol. The packaging and associated marketing images are, therefore, related to energy drinks and the metaphor of an “explosion of taste” (*smaak-explosie*, in Dutch).

The two design proposals in Figure 7.9 were again inspired by utopian design. The first one is a postmodernist interpretation of the pills as a way to make life easier. The idea is that children can be seduced to eat healthy vegetables when the pills take away the bitterness of species like cauliflower and chicory. The packaging is, therefore, styled as a playful broccoli. The second design proposal is inspired by



Figure 7.8 A packaging design proposal for the *Wonderberry* pills as a “taste-enhancer” presented as a marketing campaign with a brand name, a slogan, a poster, and billboards. By Lara van Oppens, Renée Sommen, Julie Smeets, and Elien Wille.

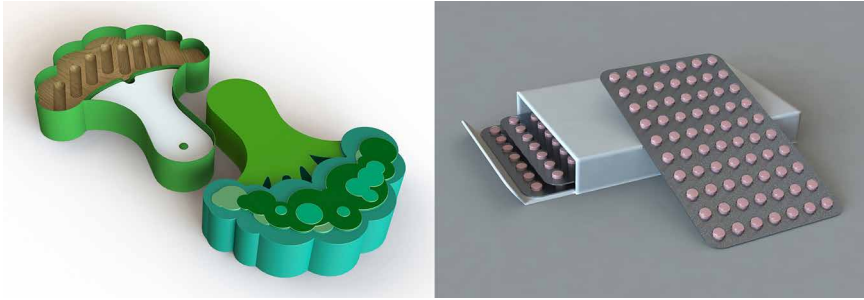


Figure 7.9 Two examples of a packaging design inspired by utopian design. Left: a design aimed at stimulating children to eat healthy vegetables. Right: a design aimed at using the tablets in scientific research. By David Florea, Ennis Jacobs, Jesper Cassiman, and Yosse Claesen.

the socially functionalistic notion of alleviating the masses. The technology was therefore presented as a means for scientific research in taste development, with a packaging that emphasizes the technical nature of the pills and associates the product with standardization and mass production. The latter is amplified by the seemingly neutral presence of the white casing, which doubles as a metaphor for the image of science as being neutral.

Philosophy of Technology through Design?

These pills, based on a natural ingredient from miracle berries, change what normally tastes sour to taste sweet. This effect is then supposed to make one eat healthier because one would need less sugar, and the pills are marketed accordingly (Merwin 2013). From the design case of packaging the *Wonderberry*, we can see that the designs make explicit how we can—or should—interpret the technology. It is specifically that aspect where collaboration with design can also be beneficial for the philosophy of technology. We will now concisely review the case to see which kind of philosophical reflection can be evoked through design practice.

What is the purpose of this strange thing? All it does is convert some connections in our world. It makes sour taste sweet. This reminds us of Bruno Latour's (2012) characterization of technology, or the "technical mode of existence," as that which bends, transforms, reverses an element in how all things connect to all other things in the world. That description differs from "functionality," as it does not refer to functional means for a well-defined purpose but alludes to a change of direction, regardless of purpose, in any direction. A common-sense understanding is that technology is defined by its functionality: technologies offer solutions for problems; a technology is a means for an end. In this understanding, the focus is on finding and producing a solution. It can appear that technical development is only about the means and that the goals or the needs to fulfill are given. However, technologies do not simply have a well-defined function. That is what this design exercise is about.

Also, in another way, the *Wonderberry*, as a kind of pill, revives in a wonderful way the whole history of thinking about technology, even from long before the actual philosophy of technology. It refers back to insights about the *pharmakon* in ancient Greece as very ambivalent: both healing medicine and dangerous poison. The *Wonderberry* pill is therefore a *pharmakon par excellence*.

Discussion and Conclusion

In “designing things philosophically,” one can recognize the practical turn as a design philosophy. It is a particular approach (Cross 2001) to the development of technology in general and things in particular. It is also a theoretical approach that serves design in practice (Redström and Wiltse 2019). The added value for design philosophy is that the practical turn is opening up opportunities for deepening the understanding of design by applying abstract theory to design practice (Dorst 2011; Buur et al. 2023). By subsequently reflecting back on the design results—as in “a designerly way of doing philosophy”—this is also rendering new knowledge comparable to the general practice of Research through Design (Findeli 2010). The benefit is that it does not necessarily make the design practice itself more abstract, as can be seen in other approaches like Design Thinking (Dorst 2019). This is a valuable thing as the design practice in itself has become ever more complex over the years (Valtonen 2005). Furthermore, earlier work (Raub et al. 2018; Eggink and Dorrestijn 2020) has shown that by “designing things philosophically,” the practical turn also relates well to the tendency of the design discipline to move away from the dominant frame of mere “problem solving” (Dubberly 2022). Therefore, designing things philosophically is opening up to more general future thinking notions of design, both as a means for contributing to change (Valtonen 2020) and by using design for articulating issues in society (Kolks 2023; 2024).

We have seen that the philosophy of technology made a move from abstract theories to more detailed descriptions of concrete technologies, situations, and use practices by means of the empirical turn. At this time, however, there is a renewed wish to bring back a more critical perspective on the development of technology in the call for an ethical turn. It would be a pity, however, if this would widen the gap between philosophy and practice again. That is also a reason why we have considered three periods turn-by-turn, instead of two. We do not oppose the empirical approach as the new and improved one against the classical—but now outdated—philosophy of technology. Rather, we see the present challenge as finding a balance between the extremes of a utopian and a dystopian view, which were dominant in the early and classical philosophy of technology, respectively.

Therefore, in our proposal of the practical turn, we would like to continue with philosophical reflection on questions about deeper principles and structures, while simultaneously continuing with more practical and applied work in collaboration with design and design research. These two approaches need not be mutually

exclusive. Central to our proposal is the application of philosophical insights in actual design. This should not at all mean, however, that only philosophical work that can directly be put to practice is valuable.

What is, then, the meaning of the practical turn? The “philosophical accompaniment of technology” as the basis of this practical turn is an adequate but also very general expression. The redesigns and reconceptualization in the two cases we discussed also illustrate Don Ihde’s variant of a practical philosophy of technology, in which he suggests that philosophers of technology can serve in a “Research and Development role.” His proposal is that philosophers contribute to the design process with “deep insight into both technological structure and the history of technologies” and with “a critical take,” though “detracted neither by utopian nor dystopian aims” (Ihde 2002: 112).

Such ideas could, however, be made one step more concrete and operative. We think that there is a need for more translation of work in the philosophy of technology into philosophical tools for design research. As such, we do not propose to turn “away” from the empirical. Instead, our practical turn is a call to take the next step, look around the next corner, and be curious about what to discover;

the term turn generally carries a twofold connotation. First, it signifies the change of research ideas and essential viewpoints, such as the subjectivist turn in modern philosophy and the linguistic turn in twentieth-century Western philosophy. Second, it denotes the change of research fields and focuses, such as the political and ethical turn in critical theory and the ethical turn in Western philosophical and literary theories. Regardless the kind of transformation it addresses, “a ‘turn’ implies unresolved transition—a movement that has not yet reached a destination, yet also cannot return to the security of its origin” (Goodman and Severson 2016: 2). As a gesture indicating change, a turn also implies a directional movement involving both progress and departure—toward a new goal and away from the origin. More importantly, unlike the certainty of a paradigm, the turn implies an uncharted future.

(Zhang 2023: 319–20)

In taking this next step, we recognize two ways of advancing the practical turn as a design philosophy:

1. The practical turn as a contribution to the ethics and societal embedding of concrete technologies and the practice of responsible design (Design Case 1).
2. The practical turn as a way for stimulating creativity in design and, conforming to the reciprocal effect of the practical turn, also developing creative approaches for doing ethics (Design Case 2).

In the end, it is all about being both critical *and* creative with philosophical design tools.

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Chapter 8

MOMENTS OF READING: MAKING MEANING THROUGH DESIGN AND PHILOSOPHY

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Introduction

Philosophy often plays a contradictory role when addressing technological design. While it has the ambition to influence design processes and their outcomes, its role is often limited to an external auditor reduced to checklists to be considered after technological development (e.g., Wong et al. 2020; Nordtug and Haldar 2024). We use the term “design” to refer to an exploratory, generative, and reflective practice associated with the practical know-how, embodied ways of producing and/or envisioning a technological tool, process, or service (in line with Cross 1982; Hodges et al. 2017; Redström 2020; Valtonen 2020). In this chapter, this definition is employed via ready-made concepts and articulations of problematic situations, often provided by philosophers, to become somehow embedded in certain aspects of technology (e.g., Albrechtslund 2007; Alfrink et al. 2023). As a reference, let us take AI, a politically charged technology. In response to concerns such as bias, deception, and accountability, introducing philosophical and ethical reflection to the AI design practice is seen as a way to “democratically” or “responsibly” design AI systems. Philosophers and ethicists are thus given the task to define concepts and delimit the boundaries of design problems, while designers are tasked with materially embedding these ideals in the technology.

Using the problem of AI vis-a-vis democracy as a site of encounter between design and philosophy, in this chapter, we suggest that these fields have a productive overlap that has been hitherto underexplored. By taking advantage of the conceptual ambiguity of these three terms (i.e., AI, design, democracy), we do not aim to provide definitive or “correct” new terms or a range of solutions to the problems posed by the use of AI in democracies. We do intend, however, to show that developing and practicing design and philosophy in a nonhierarchical, nonsupplementary manner allows one not only to question the dominant conceptual assumptions and their normative and political implications but also to expand the space of diverse interventions. To explore this claim, our chapter

presents the *Moments of Reading* workshop as a practice of collective conceptual articulation, a thinking-through-doing exercise that explores the conceptual relationships between AI, democracy, and design and their surrounding lexicons through “designerly inquiry” (Schön 2013).

The workshop took place twice, in March and October 2023, in the Netherlands, at the Delft University Technology and at the University of Groningen, respectively, within the framework of the AI DeMoS Lab.¹ The lab’s goal is to explore the relationship between AI and democracy through the prisms of philosophy and design, which gave impetus to the workshop. The title of the workshop reflects upon the intuition that conceptual definitions are not an expression of a stable identity but moments of reading in an iterative interpretative practice. It also follows the scholarship suggesting that the way we talk about technologies is productively related to how we operationalize the technological visions and conceptual definitions in developmental practices (Grunwald 2018). The initial goal of the *Moments of Reading* workshop was thus to open a conceptual complexity between the vocabulary around AI, democracy, and design through a card-based engagement with numerous participants. Using this workshop as a conceptual laboratory, in this paper, we will reflect on how it can serve as an approach to provide alternative conceptual articulations and be a model for doing philosophy through the generative practices of design.

In developing our version of the productive overlap between philosophy and design to address sociotechnical problems, we will show how the two often embed elements of each other in their workings, specifically when engaging in participatory research aimed at knowledge-production practices. Through our workshop approach, we will show how conceptual work in philosophy and practice-based research in design can reinvigorate each other in reframing conceptual exercises as collective knowledge-production practices. In doing so, we put forward a productive overlap between design and philosophy as a co-creation practice, contributing both to the procedural and substantive components of research. This practical approach to philosophy crafts thinking not as an isolated and finite theoretical exercise but as a (hermeneutic) practice, that is, a work of interpretation and thus relational, contingent, political, and only intermittently stable (Kudina 2024). We suggest that it is this kind of thinking and doing that is essential in approaching sociotechnical challenges, such as the relation between AI design and democracy. Consequently, our understanding of technology extends beyond the focus on material artifacts or use practices to also include reflection on how the conceptual, in its both philosophical and design senses, is expressed through collective material practices of (meaning-)making.

The chapter proceeds as follows. First, we identify productive similarities between design and philosophy in them both being material and collective practices, allowing them to benefit from the nonhierarchical, nonsubservient, and nonsupplementary relationship. Second, through reflecting on the *Moments of Reading* workshop, we show how working with concepts visually exposes implicit connections between philosophy and design, especially if conceptual clarity is not positioned as an end goal. Third, we posit that such epistemological rethinking

of the relationship between philosophy and design implies political distancing from the principle of pre-given identities, manifested in the oft-used approaches of stakeholder engagement, and valuing nonidentity as an organizing principle for conceptual articulation.

*Design × Philosophy: Connecting Disciplines through
Material and Collective Practices*

In the opening of his seminal essay “Traditional and Critical Theory,” Max Horkheimer addresses the question of what theory is:

Theory for most researchers is the sum-total of propositions about a subject, the propositions being so linked with each other that a few are basic and the rest derive from these. The smaller the number of primary principles in comparison with the derivations, the more perfect the theory. [...] If experience and theory contradict each other, one of the two must be reexamined.

(Horkheimer 1982: 188)

In this text, Horkheimer provides a general sketch of how traditional theory implicitly conceives itself and proposes an agenda of what critical theory ought to be: interfering and changing the world through ideological critique rather than solely understanding it through conceptual representation.

Horkheimer then gives Henri Poincaré’s metaphor of science as a library that must be continuously expanded as an example of traditional theory’s self-image. Interestingly, Poincaré’s metaphor for science and theory is a technologically mediated practice, that of the library. This library, however, remains ideal and immaterial. This is because Poincaré uses the library example only as a normative metaphor for knowledge production and not as a reference to an actual library. Even when real, material libraries are themselves a technique for producing, archiving, and distributing knowledge.

In this metaphor, knowledge is regarded as something obtained after a long analytic trajectory: dissecting general, vague, ungrounded, and superficial opinions to the specific, empirically grounded, and profound scientific assertion. This is a model of knowledge inherited from the long-standing inductive tradition that imagines it as observation and categorization through conceptual delimitation. That is, an analysis breaking down abstract generalities into concrete and “grounded” concepts that can refer back to the “real” world out there.²

In a similar spirit to Horkheimer, in this chapter, we argue for a reimagining of the ways in which knowledge is practiced. Instead of recurring to ideological critique, we propose an image of knowledge linked to questions and practices in design. If knowledge is a library or any other technologically mediated practice, then the relationship between design and knowledge production (call it science or philosophy) is not one in which philosophy remains an external theorization to design practice. It is not one in which design serves as decoration or creative

translation of “serious and abstract” conceptual work. Instead, we argue that philosophy, even when seemingly abstract and conceptual, always implies practice—a practice that is mediated by design.

Design has often been framed as a meta-discipline bridging diverse areas of expertise (Ozkaramanli et al. 2022). Instead of content, design provides practical know-how, offering methods and tools to escape the compartmentalization of expert knowledge and allow for transdisciplinarity (Ozkaramanli et al. 2022). We see design as enabling a practical and materialist approach to theoretical work at large. The idea that conceptual work is mediated by design practices also mirrors our position on technology that, like language, is determined by and simultaneously determines material, social, and symbolic practices.

Design research also has a strong focus on the materiality of research practices (Laurey, Soekijad, and Huysman 2022). Design practices often involve a blend of a thought process and hands-on implementation (Valtonen 2020). According to Nelson and Stolterman (2012), “design wisdom” encompasses not only reasoning, observation, and reflection but also imagination, action, and the tangible act of creation. Similarly, Manzini (2015) views design as a fusion of three human skills—critical thinking, creativity, and practicality—enabling the envisioning of possibilities and concrete ways to get there.

This generative quality of design dates back to Herbert Simon’s seminal definition of design practice, which asserts that anyone who devises strategies to transform existing situations into preferred ones is engaging in design (Simon 1969). These practices not only involve crafting physical objects, systems, and experiences but also generating knowledge that contributes to the construction of potential future worlds (Hodges et al. 2017). Throughout the design process, this active knowledge generation facilitates the formation of new meanings and the establishment of previously undiscovered connections, associations, and concepts. Dedicated to *designing something*, practitioners are keenly aware of the manual work with objects needed to produce an artifact, system, service, or technology. Manual know-how, or the embodied routines for handling material objects, is the very knowledge generated through this material work that constitutes the substance of design. Our understanding of design thus relates to the “embodied turn” (Neville 2015), whereby all design practices, whether material, linguistic, gestural, or conceptual, are “performed with and through situated, physical, social, bodily interactions, which are themselves constitutive of the meaning and consequentiality of those actions” (Matthews et al. 2021: 3).

The critical offshoots of design research, such as critical making (Ratto 2011; Kramer et al. 2015; Bogers and Chiappini 2019), critical design (Dunne 2008), material speculation (Wakkary, Oogjes, and Behzad 2022), and critical technical practice (Agre 1997), all share the ambition of expanding design from producing functioning devices toward practicing design as a process enabling reflection and critique of the conditions that create and provide sense to those very functioning devices. In many ways, critical design/making mirrors the ambitions of the philosophical critical project going back to Kant: exposing the conditions of possibility of thought and action. Wakkary et al. (2022) put this

aptly when describing material speculation: “potential reasoning would include not only ‘what is this thing’ but also ‘what are the conditions for its existence’ (e.g., including the systemic, infrastructural, behavioral, ideological, political, economic, and moral)?” (2022: 47).

These approaches parallel the ambitions of philosophy while expanding the available metaphors to describe reflective critique. Instead of imagining reflection as an introspective, meditative process, design focuses “on the constructive process as the site for analysis” (Ratto 2011: 253). Highlighting the figure of the maker and their constructive process as a site for knowledge, design embodies philosophical conceptual work. More precisely, it can ground philosophical reflection in material practice.

Framing the relationship between design and philosophy in a nonsupplementary way provides another implication: philosophy as a design practice is performed collectively. Practical know-how of tools cannot be described as the internalization of abstracted concepts obtained either from introspection or experimentation. It is rather the creation, establishment, transmission, and re-negotiation of shared practices within a material context. Ratto (2011) and Agre (1997) argue that technological design is never carried out alone but within communities of shared know-how. The knowledge produced through a philosophy inspired by design is in the practices bound to communities of knowledge, just as in the designed artifacts. Philosophy as design transforms the epistemological question of knowledge into a political one. And inversely, design as a reflexive practice centers the social relations on making (e.g., through deliberation) rather than on the artifact itself.

The *Moments of Reading* workshop became an attempt to intertwine philosophy and design through the idea that concepts are, in several ways, material operations.³ Trying to imagine conceptual work as a design practice tied to material technologies makes our proposal different from earlier attempts to complement design with philosophy (e.g., Eggink and Dorrestijn 2018) by making the former “critical” or “ethical.” Additionally, it constructs a different model of thinking where reflection implies (1) a practice of making, (2) a material medium, (3) a shared community of practice, and (4) a political framework to build and sustain this community. Next, we will explain how these ideas translated in the *Moments of Reading* workshop.

Moments of Reading Workshop: Assembling Concepts through Visual Thinking and Collective Deliberation

The *Moments of Reading* (MoR) workshop intended to illustrate the latent “investment in materiality” of philosophy (Panagia 2014: 544), involving the arrangement of ideas or concepts through a collaborative design practice. In this section, we will explain the development and reflect on our experiences of the two iterations of the workshop, which functioned as an experimental site to articulate our proposed materially bounded and collective model of thinking.

During the workshop, participants needed to connect concepts related to AI, design, and democracy. To this end, workshop facilitators designed eighteen triangular cards, each displaying one concept and its brief textual interpretation (please refer to figures 8.3 to 8.8 in the Appendix). For instance, AI-related concepts included, among others, “infrastructure,” “agent,” and “network,” for democracy—“representation,” “contention,” and “human rights.” To anchor the participants’ thinking in AI-related issues and practices, we introduced two cases: synthetic media and algorithmic feeds. The participants were then divided into groups, each of which received a set of cards containing all the concepts belonging to two of the categories and one single card of the remaining one. The participants then needed to collectively decide which concepts would best fit with the given single card with no further instructions. For example, if the single concept a group got was from the AI category (e.g., “network”), they had to choose a card from the democracy set (e.g., “representation,” “contention,” “human rights,” etc.) and a card from the design set (e.g., “speculative,” “human-centered,” “decolonial,” etc.). Participants decided themselves how to connect the concepts and visualize their triadic arrangement. Depending on the initial single card, participants had to reflect on the implications of their conceptual triad for the development and use of AI in democratic design practices. While there were no correct answers, the point of the activity was for participants to visually articulate how they arrived at their proposed conceptual relations.

Inspired by the Hegelian online resource www.hegel.net, the cards were designed as triangles that could create larger triangles, while also using the negative space in between for thematizing how the concepts were connected. It was our intention that the participants design their own collective conceptualization process with the visual schema afforded by the cards.

The first iteration of the workshop took place at the Industrial Design Engineering Faculty in TU Delft, welcoming twenty researchers in the humanities and social sciences, designers, and computer scientists. The most interesting conceptual connections were those that creatively “hacked” the suggested rules, for instance, merging two cards to envision new meanings or questioning how we think about the distribution of agency when it comes to democracy and technology (Figure 8.1). In these cases, participants not only critically approached and expanded the given concepts but also imagined different forms of concepts relating to one another. They used visual tools to diagram and make explicit how meaning gets created by approximating or moving concepts away from each other. Instead of sticking to triangles, these groups imagined new ways to structure concepts, such as Celtic triquetras or octagonal honeycomb patterns, as seen in Figure 8.1.

Figure 8.1 shows how participants arranged the cards in configurations that went beyond the facilitators’ expectations. On the left, participants deemed it important to note the nature of the relations between the terms: democracy does not relate to AI in the same way that AI relates to design. That is, linking AI to democracy will create different questions to those emerging when linking AI to design. On the diagram to the right, participants required two “design” cards instead of one. They made the point that more than one approach to design could

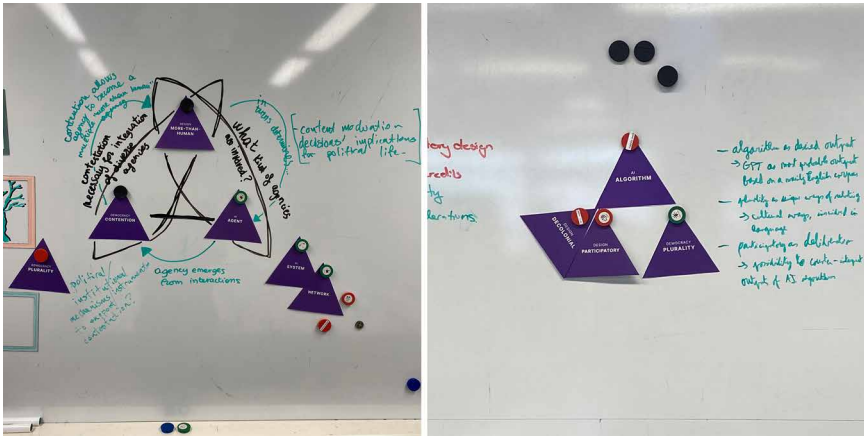


Figure 8.1 Participants' diagrams in the first iteration of the *Moments of Reading* workshop, 2023. Jordi Viader Guerrero.

be used to frame the democratic use of AI algorithms. Overall, the different arrangements show that the relations between AI, design, and democracy are not pre-given. They are rather particular constellations emerging from the aspects of these terms we wish to highlight.

These diagrams are a result of organizing a momentary community of practice in relation to a provided tool (i.e., a set of cards). Hermeneutically speaking, the cards and the activity around them trigger collective sense-making, “a moment of reading.” Unlike conceptual closure, the triads were meant as tools for triggering, tracing, and future blueprinting of a communal moment of conceptual expansion. The cards then act as a highlighter when reading a text, a material aid to the supposedly mental activity of reading, rather than a way to capture a higher truth or message enclosed in it. Consequently, the workshop can be framed as an event of conceptual articulation. Indeed, after the participants organized the cards, each group presented their diagrams and explained the reasoning behind their schemes to the rest of the participants. Afterward, we held a general discussion about their experiences and difficulties to decide upon conceptual relations and their visual distribution. The entire activity can then be summarized as a mediated practice of sense-making leading to a group discussion on how AI, design, and democracy relate to one another and how orchestrating conjoint articulations can change the way we conceive of individual concepts.

While we do not want to underestimate the importance of this final communicative moment of deliberation, we also want to see conceptual and visual work not solely as a preamble to speech but as an option for political action. Our intention for this workshop was to reveal that deciding how concepts relate to one another is already a moment of (political) collective engagement that precedes any structured communicative procedure. Replacing an image of a solitary philosopher with one where she is always embedded in a communal (design)

practice reveals that there is a political and collective dimension in every moment of reading. Even if the fractal scheme is of Hegelian inspiration, the resulting diagrams are not meant to represent an upward movement of transcendental revelation of a new key concept (i.e., the movement of criticality) but a horizontal one to support the unfolding of a collective practice. We suggest thinking of these cards in terms of using a highlighter when reading a text, a material aid to the supposedly mental activity of reading, rather than a way to capture a higher truth or message enclosed in it.

As we showed above, conceptual articulation as design practice does not provide an unmediated description of the world but performs interventions. These interventions, however, might produce undesired consequences and trade-offs, an inalienable part of knowledge production. Regarding the MoR workshop, critique and confusion accompanied both of its iterations. Participants expressed that they were overwhelmed with the number of concepts and the sheer amount of text (see Appendix for a selection of cards from the workshop). The text accompanying the concepts appeared confusing: the participants did not know how to interpret its function since the texts themselves were deemed too long and too specialized. While the texts were meant to cause friction in alienating participants from preconceived conceptual understandings, they were also meant to aid them in grounding the concepts. Yet, they left participants with more questions than answers. Thus, the uncertainty created by the tension between written text, hands-on activity, and visual outcome set the tone for the participants' engagement with the cards. Ultimately, the crux of the workshop was about collectively dwelling in and negotiating with this uncertainty. When presented with a tool (i.e., the cards) with no clear rules of operation and yet still expecting an outcome, the problem of how to use the tool becomes a problem of deciding upon schemes for organizing the relations around them.

In the second iteration of the workshop, addressed to master students of the *Introduction to Voice Tech* course at the University of Groningen, the groups recurred to different strategies to overcome the conceptual uncertainty: some extensively read the text in the cards in pursuit of a "truthful" interpretation (as seen on the left image of Figure 8.2), some outsourced this task to *ChatGPT*, while others recurred to voting through a hand-raising procedure irrespective of whether students actually read the cards. Finally, some participants went for iterative trial and error, quickly skimming through all the provided cards and sticking to what felt right without any clear procedure (as seen in the right image of Figure 8.2). These groups are an example of either completely evading the uncertainty problem or, perhaps, of feeling comfortable with dwelling in it, unconcerned about getting the connections "right" but simply with producing an outcome.

This last strategy presents the card game as a localized tool to externalize thinking as a collectively practiced skill of ordering, notwithstanding the original semantic content (Rieder 2020: 87). The card game holds the possibility of transforming semantic concepts into "operative signs" that remove "the burden and complexities of interpretation" (Krämer and Bredekamp 2013: 26). This

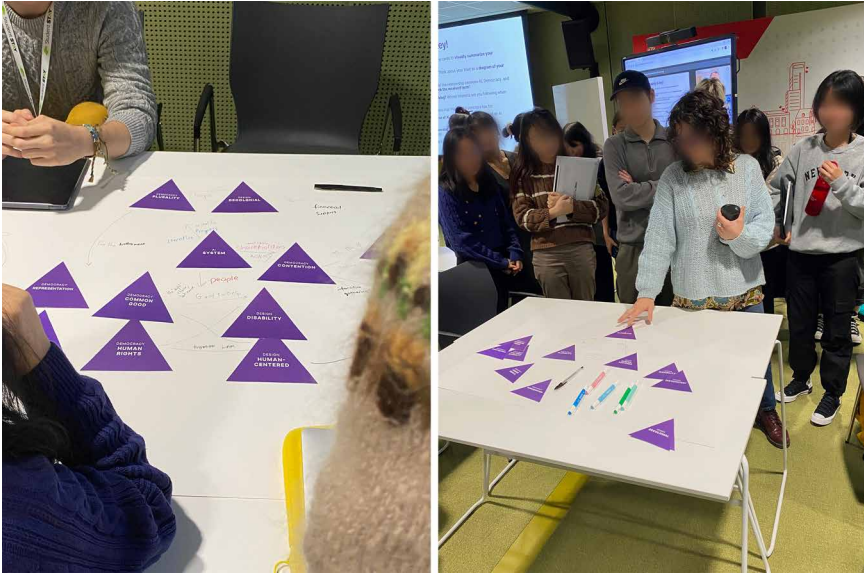


Figure 8.2 Master students assembling conceptual triads during the second iteration of the workshop, 2023. Jordi Viader Guerrero.

strategy also closely resembles our proposed model of philosophy-as-design-practice: it is (1) a practice of making with (2) a material/technical medium and performed by (3) a shared community of practice.

However, it is unclear if this strategy allows for politics to build and sustain the community of practice. While allowing for a description of conceptual work as “an external, distributed and collective practice” (Rieder 2020: 87), this use of cards does not tie well with the interpretative task needed to understand the practical and theoretical implications of that practice. Since participants engaged with the text in the cards differently, they possibly lacked a shared understanding underpinning their decision-making. Consequently, the conceptual triads do not per se present a “better” understanding of AI-design-democracy but a working one, a good-enough result of the activity.

Drawing on our workshops, participants in the first edition predominantly had some prior disciplinary knowledge, being designers, social scientists, philosophers, researchers, and engineers who willingly attended the workshop to discuss the AI-design-democracy relation. Meanwhile, the second iteration addressed students who had some knowledge of these topics and for whom this workshop was mandatory as a guest tutorial in their curriculum. This led to a more pragmatic engagement with the activity, resulting sometimes in a randomly decided conceptual distribution in triangles and sometimes presenting a visually convincing diagram following the triad structure while not being able to articulate the reasons for conceptual choices nor the drawn links between them.

Such a pragmatic use of cards is significant as it resembles the tensions between machine learning systems unconcerned with epistemic standards of truth and meaning (see Bueno 2017; Bender et al. 2021) and democratic practices often assumed to be deliberative and, therefore, semantically oriented. This raises the broader question: How can technological processes whose effectiveness relies on translating conceptual labor into trial-and-error operation of digital tools be implemented into democratic practices dependent on meaning-making?

The scheme we have sketched until now opposes mental (conceptual) labor to manual (designerly) labor—the opposition this paper set out to blur. As mentioned before, critical design dealt with this problem by framing design practice as a reflective hermeneutic practice (Sengers et al. 2005). As Agre (1997: 18) suggests, “A critical technical practice will, at least for the foreseeable future, require a split identity—one foot planted in the craft work of design and the other foot planted in the reflexive work of critique.” In the case of the MoR workshop, it should have one foot planted in the visual disposition of the cards and another in the interpretative and communicative moment of discussing design procedures with the entire cohort. Neither of these moments is more important than the other.

Keshavarz and Mazé’s (2013) notion of indisciplinary in participatory design can help us understand the potential democratic value of iteratively operating with signs of limited meaning-making. Keshavarz and Mazé borrow from the ideas of philosopher Jacques Rancière who has extensively written about the political importance of dissensus (Rancière 1999; Rancière and Panagia 2000; Deranty et al. 2010: 69). For Keshavarz and Mazé (2013: 17), *indisciplinarity* is “an approach to framing collaborative activities in ways that avoid the hierarchy or domination of one discipline, one form of knowledge, or one person/group over another.” Indisciplinarity is not exactly the rejection of expertise and specialization but the critical acknowledgment that not all knowledge is produced within the specific practices and spaces of intellectual labor (e.g., academia, private research centers, and governmental institutions). It is also a realization that knowledge production is not necessarily a tool for convergence and contradiction resolution. Indisciplinary knowledge can instead highlight contradictions and repurpose them to look with a new light on inherited assumptions in practices and social relations of specialized knowledge production.

In short, indisciplinary can be a valuable nonhierarchical approach to organize the relations in participatory design aimed at diversifying and questioning conventional blueprints of knowledge production. Expanding on Keshavarz and Mazé’s reading of Rancière (2013 *ibid.*), we argue that reframing a practice as another and thus reconsidering what skills, tools, and operations it engages with, redraws the boundaries of who and what is deemed of political relevance. Workshops such as MoR might be relevant for overcoming disciplinary boundaries, not by bridging one discipline to another but by creating a new context of practice that ends up doing different things than expected.

Admittedly, both iterations failed to stress the importance of the interpretive moment of discussion about how participants decided upon specific card arrangements. By the end of both sessions, there was not enough time for

participants to explain their design decisions or to reflect in situ on their implications on AI development and use, design methodologies, and democratic practices. Importantly, as facilitators, we did not have a clear idea of what the resulting diagrams were meant for. We were then not aware of the importance of the diagrams as representational tools not only to collectively think through practice but also to document and share this practice. Looking back, we consider the cards to hold a dual position as representational tools: they trigger a social procedure for arranging them while being a medium to visually record this procedure. The diagrams are meant to be read, interpreted, and shared with people outside the community that made them. In addition, they should be treated as arrangements to be continuously revisited.

In future iterations of the workshop, we want to highlight the importance of recording and sharing the participants' decisions to compel them to connect the cards thoroughly with marks and symbols to be explained at the end of the workshop. It would also be relevant to hold the workshop in two or more sessions in which participants could revisit and expand their diagrams or even use them to speculate about specific scenarios. The challenge is then to facilitate a critical distancing that questions the conditions of knowledge-producing actions, to create spaces where conceptual work is rooted in de-specialized, yet not de-skilled, collective practice, and encourages a reflection about the goals and meaning of that very practice.

Political Implications of Reconceptualizing the Relation between Design and Philosophy

The question of who and under what conditions can be a part of the design process also implies a politically salient conception of society with implications on how knowledge is organized and who can produce it. Instead of focusing on the content of concepts (i.e., epistemic representations), indisciplinary helps us address critical design's ambitions of tackling the (material) conditions of representation (Agre 1997; Rancière, Panagia, and Bowlby 2001). It questions the idea that knowledge is something only academics produce, categorize, and guard, that criticality can only come from those who have a clear, holistic picture of a given discipline, and that it is them who are the preferred actors and receptors of knowledge. Joining Mazé and Keshavarz, we see design as an always already critical practice, producing knowledge through shared practices within specific material contexts. This epistemological critique of representation can also be translated politically into participatory design. Here, participants accept pre-given identities, most visible in stakeholder-centered approaches. Contrary to that, the lens of indisciplinary mobilizes nonidentity as an alternative conception of how design processes can be organized. Working with already established identity categories may have its merits, but as Butler (1993) argued, "it may be that the persistence of disidentification is equally crucial to the rearticulation of democratic contestation." Rather than imagining the participants coming together to the table as a metaphor

of design politics, such an alternative approach centers on the process of setting the table itself without having the prior role distribution.

Since the problem of conceptual representation that we raised in the MoR workshop, engaging design and philosophy is both epistemic and political, so is our interpretation of the relationship between design and philosophy. Such an epistemic and political rearticulation of the relation between design and philosophy allows us to think differently about the political subject at the center of these knowledge-producing practices.

By emphasizing the intertwinement of procedural and material aspects in the knowledge-generative practices of design and philosophy, nonhierarchical and aiming at diverse conceptual representations, our MoR workshops acted as a hybrid forum for knowledge production (Callon, Lascoumes, and Barthe 2009). This hybrid forum was fruitful for generating new forms of participation identities, different from how citizens and experts have been traditionally conceived of: not only as sources of knowledge extraction but as disruption of procedural assumptions and questioning the pre-given conceptual tools. Politically, such hybrid forums extend the interdisciplinary forms of knowledge production in a way that rearranges the relationship between citizens and experts, the social and the technical. Such a reconceived relationship between design and philosophy allows changing the logic of participation in knowledge-generative practices by creating space for people to intervene in the concepts that underlie design processes, thus allowing them to move beyond established identities and the division of expertise.

Importantly, it allows expanding the circle of identities in design and philosophy beyond a traditional idea of stakeholder engagement. Stakeholder engagement in both disciplines originated as a way to integrate the wider citizenry into the decision-making process regarding technological development, an attempt to broaden the epistemic practices and increase the democratic impact of academic knowledge practices (e.g., in constructive technology assessment, critical technology assessment, value-sensitive design; see Swierstra and Vermaas 2022: 248–50).

While the inclusion of citizens as stakeholders has its merits, it also has notable limitations, with epistemic and political dimensions. Centrally, by attempting to represent the world in coherent predefined stakeholder categories, this approach reproduces already existing subjectivities, striving to provide them in a pure form conducive to the democratic ethos. Here, the stakeholder approach negates accounting for conflictual dispositions that a citizen can have while inhabiting multiple roles in relation to technology. The possibility of inhabiting multiple roles complicates the idea that it is only through being one stakeholder that a citizen can have a sufficiently articulate position toward the politics and design of technology. Henceforth, accounting for conflictual dispositions may broaden the scope of subjectivities configured through public engagement with technology, such as design workshops.

Moreover, the stakeholder approach tends to put people in positions of power. While the extent of power that the stakeholders have in an actual technological development in a particular domain is a contingent and contextual matter, such

workshop exercises assume that it is only by virtue of being in power that one can shape the direction of the technological development. The proponents of the stakeholder approach may rightly object that it is precisely the purpose here to empower citizens by placing them into such positions, granting them possibilities to think about technology in a way they usually do not in their daily lives. However, such an idea of empowerment often does not question the actual distribution of power in a particular domain. As a rationale, the notion of empowerment does not challenge the hierarchical structure imposed on governance frameworks since the focus on stakeholder cooperation and consensus-building tends to assume that actors such as NGOs and tech corporations have equal political weight. Seen this way, framing citizen inclusion through being an empowered stakeholder risks reproducing a version of subjectivity, in which the delineated division of labor and civic responsibility occludes possibilities of relating to technology differently.

Additionally, the stakeholder approach privileges the consensus-based frameworks of discussing, designing, and governing technology, disregarding the importance of disagreement in enacting political subjectivities. Our *Moments of Reading* workshops demonstrate that any reached consensus on how to arrange concepts of AI, design, and democracy in a triangle is provisional and temporary, subject to new findings, new proposals for conceptual additions, or simply by participants not being happy with the final result, without or without clear reasons. We suggest that stakeholder consensus is not an endpoint after which the actual technological development or implementation can start; instead, it is an always-provisional result of a continuously unraveling political life, represented by moments of agreeing, just as much as disagreeing.

In the context of our workshop, we specifically did not provide participants with predefined roles that they should inhabit while working with concepts. Following Keshavarz and Mazé's notion of indisciplinaryity, the participants were simultaneously both experts and laymen. By structuring deliberation as an open-ended design activity, the workshop imagined politics as something different than a harmonious administration of different segments of society. In this way, it opposes an implicit image of a rational consensus-based society traditionally presupposed in stakeholder methods (Swierstra and Vermaas 2022). Our reinterpretation of the relation between design and philosophy throughout the *Moments of Reading* workshops contradicts the idea that politics is what happens around the table of legitimate representatives with enough knowledge and credentials to take part in socially relevant debates. The workshop defies the idea that what philosophy and design offer to democracy is setting up tables.

Conclusion

In this chapter, we sketched the contours of a space where philosophy and design can meet as sets of collective practices. The type of space we hoped to articulate seeks to instantiate a relationship between the philosophy and design that is nonhierarchical, nonsubservient, and nonsupplementary.

As such, we turn to philosophy and design to problematize the distinction between making and knowing. This flattening maneuver of conceiving of philosophy and design as structurally similar proposes that conceptual work should not only be an equally shared burden between these two fields but also stipulate rethinking of entrenched disciplinary differences in making things and producing knowledge. Using iterations of the *Moments of Reading* workshops as cases through which to think about these issues anew, we showed how alterations in thinking about concepts as collectively performed practices have implications for both (1) philosophy and design as disciplinary fields (Section “Design × Philosophy: Connecting Disciplines through Material and Collective Practices”), (2) knowledge production (Section “*Moments of Reading* Workshop: Assembling Concepts through Visual Thinking and Collective Deliberation”), and (3) political identities in democratic design settings (Section “Political Implications of Reconceptualizing the Relation between Design and Philosophy”). While our chapter seeks to reimagine the relationship between the two disciplines, in conclusion, we would like to offer some reflections on how such an ecumenic movement can happen.

For philosophy, reimagining philosophy and design as co-creation practices can entail further thinking about what different forms of design practices can do for conceptual work. This way of making knowledge with others has an extended lineage. For example, the Chicana feminist Gloria Anzaldúa extensively used drawings during her lectures in a way that exceeds the illustrative purposes of the visual material. The drawings, upon which she relied extensively during her public lectures, were both the medium through which the theorizing happened and the means for community-building. As Galvan (2023) shows in her interpretation of Anzaldúa’s works, “[T]hrough incorporating drawings into her talks, she encouraged listeners to join her in co-creating their understanding of her concepts alongside her.” More recently, Smith et al. (2023) intervened in the conceptual work of philosophers of technology through pictorial design, demonstrating how the visual exhibits a role irreducible to the discursive, textual dimension. We join this call while also suggesting expanding the sensorium beyond the visual domain into other modes of the sensible. This line of inquiry can also benefit from further articulating the implications such reimagining of design and philosophy can have for politics and democracy—a step we have taken in this chapter.

Looking for resemblances between making and knowing also changes the way we conceive the relationship between technology and design practices. As mentioned throughout this chapter, our understanding of technology extends beyond the focus on artifacts and use practices to include what we have called “conceptual labor.” That is, as knowing entails material practices of making, concepts are expressed through technologically mediated practices. Technology is then intimately related to the conceptual: concepts spawn from practices enabled by technologies (such as this card-based workshop)

that can be later formalized or stabilized into new technologies, and that can furthermore lead to newer practices. The *Moments of Reading* workshop and the visual methods mentioned in this section showcase how design workshops and, more broadly, design practice, understood as a wide set of social contexts oriented to making, can be a form of technology—more precisely, a technology of conceptualization.

When it comes to design, we advocate for continually acknowledging an unstable, politically salient, and philosophically rich conceptual work that is always present in design practices. If, as we argue, design and philosophy are not an after-the-fact addendum to each other, then it implies an absence of any exterior position. Moving forward with an understanding that concepts are never fixed and pre-given entities but are rather always collectively performed and potentially changeable articulations can help to endow design practices with a sense of heaviness about the inherent conceptual work that the discipline is involved in. Moreover, while participatory design tradition has extensively articulated the necessity of broadening involved parties in the design process, the moments of dissensus, as we suggested, can more vividly accompany moments of knowing and making.

Appendix



Figure 8.3 Card for "Infrastructure," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Text in Sandvig, C. (2013) "The Internet as an Infrastructure," *The Oxford Handbook of Internet Studies*, p. 86–106.

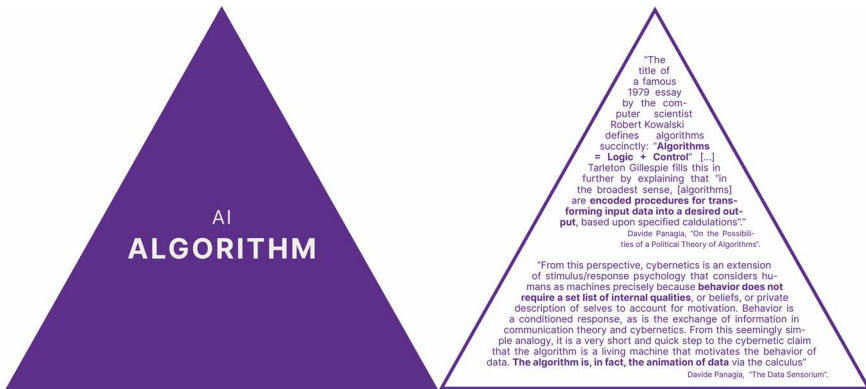


Figure 8.4 Card for "Algorithm," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Texts in Panagia, D. (2021) "On the Possibilities of a Political Theory of Algorithms," *Political Theory*, 49(1), p. 109–33, and Panagia, D. (2018) "The Data Sensorium," *Cultural Critique*, 101, p. 234–48.



Figure 8.5 Card for "Common Good," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Text in Hussain, W. (2018) "The Common Good," *The Stanford Encyclopedia of Philosophy*.

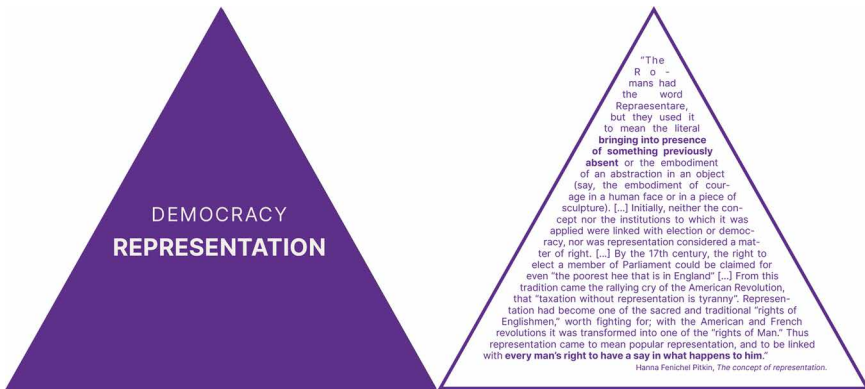


Figure 8.6 Card for "Representation," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Text in Fenichel Pitkin, H. (1967) *The Concept of Representation*, p. 3.



Figure 8.7 Card for "Decolonial," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Text in Abdulla, D., Ansari, A., Canli, E., Keshavarz, M., Kiem, M., Oliveira, P., Prado, L., Schultz, T. (2019) "A Manifesto for Decolonising Design," *Journal of Futures Studies*, 23(3), p. 129–32.



Figure 8.8 Card for "More-Than-Human," 2023. Design by Dmitry Muravyov and Jordi Viader Guerrero. Text in Forlano, L. (2017) "Posthumanism and Design," *She Ji: The Journal of Design, Economics, and Innovation*, 3 (1), p. 16–29.

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Notes

- 1 www.tudelft.nl/ai/demos-lab.
- 2 This inductive, empiricist model, however, remains indebted to rationalist idealism in as much as it imagines the empirical and concrete to be rationally organized.
- 3 See the notion of "cultural techniques" that regards the technical as material chains of operations in localized contexts that may or may not consolidate into stabilized technologies (Rieder 2020: 83–9; Siegert 2013). Cultural techniques precede and codetermine conceptualization as they are social and material practices that process and arrange the world through distinctions, displacements, or differentiation. Counting, for example, being a technique that precedes the concept of number and, therefore, mechanical technologies for calculation (Winthrop-Young 2013). In a

similar way, we propose that design practices—understood not as a singular activity of “designing” but as a wide set of social contexts oriented toward intentionally making things with materials—can function as techniques of conceptualization. In this way we align with an “anti- or counter-platonic stance” (2013: 8) of conceptualization, in this chapter transformed into “conceptual labor,” to implicitly underline the material, collective, and economic aspects of hermeneutic activities.

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Chapter 9

DESIGNING DISOBEDIENT FORMS OF LIFE

Leonardo Marques Kussler and Marcos Namba Beccari

Introduction

The discussion we propose here addresses the possibilities of disobedient design in the context of the subtle control society we live in. The idea is to start from the premise that a part of design—especially in the sense of what Adam Nocek (2021) called *governmental design*¹—is thought of from the notion of obedience, which means designing from specific standards and for human beings to act and behave in a certain way. Furthermore, we would like to highlight how this has subtly intensified, reinforcing the motto of design as a tool of problem-solving and not as a way of being and thinking critically, which, as we would consider here, is a disobedient way of designing.

In order to explore this argument, initially, we propose a brief historical-theoretical overview of the discussion from the *philosophy of technology* to the *philosophy of design*, including authors such as Ihde, Heidegger, Feenberg, Latour, and Verbeek. In the following section, we list some examples of what we consider to be practices of disobedient design, highlighting the exhibition *Disobedient Objects*, the project *Arte Útil*, and the artistic posters by Vincent Perrottet, which, in different and complementary ways, address both the concept of disobedience and ways of exercising counter-conduct living in the age of algorithms through art and design. Next, we approach the concept of disobedience from Foucault's notion of counter-conduct, emphasizing that just as power is always relational and not absolute, forms of escape from this power are also built between people who disagree with the established order and governmentality.

Lastly, we end the discussion by proposing some reflective coordinates on the possibility of designing disobedient forms of life in the age of subtle control, proposing that we try to escape the subtle control of this era in which we live through forms of being-in-the-world closer to art and in-person performances. With a focus on corporeality and through what we call a process of re-ritualization of life, this allows us to understand we are in a world that devalues the way of living that thinks differently, and such attitude can help us rebuild a sense of community,

of searching for a way of understanding life together with other beings, which aligns with a way of thinking and being that is situated by definition.

Philosophy of Technology, Design, and the Obedience Premise

Initially, talking about the philosophy of design would make as much sense as the initial proposal of the philosophy of technology, as both areas are concerned with designing objects, artifacts, and/or scenarios so that they function in a specific way. In terms of Western philosophy, we can trace this discussion back to the Greek conceptual division between Φύσις (*physis*) and ποίησις (*poiesis*), which can be translated into *nature* and *creation*, respectively, something that creates itself and something that depends on something else in order to come to being (Feenberg 2006). Another distinction made by ancient philosophy in order to deal with two different activities, namely ἐπιστήμη (*episteme*) and τέχνη (*techne*), that is, what was considered to be the *theoretical knowledge* and the *practical knowledge*, science, and art.

Taking a leap of a few centuries in time, in modern philosophy, there is a completely different way of seeing the capacity of crafting and creating, subsuming the ability to transform essences into existences or ideas into artifacts according to the concept of *technology*.² From there, technology began to be seen by philosophy as something purely instrumental, devoid of values, as a means to an end, revealing a vision of dominion over nature. In fact, according to Ihde (2009), technology was a background phenomenon until the middle of the nineteenth century, so it only begins to be treated with due attention in the twentieth century. It is in the historical moment of the aftermath of the First World War that Heidegger's discussions concerning technology in *Being and Time* cause a big upheaval, especially with the idea that the occurrence of *Dasein* in the world implies that we are beings that exist among other beings, human and nonhuman (Heidegger 1977).

As Harman (2010) argues, every single entity gains significance from its full context, for the situation and context change the status and values of things, and every entity is constituted precisely because of this involvement. After the Second World War, in *The Question Concerning Technology*, Heidegger also presents and publishes another reflection on technology, now especially aware of the rapidly developing nature of technology at levels never seen before, in which, more than ever, the environment is seen as a resource to be exploited technologically (Heidegger 2000). Heidegger is one of the first thinkers to consider the fact that *technology is not merely instrumental* but a way of knowing and uncovering the latent truth of things that were hidden—similar to what Aristotle used to say when referring to *techne* as one of the ways humans pursue knowledge. For Heidegger, unlike the *techne* of the ancients, which produces something while bringing it to light and imitating nature, the way in which contemporary technology produces things is like the ancients, but without a pattern defined by nature, since contemporary technology dictates the rules, challenging nature.³ That is why

Verbeek (2005) affirms Heidegger comprehends technology as a way to approach reality that dominates and controls, considering reality only as something to be manipulated. For Heidegger, a nuclear power plant, for instance, is not something that already exists in nature but a way to *force nature* to deliver something whenever we, as human beings, want it, differently from the way things happen in nature.

An author who intensifies the discussion on the relationship between subject and object is Latour (1994), who is responsible for promoting the idea of *actor-network mediation* to explain agency. For Latour, society is only possible, especially contemporary speaking, because of this mediated relationship with technology, for there is no sense in talking about cause and effect because they are the result of the interaction itself. In this sense, purpose and intentionality, for instance, can only exist *for* and *in* the collective, in such a way that the power provided by something is available only to an association, not to subjects, and responsibilities are shared between several actants, whose actions are involved in different technologies. Once again, the idea of *neutrality* of artifacts comes back to the surface of discussions, especially when considering that studies in the field of philosophy of technology have changed significantly in the last three decades so that the tone of research has turned less to questions related to the concept and impacts of technology on humanity and more to questions about technology itself.

Now, to support our premise that a part of design tends to be *obedient* and/or *for obedience*, we can say that design is defined as a method backed by a very rigid epistemological base, as shown by Pevsner (1960). By following this theoretical framework, the preponderant view for many decades in design came down to just the task of creating artifacts with desirable properties and how to design them (Simon 1996). This is what we understand as *obedient design* or *design for obedience*, as it is based on the view that design should start from supposed certainties and not necessarily speculate about problems but rather solve them and, more than that, instill certain forms of life, ways of using and pre-established and somewhat dogmatic rules for how to create artifacts. In this sense, what we consider as obedient design is this view of design that does not consider preconceptions and worldviews and, consequently, ends up imposing conservative values and forms of life, since it is not open to the different, to changes and criticism.

This is the point where we turn to the study of what started as the *philosophy of technology* and gradually consolidated itself as the *philosophy of design* or *design philosophy*.⁴ As we understand, design seems to follow the path of philosophy of technology discussions, as it can also be based on questions related to the creation process, production that, initially, is reduced to artifacts and, later, as we have shown, opens up to scenarios and futures—and this starts from certain parameters and expects certain behaviors, results, and forms of life. Over the last few decades, studies have changed so that they are becoming more related to the speculative than productive aspects of artifacts, and this can be seen in several publications (Franssen and Bucciarelli 2004; Vermaas, Kroes, Light, and Moore 2008; Krohs and Kroes 2009; Kroes 2012; Franssen, Kroes, Reydon, and Vermaas 2014; Kroes and Verbeek 2014; Van den Hoven, Vermaas, and Van de Poel 2015; Vermaas and Vial 2018). In this way, step by step, the field of design shifted from

limited scope, giving a more critical, speculative, and decentralized character to the act of designing objects, encompassing scenarios, ways of thinking, and acting in the world (Willis 2006; 2014; Franzato 2011; Malpass 2017; Fry 2018; Tharp and Tharp 2018). Thus, there are design practices and studies more concerned with the technological aspects and the implication of this in human life, others with ethical elements, in addition to concerns about the climate emergency and the Anthropocene crisis (Michelsen 2021).

From this paradigm shift in design research, the theme of obedience can be highlighted, since, as a rule, artifacts are designed *for* people with a certain function, not for questioning use or how much such things shape human behavior. There are research areas that are tangential to the idea of *obedience design*, such as those concerning *nudging theory*, which, especially in architectural projects, refers to the choice environment to induce better choices within pre-established options (Thaler and Sunstein 2008), as well as *value sensitive design*, which argues that values arise from artifacts and depend on how we use them (Friedman and Hendry 2019). According to Khadilkar and Jagtap (2021), this can be conceptualized as *paternalism*⁵ when designing, as it encompasses the notion that whoever designs makes the decision on behalf of the user. We understand that, sometimes, depending on what is being designed (especially in the case of a product that needs to respect safety parameters in usability), there is a design need to do something with the least number of unplanned interactions when using it. However, this is not always true, since, as we show here, for decades, design has not been restricted to just designing products and services. When we talk about subtle control and algorithms in this text, we are also talking about the problem of obedience in design. If we consider that algorithms allow objects to act autonomously and make decisions without the user's direct consent, this directly affects the user's well-being and freedom of choice (Rochi 2023)—we will return to this topic later.

After this historical-theoretical overview, based on the expansion of the concept of design, as the call for this edition is to talk about boundaries and fringe studies regarding design philosophy and disruptive technologies that transform human-world relations, in the section below, we bring some examples of design exhibitions that not only bring the theme of disobedience directly into their creations but also invite people to reflect on the more general context of what it means to (dis)obey.

Some Examples of Disobedient Design Exhibitions and Projects

It is not hard to find more orthodox design manuals or compendiums that focus on teaching object diagrams or the way of thinking for the creation of certain artifacts. There are numerous design projects that are based on User-Centered Design, which, as we know, does not develop something just for a certain ideal user but also conforms this user to a certain type of use, an expected behavior when interacting with such an object (Norman and Draper 1986). This type of design tends to be largely *obedient* or thought in favor of a certain way of being

in the world that is ordered, follower of predefined rules, adequate to the values already categorically expressed in the world (Callén, Morant, and Rispoli 2018). But, at this point, we would like to mention some projects that seem to us to bring exactly the opposite, that is, to make one think beyond previously projected values and without the need to conform an object to a certain expected behavior in the interaction of the subject with a certain artifact.

One such project of disobedience and design can be seen in the exhibition *Disobedient Objects* (2014), at the *Victoria and Albert Museum*, 2014–15. This exhibition, which is closer perhaps to what is traditionally expected of a work of contemporary art, is focused on encouraging reflection, making the public question itself about a certain theme, and questioning the function or role of certain objects in movements for social change. In a way, the exhibition showed how political activism is composed of a wealth of design and collective creativity in order to challenge patterns, behaviors, definitions, and ways of being-in-the-world. This becomes even clearer with the publication of Flood and Grindon (2014), which reinforces the Bachelardian idea that disobeying is acting, and it is a Promethean behavior since disobedience is the spark of all knowledge.

In the catalog in question, the disobedient objects tell stories of social struggles, popular revolts, and counterpowers, showing how artifacts—as well as performance, music, and visual arts—played a fundamental role in the social and behavioral change of human beings. Unlike other exhibitions of political art and historical social movements, this one not only included objects but focused specifically on the objects themselves and their production. Disobedient objects can involve DIY hacking—such as teaching how to make graffiti inside a kraft paper bag so as not to be seen by the authorities or diagrams of how to make a tear gas mask with a pet bottle—as well as help to think and develop new ways to disobey, as there is a notion of openness toward the other, of *disobeying-with*.

Another example to think about would be the *Arte Útil* project—roughly translated as *useful art*—which assumes that art or the artifact created is a tool, a device that can help create and implement strategies to change how we act in society. This initiative was proposed by Tania Bruguera (2013), an artist and researcher at the *Queens Museum*, New York, and other art spaces. Instead of proposing objects that are actually utilitarian, the idea is to design new social uses for art, respond to current demands, and make art more interactive, with tangible results and benefits for *initiators* and *users*, in pursuit of sustainability, resuming the transforming aspect of aesthetics. On the museum's website (2013), people are invited to submit their projects and design case studies, as well as download projects already registered—such as the one implemented by *Atelier d'Architecture Autogérée*, in France, which consisted of a temporary garden constructed out of recycled materials, encouraging people to get access to and critically transform temporary misused or underused spaces. The varied projects include, for instance: affordable housing in economically fragile communities, an initiative to facilitate internet access in poor communities and construction of a safe place for different species of bees on a terrace in Amsterdam.

Finally, another example pertinent to this discussion is a series of posters by the French graphic designer Vincent Perrottet (2009). His poster series, entitled *Travaille d'abord, tu t'amuseras ensuite*, sees itself as proposing a range of ideas about a compulsively consumer-oriented society and works as manifestos against disenfranchisement and degradation of the responsible population into an object. These ten posters, which were originally commissioned by the *Centre National des Arts Plastiques* in Paris, are printed on both sides: on one side of each is a full-surface shot by the French photographer Myr Muratet without commentary, which is linked on the opposite side to a dense grid of writing against a brightly colored background. The organization of the latter is graphically clear through the use of different colors and type sizes, taking away the dread of such a mass of text by making it into an image. Check marks in the texts suggest that they have been studied intensely, encouraging reflective readings. The photographs by Muratet, while having no direct reference to the texts but rather an associative connection, complement the complexity of the poster message. Interwoven into a dense fabric with the poster's title, which Perrottet himself formulated and which sums up the interlinking theme, are quotations from writers, philosophers, and sociologists.

Perrottet repeatedly uses his poster series in new ways for a variety of political events and demonstrations: hung temporarily on strings in public spaces, both sides of the poster can be seen. But sometimes only the textual messages are pasted on walls. In addition, the posters are also available in a smaller format so they can be worn in protest marches, where they are transformed into miniature banners. According to Bettina Richter (2018: 259–60), Perrottet described the intention behind this as follows: “The overarching theme is the expression of graphic forms and thoughts that oppose ‘the market,’ which is the sole model of social and economic organization proposed in the overwhelming majority of public or private spaces and in the mass media through advertising and journalists who are remunerated by it more or less directly.”

The high quality of the design and printing of the posters corresponds to the challenging texts. In terms of form and content alike, what is at stake for Perrottet is to challenge the gaze—and as a result to challenge thinking as well. However, this series of posters has already been the target of criticism, regarding its supposedly elitist use of language as a means of excluding and dominating, rather than an instrument of disobedience. In this discussion, maybe other questions are also relevant: In an aggressively visual environment, can a political text-based poster actually be something more than a militant slogan that will soon take on a life of its own on T-shirts, presented as a supposedly individual worldview when it happens to be in line with the marketplace? Is such a poster able to enter into a dialogue with its audience on an equal footing? Can it trigger reflection and emotional response, transforming the subjectivity of the speaker and those to whom it speaks into a political act?

More than fifty years after May 1968, ideological frontlines that were once clearly defined have irretrievably collapsed into a state of utter confusion. Disobedience seems to have been largely appropriated by the economy, becoming a matter of fashion; it is abused by the masses and those in power alike. At the same time,

there is a rich repertoire of creative practices in which disobedience is continually being reinvented in the face of advanced globalization and digitalization. Here, disobedience manifests itself as a cultural achievement that is as vibrant and necessary as ever before. It is precisely for that reason that the question of the relevance and impact of disobedience needs to be posed anew.

In the next section, our intention is to expose the extent to which design can also be considered as a driving force of disobedient forms of life, in addition to predictive or conforming projects of behaviors present in traditional design practices, affirmative and marked by the industrial and capitalist paradigm of modernity. Assuming that design usually tends to organize and formulate projects aimed at obedience, control, and ordering of forms of life, we will reflect on the extent to which we can also subvert it so that it collaborates with the proposition of more poetic, critical forms of life, disobedient and free-spirited among the *technological entities* that permeate our lives.

Approaching the Idea of Disobedience: Counter-Conducts and Other Elements

After outlining the extent to which design can offer and encourage reflections on and beyond its creations and situating how we understand the design obedience paradigm, in this section we would like to propose some arguments about obedience, counter-conduct, and some foundations that guide ways of thinking and acting differently from what is already established or expected. This has to do with the speculative, critical, and propositional capacity already stated above and will allow us to establish some parameters of the discussion about social obedience, especially from Foucault and some authors influenced by him, in order to prepare the ground for the proposal that we will make in the next section, namely, on the issue of communication technologies, subtle control and the aporia in which it daily submits our way of *being-in-the-world*.

Regarding the relationship between subjectivation and governance, Dorrestijn (2012) proposes that the *power of technology* can be recombined with what Foucault proposes in his more mature work, in which he revisits the *aesthetics of existence* present in post-Socratic philosophy. At the end of the 1970s, Foucault began to increasingly adopt the term *technology*, instead of *discourse* or *device*, as practices imbued with strategy that link subjects to certain regimes of truth (Hutton et al. 1988). Thus, it is possible to argue that human subjectivity is formed *under the influence and in mediation with technology*, so that every human being experiences and undergoes transformations in the way of being when coming into contact with such technologies. In this sense, when we talk here about forms of life that are disobedient in relation to design, the objective is to show that unplanned uses and/or refusals of forms of use also make up different ways of being based on interaction with artifacts that modify every form of human existence.

Foucault pays attention to the role of obedience in shaping cenobitic spirituality, that is, in what he calls *pastoral power*. Unlike the Greeks, for whom obedience was

a means to achieve a certain end, in cenobitic spirituality obedience is a virtue, becoming an end in itself. According to Foucault (2001: 146), "Greek Christianity called this state of obedience *apatheia*. [...] In Greek philosophy, *apatheia* designates the empire that the individual exercises over his passions thanks to the exercise of reason. In Christian thought, *pathos* is the will exercised on and for oneself. *Apatheia* frees us from this recalcitrance." But the notions of conduct and counter-conduct, drawn from Foucault's studies on Christian pastoral, seem to be more fundamental for the present discussion since they reveal more explicitly the domain of subjectivation and ethics in his thought.

In *Security, Territory, Population*, Foucault (2007a: 201) adopts the notion of *counter-conduct* as a correlate of *conduct*. Thanks to these notions, it is possible to highlight the strategic role played by the relationship with each other in the government of human beings, as well as the possibility of resisting this role. After all, if exercising power means trying to guide the conduct of others, that is, trying to "structure the possible field of action of others," freedom constitutes the very "condition for the exercise of power," or rather, that specific form of power Foucault calls *government*: government can only be exercised over free individuals, and only as long as they are confronted with "a field of possibilities in which several ways of behaving, several reactions and diverse behaviors may be realized" (1982: 789–90). Therefore, between the governmental mechanisms of power that try to lead the individual in a specific way and the possibility for the individual to behave differently, the field of his freedom is clearly defined by his acceptance or refusal to *be led by that specific mechanism*, to let himself be led *in that particular way*. This possibility of refusal constitutes the first necessary step in a practice of resistance, namely a counter-conduct. In *What Is Critique?*, Foucault elaborates on these ideas and suggests that we should define critique as an ethical-political attitude based on "the will not to be governed thusly, like that, by these people, at this price" (2007b: 75).

During the course *On the Government of the Living*, Foucault (2014: 229) addresses the problem of obedience in the Christian spiritual direction, arguing that the submission of one's will to the will of the other does not consist in a "transfer of sovereignty," because in the Christian spiritual direction, "there is no renunciation of will by the individual." Although in his analysis of the same issue in *Security, Territory, Population*, Foucault (2007a: 178) implied that, in order "to act so that one's will, as one's own will, is dead, that is to say so that there is no other will but not to have any will," the disciple must want to *suppress* his own will. It is only in 1980 that Foucault explicitly stated that Christian spiritual direction requires, as a *sine qua non*, the *positive practice* of the disciple's will. In fact, for the master to govern him, to guide his conduct, the disciple's will must remain intact because it is essential for the proper functioning of this relationship that the disciple *wants* his will to be entirely submitted to that of his master, and that the latter says, in all circumstances, what must be done (Foucault 2014: 229–30).

As a consequence, the bond that unites disciple and master is free and voluntary, and the direction itself "will last, function and unfold only insofar as the one directed still wants to be directed," for it is "always free to cease wanting to be directed." Foucault (2014: 230) argues that this "game of full freedom, in

the acceptance of the bond of direction,” is crucial: Christian spiritual direction is not fundamentally based on constraints, threats, or sanctions. The structure of obedience is, of course, the condition, substrate, and effect of Christian spiritual direction, but we must not regard it as a perfectly oiled “subjection machine.” Its strength lies in the fact that Christian spiritual direction constantly rests on the *free* will of the individuals to be led, but this is also its weak point, because the *I want*, which is essential for the good functioning of pastoral government (and governmentality in general), can never be abolished. Thus, the *I want* can always, at least in principle, be inverted and become *I don’t want anymore*.

Therefore, through the notion of critique, Foucault emphasizes the importance, in every practice of resistance, of the exercise of what he calls *counter-conduct*, since, in order to break the (governmental) relationship of obedience, the individual must withdraw his consent to be led *in a specific way*. To do this, the individual must contest and detach himself from the form of subjectivity that these specific governmental techniques—and this specific regime of truth—aim to constitute and impose on him. However, contesting the form of subjectivity imposed on individuals to construct a different subjectivity is not an easy task: in fact, if the concrete functioning of governmental mechanisms of power rests on the freedom of individuals, it is also essential that such governmentality produce discourses that *neutralize* that freedom, thus giving individuals the impression that there is no real choice to be made. The different forms of governmental power have one crucial characteristic in common: they can operate exclusively on the basis of an original consent (*I want*) to be reiterated at every moment by individuals and which, however, is constantly reinscribed within the framework of a *you must*, whose aim is to convince them that this consent is the only possible path they have access to if they want to achieve salvation, happiness, well-being, and freedom itself.

The possibility of saying *I don’t want* (to be governed, directed, conducted *in a way*), that is, the possibility of withdrawing one’s consent to be governed *in a specific way*, is therefore *masked* from the start, presented as inaccessible, or constructed as something essentially *undesirable*. In Foucault, the history of truth and the genealogy of the modern (Western) subject can help us to *unmask* this governmental *trap*, giving us the chance to *perceive it* and to open space for the practice of a counter-conduct and the experimentation of new ways of being *subjects*. In this sense, our intention here is to show to what extent it is possible to think about design based on these terms of counter-conduct and disobedience, allowing us to stress reflective and critical elements that we consider as good practices of the speculative design to which we approach theoretically.

On the Possibility of Designing Disobedient Forms of Life beyond Subtle Control Mechanisms

After having discussed themes dear to the philosophy of technology, philosophy of design, and counter-conducts, with examples of artistic exhibitions and speculative (and why not *philosophical*) design practices about the concept of disobedience,

we turn to the theme of disobedience as a kind of response to the subtle control society we live in. Next, we will list some clues of possibilities to think about new ways of being-in-the-world from the point of view of disobedience, but via an argument that starts from design as an area capable of philosophizing and transforming modes of being:

1. Our purpose here is to think about the possibility of escaping technological control through practices and/or performances that flirt more with art and, in a special way, that offer the possibility of *re-ritualizing human life*, whose focus is, perhaps, *in activities that emphasize the human body in its presence with others (animated and nonanimated entities)*. In other words, we support that perhaps the most disruptive way of being-in-the-world—or *engage in counter-conduct*, in Foucault's terms—lies in the possibility of being useless to *homo capitalisticus* or the exacerbated *homo oeconomicus*, and this tends to form in a *communitarian relationship* or one that seeks a way of *being-with-others* (Escobar 2016; 2018).

The argument we would like to explore here, based on what we have discussed so far about the possibilities for design to be more *provocative* and less *prescriptive*, is that design can be considered as a way to think and perform in the world in order to circumvent subtle technological *control mechanisms*—to keep in mind the relationship with Foucault's terms.

Obviously, the argument is not to simply ignore them but to understand to what extent we can exist, choose, and deliberate beyond the suggestions of trends and hashtags. This does not mean that we have to become technophobic or Luddite but to be aware of the type of ontological and existential alteration that such mediations provoke in our human intimate, and this is part of the philosophical aspect already imbued in the design.

2. Therefore, to be disobedient, in this scenario, is also being able to consciously identify and reflect on the intrinsic values of such human monitoring and restriction technologies, taking advantage of what is good and facilitating work, but being aware of programming biases, subjectivities imposed on it, and the colonizing tendency of minds and bodies that starts to disregard everything that surrounds such technological advance. In short: one of the greatest disobediences is the ability to be critical of the world mediated by different entities.

According to a good part of the humanist philosophy movement, obeying reason or laws is what differentiates us as human beings, capable of *dominating our inner beasts*. Is the act of disobeying—of being a civil dissident, as Gros (2017) states—so far from an ideal of humanity, or does it simply rival an outdated and Eurocentric notion of rationality that, ultimately, placed us in the climate emergency situation in which we currently live? In a sense, obedience led us to the way we live today: de-ritualized individualist beings (Han 2020). If we understand the ritual as the process of symbolic techniques of feeling at home in the world, it is important to allow one to *inhabit the world* and life to be stabilized through repetitions, especially given

the fact that repetition tends to stabilize and increase and deepen attention. It is in this sense that we have brought examples of artistic exhibitions that imply communal, in-person participation, far from screens and *digital mechanisms* that choose for us. In the disobedient way of designing that we propose here, it is necessary to be fully aware, present, and open to reflections and the ability to ask new questions, and not necessarily have answers or recipes for how to act.

To escape the novelty that becomes routine, we are led to a logic of consumption and production of more things, experiences, and new stimuli, since the intense contemporary life ends up translating into a life of constant consumption. This type of behavior of always waiting for something new is typical of the consumer society and production calculated by algorithms⁶ (Nocek 2021), which, as well as forming pockets of content playlists, are also always looking for news to continue generating engagement.

3. In a way, following the trail proposed by Han (2020) in his critique of the neoliberal way of life, which fetishizes and commodifies life into quantifiers and the use of (im)material artifacts, another solution would be to understand rituals in their potential to enable bodily performances in which community values, of common life, are experienced physically and in person, internalizing them and creating a type of knowledge with bodily identity and connection with other beings.

That is why, in Section “Some Examples of Disobedient Design Exhibitions and Projects,” we chose to show some examples of art exhibitions that directly address the issue of disobedience without necessarily providing solutions or demanding specific behavior but rather proposing that the public interact with the work, *reflecting and acting together* and drawing their own conclusions about the topic or simply rethinking their form of life after participating in an artistic performance. One of them shows how political activism is composed through collective creativity so that, through joint counter-conducts, it is possible to change patterns of behavior and ways of being-in-the-world, focusing not on creating useful objects but on the act of designing with other people and reflecting on this in the process. The second example focuses not on proposing utilitarian objects but on designing new social uses for art, considering current demands of society and making art more interactive and performative so that it can include actions in favor of sustainability and rethink elements of transformation of aesthetics. The third and final example shows posters temporarily placed around the city with philosophical phrases and images, which can be read by the public who encounters them and, in smaller versions, used in protests in the context of *artivism*.

These examples show that, in a way, escaping from noncommunal digital communication, as it individualizes and creates bubbles of interests that do not intersect, is also escaping from the mold of life of (self-)productivity or self-exploitation. The self-production of social networks, which requires our full attention and our lack of *showing ourselves*, lacks the symbolic power that unites people, that puts them in communion. While a disobedient form of life may

be able to slow down the productive rush of contemporary neoliberalism—in which the design focused on the production of artifacts also gets lost, the society of AI, of content generators through chats, of compulsion for information and productive communication, goes in the opposite direction. The point is that designing disobedient forms of life involves proposing reflections, inciting critical thinking and communal political actions, unlike the vision of part of design that aims to create products and prescribe specific uses and/or behaviors as the ultimate task of the act of designing. This is why projects like *Arte Útil*, mentioned in the third section, are understood here as disobedient and capable of inspiring disobedient ways of life, as they invite people to think and act on the space where they live, to do manual activities and in groups, not restricting themselves to digital manifestations. Designing outside of algorithmic logic means not having predefined options, expected behaviors, consumption projections, or specific use of a product/service but rather serving as a space to exercise critical thinking, to think for yourself, and not simply join a trend.

Certainly, we agree with the lucid and realistic vision of Bonsiepe (2021), which argues that design needs to rethink its megalomaniac posture that it will solve all the problems of capitalism—design thinking techniques for everything, designing future scenarios, proposing responses to global warming, solving ethical problems of great stature, the question of agency and technical mediations, and so on. In a complementary way, but from a completely different point of view, Nocek (2021) states that design is not part of the solution but part of the creation of the crisis in which we live, since design is immanent to technologies that shape human life and not human. According to the author, automation technologies, in general, are not mere effects of cultural and political systems but pervasive in the material world in which human and nonhuman life coexist in mediation with algorithmic automation.

Based on a critique of Foucault's framework on governmentality, Nocek (2021: 115) states that “governmental design is therefore a first attempt at critiquing the largely unconscious operations of designing that give birth to specific practices of neocolonial subjectivation in the 21st century,” because the *practices of contemporary algorithmic governmental design are ontological*, and this means that *they shape the subjectivations* of the present neocolonial days. For Nocek (2021), algorithmic automation is a way to guide the possibilities of action toward rational ends, which shows that digital devices were designed not only with a view to certain results but rather to *enable certain modes of existence to the detriment of others*. These intelligent subtle control mechanisms structure the field of possible action, fostering *only the most desirable modes of existence* for a given set of rules—in short, they are old control practices redesigned to become more invisible. Algorithmic platforms not only translate data into useful patterns of information but also help predict user behavior and *redirect their actions and decisions*. To put it simply, it seems that Nocek is shifting the discussion from ontological design—which implies thinking that designing is as much or more involved in rethinking why we create values and shape the way we live in the world in interactions with

artifacts than in uncritically creating objects that shape human behavior—and considering the notion of governing by design.

Returning to Foucault's concept of counter-conduct, we can highlight that all conduct is essentially historical and contingent. We are not naturally or necessarily linked to this or that conduct, nor are we obliged to accept it and to mold our subjectivity and our way of living based on it. Analogously, the idea that the algorithm—no matter what kind of algorithm—does not give us a choice, that we are forced to submit to it and build our interactions according to it, turns out to be an ethical-political trap. However, from Foucault onward, a counter-conduct can be directed to the creation of a new ethics and a new politics whose objective is to criticize the regulation of our conduct through algorithms—without necessarily abandoning or avoiding them. Knowing about the existence and functioning of the *black box* of algorithms, as Flusser (2000) would say if he were still alive to discuss this technological unfolding, may be the preponderant aspect for us to seek disobedient and critical forms of life in the face of the logic that tends to dominate and domesticate subjectivities in an increasingly subtle way. It is in this sense that we have brought, in this text, examples of ways of designing that are closer to contemporary art proposals—which include occupation of spaces, sociopolitical demonstrations in the streets, production of a community garden—since, in our understanding, they do not seek to provide ready-made solutions for users but seek to propose themes to be discussed and provoke the people who get involved.

To conclude this section, we would like to mention that, as Judith Butler (2009: 787) correctly observes, there are two interrelated dimensions to Foucault's notion of critique: "On the one hand, it is a way of refusing subordination to an established authority; on the other hand, it is an obligation to produce or elaborate a self." Likewise, the notions of conduct and counter-conduct are like two sides of the same process of constituting subjects. As Lorenzini (2016: 73) argues, "subjectivation too implies a *reactive* moment, which is the moment of de-subjection or counter-conduct, and a *creative* moment, which consists in the invention of a different form of subjectivity." Butler (1997; 2015) also mentions a theory regarding the *performative discourses and actions*, in which (political) power is represented and modes of being are somehow imposed, for there are discourses that order and shape forms of being-in-the-world, modes of obedience, and, consequently, counter-conducts that occur through the bodies of such human beings, constituting themselves as *habitus*.

Final Considerations

When we started writing this text, we thought that the theme of disobedience had everything to do with the notion of *technological turn*, so we started the text talking specifically about classic authors of what was consolidated as the philosophy of technology from neo-Heideggerian studies. The point was precisely to establish this link that, sometimes, does not seem so obvious in the main studies of the

philosophy of design or *design philosophy*. In order to show the relationship between designing and creative art, we explored, in the first section, the fact that, since Heidegger, there has been talk of the *technological mediation* of human beings with other nonhuman beings. When this is not taken into account, the tendency is to have courses and discussions in design that reduce themselves to trivial themes within the scope of production, efficiency, and problem-solving, without space for discussions about the ethical consequences and environmental impacts of creation via design.

In the third part of this text, we discussed the *Disobedient Objects* exhibition and the *Arte Útil* project, in addition to the works of Vincent Perrottet, which expose how political activist groups act with collective creativity and design richness expressed in objects and/or environments that challenge values fixed in the society of control. To disobey is to act, and the disobedient objects in the aforementioned exhibition tell stories of social struggles, social movements, and *disobedience-with-others*. In the case of the *Arte Útil* project, our purpose was to highlight how a small temporary collective garden allowed different people to think about the occupation of spaces and climate problems. Finally, Vincent Perrottet's works propose a reflection on the hyperconsumption society in which we live, in which simple questioning, as it is not part of the logic of consumption, already becomes a disobedient micropolitics.

In the fourth part, we decided to discuss the concept of disobedience and we did so based on the countless texts that Michel Foucault wrote about obedience, forms of control, and exercise of power through control mechanisms and/or security devices typical of biopolitical governmentality. From this, we brought up the discussion about the type of design that puts the user at the center of the project and also conforms them to a *correct way* of using something and/or behaving in a certain environment. Summing up our discussion as much as possible, we tried to show how this type of design is totally conservative and obedient since it does not seek to think of new scenarios and different forms of life but only the maintenance of what already exists—which can be very impoverishing and biasing in terms of what can be created and the type of world we want to live in.

At the end of the text, we discussed the relationship with some ways of being disobedient in the society of subtle control ordered by algorithms, especially considering the idea of *governmental design* provided by Nocek. Since we did not opt for a Luddite way of denying technology, our proposal sought to show that some forms of being-in-the-world can be counter-conducts to the age of subtle control. In short, we were talking about *encouraging forms of life closer to art and activism*, since, like the examples analyzed, it is one of the most viable ways to escape the individualistic and obedient logic of algorithms that place us in existential domes or, if we want, *individualistic bubbles*. Our bet is that ways of being-in-the-world that prioritize communal creation, as well as a way of understanding things with-the-other, focusing on the bodily presence of people and without focusing on exclusively digital projects, can disrupt, even if partially,

the paradigm of the obedient way of designing, allowing us to think in a critical way and situated in the social challenges typical of our time.

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Notes

- 1 This is certainly related to the well-known User-Centered Design approach, but is not restricted to it—even pointing to what we could call *algorithm-driven design*. However, Nocek (2021: 126) points out that “the agency of governmental designing is not located in a particular body, institution, or subject.” This means that, in our critique, we have in mind a design that is increasingly driven by automation and machine learning, so that, in design, it no longer seems to make sense to think of a *user* beyond these techniques and applications that shape their uses/interactions.
- 2 In German, *Technologie* (technology) is commonly used to refer to “cutting-edge technologies” such as nanotechnologies or artificial intelligence. *Technik* is used to talk about old machinery and well-established fields of engineering. In addition to the linguistic issue, it is worth mentioning that the philosophical discussions of both Heidegger and the countless philosophers who succeeded him start from the concept of technique, not technology.
- 3 For an up-to-date and academically diverse compendium, including design and philosophical studies of technology, see Franssen, Lokhorst, & Van de Poel (2023) and Vallor (2022).
- 4 In Brazil, despite the incipient discussions on design philosophy, we have published articles in order to take a step forward and think about the philosophical/speculative aspect of design for some years now (Beccari, Portugal, and Padovani 2017; Kussler and Lorenz 2018; Kussler 2023).
- 5 As Dworkin (2020) states, in social life there are several moments in which actions are guided by policies and social rules for different reasons, however, when someone is asked to follow a certain order for the simple fact that the person would be better off that way or would be less harmed, and the person does not want to behave in that way, there is a case of paternalism.
- 6 An algorithm is a sequence of pre-programmed instructions or commands with the aim of solving a problem or performing a task. It is currently applied to a large extent in all digital means of production, consumption, interaction, and communication. Despite helping with various tasks and facilitating the current way of life, in general, what we want to point out here is that it is a set of codes and calculations that are formed on a basis that we are unaware of and suggest products, routes, services, relationships, etc., hindering our ability to choose and be critical.

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Chapter 10

TECHNOLOGIES OF FASHION OR FASHIONABLE TECHNOLOGIES? DIALECTICS, PARADOXES, AND THE MEDIATION OF MADNESS

Annie Kurz, Gabriel Brasil, and Franey Nogueira

Introduction

Digital or virtual fashion refers to wearables designed as digital artifacts for use in virtual spaces like social media. As emerging players in the fashion industry, especially post-Covid-19, virtual wearables challenge traditional notions of clothing being tied to textiles and the physical body. Designers now can fully embrace their ideas, almost completely disconnected from the constraints of the flesh, allowing them to stage their digital sketches as the end products. These fashionable virtual items increasingly become popular on platforms such as Instagram while often in entanglements with generative AI and NFT/blockchain marketplaces (Joy et al. 2022; Wang et al. 2022). Digital fashion (DF), designed to enhance online self and brand presentations, is moreover praised internally for promoting sustainability by using fewer resources and emitting less CO₂ than physical luxury fashion. As fashion merges with gaming, beauty, and the arts, it raises questions about how fashion design should be (re)defined in the digital era.

To explore DF, we propose the combining of key concepts from two philosophical directions—firstly, the postphenomenological approach introduced by the American philosopher of technology Don Ihde (Ihde 1990; 2001; 2009b; Rosenberger and Verbeek 2015), and the related *mediation theory* (Verbeek 2005; 2014; 2015; 2016; 2019; Kudina 2021), with Italian system theorist and sociologist Elena Esposito's philosophical account of fashion (Esposito 2004; 2011; 2017; 2020).

We focus on combining the postphenomenological concept of “multistability” with Esposito's insights into fashion's peculiar relationship to “novelty” since modernity. In other words, we seek to place Ihde's core concept into the world of fashion and digital fashion design. As Ihde's observations state, technologies can be used in versatile ways, forming different experiences while revealing the world and the self to us in a variety of ways. This is so, according to Ihde, in situated use

cases as well as observable from a wider perspective—historically and in variations across different cultures (Ihde 1990). Ihde, therefore, proposes a nonessentialist and multilayered analysis considering both the micro- and the macro-lens on technologies. We suggest a framing of digital fashion as a technology under both lenses. In expanding on the macro-perspective looking at the latest fashion design technologies, we turn to Esposito's theory. As she observes, historically fashion as we know it today has a peculiarly uncritical way to relate to *novelty*. It sets out to iterate through aesthetic versions of itself, constantly offering new variations and new perspectives on how to present the self in relation to society and time. With Ihde, we label this principle as a special kind of technological *multistability*, which we likewise consider descriptive of DF. Fashion's *raison d'être*, according to the sociologist, is to consciously bet on switching perspectives, orienting perception toward that which is "new"—the latest trend. To explicate this aesthetic multiplicity (better: multistability), fashion operates in a contingent manner: it is clear to everyone that fashion could and will be "otherwise."

The focus on novelty, so we additionally note, amplifies in the digital realm as materiality retrieves to the background. While constantly looking for novel ways how to design for novelty, fashion explicitly reveals that the "world," and therefore the relation between self-identity and society, can be interpreted in many ways. Manifesting as a collection of aesthetic expressions, fashion explores that which is not impossible yet could be otherwise. We observe that technically, online novelty is unlimited and, compared to the analog world, a more easily mined resource. DF taps into this state by offering virtual products to satisfy digital cravings for novelty, which we term "fast" or "pure novelty"—forming a strategic horizon on how to deal with contingency tied to the paradoxes of identity.

Esposito (2017) extensively elaborates on fashion as an inherently paradoxical phenomenon and shows that operating within manifold paradoxes does not have to be a problem. The sociologist summarizes these principles as "absolute madness" (Esposito 2017: 4).¹ "Madness of fashion" is the term we propose to synthesize Esposito's overarching conclusion, similarly stated by Eun Jung Kang (2012), namely that the genesis of fashion's madness is inseparable from the emergence of modernity itself. We use this term here to describe and investigate how technologies of fashion and digital fashion have shaped the human experience since modernity.

The central research question that follows is how mediation theory can acknowledge and integrate fashion's madness amplified online. How can the *human-DF-world* relationship be conceptualized, tilting perception toward a world of "pure novelty"? We ask how fashion influences, or *co-shapes*, our worldview through an overarching lens that prioritizes the "new" over that which is "old," the "in" versus the "out." Consequently, we offer an adjusted postphenomenological formula to acknowledge such "mediation of madness."

Our chapter begins with clarifying fashion industry terminology and discussing current developments. Second, we delve into one of Ihde's core concepts—multistability—in relation to fashion in virtuality. Section "Esposito on Fashion and Its Relation to Novelty" discusses Esposito's philosophical account of

fashion, illustrating fashion's "modern" relation to novelty. We delve into fashion's historical genesis, some of its paradoxes, and its dual nature expressed in French as *la* and *le mode*. Section "Mediation of Madness" seeks to achieve the integration of Esposito's emphasis on novelty into Ihde's relational ontology. To fit into the world of fashion and DF, we consequently propose the adjusted postphenomenological analytic formula: *Human* → *Technology* → *World of Novelty*. Finally, we conclude with a discussion of Ihde's concept of "technofantasy" and two contrasting versions of a fashion utopia.

This text centers on the designer's perspective. The general and industry-specific knowledge discussed is based on our own fashion, art, textile, and 3D digital design work from mostly within the US fashion industry. Empirical records were gathered within New York City's garment district from 2007 to 2020 and through online research after 2020.

Introduction to Digital Fashion

The Cambridge Dictionary (2023) provides the following definition for fashion: "the most popular style of clothes, appearance, or behaviour at a particular time." We use this definition to further elaborate on the digital variations of fashion and fashion design in contemporary industry contexts. We start by addressing key terminologies in the industry connected to digital fashion. Then, we explore its history, connections to fields like gaming, and the impact of current advancements on traditional fashion design practices.

Virtual or digital fashion refers to wearables created for the digital realm, popular on platforms like Instagram to enhance avatars for self- or brand-presentation.² Users can digitally add DF to photos or use virtual fashion filters during video calls for "look" modifications.³ DF also can help to represent and market fashion brands online, offering virtual copies (digital twins) of physical garments to be tried on online before purchasing the "real" object of desire. Virtual clothing, often described as "non-existent," gains traction in the fashion industry as creative business models emerge around it.

While designers, for example, on New York City's Seventh Avenue, rapidly try to innovate in connection to the technologies of DF, the technical work of the designer further moves away the discipline from the material body. Online fashion is confronted with issues of materiality, embodiment, and the human form in different ways than analog fashion. A growing number of developing design jobs no longer can be done by classically trained fashion designers but rather by 3D graphic artists or generative AI specialists, not seldom akin to the gaming industry. Classical fashion market segment divisions are driven by differences in quality of material and utility, yet as this type of physicality no longer holds in digital settings, the factor remaining for value production is the aspect of aesthetic *novelty*. The designer's drawing thus becomes the end product. We therefore describe this as an amplification of the designer's illustration through digital means; the sketch (the new idea) gains importance. Clothing designers and the

fashion industry at large must reassess the boundaries and the meanings of their craft. It is no longer obvious what fashion design is and, more importantly, what fashion design education must entail in the future. Designers find themselves adapting to new roles, blending with disciplines like art, gaming, graphic design, and the beauty industry. Simultaneously they explore the potentials offered by generative AI to create and to innovate within these blurred design spaces.

Fashion designers grappling with these potentially disruptive technologies often express concerns that their tailoring craft in its classical forms may no longer be “enough,” mirroring broader anxieties across various creative disciplines when considering the expansion of generative AI.⁴ No wonder this sometimes evokes neo-Luddite sentiments, reminding us of the history of the textile industry in England during the Industrial Revolution. Violent uprisings of textile workers were a result of comparable fears that automation might eradicate their livelihoods by eradicating the knitting and weaving craft.

DF use cases are expanding in versatility. They might be utilized for a social media post and to enhance self-presentation on dating apps, during videoconferencing, or within a metaverse (virtual reality platform). For exhibition or trade, DF might become a collectible artifact. Here, it is relevant to distinguish between DF- and NFT-related fashion (a further development).⁵ The former encompasses a general term to describe virtual wearables, whereas NFTs will document ownership and uniqueness of the digital file (e.g., image, video, or GIF). Such NFT links become possible through the so-called blockchain technology,⁶ which is situated amid the ongoing developments of Web 3.0.⁷

The latest hype surrounding this virtual “identity play” warrants philosophical reexamination of fashion as a novel technological layer influencing how people see and negotiate their self-image. But why invest in nonphysical, nonfunctioning clothing? Why purchase running gear that does not assist with running? The proposed philosophical insights will be useful to explain why the so-called “non-existence” of virtual fashion products, like a virtual running shoe, does not pose any sales problems.

The Skin in the Game

To adequately describe DF, we now delve into its history closely tied to the gaming industry. While still rather new to New York’s fashion district, DF had already a notable history, as markets for digital wearables have for decades been commonplace in the world of gaming. Hence, the growing popularity of DF can be described as a digital “gamification” of clothing or as a digital identity “play.” Gamers would not speak of fashion but usually refer to “skins” when describing digital wearables of their virtual avatars. Game examples where skins play a role are *Second Life*, *Sims*, *Roblox*, or the recently popularized *Fortnite*. Here, the so-called digital skins can be purchased or earned by achieving game goals. Skins sometimes come with special virtual “equipment” that add, for instance, “superpowers” to an avatar. Other times, they are purely visual enhancements stored in some type of virtual closet.⁸ Skins and DF embrace the same idea: offering playful new looks for virtual stand-ins.

All creative industries are keen to invest in the potential of these advancements. It remains uncertain how these technologies will evolve in the future, as evidenced by recent hype and setbacks. Yet for philosophers, designers, brands, and fashion design education, the pressing inquiry pertains to how to address these recent advancements, where the future emphasis should lie, and, more broadly, how to conceptualize these technologies potentially revolutionizing the traditional fashion design field.

Many believe that Covid-19 accelerated the rise of digital and NFT fashion. While the required technologies like *CLO3D*, *Blender*, and *Adobe Suite* have existed for years, lockdowns acted as a catalyst, convincing the last skeptics of digital clothing's potential. Early industry players, for example, *DressX*⁹ or the *Febriquant*,¹⁰ promise easy access to designer goods, versatile "high-quality" digital looks largely for social media posts. These companies combine the famous "selfie" with individualized high-end clothing designs, otherwise only accessible to the wealthy.¹¹ Some argue this to be the democratization of *couture* fashion.¹² In an introductory video embedded on their website, an all-pink mini dress intricately sculpted with butterflies sells on *DressX* for \$75.00. The company also emphasizes its goal to be working toward a moral goal: more sustainability in fashion.¹³ The claim is that excess garment purchases, often only for one-time social media use, could be eliminated through DF.¹⁴

These empirical observations and the growing popularity of wearables in the virtual realm show that the latest fashion design artifacts influence human experiences of the world and the self. With the self-portrait or the selfie on center stage, the social media experience self-evidently changes how people view their identities, as its "potentials" in quality and quantity enhance in the virtual realm. DF transforms, in other words, it mediates the idea of self-presentation and pushes the limits of its possibilities in the virtual realm.

We now turn to Ihde, and then to Esposito, to describe how the mediation of DF operates at two levels, the bodily perceptual and the cultural-historical ones.

Ihde's Multistability

In earlier works, as well as in *Technology and the Lifeworld* (1990), Ihde often differentiates between two levels of human experience tied to technologies, the "micro-level," entailing bodily sensorial dimension of perception, and the "macro-level," for the cultural-historical dimension. Later, he distinguishes these in terms of "two bodies" to be analyzed (Ihde 1998: 89): "Body One," or the physical (being-here) body guided by its situated materiality and its senses, and the cultural "Body Two," informed by more complex cultural historicity such as norms or traditions (Ihde 1998; Kudina 2021). These two domains are entangled in experiencing, as will be seen later in this section.

Ihde's most prominent analytical toolkit tied to his relational ontology allows for exploring technologies of fashion from the first-person perspective with a

systematic angle on how to look at concrete use cases and how to be specific within descriptive exercises. As postphenomenology advocates for the convergence of phenomenology and pragmatism (Ihde 2009b: 9), the school of thought is akin to interdisciplinary mixed methodologies practiced within science and technology studies (STS). Postphenomenology bases its analytic methodology on German philosopher Martin Heidegger's hammer analysis (Ihde 1990: 31) and his distinction between *Vorhandenheit* and *Zuhandenheit*—how technologies can be “present-at-hand” or “ready-to-hand.”¹⁵ Heidegger observes that a technology in use leads to a specific experience of the world, which is different from technology as such. Ihde further elaborates on this observation and provides analytic nuance on how to identify different types of possible use variations with different types of technologies. His relativistic formula sits under the umbrella term *human-technology relations*. In section “Esposito on Fashion and Its Relation to Novelty,” as we fuse it with Esposito's insights, we shall further expand on the following original framework provided by Ihde (e.g., 2009a).

Human → Technology → World

Ihde proposes four distinct modalities on how to differentiate human-technology relations: *embodiment*, *hermeneutic*, *alterity*, and *background* (e.g., Ihde 2009b: 42–4). Usually, first on the list is *embodiment relations*, discussing technologies that merge with the body and becoming transparent when functioning well (e.g., reading glasses). *Alterity relations* describe a quasi-other experience, e.g., with an ATM machine or with a voice assistant like Amazon's Alexa. *Background relations*, usually last within Ihde's descriptions, are discussed the least within postphenomenology. It denotes technologies not directly in use but operating mostly below the threshold of people's awareness, like a heater or a building. Background technologies typically come to the foreground when malfunctioning.¹⁶ To some extent, we consider that fashion and digital fashion operate mostly in the background condition. However, most important for our further inquiry are Ihde's *hermeneutic relations* or, more generally, Ihde's *material* and *cultural hermeneutics*, which allow for an analysis preoccupied with meaning-making and interpretations. Ihde's ambition to develop a material hermeneutic of technology is especially explicit in his book *Expanding Hermeneutics: Visualism in Science* (Ihde 1998). Originally stemming from biblical text interpretation, hermeneutics deals with meaning in science and everyday life through the act of describing and interpreting what appears to a subject. The hermeneutic approach is prominent within the postphenomenological corpus.

Ihde's relations, which we could only briefly mention above, already expose some of the ways in which technologies can be multidimensional in their use cases, holding a multiplicity of meanings within human-technology relations. This is also the case for fashion technologies. Ihde consequently prefers the term “technologies” in plural versus “Technology” with a capital “T”. He thus rejects Heidegger's romanticism and essentialist views on technology tied to the concept of *Gestell* or, in English, “enframing.”¹⁷ One central postphenomenological viewpoint

is that technologies are *multistable*, never one-dimensional instrumental objects with a single meaning. Mediating technologies, in plural, *co-constitute* perception in various ways while disclosing knowledge about the world.

Ihde's notion of technological multistability draws on his investigations of visual perception according to Gestalt psychology. His primary examples are drawings of various perspectives on the *Necker cube* and the ambiguous interpretations hidden within them. Discovering that visual perception is essentially ambiguous yet stable in multiple ways, he extrapolates that perception "through" or "aided by" technologies must also share those qualities.

On one occasion, he explores how "Polynesian and most other South Pacific navigators" used a low-tech or "noninstrumentally" mediated system to find their way on the waters. The bodily sensorial mode of perception informing their navigation practices radically differed from modern European methods of orientation at sea. Ihde describes this change in contexts as a historical and cultural variation, a "cultural-multistability" based on the same "human desire for long-distance orientation across seas" (Ihde 1990: 149).

However, it is important to note that multistability fundamentally works differently in our specific case of fashion technologies. In Ihde's account of scientific technologies (1998), when instrumental variations reveal the world to us, multiple technologies might produce visualizations as they additively create increasingly *robust* depictions of scientific objects, sometimes labeled *knowledge*. In our case, today's (Western) fashion is not interested in such instrumentality and this type of accumulative knowledge production. As argued further below, with fashion, variation itself is the goal, and ambiguity, or unresolved paradoxes, its fuel and the norm.

Thus far, we have presented Ihde's methodology, sometimes also termed "variational analysis," and his modalities of human-technology relations as underlying multistability. By adopting the lens of multistability, we hold that we can better understand the variations of designed fashion artifacts growing out of the universal human desire to present and enhance the self through the means of clothing and other wearables.

In the next part of our argument, we consider Esposito's appraisal and demonstrate how fashion technologies operate multistability on the cultural-historical level in a very specific manner, where aesthetic variation itself is the point—both the means and the end—to establish the "modern" norm orienting perception toward that which is "novel."

Esposito on Fashion and Its Relation to Novelty

System theorist Elena Esposito's analysis allows for the widest possible lens on fashion, considering its historical and cultural impact. With Ihde, we understand her approach as the macro-lens on the technologies of fashion. She is interested in fashion's historicity as it unfolds surrounded by its mysteriously uncritical attitude toward aesthetic frivolities, as long as they qualify as novelties. We might also

describe this phenomenon as fashion's interest in sheer "difference." Under the umbrella term "abstractness of fashion" (2020: 116), Esposito theorizes fashion's *contingent* attitude toward *contingency* and its radically uncritical iterations through its variations.

According to her, today's type of fashion system, or the *fashion ethos*, as we call it, historically holds a point of genesis. It is marked by this very kind of elevating attitude toward *novelty* or *newness*, inviting disruption, surprise, and contingency to enter aesthetic thought. The human-novelty relation began changing with the emergence of what is known as *modernity*. In the sixteenth century, Europe began forming an unprecedented attitude toward the world (Esposito 2017: 9), prioritizing the *world of novelty* over the *old world*. Today, the "new" still is not just tolerated but preferred and invested in, often labeled as innovation: "Novelty becomes a criterion of value and is prized in all fields: in the arts, in the mass media, but also in science and political debate—and primarily in fashion" (Esposito 2017: 9).

Esposito also notes that newness in fashion must be produced in the right amounts to be recognizable as new and therefore seen as related to the old, yet different enough to become what is "in" while anticipating that soon it will be "out." A short-term consensus is called a *trend*. Without an obvious rational grounding, the "rationality of fashion" unfolds as that of "irrationality" (Esposito 2011: 604).

Today's fashion infused into new media increasingly pushes perception toward novelty as such: "One needs more and more extravagant novelties and needs them more and more often" (Esposito 2017: 9). We conclude that through this type of technological amplification, digital fashion can compensate for its material lacking while serving the need for "extravagant novelties"; the digital end product we label as "pure novelty."

The Emergence of the Madness of Fashion

Esposito describes today's dynamics of fashion, historically and by the standards of the seventeenth century, as "absolute madness" (Esposito 2017: 4). She argues that while humans have always exhibited preferred behaviors and modes of making things, these were guided by external factors set to completely different standards of judgment. Novelty was experienced as disruptive and disorderly. Esposito also notes that in premodern times aesthetic changes in clothing or other goods were slow and gradual. Assessments of beauty, quality, and usefulness were governed by values such as tradition, a longing for stability, or by external forces such as climate or the availability of materials (Esposito 2017: 5). Because fashion holds a historical point of genesis, its etymology, and the mindset to embrace fashion's "rationality" or the lack thereof, must have a lot to say on the contemporary embrace of its digital variations. "Fashion is an anglicized French word originating from old French *façon*, *fazon*, whose Latin root is *factio* and *facere*, both implying making or doing something without a specific connotation of its activity" (Kang 2012: 6). But why and how did fashion begin re-interpreting time and materiality, demanding instability, constant change, and novelty around the human body and lifestyle?

The concept of fashion as we know it today, with its mass and individual behaviors, is not inherent to human existence throughout history (Esposito 2011: 605; Kang 2012: 5; Meinhold 2013: 19). While humans have always utilized materials for body protection and decoration, fashion introduces a peculiar new interpretation of time, emphasizing the value of change, versatility, and surprise. Most importantly fashion offers a viewpoint to integrate contingency into its aesthetic strategies. Fashion embraces the fact that fashion could be and soon will be otherwise without having to provide a reason why. “If we like something because it is fashionable [...] our motivation is purely tautological, and we are fully aware of transience: we know that next year we won’t like it anymore, as last year we liked other things, with no reason” (Esposito 2017: 5).

We summarize this as one of the core principles of fashion *design*. Esposito notes that philosophical records show inquiries into the nature of change in taste tracing back to the philosophers of nature, yet there are some disagreements on when fashion emerged as a conceptual idea with its distinctive attitude of the “in” and “out,” prioritizing instability over stability, the ephemeral over the absolute. Perhaps understandably, fashion at its historical genesis, therefore, was not seen as a virtue but as chaos, a great disturbance; it was described as breeding disorder, restlessness, and moral decay, as observed by La Bruyère (cited by Esposito 2017: 6). Kang (2012) summarizes that we can observe fashion’s restlessness playing out within the dialectics of fashion history.

Immanuel Kant already came to a troubling verdict of how the human-fashion relationship plays out. In Kant’s view, it would be foolish not to follow fashion in a world full of fools. Esposito encapsulates Kant’s verdict of foolishness, in her words, “madness” as follows: “Kant, for example, said that following fashion meant to be mad, but he also said that in a world where every-one is mad, it is better to be mad with others than to be sane alone—therefore it is better to be mad according to fashion” (Esposito 2011: 605).¹⁸

Fashion’s Paradoxes

Esposito argues that even from today’s perspective, fashion can be described as madness in the sense that it does not need to be reasonable in any nuance of the word: “The only reason of fashion is the absence of reasons” (Esposito 2017, 16). Moreover, she describes fashion as madness because today’s fashion principle does not seek to resolve its inherent paradoxes, nor does it seek to avoid paradoxical operations. For fashion, paradoxes are not a problem. Instead, fashion invests in the embrace of internal and external paradoxes tied to the dynamics between identity and society in relation to time, in relation to the “old” and the “new.”

Esposito elaborates in depth on different types of paradoxes within fashion, which we can only selectively discuss here. She notes that one fundamental paradox within fashion is that through producing, naming, and identifying novelty and that which is “in,” the old and the “out” are being produced in the first place. Another important paradoxical endeavor playing into today’s rise of digital fashion is the search for individuality and originality of the self, sometimes termed the search for

authenticity.¹⁹ While everyone wishes to express the uniqueness of the self, wishes to be original, or at least wishes to be seen as such, within this search for originality, everyone does the same: look for “originality through imitation” (Esposito 2011; 2017: 12). According to the sociologist, such “abstractness of fashion” (Esposito 2020: 116), its inherent tensions, and the dialectical relationship between the individual and society seem inescapable.²⁰

Esposito contends that the *modern* attitude toward the world that breeds novelty while playing on paradoxes philosophically should not be taken for granted. The modern, conceptually fundamental shift is observable within other disciplines, but most significantly within fashion, as a specific type of human-world relationship. In short, fashion today can be described as “mad” not only because it stands free from any type of rationality or traditionally valid reasoning but also because fashion superficially covers up its own inherent paradoxes explicitly using aesthetic frivolities to do so. The tactic is a play on rapid switching between stabilities (looks) through constantly offering the next new perspective.

In summary, fashion operates as “an accumulation of paradoxes” (Esposito 2017: 13). Historically, it canceled the doxa of tradition and cultural stability introducing the modern ethos that put novelty, surprise, and sheer difference on a celebratory pedestal. Trends or fashions and the prioritization of new over old replaced prior consensus on absolute beauty and usefulness. “If a system includes a paradox—it has always been said—it can include anything. It cannot exclude anything, and no longer provides any guarantee of reliability” (Esposito 2017: 15). Fashion’s philosophical project does not seek to resolve its paradoxes but offers to amplify and neutralize them at the same time. We note that this principle receives increased validation online as DF grows in popularity.

Interpreting Fashion’s Dual Nature

We have suggested that the mediation of DF must be defined through (a) the micro-perspective on the situated and embodied human-DF relations, and (b) through Ihde’s macro-lens on the technology. With Esposito we further elaborated on the latter to demonstrate fashion’s philosophical and cultural peculiarities. Fashion then unfolds not only as a technology in use but as *the* modern or in contemporary terms, the postmodern attitude, rejecting any dominant narrative and therefore any aesthetic consensus while always orienting perception toward the “next new thing.” To fully acknowledge fashion and DF in this more “transcendental” way, as mediating cultural orientation toward novelty, fashion must be interpreted within its historicity and the origins of its dual nature.

As indicated by the Cambridge Dictionary, fashion holds two connotations. Etymologically, fashion’s double-layered meaning can be traced back to the French. The two distinct expressions *la mode* and *le mode* emerged in France in the early seventeenth century. *La mode* denotes variations in female dress styles. It describes embodied material and aesthetic variation. On the other hand, *le mode* refers to a temporary attitude—or even a philosophy—a cultural or more general preferred mode of behavior, action, or thinking (Esposito 2011: 605; Kang 2012: 6).

According to these authors, it is crucial to consider both meanings to appreciate the full notion of fashion in its philosophical project, which in turn influences other disciplines and other cultural sectors. Kang points out that hermeneutics will be helpful in decoding the different layers of meanings within fashion (Kang 2012: 110), bringing us back to Ihde's material and cultural hermeneutics (Ihde 1998). Hermeneutics will recognize non-neutrality and the multistability of fashion's artifacts and digital artifacts as well as its general attitudes fixated on novelty, as described above. It also will appreciate fashion's communicative nature, often expressed through performative signs or sign-like elements like brand logos, text slogans, or advertisement images. Roland Barthes (2010), for instance, focuses on the fashion system as a complex network of signs, emphasizing its significance in his semiotic analysis of wearables revealing cultural myths. However, while recognizing the sign-like qualities of fashion is insightful, it does not explicitly elucidate its overarching philosophical implications (Svensen 2006, as cited by Kang 2012), which we seek to emphasize here. An understanding of fashion's multistability, therefore, involves interpretation of the artifacts (*la mode*) as well as of how they mediate the world ideologically (*le mode*)²¹ through an overarching culture, setting the tone for interest, attention, and behavior.

We hold that these dual principles also apply to fashion in the digital realm. The madness or abstractness of fashion, therefore, does not change online but brings this modern western attitude toward the world closer to its logical conclusions. The notion of novelty as the highest virtue to help manage contingency and inherent paradoxes within identity is, in turn, technologically mediated and amplified through the digital realm.

Mediation of Madness

In this section, we are interested in establishing the concluding connection between Ihde's *technological mediation* and Esposito's *madness of fashion* to arrive at our proposed concept of the "mediation of madness."

In a footnote, Esposito mentions that the German word for modernity, *Neuzeit*, literally translates as "new time" (2017: 8). We proposed the three-word terminology the "madness of fashion" to synthesize Esposito's conclusions on fashion as an accumulation of paradoxes and, more importantly, on fashion's relationship to that which is new. Within mediation theory, we seek to discuss the (re)orientation of *intentionality* toward the new or novelty as a crucial part of how fashion and, therefore, DF mediate.

As discussed above, *la mode* names the mediation of wearable artifacts (virtual or not) and can be analyzed through Ihde's methodology zooming in on the first-hand human-DF relationship. Ihde's macro-perspective and his "Program Two" (1990) offer such a shift in perspectives. From the concrete use-case, observations now can turn to more general cultural patterns: *le mode*. We have proposed a further elaboration with Esposito on the macro-lens looking at the mediation of fashion as a cultural ethos preoccupied with *novelty* at its core.

Now we can inquire into fashion's uncritical appreciation of novelty and into the culture around the technology. How does DF foster or feed into the search for novelty and how does the technology re-create the modern (or postmodern) fashion paradigm? How does the technology (re)orient intentionality toward a world of novelty? How do individual use cases manifest in revealing the world and the self to us in this particular, sometimes ethically problematic way?

To frame our proposal to use the term "mediation of madness" within Ihde's formula, we consider fashion's uncritical push toward newness as the most crucial point of how fashion premediates the world to us. It is also the crucial point in how fashion dialectically negotiates and exaggerates itself, while its users search for identity. Thus, through the lens of fashion, the world and the self appear to us to be pre-oriented. This is observable through the tensions between "new" and "old," "in" and "out," and therefore valuable or not. Intentionality toward the world becomes intentionality toward that which is "new in the world." The fashion designer evaluates the world (e.g., functional, aesthetic, historical, or artistic information) in relation to the anticipated novelty she or he seeks to create. Design is evaluated on its relation to the "new" and the "old." Designs must be "fresh," or they are otherwise uninteresting. The fine-line designers must rely on the "new" holding just enough resemblance with the "old" to still be recognizable as new in the first place. Fashion, so we claim, is not a technology like others and, therefore, needs to be defined within a lens sensitive to its particularities, as Esposito explicates.

The following formula combines the core ideas discussed. Based on Ihde's original analytic framework (Human → Technology → World), we express fashion design as well as the fashion experience through the following threefold relation:

Human → Technology → World of Novelty

Ihde's "World" and intentionality (→) toward it is tilted to fit the world of (digital) fashion. Intentionality is directed (pre-mediated) toward novelty in the world. Empirical information on the world is then pre-judged through the question of novelty as fashion's *modus operandi*. For instance, experience shows that a celebrity can never be seen in the same dress twice. An "old" dress would sabotage reputation and fashion's *raison d'être* and would automatically make the person "out." As one of our editors noted, the hypothetical decision to wear the same dress twice would itself be interpreted as an idea out of the norm—a novel idea of how to deal with self-presentation. These principles that celebrities and their stylists understand well now are amplified online with fashionable novelty available to anyone at any time. All users on social media platforms can now be "in." An Instagram post, for example, ideally depicts *now-time* with always new updated content showcasing events from people's lives as they happen. Posting an event from last week or two years ago would appear outdated and therefore pointless unless framed as a *new* cherished memory. Fresh social media content satisfies cravings for *Neuzeit*—new time, the current, the contemporary, all that which is "in."

Virtual fashion works with these principles by offering fast and low-cost novelty without real life (RL) material hassles, providing access to what we call *fast* and *pure*

novelty. People can share glamorous new variations of themselves (looks) and thus a new identity event without having to *be* or *go* anywhere glamorous. This desire to present new versions of the self on social media in constantly new ways led to a correlation (causation speculated) with increased retail returns of designer goods in the last few years (Fish 2019). Perhaps after a quick use for a photo shoot?—we might further speculate. Digital fashion design brands set out to break with such unsustainable analog fashion habits, also known as material consumerism. It seeks to solve the problem by filling the void of a constant need for novelty. Pure and fast novelty becomes accessible and affordable to all. Design firms may be ethically motivated in doing so because they are often ambitious to reduce the energy resources required to produce “real” designer goods. This argument, however, falls apart considering some of the use scenarios called *digital twinning*. In many cases, DF does not replace the “real” garment but doubles it. In other cases, it produces a digital token to go with the garment, often a high-energy NFT, to secure brand authenticity and ownership.

Discussion: On Techno-Fantasy and Fashion Utopia

We have discussed fashion’s current advancements in the digital realm and relevant terminology tied to the NFT marketplace. The design discipline we have explored as it expands into virtual fashion is growing in popularity, especially so for use on social media platforms. Moreover, we have shown that a redefinition of fashion in the digital realm must be tied to virtual artifacts known from the gaming industry. The so-called *skins* in gaming and DF serve a similar desire: the desire to create novelty in service of a virtual stand-in, an avatar. The crucial dimension of how fashion mediates, so we argued, is *technological multistability* in connection to a *world of novelty*. Digital design, then, through the lens of multistability, unfolds as a faster way to iterate through possible novelties through as many variations (stabilities) as possible while playing on the contingency of identity in a contingent and irrational manner.

For further discussion, it is relevant to note that DF makes the business case for *digital novelty* by offering a fantasy, a type of fashion utopia. Digital fashion designers offer technically limitless, fast, and pure solutions; “high-end novelty” without any “real life” material limitations; novelty in service of originality and uniqueness is now made easily accessible and affordable to everyone while the industry claims to work toward reducing energy costs.

It is also interesting to remember the contrary kind of fashion utopia proposed by Thomas More in his satirical work *Utopia* ([1516] 2020), in times before today’s concept of fashion even existed. More depicts the inhabitants of his imaginary island dressed uniformly and wearing the same haircut, as also noted by Kang (2012: 138). Within this imagined “perfect” society, diverse clothing styles do not exist; they are unnecessary. Novelty and versatility are pointless in More’s Utopia. By eliminating all idealistic and material tensions, the playful realm, or what Kang (2012) terms the “dialectics of fashion history,” becomes obsolete. Instead, Utopians

reached a consensus on a single style of ideal clothing and modes of doing things, fully eliminating the notion of what later became known as fashion. Innovation is not anticipated as the ideal clashes with the realities of the utopian world. Since the ideal mode or style has been settled, the status quo remains unquestioned and unchallenged by alternative propositions (alternative stabilities). Full stability is achieved through the elimination of the multistability of fashion, through the elimination of novelty. More humorously anticipated the “madness of fashion.” By his standards, the seemingly dystopian ethos of today’s fashion amplifies phenomenologically in the virtual realm. DF restlessly and determinately rushes toward digital novelty producing the next new thing in support of the next new “me.”

Both the virtual fashion “utopia” and More’s no-fashion Utopia offer imaginary solutions to tensions and inherent restlessness and paradoxes within identity itself. Operating between stability and instability, between the individual and the community, the “in” and the “out.” Proposed solutions are the elimination of either aesthetic trivialities (More’s Utopia) or their radical embrace (DF fashion). The DF utopia exaggerates the lens tilting toward novelty by providing a shortcut to achieve it. Both utopias offer a fantasy on how to deal with philosophically detectable contingency, that is, contingency within the self in relation to society and time. DF sets out to impact this relationship.

We note that virtual fashion would not be interesting if not invoking any relevant perceptual and experiential change within the human-world relationship. Ihde explains such technological *non-neutrality* with a short anecdote on fashion and a variant of Hans Christian Andersen’s Emperor’s New Clothes. Ihde imagines a garment perfectly transparent, through which people can “technologically experience the world (Ihde 2009a: 79).” People could “see through it, smell through it, hear through it, touch through it.” Since this technology will not evoke any perceptual change whatsoever, no one would bother acquiring it. “Only by losing some invisibility” will the garment become usable and interesting. But at the price of losing total transparency, technology, in our case fashion technology, becomes that “through which we relate to an environment.”

In *Bodies in Technology*, Ihde offers the concept of “technofantasy” (Ihde 2002), discussing aspects of disembodiment in virtual reality (VR). It can be useful to balance utopian and dystopian views to appreciate DF as just that: a fantasy, an exploration of technical solutions to the quest for identity in relation to the world, an exploration of the “existentiality of our technologies”: “I want to conclude this foray into virtual bodies with something of an epistemological moral: VR is a phenomenon that fits neatly into our existential involvement with technologies. Here the question is a deeper one involving our desires and fantasies, which get projected into our technologies” (Ihde 2002: 13).

Players within DF thus set out to satisfy techno-virtual fantasies and the existential cravings for novelty and individuality online. The (post)modern drift toward novelty receives a digital twin as the search for identity plays out in both embodied real life (RL) and in differently embodied virtual reality (VR).

Digital design experiments fit under an interdisciplinary umbrella, reevaluating fantasy, the imaginary, and the designer’s sketch. As designers only see very few of

their virtual ideas being turned into “real” garments, they already operate in VR. While DF design does require very different drawing skills, conceptually, fashion’s latest digital iterations should *not* be conceptualized as a radical shift or change within the design process but rather as an amplified variation.

Consequently, with Esposito we conclude that the digital fashion movement does *not* hold a new type of idea but is better understood as a continuation and the logical conclusion to the fashion ethos since *modernity*.

Concluding Note

In this chapter, we proposed a twofold methodology to analyze digital fashion (DF). To appreciate fashion and its design discipline, which is academically often neglected, we advocated for the merging of the philosophy of technology, more specifically, postphenomenology and mediation theory, with Esposito’s philosophical account of fashion. Most importantly, we have emphasized two concepts: Ihde’s *multistability* and Esposito’s inquiry into *novelty* as fashion’s peculiar attitude toward the world. We proposed the three-word terminology “madness of fashion” to synthesize Esposito’s conclusions. Consequently, in combining Ihde’s multistability concerning his all-over project with Esposito’s notion of modernity emerging as uncritical of novelty, we have proposed the analytic formula to fit the world of (digital) fashion: Human → Technology → World of Novelty. This offered a framework to discuss DF in a world pre-mediated by fashion, orienting human perception (intentionality) toward something new in the world (i.e., design). Our conclusion from the designer’s perspective is that DF conceptually unfolds as an amplification of the fashion ethos on the way to manifesting the logical conclusion to fashion’s *raison d’être*—*pure novelty*.

Notes

- 1 In this text, we are careful not to misuse the term “madness” and be insensitive to mental illness, nor to overwrite our general view that fashion design, and digital fashion design, is a beautiful creative field akin to the visual and performing arts. The “madness of fashion,” so we argue, merely highlights its philosophical complexities and societal influences, which in recent times, in both academic circles and civil society, has too often been put aside as insignificant for theoretical inquiry.
- 2 To be distinguished from what Lianne Toussaint (2018) calls “techno-fashion” or “wearable technology” (Van Dongen et al. 2019), which are physical wearables entwined with technologies (e.g., through smart textiles composed of solar cells), potentially connected to generative AI tools.
- 3 Also known as “beauty filters,” a further DF variation akin to the gaming and the beauty industry that allows for virtual body modifications enhancing, for instance, the virtual appearance of the skin or the shape of the face or the body. The goal is to achieve the so-called “photoshopped look” without appearing digitally manipulated, an enhanced public appearance previously exclusive to celebrity imagery.

- 4 The first AI fashion week was organized in New York City, in 2023, <https://fashionweek.ai> (accessed January 20, 2024).
- 5 NFT, defined by Cambridge Dictionary (<https://dictionary.cambridge.org/dictionary/english/nft>, accessed January 15, 2024): “non-fungible token: a unique unit of data (= the only one existing of its type) that links to a particular piece of digital art, music, video, etc. and that can be bought and sold.” A notable application of blockchain is cryptocurrency, with Bitcoin being the most prominent example.
- 6 Blockchain, defined by Cambridge Dictionary (<https://dictionary.cambridge.org/dictionary/english/blockchain>, accessed January 15, 2024): “a system used to make a digital record of all the occasions a cryptocurrency (= a digital currency such as bitcoin) is bought or sold, and that is constantly growing as more blocks are added.”
- 7 This new emerging internet framework seeks the decentralization or the decoupling from Web 2.0 platforms (Big Tech companies such as *Meta* or *X*, dominating social media spheres).
- 8 Some games even have established business models based *only* on the in-game purchasing of skins, while the game itself can be downloaded for free.
- 9 <https://dressx.com/> (accessed December 12, 2023).
- 10 <https://www.thefabricant.com> (accessed January 18, 2024).
- 11 However, linked to NFTs, a new type of exclusivity and potentially a new high-end price market can also be fostered.
- 12 *Couture*: individual high-priced custom-made garments. To be distinguished from *haute couture*, a protected segment amongst French fashion houses also offering high-end custom-made garments. *Haute couture* companies like *Chanel* must fulfill strict requirements to call themselves by that name.
- 13 As argued by Daria Shapovalova, the cofounder of *DressX*, <https://www.youtube.com/watch?v=iKBePuTOB6U> (accessed February 18, 2024).
- 14 This argument is debatable when considered holistically. Through the technologies of DF, we see for instance, big luxury brands such as *Chanel*, *Balenciaga* or *Louis Vuitton* producing “digital twinning” or virtual “try-ons” that double, and not replace their collections. CO₂ emissions caused by blockchain technologies (NFTs) are likewise not to be underestimated.
- 15 In *Sein und Zeit* (Being and Time) (2006), Martin Heidegger discusses the use of a hammer to make this distinction. He contrasts a technology in use with a technology that is experienced as *Zeug*—objects “uselessly” lying around.
- 16 Ihde often refers to Heidegger’s (2006) hammer analysis when discussing technological malfunction, however, within any type of relation, a “breakdown” can occur.
- 17 In *The Question Concerning Technology* (Heidegger 2013), Martin Heidegger approaches “Technology” from a more deterministic perspective—Technology in general, often referred to as technology with a capital “T”.
- 18 In German, Kant uses the expression “*Narr sein*” (Kant 1912, §72), which literally translates as being a *fool* or being *foolish*.
- 19 Compare, for instance, Jean Paul Sartre’s existential concept of the human thriving for “authenticity” (Sartre 1992).
- 20 This dialectic of the “in” and “out” specifically becomes explicit when traveling to a foreign country culturally different from one’s own. The question immediately becomes how to strategize social appearances. Is it better to “blend in” and quickly purchase local fashion, or can it be acceptable to “stand out” as a stranger?

- 21 Turning into a “transcendental” question: how the fashion ethos produces the necessary conditions for the fashion experience.

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Chapter 11

NEXT FRONTIERS FOR DESIGN PHILOSOPHY AFTER THE TECHNOLOGY TURN: A DISCUSSION

Fernando Secomandi and Peter-Paul Verbeek

The preceding chapters bring together a wide range of philosophical perspectives and propose compelling new concepts for design philosophy, taking technology as a critical site for reflection. As such, they can galvanize interdisciplinary dialogue and approaches, fostering connections not only between researchers in design and philosophy but also with related fields such as science and technology studies and the arts.

As organizers of this journey, we were pleased to receive submissions from researchers in sixteen countries, though, regrettably, none from much of Asia or Africa. Our edited volume resulted clearly weighted toward contributors from the Global North. This could be attributed to the fact that our call for papers was disseminated through networks and associations in which we have been active over the years, primarily within academic circles focused on design and philosophy in the Netherlands and Brazil. Consequently, many of the theoretical perspectives expressed here also align with our own work at the intersection of design and postphenomenological philosophy of technology (Verbeek 2005; 2011; Secomandi 2013; 2017; 2018).

Geographical and epistemological diversity, however, can be—and to some extent has been—achieved in some ways. New frontiers can open paths toward less-explored terrains. The work of the Brazilian philosopher Álvaro Vieira Pinto is one such case, a hidden gem off the beaten path that has only recently begun to receive attention, including in this volume. His *O conceito de tecnologia* (*The Concept of Technology*), completed in the early 1970s, is one of the first treatises on the philosophy of technology produced in the Americas and includes significant reflections on the “ability to design” (*faculdade de projetar*). Due to various contingencies surrounding the handling of his estate after his death, the manuscript was only discovered several decades later. It was finally published in two volumes in 2005 but remains unavailable in languages other than Portuguese.

Because of the well-known bias in academic publishing favoring the English language, several perspectives continue to circulate far less widely. Notably, Pieter

Vermaas, editor of the Springer series *Philosophy of Engineering and Technology*, has been curating collections dedicated to specific countries and language communities—including France (Loeve, Guchet, and Bensaude Vincent 2019), Spanish-speaking countries (Laspra and López Cerezo 2018), China (Wang 2020), Italy (Chiodo and Schiaffonati 2021), and Portugal/Brazil (Jerónimo 2023). Reflecting on the maturity of the philosophy of technology in the Spanish-speaking world, Carl Mitcham acknowledged long ago: “The simple fact is that Spanish-language philosophical discourse has recognized for much longer than English-language philosophical discourse the philosophical significance of technology” (1993: xxv).

In the design field, efforts to systematically account for the global diversity of design philosophy remain more limited. Without attempting to be exhaustive, we nonetheless direct readers to some notable groups and initiatives: the French journal *Sciences du design*, currently edited by Jocelyne Le Boëuf, Sébastien Proulx, and Stéphane Vial; in Brazil, the growing body of work led by Marcos Beccari, Daniel Portugal, and their collaborators; and in Germany, the Board of International Research in Design (BIRD) series published by Birkhäuser.

New frontiers of design philosophy can also be opened by turning to the past. One may consider Ernst Kapp’s *Grundlinien einer Philosophie der Technik* [Elements of a Philosophy of Technology], often considered the first treatise on the philosophy of technology, originally published in 1877 in Germany. Once thought to represent a defunct, Hegel-inspired perspective, the book was recently translated into English for the first time and reconnected to contemporary discourses, including posthumanism (see Kapp 2018). In a similar retrospective light, works once hailed as foundational in the philosophy of technology can suddenly become contested. Fuchs (2015), for instance, urges media theorists to stop citing Heidegger altogether due to his antisemitism—though we might ask what kinds of insights risk being foreclosed when such borders are drawn too sharply.

Another strength of the present volume is that it is firmly grounded in compelling empirical cases involving a wide range of technologies or technological practices. The fact that many of these cases include digital and computational artifacts or systems should come as no surprise. If we are right, as argued in the introduction with the help of Maldonado, that increased philosophical attention to technology and design arose from a particular historical moment marked by accelerating industrialization, it follows that the “turn” to technology—characterized in this book as taking place over the past few decades—would likewise be shaped by the emerging technologies and practices mostly influencing design and philosophical discourse nowadays. This does not mean that the insights developed here should be confined to high-tech contexts, that these contexts necessarily host the most cutting-edge scholarly debates, or that emerging technologies must be made focal because they are symbols of progress. Most importantly, we are not advocating for a form of “Promethean techno-salvation” (Fry 2025: 57) that ignores the urgency of challenging and proposing alternatives to dominant conceptions of

development and progress—conceptions often tied to “advanced” technologies and design practices originating from hegemonic powers. In particular, we are concerned with the enormous socio-environmental costs of contemporary digital technologies, especially AI, despite their seemingly “dematerialized” nature. However, this critique should not come at the expense of rejecting technology and design altogether, including some of their modern instantiations.

Finally, some of the most compelling frontiers for design philosophy lie in the future. In line with several contributors to this volume, we are confident to be witnessing a growing interpenetration of fields that moves beyond the philosophy *of* (as in applied to) design. These are developing in different guises: as design *informed by* philosophy, as design-*oriented* philosophy, or even as a move toward the design *of* philosophy. To strengthen these trajectories, we believe that after the technology turn in design philosophy outlined here, a complementary *design turn* in the philosophy of technology is both necessary and promising. This means not only securing the space that design has already claimed within the field but also expanding it by drawing more deeply from the design disciplines. In particular, we believe the philosophy of technology stands to gain much from inquiries at the intersection of architecture and industrial design with the fine arts. Engaging more frequently with the domain of aesthetics, for instance, could enrich the field with concepts related to beauty, ornamentation, style, and taste. While these ideas have always been part of design history, they are less commonly addressed in the philosophy of technology, which has traditionally emphasized engineering design. Such engagement could help bridge long-standing divides between science and the humanities, technics and culture, and practice and theory—divides that modern design has long struggled to overcome.

In short, design philosophy after the technology turn has carved out a territory of its own, which we have attempted to outline here. But any map inevitably falls short of capturing the full richness of the terrain. Design philosophy's borders are fluid and continually evolving, and we hope that the ideas explored in this volume serve as starting points for many future journeys into the fascinating landscape where humans, technologies, and societies intersect through design.

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