Routledge Studies in Contemporary Philosophy

DIGITAL HABITUS

A CRITIQUE OF THE IMAGINARIES OF ARTIFICIAL INTELLIGENCE

Alberto Romele

"This book not only represents an impressive contribution to the philosophy of technology, but also helps serve to further define this field of inquiry. It clearly shows that technology cannot be reduced to the sum of its parts and its purely material dimension, but that it is based on a work of the imagination. This book will be an excellent resource both for inspiring classroom discussion and for future scholarly research."

Luca M. Possati, Delft University of Technology, The Netherlands

"With its original analysis of the technological dimension of habitus, Digital Habitus does not only offer an interesting reading of Bourdieu, but also fills an important gap in the philosophy of technology and helps to link thinking about contemporary technology to influential theory of social reality. Finally a theory that does justice to the ways digital technologies produce habitus and a timely warning about what Alberto Romele calls a the 'flattened hermeneutics of the self' presented to us by AI and related technologies. Obligatory reading."

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"Alberto Romele deftly weaves a critique of technology by encouraging us to consider digital technologies through the familiar habits that they are designed to reproduce. Through the concept of digital habitus, this book is both a response to different intellectual traditions and a new trajectory for philosophical and critical inquiries."

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"In a theoretical scene in which the dogma of innovation at any cost, which is often a sham innovation, has imposed itself, Alberto Romele has the merit of originally reconnecting contemporary reflection on technology with the philosophical and sociological tradition. For this reason, there is no philosopher of technology who cannot benefit from reading this book."

Maurizio Ferraris, University of Turin, Italy

DIGITAL HABITUS

This book proposes a new theoretical framework for approaching the causes and effects that digital technologies and the imaginaries related to them have on the processes of self-interpretation and subjectivation.

It formulates three main theses. First, it argues that today's digital technologies, which are primarily based on artificial intelligence (AI) algorithms and big data, are formidable *habitus* machines: they offer increasingly personalized services, but these machines are actually indifferent to individuals and their personalities. Second, this book contends that the effectiveness of these machines does not depend solely on their concrete capacity to classify the social world. It also depends on the expectations, hopes, fears, and imaginaries that we have concerning these technologies and their capacities. This cultural *habitus*—a worldview or world picture—leads us to *believe* in the concrete effectiveness of AI and its potential for our societies. Third, the author takes this Bourdieusian notion of *habitus* and connects it to current "empirical turn" in philosophy of technology. He contends that, by looking too closely at the things themselves, many philosophers of technology have deprived themselves of the possibility to study the symbolic conditions of possibility in which single technological artifacts are always embedded.

Digital Habitus will appeal to scholars and students working in philosophy of technology, the ethics of AI, media studies, and science and technology studies.

Alberto Romele teaches digital communication at the Institute of Communication and Media at Sorbonne Nouvelle University. He is also research associate of philosophy and ethics of technology at the Department of Philosophy and Education Sciences of the University of Turin. He edited *Towards a Philosophy of Digital Media* (with E. Terrone, 2018) and *Interpreting Technology* (with W. Reijers and M. Coeckelbergh, 2021). He is the author of *Digital Hermeneutics* (Routledge 2020).

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Digital Habitus

A Critique of the Imaginaries of Artificial Intelligence

Alberto Romele

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Introduction

When I wake up in the morning, the first thing I do is turn on my phone. To check the news, I use Google News, which brings up news that is interesting *to me*. I find, for example, the latest broadcast by the French radio station France Culture. Then I read something about Steph Curry, my favorite player in the National Basketball Association. Then there is news about the war in Ukraine or the street food in Paris, Porto, Verona, and Naples. Not only are all these things of great interest to me, but Google News also effectively selects the sources that most reflect my ethical, social, and political views. Sometimes I am fed news from the conservative French newspaper *Le Figaro*, but this is a minor mistake because on a sleepless night, I was looking for information about the right-wing candidates in the last French presidential elections.

I usually spend the morning writing. The first thing I do is put on my headphones and open Spotify on my computer. Spotify offers me numerous playlists: Discover Weekly, Release Radar, On Repeat, Your Summer Rewind, and so on. I love these playlists because they allow me to listen to new things that I already know *will not bother me* during my writing routine, because they sound so much like what I usually know, listen to, and enjoy that they go almost unnoticed. These songs will merely improve my morning mood and concentration on an almost unconscious level without creating an obstacle or friction. In a week or two, Spotify's algorithm will replace them with other songs, and I will not even notice.

In the afternoons it is usually tiring for me to do real work. Mostly, I turn to answering emails from students and colleagues, solving administrative problems, and (but only if I really have time left over) reading something. I tend to be easily distracted, and so I often find myself browsing social media, particularly Facebook, Twitter, and Instagram. I feel *comfortable* scrolling through these social media feeds, which I have helped build with likes, retweets, follows, and so on. I also find on those sites a fair balance between things that concern friends and acquaintances, others that concern strangers, and still others that concern products that, for one reason or

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another, might interest me. And it is not uncommon for me to click on the advertisements for these products, especially clothes, books, and concerts and other events, and end up buying them. At the end of the purchase, the same sites suggest other products that might appeal to me, based on the interests shown by people who bought the same product(s) I just bought.

Things do not end in the evening either; after putting my children to bed, my wife and I sit down to watch some series on Netflix. I noticed a few days ago that while I used to experience the end of a series with *horror vacui*, I am now reassured by the fact that Netflix's algorithm will no longer even give me the time to feel empty and desperate, as I did when I finished *Breaking Bad*. I will almost certainly immediately have a new algorithmic suggestion that is quite enticing. Between one great series and another, somewhat as in love stories, short adventures are interspersed, some enlightening, and others mere distractions from the fear of being without any distractions even for one evening.

I cannot tell if this chain I experience on a daily basis ever breaks. Maybe it moves more slowly such as during vacations at the seaside, but it never really stops. In any case, what I have briefly recounted here is certainly not an extraordinary day. It is an ordinary and common day for so many people all over the world, including (and perhaps especially) those whose work is commonly believed to be creative, such as that of the researcher in philosophy, but which in reality, especially after three years of pandemic, mostly boils down to standing in front of a computer for days at a time. The expression "algorithmic curation" is often used to refer to the phenomenon by which the algorithms that underlie the digital personalized content and services offered to users lead the users themselves to live in information and algorithm bubbles. In these bubbles, we see and access only what the algorithms—based on the analysis of large amounts of (meta)data about us culled from our own online actions and iterations and from people who for some reason are considered similar to us—think is interesting and meaningful to us. In this book, I show how these bubbles extend all the way to our carnal loves and desires.

We thus find ourselves resembling the tick mentioned by biologist Jakob Johann von Uexküll in the 1930s. This tick is blind and deaf but can readily smell the butyric acid emitted by mammalian skin and needs only a few stimuli to have its own *Umwelt* (world environment):

> The whole rich world around the tick shrinks and changes into a scanty framework consisting, in essence, of three receptor cues and three effector cues—her *Umwelt*. But the very poverty of this world guarantees the unfailing certainty of her actions, and security is more important than wealth.
>
> (von Uexküll, 1957: 12)

In a similar way, digital bubbles reduce our world environment to those few stimuli that make us good consumers. The certainty that our digitally mediated behaviors are predictable is more important to the machines and their owners than wealth and variability. But this, it can be said, ends up impoverishing our perception of the world environment, and the worlds of others (*Mitwelt*) and the self (*Selbstwelt*). The difference between the tick and us in our digital bubbles is that our world is poor not by nature but by design.

One of the fundamental theses of this book is that today's digital technologies, which are primarily based on artificial intelligence (AI) algorithms and big data are formidable *habitus* machines. From a structural point of view, they offer increasingly personalized services (the playlist I like, the feed I am interested in, the love I am seeking, and so on), but these machines are actually indifferent to individuals and their personalities—where "personality" means the style by which each individual appropriates the habits that make him or her similar to other members of his or her group. On the one hand, we have technologies such as social media that let us express ourselves with great freedom: posts on Facebook, photos on Instagram, and videos on YouTube that can be loved, hated, and so on. On the other hand, all these creations, actions, and interactions matter to digital machines and their owners only insofar as they can be reduced to accumulable and analyzable data. Individuals are systematically reduced to general classes of action and preferences; based on their membership in these classes, they are offered targeted content, products, and so on. As for subjectification effects, it is possible to think that repeated contact with these technologies ends up flattening the self to these generic tendencies.

Certainly, the techniques and technologies of habituation (to consumption) did not emerge just the other day; those who watched the series *Mad Man* know how United States and, subsequently, European and world societies have been constituted on processes of habituation of the self to the appreciation of certain products and lifestyles. It can even be said that this goes back to long before the invention of all those machines for producing superstructures of desire that range from Madison Avenue to Hollywood. It is no accident that ancient skeptics and modern philosophers questioned the processes of social accustomization of the self. However, what is new is that habituation—that is, the categorization of individuals according to general tendencies and classes—is at the very heart of how these machines function. Digital machines are *habitus* machines because they *actively* and *autonomously* produce social classifications and categories—usually on the basis of previous, human-made classifications—that, insofar as they are translated into forms of algorithmic curation, are embedded and embodied in individuals.

Another important thesis of this book is that the effectiveness of these machines does not depend solely on their concrete capacity to classify the social world. It also depends on the expectations, hopes, fears, and imaginaries more generally that we have concerning these technologies and their capacities. In other words, there are conditions of possibility for the success of these technologies that are not technological, but rather cultural and symbolic. Let us go back for a moment to the initial example of my daily routine. Between one academic task and the other, I often read stuff online on the topic of AI. Indeed, since I live in my own information bubble, AI algorithms offer me similar information for which I no longer even need to search. Very often, I am confronted with images of AI depicting it as an androgynous, white robot, a half-flesh and half-circuit brain, zeroes and ones floating in space, and so on. It is at once ironic and troubling that AI is choosing its own representations for me. My idea is that these depictions (along with other cultural productions such as novels and movies) are not mere accessories; they are not fantasies detached from the concrete developments and implementations of AI. Rather, they play an active role insofar as they create a cultural *habitus*—a worldview, or world picture—that leads us to *believe* with *certitude* in the concrete effectiveness of AI and its potential for our societies.

In this book, I formulate a thesis according to which similar depictions of AI are "screen images" that, instead of communicating, divide and separate, leaving non-experts outside any possible participation in the processes of development and innovation in AI. One can look—as is indeed the case for many of us—at hundreds of these images without in the end having any better understanding of what is going on in the research labs and companies working with AI. I introduce the term "anesthetics," which combines "esthetics" and "anesthetic," precisely to account for depictions of AI whose ultimate effect is to anesthetize any public debate about AI.

My contention concerning the cultural *habitus* of AI—that is, the way AI as a technoscientific fact is embedded in a symbolic aura—is rooted in a broader discussion about the present status of the philosophy of technology, a debate with which I engage in this book. The philosophy of technology has been dominated in recent years by the "empirical turn." This term generally refers to a rejection of classic philosophy of technology of authors such as Martin Heidegger, Jacques Ellul, and Herbert Marcuse, who are accused of determinism, pessimism, and an ignorance of or lack of interest in real technologies. Heidegger (1977: 4) famously argued, "the essence of technology is by no means anything technological." Rather, the essence of technology is *Gestell*—a word that has been translated as "enframing"—that transforms the world into a "standing reserve"; that is, something ready to be used. Technologies give us particular access to the world in which that world appears to us as a series of elements at our

disposal. In our dispositional understanding of the world, the world is just a reservoir of resources to be exploited at our will.

According to the representatives of the empirical turn, this perspective is far too general and vague: how can one use the single notion of *Gestell* to define and critically understand two technological artifacts as different as a lighter in my pocket and a hydroelectric dam? To be sure, they are both standing reserves in the sense of being reservoirs of energy always at our disposal. But the differences—in terms of scale, type of energy, social and environmental consequences, and so on—are no less important. To use the same notion of *Gestell* for both of them is like limiting oneself to the single concept of a living being to approach entities as different as a human being, a hippopotamus, and a gentian. According to the empirical philosophers of technology who began to emerge in the 1980s, the philosophy of technology should be much closer to the things themselves. Philosophers of technology should be closer to engineers, be able to converse with them, see what they are doing, and perhaps even have some expertise in the field.

I do not have anything against such an empirical perspective. On the contrary, I try to practice it myself, even in this book. And yet, I contend that philosophy of technology after its empirical turn has ended up throwing out the baby with the bathwater. By looking too closely at the things themselves, many philosophers of technology have deprived themselves of the possibility—which, for me, is also a philosophical duty—to study the conditions of possibility in which single technological artifacts are embedded. These conditions of possibility (or transcendentals) are of different kinds: technological, economic, environmental, social, cultural, and so on. In this book, I focus on the social and cultural (and more broadly symbolic) conditions of possibility. Note that I do not want to simply oppose a transcendental perspective on technology to the dominant empirical one. My intention is rather to articulate them in what I call a "hermeneutic philosophy of technology" (HPT).

From a theoretical perspective, the notions of digital and technological *habitus* refer precisely to the symbolic aura in which (digital) technologies and technological and digital mediations are entangled. Every book has its own hero, and I have not yet identified mine. His name is—as the reader might have already guessed—Pierre Bourdieu. However, this is not a book *about* Bourdieu; neither is it a book about Bourdieu *on* technology or Bourdieu *and* technology. Instead, the Bourdieusian notion of *habitus* is constantly adapted to the specific purpose of this book. So, for instance, I insist on the technological dimension of the *habitus* that Bourdieu himself never really discussed. I also frame the *habitus* within the broader history of the philosophical concepts of imagination, schematism, and social imaginary. Finally, my perspective concerning the digital *habitus* is much darker than the one developed by Bourdieu himself concerning the social *habitus*.

The Bourdieusian *habitus*, and Bourdieu's perspective on social reality more broadly, helps me to support the three main theses of this book. The first is the general idea that technologies are always greater than the sum of their material parts. Technologies are embedded in—and contribute to maintaining and reconfiguring—cultural worldviews. Technological mediations (that is, the way technologies give access to the world) are always symbolically mediated. The second is that in dealing with digital technologies, particularly AI algorithms, we are dealing with *habitus* machines—that is, machines that actively classify the world and lead to effects of habituation of human selves.[1] The third is the idea that the effectiveness of these machines does not depend exclusively on their concrete capacities but also on the imaginaries (representations charged with feelings such as fear and hope) that people have toward them and that are crystallized in cultural productions like online images representing AI as white robots, blue skies, and so on.

In the thirteenth century, two conflicting theories of sacramental efficacy were debated; one was material, according to which the virtue of the sacrament is as effective as the healing virtue of certain plants or minerals. The other was symbolic, according to which the sacrament is *causa sine qua non*—in the same way that the sentence is the cause of imprisonment, since there is no imprisonment without the pronouncement of the sentence, even if the sentence is not effective cause of the punishment (Rosier-Catach, 2004). It could be said that AI has finally put an end to this old quarrel. AI is indeed *both* materially and symbolically effective; the material and the symbolic effectiveness of AI nourish each other in a sort of hermeneutic (or vicious) circularity.

* * *

Having offered these general considerations, I now introduce each chapter. The book is divided into two parts: the first is theoretical and the second critical. The reader who is not interested in debates in contemporary philosophy of technology or in defining technological imaginaries in terms of *habitus* can skip directly to the second part. Furthermore, each chapter enjoys a certain autonomy and can thus be read individually.

Chapter 1.1 is devoted to transhumanism, which is not so much to be understood as the "noble" philosophical discourses of its most famous representatives, but rather as the militant participation of groups of people in discussions about "technological alterities"; that is, technologies to which they do not really have access. These discussions are full of expectations, hopes, and fears about these technological alterities. More specifically, the chapter—which has an (auto)ethnographic style—is structured around three transhumanist encounters. I had the first one with the researchers of the Ethics and Transhumanism Chair (ETH+) during my three-year stay

at the Catholic University of Lille in France. The second encounter was with members of AFT-Technoprog, the French transhumanist association, and the third consists of participant observations and a series of interviews I conducted at a center specializing in lower limb prosthesis. Two ideas emerged from these encounters. The first is the one expressed above of a trivialization of transhumanism, which usually has little to do with California billionaires or Oxford professors. Second, the idea that despite a well-justified suspicion toward the philosophical value of its contents, the transhumanist attitude to technologies is helpful in liberating technologies from the greedy yoke of materialism.

In Chapter 1.2, I introduce the concept of technological imaginaries. In the first part of the chapter, I propose a critique of the philosophy of technology after its empirical turn. I also defend a hermeneutic approach that combines empirical and transcendental analyses. I distinguish between a general and a special HPT. In the second part, I criticize those who have recently recognized the need for the philosophy of technology to "think big again" (that is, to abandon its excessive empiricism) but who have also reduced the transcendental dimension of technologies to Technology with a capital T. In the third part, I focus directly on the concept of technological imaginaries, the creation of which consists of three steps: the import of Paul Ricœur's understanding of the social imaginary in light of its two poles, ideology and utopia; the critique of Sheila Jasanoff's definition of sociotechnical imaginaries; and the introduction of the concept of *habitus*, which at this stage is for me a version of the imaginary oriented toward ideology rather than utopia.

In Chapter 1.3, I propose an archaeology of the concept of *habitus*. Like the previous chapters, this one is developed in three stages. In the first part, I show how at the heart of the history of the concept of *habitus* is a separation between the two poles of *hexis-habitus* and *ethos-consuetudo*. In ancient and medieval thought, it was mainly the former that aroused the interest of philosophers and theologians. The emphasis shifted in modern philosophy brought about by authors such as Montaigne and Pascal. When Bourdieu speaks of *habitus*, he has in mind something more akin to *coutume*—the French word for *consuetudo*, or custom in English. In the second part, I contend that Bourdieu continues to speak of *habitus* to mark continuity with the Kantian tradition, or rather with that process of socialization and culturalization that characterized a certain erethic reception of Kantian schematism. In the third part, I focus on the technological dimension of *habitus*. Bourdieu is fully aware of the technical dimension of *habitus*, particularly in the sense of Marcel Mauss' techniques of the body: postures, gaits, accents, and so on. Moreover, his social philosophy is full of quasi-technological objects such as cooked foods, clothes, and works of art. In short, Bourdieu prepares the *habitus* well to consider technologies, but the technological *habitus* is not his focus.

Chapter 2.1, which is the first in the book's second part, is about the technological *habitus*. First, I propose another critique of empiricism in contemporary philosophy of technology focused on postphenomenology. I show how postphenomenologists since Don Ihde, the founder of this current, have mainly worked on technological mediations—the subject-technology-world relations—that are flat and one-dimensional, but not on the cultural context in which these mediations are entangled. I also discuss some recent attempts to think about the philosophy of technology beyond its empirical flatness, such as Mark Coeckelbergh's (2020) reflection on language and technology. In the second part of the chapter, I rely on Bourdieu's understanding of the relation between power and language, especially the idea that the performativity of language depends not on a force intrinsic to the word but on the power accorded to the one who utters it. By analogy, I formulate the idea that the power of technologies goes beyond their technical capacities. The technological *habitus* (which I identify in this chapter with the embodied state of technological capital) is the force of technologies that transcends both their own materiality and the written norms related to them. In the third part of the chapter, I account for three risks related to a Bourdieusian perspective on technologies: transparency, determinism, and absolutism.

In Chapter 2.2, I focus directly on the concept of digital *habitus*. The idea is that today's digital technologies (which are based on AI algorithms that process big data) are *habitus* producers and reproducers. In the first part of the chapter, I compare the heuristic ability of Latour's and Bourdieu's social ontologies to explain today's digital technologies. My thesis is that today's digital technologies are more Bourdieusian than Latourian. In the chapter's second part, I argue that although digital technologies now offer increasingly personalized services, they also remain completely indifferent to individuals and their personalities. Individual actions and interactions matter only insofar as they can be digitally traced, quantified, and analyzed. The repeated contact with these technologies in multiple contexts has flattening consequences on our understanding and construction of ourselves. In the third part of the chapter, I draw on Paul Ricœur's notion of narrative identity to better explain the risks related to this flattened hermeneutics of the self.

In Chapter 2.3, I approach the digital *habitus* from a different angle. The notion is not understood here à la Bourdieu but rather à la Erwin Panofsky. It does not indicate the perspective of a specific social class on technologies or the way specific technologies classify human beings; rather, it indicates a cultural atmosphere that brings us, on a global scale, to a certain attitude toward specific technologies such as AI. This generic atmosphere is crystallized in cultural productions such as the popular images of AI that I analyze in this chapter. In the first part, I propose a methodological

detour in which I confront and propose to articulate Panofsky's iconology and Georges Didi-Huberman's critique of it. In the second part, I consider some of the popular depictions of AI used in science communication and marketing and propose assessing them according to a standard perspective in the ethics of science communication that I call referentialist. In the third part, I advance the idea that the real problem with these images is not so much their lack of reference to the things themselves, but rather their incapacity to provoke any form of debate or even disagreement among the public at large. I rely on Jacques Rancière's thought, specifically his concepts of the "distribution of the sensible," "disagreement," and the "pensiveness" of the image.

In the conclusion, I discuss the possibility of expanding the critical perspective on the images of AI proposed in Chapter 2.3 to the (ethics of) AI itself. In particular, I introduce the idea of an agonistic approach to the philosophy of technology and AI.

* * *

I conclude this introduction with three considerations—the first concerns the continuity between this book and my previous research in the field of digital hermeneutics. *Digital Habitus* can be considered the second volume of my *Digital Hermeneutics* (Romele, 2021), in which I study the relationship between hermeneutics and the digital from three perspectives. The first is a deconstructive outlook, from which I use the digital to criticize a certain idealism of the matter in the philosophical hermeneutics of authors such as Heidegger, Gadamer, and Ricœur. The second perspective is epistemological, with philosophical hermeneutics playing a positive role. For example, I propose a hermeneutic concept of information, equidistant from empty theories of sense and meaning like Claude Shannon's mathematical theory, and those far too full of sense and meaning, such as Luciano Floridi's semantic and veritative theory of information. Inspired by the historian Carlo Ginzburg's evidential paradigm, I also propose the concept of digital trace, which can account both for the materiality of the data collected and processed and for the fragility of the knowledge built on these data. Third, I propose an ontological turn in which I ask whether and under what conditions we can say today that some digital machines manifest proto-interpretive and imaginative capabilities. I answer this question in the affirmative but on one important condition: that of humiliating, so to speak, human claims to creativity.

In *Digital Hermeneutics*, I formulated for the first time the idea that human beings are creatures of habit and are thus more similar to algorithmic machines than philosophers have normally been willing to admit. However, after I finished writing the book, I also realized that my reflection could not end in such a cheerful acceptance of this principle of symmetry

between humans and non-humans. People are creature of habits, to be sure, but it seemed to me that algorithms are today capable of taking significant advantage of this habitual nature of human beings and thus make human beings even more habitual than they would normally be.

I decided to approach digital hermeneutics critically and developed it in two further directions: toward a digital hermeneutics of the self, and toward a cultural digital hermeneutics. In the case of the digital hermeneutics of the self, I speak in this book of an anti-hermeneutics, because *habitus* machines intervene so much as to impede the processes of subjectivation of the self. Similarly, one could speak of anti-cultural digital hermeneutics because dominant images (and texts and narratives in general) about AI anesthetize the possible arising conflicts of interpretation. Next to these two senses, there is a third meta-sense of digital hermeneutics that I develop in this book, though it is already, if less explicitly, argued in *Digital Hermeneutics*. Here, I refer to the circularity, both preached and practiced, between empirical and microanalysis and transcendental and macroanalysis.

My second consideration concerns the use of the term "critique" in this book's subtitle. How can a philosophy that basically renounces the power of the subject (which is reduced to no more than a glitch between a habit and the other one) and its creative imagination be said to be critical? How can a philosophy that spends much of its time showing the limits of the subject's freedom in a technologically and digitally mediated context and very little talking about possible exit strategies be called critical? Indeed, the reader will not find much consolation in this book, other than a few references to "the [digitally] good life, for and with others, within just institutions" (Chapter 2.2), the need to promote "pensive images" within science communication about AI (Chapter 2.3), or the plea for an "agonistic politics" of AI (Conclusion). However, the reader may use this book as a "martial art," an expression used by Bourdieu to define sociology. Indeed, in French Bourdieu spoke of "*sport de combat* (combat sport)," and Pierre Carles' famous documentary on Bourdieu is called *Sociology is a Martial Art* in English.[2] This unfaithful translation is actually happier than the French original because, as is well known, many martial arts are based on defense rather than attack, on channeling the enemy's force rather than opposing force with force. In a similar vein, this book can be said to be a critique primarily insofar as it offers a theoretical background for thinking about the forces of domination that we embody in our technologically mediated intentions and actions or that are even embodied in the technologies with which we deal every day. This is especially (but not only) the case with AI algorithms, proto-classification systems of the world whose way of dividing up the world imposes itself on and embodies itself in us. In this book, I propose what might be called "slow criticism,"

a criticism that proceeds by careful (de)construction. My belief is that only a critique that has gone as far as possible to explain the reasons for and practices of domination will be able to bring forth understandings (and practices) of freedom that are not naive.

My third and final consideration concerns acknowledgments. Some of the ideas of this book have already been presented in a different form in the following publications: Romele, A. (2021). Technological capital: Bourdieu, postphenomenology, and the philosophy of technology beyond the empirical turn. *Philosophy & Technology*, *34*(3), 483–505; Romele, A. (2022a). Is critical constructivism critical enough? Towards an agonistic philosophy of technology. In D. Cressman (Ed.), *The necessity of critique: Andrew Feenberg and the philosophy of technology* (pp. 239–253). Springer; Romele, A. (2022b). Images of artificial intelligence: A blind spot in AI ethics. *Philosophy & Technology*, *35*(1), 4; Romele, A. (2022c). The transcendental of technology is said in many ways. *Foundations of Science*, *27*(3), 975–980; Romele, A., & Rodighiero, D. (2020). Digital habitus or personalization without personality. *HUMANA.MENTE Journal of Philosophical Studies*, *13*(37), Article 37.

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Notes

1 In his recent book on the "habitus machine," Massimo Airoldi (2022) focuses on this point from a sociological perspective. He analyzes how AI algorithms classify the world on the basis of existing social classifications and thus reproduce and even reinforce social discriminations and lacks of recognition.
2 https://vimeo.com/92709274. Accessed on January 10, 2023.

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Part I

1.1 From Transhumanism to Technological Imaginaries

I started thinking about this book a few years ago when I arrived at the Catholic University of Lille. My contract was linked to a research chair funded by the Hauts-de-France region called Ethics and Transhumanism (ETH+); Humanity+ is the international transhumanist association founded in 1998 by Nick Bostrom and David Pearce under the name World Transhumanist Association. As a researcher interested in the philosophy of technology, I had never had a particular interest in transhumanism. In fact, I could only be wary of it, since I considered transhumanism to be no more than a bizarre set of theories and discourses about future and hypothetical—indeed, many of them improbable—technologies.

My distrust of transhumanism had a somewhat twofold origin: on the one hand, there was my Heideggerian background. Transhumanists seemed to me to embrace technology and its promising future too quickly. On the other hand, there was also inside me the soul of the empirically oriented philosopher of technology I was trying to become—I devote ample space throughout this book to explaining, and critiquing, this empiricism of contemporary philosophy of technology that I admired at the beginning of my studies in this field.

I still remember some of the questions I was asking in my head the day I began to work in Lille: why did a Catholic university launch a research chair on transhumanism? Why did a region, led by Xavier Bertrand, a right-wing politician, and according to Wikipedia a Freemason in the lodge Les fils d'Isis and a member of the Grand Orient of France since 2015,[1] give more than a million euros for such research? Moreover, I knew that Bertrand was personally interested in the issue, so much so that he personally opened an international conference that we organized on transhumanism in 2018. Were Bertrand and the hierarchies of France's largest Catholic university concerned, fascinated, or both?

My project in Lille was to study transhumanism not so much from a philosophical point of view as from a sociological one. As a matter of fact, I had even thought of secretly conducting a kind of ethnographic inquiry

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within the ETH+ research chair. I saw myself like Bruno Latour when he visited Roger Guillemin's lab at the Salk Institute (Latour & Woolgar, 1986) or among the engineers who had thought up and loved the Aramis project (Latour, 2002). Of course, nothing all that elegant was likely (Latour is a great writer indeed), but I would have enjoyed myself and perhaps entertained some readers by writing about what was in my eyes a fascinating intrigue between traditionalist Catholicism, transhumanism, right-wing politics, a sometimes-clumsy effort of doing university-level research, science popularization, public funding, and freemasonry.

Working in Lille for three years, I found such a sympathetic environment that I decided to abandon my secret project, which would surely have ruined some friendships. While some of my colleagues were sincerely, if somewhat naively, concerned about the transhumanist risk, others had a far more interesting attitude. According to this latter group, there are different forms of transhumanism. Next to the "noble" forms of transhumanism like the philosophical transhumanism of Nick Bostrom and the industrial transhumanism of Elon Musk, there is a more "proletarian," even militant, form of transhumanism that deserves to be studied. Incidentally, while the noble forms of transhumanism most often hesitate to define themselves as such, this is not the case for militant transhumanists.

Most of those who explicitly define themselves as transhumanists are very ordinary people; sometimes competent, but much more often simply interested in and attracted by the promises—and more rarely concerned about the dangers—of emergent technologies. Over the years, militant transhumanists created associations like AFT-Technoprog, the French transhumanist association, that act like any other volunteer group: raising funds, organizing small events for both insiders and outsiders, and so on.[2] We could say that transhumanists are militants for what they believe to be a technologically enlightened future. Transhumanism is in this sense nothing extraordinary; on the contrary, it is a rather understandable way in which people try to cope—admittedly, too enthusiastically—with what might be called technological alterity.

By the expression "technological alterity," I mean everything about technology that remains for some reason—either because it is elsewhere, or because it is in another time, or because it is complex, obscure, secret, nonexistent, and so on—beyond our reach. Today, we are dealing with emerging and disruptive technologies. The media and people talk about technologies that "are being done" or "would like to be done," and yet they always seem to be too complex and distant to be explained for real. It thus seems normal to me that while most of us passively endure all this, others worry about it and want to participate in it. And it seems equally normal to me that, among these common people, some decide to do it not alone but with allies.

When I had ambitions as an ethnographer, I attended an AFT-Technoprog meeting in a Parisian bar named Le Dernier Bar avant la Fin du Monde (Last bar before the end of the world), a place that presents itself as the "first space for the expression of cultures of the imaginary in the heart of Paris."[3] The topic of the meeting was old age, which transhumanists propose to treat no longer as an inexorable fact, but rather as a disease. What struck me most about that meeting was the fact that all the talks (some given by members of the association, and some by outsiders) started from personal experiences like illnesses or family losses. Technology and science were not the questions; they were the answers, and the questions were, in my view, deeply human in every sense. There was nothing inhuman, transhuman, or posthuman about the experience and the words of those people, who simply looked to science and technology for consolation and hope.

Last summer, my father had a stroke, though fortunately not a serious one. Since that day, whenever we see each other, he talks to me about how in 50 years we will be able to upload human minds into computers so that nothing will ever be lost again. My objections that 50 years is too optimistic an estimate and that at present mind uploading seems unfeasible are worth little in his eyes. The words and thoughts of my father, who is certainly not a transhumanist (he even does not know what transhumanism is), are not too different from what I heard at that meeting.

The concept of technological alterity was extremely helpful to me in normalizing transhumanism and making it a potentially interesting object for my research in the philosophy of technology. Many times, I had to justify myself in my years in Lille to be part of a research chair called ETH+, but the concept of technological alterity allowed me to escape the embarrassment I always felt in front of myself and others. Among the works that undoubtedly helped me the most were those of one of my colleagues at the time, Gabriel Dorthe, who spent years conducting ethnographic research in AFT-Technoprog.

It is from Dorthe's work that I derive my idea of technological alterity, along with the idea that transhumanists are the alterity of science and technology; that is, those who are excluded, sidelined, and disavowed by scientists, engineers, and other stakeholders. However, transhumanists do not accept this situation: they want to participate in technological innovation, and they plea for it. Since they do not have any direct access to technological innovation and its products, they have only an indicial knowledge of it—Dorthe (2015) uses the term "indicial" in the sense of Carlo Ginzburg's evidential (*indiciaire* in French) paradigm, which is an epistemology that is based on fragile suppositions that are themselves based on but a few traces. Transhumanists try to cope with emerging and disruptive technologies based on the sporadic information they can obtain about it: media

reports, sporadic readings, and a few testimonials, but practically no firsthand observation or practice. Dorthe introduces the concept of "absent object":

> The technical objects that saturate transhumanist discourse are thus to be understood as absent objects, whose absence is actively produced as a barely escaped availability in the varied landscape of the clues of the future. Among opponents as well as among transhumanists, debate rages within the framework of this evidential epistemology; at stake is the sharing of plausibility, competence, irrational fears, or reasonable expectations.
>
> (Dorthe, 2015: 135. My translation)

Two key elements can be gleaned from this sentence. The first concerns the difference between philosophy of technology and the transhumanist attitude. If the latter is concerned with clues to the future, I believe that a good philosophy of technology must be concerned with the here and now—which, as we see below, does not at all exclude an interest in expectations, insofar as we analyze the impact of these expectations on the present situation. The second is the idea that critics of transhumanism are most often caught in the same evidential epistemology, the same dynamics that consist in arguing about (whether for or against) technological alterities.

In 2017, I participated as an observer at the Transvision 2017 transhumanist conference in Brussels.[4] The Transvision conferences are considered the most important event organized annually by Humanity+ in collaboration with other groups in the transhumanist galaxy. These conferences represent a kind of continuation of the Extropian Conferences that ran from 1994 to 2004. Transvision conferences usually feature prominent members of the transhumanist community, along with the participation of activists. At the 2017 conference, for example, there were such figures as Anders Sandberg (researcher at the Future of Humanity Institute in Oxford), David Wood (president of the London Futurists Association), David Pearce (philosopher and co-founder of the World Transhumanist Association), and James Hughes [sociologist, bioethicist, and director of the Institute for Ethics and Emerging Technologies(IEET)]. The event's primary organizer was AFT-Technoprog, and it was attended by representatives of transhumanist associations in several countries, including Ukraine, Russia, Spain, and Italy.

The conference title was "The Politics of Emerging Technologies; The Future of Transhumanism." I do not hide that, having just joined the ETH+ chair, I had high expectations for this event, thanks to which I would have, I thought, direct access to the crème de la crème of transhumanism. The meeting took place in a central part of Brussels, in one of the rooms of the

grand café Muntpunt, which is the café of the largest Flemish language library in the city. However, the actual situation was quite different from my high expectations: the event had nothing triumphant about it. There was no large audience; in fact, the audience was limited to the members of the associations and invited speakers. The presentations offered nothing in the way of TedEx panache: the speakers used ordinary PowerPoint slides and a run-of-the-mill handheld microphone. There was supposed to be a corner devoted to innovative companies, but this amounted to a couple of advertising totems that were rather sad to see—I particularly remember one devoted to a cryogenics company in Russia. There was a lot of talk about Google and Musk, but anything that could concretely relate to them was absent. Successful transhumanists like Bostrom, Ray Kurzweil, and Musk were quoted and invoked as one quotes and invokes the Church Fathers and saints to give authority and force to one's speeches and prayers. And those historical representatives of the movement who attended the event, such as Peirce and Hughes, appeared to struggle more in life than their Wikipedia pages suggested. The final dinner of the event was paid for by each participant; at coffee breaks and lunch breaks, members of AFT-Technoprog, which had organized the event, prepared some ham and cheese sandwiches for the participants. I argue that the essence of transhumanism and more radically of the human relation with technologies lies in what I saw during Transvision 2017, or even more in what I expected but did not see.

* * *

My idea is that transhumanists reveal something about the way we all look at technology. More deeply, it is possible to say that this way of regarding technology reveals something of the essence of technologies as such. My great initial challenge, which is the point of this chapter, was the attempt to shift the gaze from the transhumanist niche to our human attitude toward technology and then to try to understand technology as such in the light of this human gaze. It could be said that we are all transhumanists and that technologies are all transhuman, but only if we mean by the word "transhumanism" not a blind faith in technological progress but a fragile uncertainty toward it. It is precisely this uncertainty that prompts us to load technologies with certain representations and expectations that I call "technological imaginaries." By this expression, I mean the fact that technologies of whatever kind are never exhausted in their materiality; they are never mere artifacts. Nor can they be reduced to their most immediate effects on the individual or on society. Instead, technologies are always embedded in a broader symbolic aura of meaning that determines their understandings and possible uses. And since the relationship is circular, we could say that technologies reshape this aura.

From my research on transhumanism, I not only developed the concept of technological imaginaries I detail in this book but also learned a method that consists—strange as it may sound—of empirically studying what empirical philosophers of technology have decided to ignore. For me, it is not a matter of abandoning the empirical approach, but rather of supplementing it with an interest in the symbolic conditions of possibility in which technologies are embedded and that can be not only theoretically but also empirically investigated. The method I theorize and practice in this book is inspired by the hermeneutical circle: the (empirical) part is understood through the (theoretical) whole and vice versa.

As noted above, during Transvision 2017, I had been very impressed by the transhumanists' way of quoting people like Musk, Kurzweil, and Bostrom, along with institutions and companies like MIT, the University of Stanford, and Google, that I nevertheless suspected were (for different reasons) not especially interested in the transhumanist movement and its militant base. I joined two colleagues, Marta Severo from Paris Nanterre University and Frank Damour of the Catholic University of Lille, in deciding to find empirical proof of this intuition by undertaking cartography of the transhumanist web. The basis of web mapping relies on the idea that hyperlinks created on the Web can be used as proxies for social links. From a practical point of view, it consists of plotting in a graph the network created by the hyperlinks present in a given set of web pages.[5] Our intention was to observe the relations both within the movement and between the movement and some of the institutions and public figures named above.

First, we manually selected a list of 140 transhumanist sites. We relied on H+Pedia, a free online encyclopedia that describes itself as a project "that aims to disseminate to the general public accurate, accessible, and non-sensational information about transhumanism and futurism."[6] The encyclopedia includes a section devoted to transhumanist organizations, which listed at the time of our research (2018) about 70 (there are now twice as many) and offered links to each of them. We removed all those that had a link that was no longer active and added others that we considered relevant based on our knowledge of the field. Second, we used the web crawler Hyphe,[7] developed by the SciencesPo Paris MédiaLab, which gave us a result of 1,003 useful sites. After three rounds of confrontations and discussions between us, we ultimately selected 270 relevant sites whose hyperlink relationships were visualized with Gephi, another tool developed by the MédiaLab.[8] The final graph contains 264 nodes (six isolated nodes were eliminated) and 2,312 links. In the graph below, we visualized the network according to the degree; that is, the sum of in-degree (links received) and out-degree (links made to other sites) connections. The names' sizes are proportional to their degree.

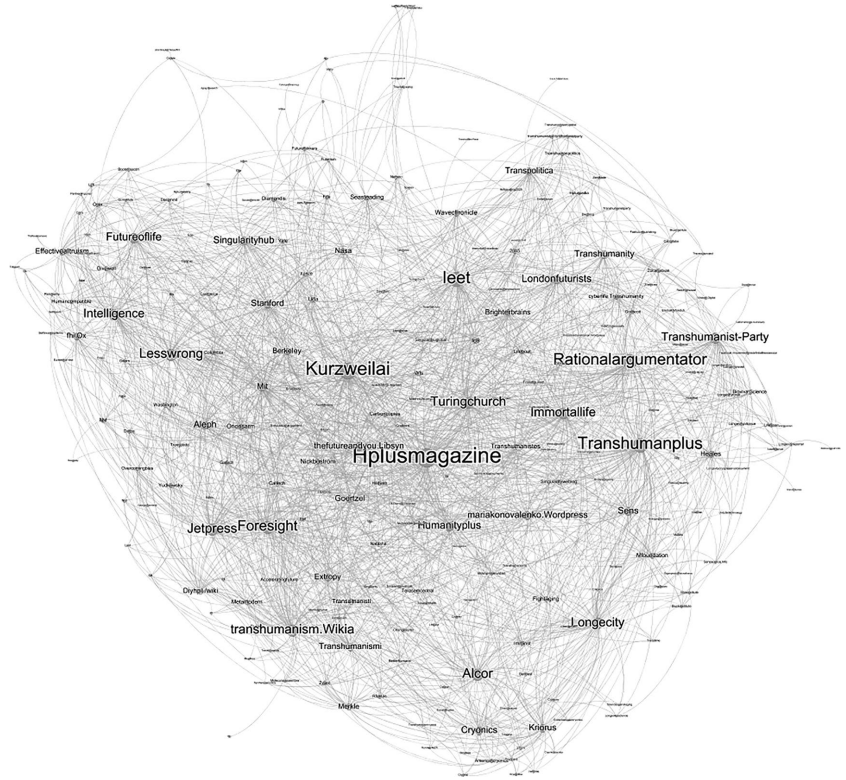

Image 1.1.1. Graph of the transhumanist web (in-degree and out-degree).
Image by Marta Severo and the author.

This graph makes clear the centrality of certain actors: *H+Magazine*, the journal of the world transhumanist association Humanity+; KurzweilAI, the site that collects the activities of Kurzweil, and the site of the IEET founded in 2004 by Bostrom and Hughes. On closer inspection, precise sub-areas can be identified in the map: in the bottom center are a number of companies and associations related to cryogenics. In the right center, we see the political phalanx of transhumanism, such as the US Transhumanist Party. Starting with Kurzweil and going up to the left is the area of the singularists; that is, those individuals or groups of individuals who are interested in the subject of singularity and the like. As I said, however, our interest was not only related to the dynamics within the movement but also to the relationships between the movement and institutions and people outside it.

Indeed, the degree is a highly inaccurate measure because it combines in-degree and out-degree connections without differentiating between the two. In the visualization of the transhumanist Web presented above, some websites have an authority function, while others serve as hubs. Authorities are websites that receive many links but link to few other websites; hubs, by contrast, link to many other sites but may only be linked by a few other sites. Our detailed examination of the outgoing and incoming links for each site[9] revealed that several sites link to many others but receive few links. This is the case with H+Pedia, the transhumanist encyclopedia, and is a perfectly normal occurrence. When this cartography was done in 2018, H+Pedia was still relatively young (it was created in 2015), and the role of an encyclopedia, even before it becomes an authority, is to refer to others.

More interesting is the case of the US Transhumanist Party, which according to our data at the time received only eight links but linked to as many as 61. The Transhumanist Party is also a rather young entity; it was founded in 2014 by Zoltan Istvan, but its lack of received links may also be a sign that among the different associations and groups within the transhumanist movement, there is by no means unanimity on what kind of politics transhumanism should promote. Indeed, there are both left-wing and right-wing transhumanisms. Moreover, it is not even clear whether transhumanism should pursue a political goal of its own: some transhumanists think that creating a political movement or explicitly endorsing an existing party could be detrimental to transhumanism's true intentions, which transcend those of any specific political interest. It can therefore be assumed that the Transhumanist Party does not receive many links because it is not recognized within the transhumanist community as a voice for the movement or as its true political phalanx.

Even more interesting for our purposes were the analyses that came out of observing authorities. Some sites receive numerous links but link to none. According to our data analysis, the top sites in terms of links received at the time were: Stanford University (49 links received; none given), MIT (45 links received; none given), UC Berkeley (39 links received; none given), NASA (37 links received; none given), and Bostrom's personal site (31 links received; none given).

The case of Bostrom merits separate consideration: among the founders of the transhumanist movement on an international scale, Bostrom is now a respected university professor at the University of Oxford. His books, such as the acclaimed *Superintelligence* (2016), maintain a transhumanist style and flavor insofar as they deal with the possible, and for him likely, future emergence of a more-than-strong AI. What most distinguishes him from many transhumanism is that he now puts forward risks rather than opportunities. The fact that he no longer refers to the transhumanist galaxy can easily be interpreted as signaling a move away from it both because his

ideas and methods have changed to some degree and, more importantly, to safeguard his reputation as a rigorous scientific researcher. Bostrom's case can be seen as a paradigmatic of all transhumanism. Transhumanists are seen as the Other with respect to the science and technology that is "really" being done. Therefore, they are continually marginalized by the scientific community, whose members define themselves as "true" scientists precisely by distancing themselves from transhumanist enthusiasms and non-expert opinions more generally.

Where the mass of non-experts somehow resigns itself to the inaccessibility of technological innovation processes, transhumanists are those who want to have their say, if in an admittedly oft-clumsy manner. There is certainly also the possibility that Bostrom gave up the word "transhumanism" and any explicit reference to transhumanists to put transhumanism into action without naming it. This possibility was discussed at Transvision 2017 itself, when some of the participants observed that the term "transhumanism" had become loaded with too much history and that it might be better to find another word to do and say the same things.

As for American institutions such as the Universities of Stanford, UC Berkeley, and NASA, it is clear that they represent major intellectual references for the transhumanist community. Transhumanists admire the research of these institutions, discuss it, and cite it in support of their theses. However, these institutions seem to completely ignore the transhumanist movement. It is possible that they choose to keep away from it because transhumanists are the pariahs of science and technology, but it is also possible that they simply ignore its existence. In short, this empirical research lends support to my initial thesis that transhumanism can be understood in terms of technological alterity, both because for transhumanists technologies are always elsewhere, and because transhumanists themselves are the Other of science and technology, the pariahs, the scapegoats through which the scientific community somehow comes to constitute itself by means of processes of inclusion and, in their case, exclusion. But this is an exclusion to which, as noted above, transhumanists nevertheless do not surrender. The major US technology research and development centers are cited by militant transhumanists as the inspirers and founders of the movement, but those pioneers are neither recognized nor cited. In the graph below, we present the transhumanist network based on the in-degree (i.e., the number of links received) connections to make the authorities stand out.

When considered in this way—as a set of imaginaries about technological alterities among a certain group of people who tend to be non-experts at the margins of technological innovation processes—transhumanism can become an interesting object for the philosophy of technology. My proposal consists in using transhumanism so understood to approach our general attitude toward technology and our understanding of technology as such.

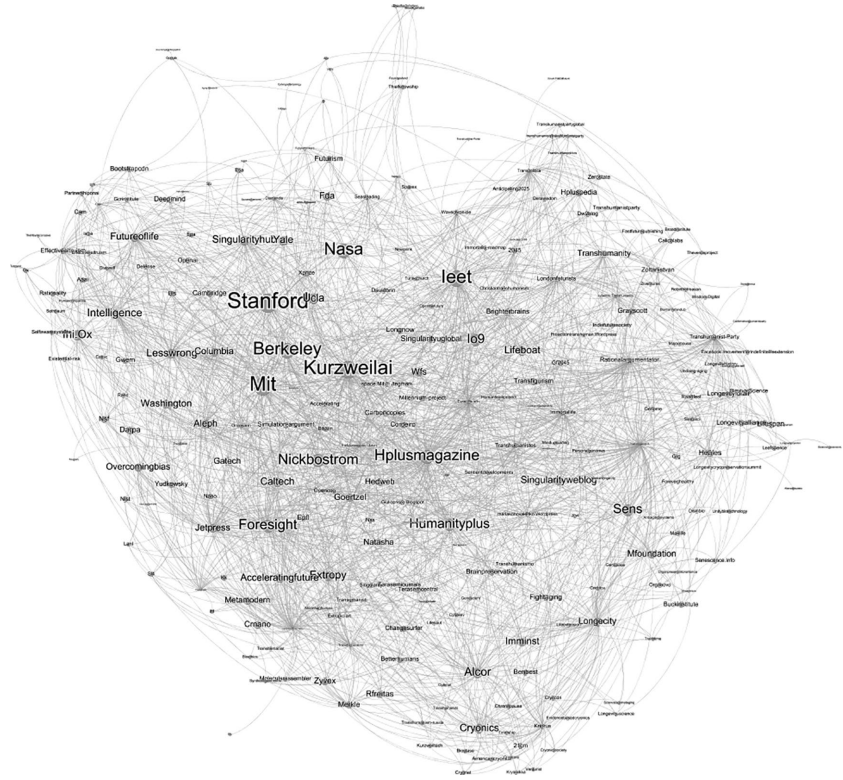

Image 1.1.2. Graph representing the transhumanist web (in-degree).
Image by Marta Severo and the author.

As to our attitude, this means that there is no technological mediation that is not in turn always symbolically mediated. As to the technology itself, this means that we cannot approach and understand it based exclusively on its materiality.

Transhumanism is useful for the philosophy of technology not because of what it says about technology, but because of the very fact that it is a discourse about technology based on the expectations or imaginaries that a certain group of people have about technological alterities. In this sense, we are all transhumanists or at least should be in some way: no matter how excluded we may be from the processes of technological research and development, we have (or should have) expectations and imaginaries about all the technologies we often hear about but cannot access. Note that I straddle descriptive and prescriptive claims ("we have" versus "should have") because, as I explain later in the book, there is a certain "anesthetics"

(i.e., an anesthetizing esthetics) in the visual and textual discourses and metaphors about emerging technologies that surround us. Transhumanists have the merit of trying to invert the effects of such anesthetics—although we could legitimately wonder if the enthusiasm transhumanists show toward technology is not itself a major effect of this anesthetics. Similarly, we could argue that all technologies are or should be seen as transhumanist in some way, because their materialities are always embedded in broader symbolic auras of meaning. A point that deserves to be highlighted already at this stage is that the relation between technologies' material and symbolic dimensions is not extrinsic: the symbolic dimension plays an active role in the entire process that goes from the invention through the implementation to the use of the technical object; conversely, the materiality of the technical object has a symbolic force in that it is able to change our general attitude toward and our understanding of the world.

* * *

In the previous section, I distinguished between noble and proletarian transhumanism. I now add a third form of transhumanism, which is the silent, unaware, and yet widespread transhumanist attitude that one can find in people who likely have no knowledge about transhumanism. Think back to my father and his ideas about mind uploading after his stroke. I turn now to a discussion of this widespread transhumanist atmosphere, with two purposes in mind. First, I want to again test my methodology, which consists of combining, in a circular and hermeneutic manner, practice and theory, or, to use Hans-Georg Gadamer's famous distinction, method and truth. Second, I want to offer further proof of my idea that there is an intrinsic value in transhumanism insofar as it gives us a theoretical framework to understand our attitude toward technology and the ontology of technical objects as such. I repeat that I am not interested in what transhumanism says about technology; rather, I am interested in the fact that transhumanism suggests that technologies, along with our attitude toward them, cannot be reduced to their material dimension.

For about two months, during the spring of 2018, I was engaged in field research at a center in the Lille region that specializes in lower limb prosthesis. Its specificity for me consisted in the fact that it was a comparatively low- or middle-tech environment. The center was not a research center where innovative prostheses are tested on a few select patients but a private clinic like many others in France and Europe. Furthermore, Lille's region is, according to the most recent statistics of the French National Institute of Statistics and Economic Studies, the poorest region in France, where cardiovascular diseases (related to the heavy consumption of alcohol, junk food, and tobacco) are particularly high. Many of the patients in the clinic had undergone an amputation because of such diseases, and most were

between the ages of 50 and 70. In this context, the technical object (i.e., the prosthesis) was constantly in dialogue with an incredible variety of human and non-human actors: the patients and their families; the doctors, nurses, physiotherapists, and other staff at the center; public and private health organizations; and so on.

My intent was to study the possible emergence of transhumanist imaginaries among patients and center staff. The idea was as follows: despite their many differences, there is something that the literature on transhumanism and the empirical philosophy of technology share. I refer here to the fact that they often, and in my opinion too quickly, speak of a merging between humans and technology. This merging is located at some point between the present and the near future. For instance, the philosopher of technology Peter-Paul Verbeek (2011) argues that postphenomenology (of which he is one of the leading representatives) should be able to account today for technologies such as neural implants, home automation, and augmented reality technologies, in which technology merges with either the human or the environment. He thus introduces the concept of "cyborg relations," an extension of Don Ihde's embodied relations that I discuss later in the book. In cyborg relations, the connection between humans and technologies becomes so intimate that the boundaries between the two disappear. In my field research, I wanted to demonstrate two things: first, from a material point of view, this merging is most often an approximation; second, since material merging is usually impossible, the symbolic dimension becomes essential to filling the gap. Hence, technological mediations are symbolically mediated, and these symbolic mediations are much more necessary for thinking about technologies and technological mediations than philosophers of technology after the empirical turn has been ready to admit.

I should add that the imaginaries are at work mediating technological mediation even when merging seems entirely successful. One thinks of a pacemaker, which to my knowledge gives no physical sensation of its presence but does solicit many hopes, fears, and expectations. Speaking of his transplanted heart (which is admittedly more present than a simple pacemaker), the French philosopher Jean-Luc Nancy writes the following:

> The intruder is introduced forcefully with surprise and cunning, in any case without permission and without being invited. […] He remains a foreigner and for all the time remaining, instead of naturalizing himself; his coming simply does not cease; he keeps on coming, and his coming is in some way an intrusion. It remains without rights, without familiarity, and without custom: a nuisance and a disorder in intimacy.
>
> (Nancy, 2000: 11. My translation)

Geoffrey Dierckxsens (2021) proposes understanding prostheses in terms of "narrative technologies." Rather than focusing on the prosthesis itself or the more immediate relationship between prostheses and human limbs, he suggests including the technology of prosthesis and its understanding in the broader scope of the patient's life and biography. He cites Jenny Slatman (2012), who focuses on mastectomy cases after breast cancer, arguing that these cases show how the process of merging between human and prosthesis goes through a long process of reidentification with the body as a whole that is by no means simple and varies considerably according to each patient's values and past experiences. Dierckxsens (2021: 159) states that

> what makes a prosthesis normatively valuable is not just its functionality or guidelines for good prosthetic treatment. What makes it normatively valuable also depends on its narrative character, that is, its potential to become part of a patient's life story.

In the rest of the chapter, the author affirms that this biographical dimension is not enough and must be integrated with the social dimension. The idea is that the social background of the patients plays a fundamental role in the ways that they biographically appropriate the prosthesis. This tension between the biographical and social dimensions is important—I insist on it myself in Chapter 2.2. However, in this context, I limit myself to considering the symbolic dimension as an undifferentiated whole that is confronted with the material one.

My empirical research on prostheses and their imaginaries went in two directions, the first empirical, the second symbolic. On one hand, I wanted to be more empirical than the empirical philosophers of technology by showing that if we looked closer at the things themselves, we would find not merging but approximation. On the other, I wanted to distance myself from the attitude of empirical philosophers of technology by (empirically) demonstrating the presence of non-empirical mediations that affect our access to and understanding of technical objects.

From an empirical point of view, I had not seen a single moment in which the prosthesis merged with the human limb. During one session of the therapeutic education program for amputees, which was devoted to the topic of taking care of one's residual limb, I instead observed a series of approximations or mediations. The technology, in this case, the prosthesis, never merges and certainly never becomes transparent in use. Technologies mediate other technologies to reduce a gap between human and technology that ultimately seems impossible to fill: the prosthesis ends with a rigid frame; within that frame, there is a socket of plastic or laminated material; the socket attaches to the body through a soft polyurethane or silicone liner that is worn between it and the residual limb; from one to three prosthetic

socks, made of wool, nylon, or synthetic fabric may be worn with the liner to make the prosthesis fit better since the residual limb can often vary in size; those socks can have different thicknesses; the interface may include different suspension systems, such as a suction valve, liners with a locking pin, or belts and harnesses. This all depends on several factors related to the type of amputation, the status of the residual limb, the pain felt by the patient, and so on.

In short, there is no merging or single mediation, but rather a multiplicity of mediations, a sort of structure of generalized material and technological differentiation. Moreover, in the interstices that always remain between the residual limb and the socket, there is a lot of sweat, especially in the summer. To wear a prosthesis, as most of us tend to forget, means having part of one's own sensible body wrapped for hours in plastic, polyurethane, silicone, wool, nylon, or the like. Amputees must clean or change their liners at least three times a day to avoid dermatitis and other medical conditions. We can suppose that in these moments the technology does not merge but instead emerges like in the famous Heideggerian example of the hammer. We usually do not see the hammer and the chain of significance attached to it; we start to notice it only when the hammer breaks. This emerging, in the case of a prosthesis, happens several times a day and reminds patients that these pieces of plastic and iron are anything but merged with their bodies. Of course, over time patients become familiar not only with prostheses but also with the cleaning and maintenance practices associated with them. At the same time, there are also several resistances that make complete habituation impossible, including hystereses (the fact that several habits acquired before amputation tend to persist over time) and the fact that people and objects around us are not typically used or designed to include forms of disability. Furthermore, we should not forget that habituation, as we see later in the book, has a strong symbolic component.

During my stay, I conducted more than 20 interviews with center patients and personnel, along with several informal discussions; through these interactions, I discovered other material limitations to the merging between the prosthesis and human member. For example, sand and water are great enemies of microprocessor-controlled knees (one of the few digital elements widely used in lower limb prosthetics).[10] Amputees who decide to spend a day at the beach must wear at least a protective sheath over the prosthesis, such as the French Aqualeg,[11] which seems to be rather heavy. I also learned that the French public health care system—commonly considered one of the best in Europe—pays for amputees' microprocessor-controlled knees, such as a C-Leg, only if the amputee demonstrates to be able to walk at least two kilometers at a minimum speed of four kilometers per hour, which is hardly a given, considering that a large proportion of amputees are not young and suffer from multiple morbidities.

Another major issue is related to the fact that changing shoes implies a complete reconfiguration of the parameters of the prosthesis. If a person decides to wear different shoes, such as high heels for a special occasion, he or she must either meet first with their ortho-prosthetist to adjust the prosthesis or have a second prosthesis at home. However, the French public health system considers a second prosthesis as something of a "spare tire" (this mechanistic metaphor is not mine but was suggested to me by an interviewee); they are therefore of lesser quality. The result is that for special occasions, an amputee will risk having to resort to a more poorly performing prosthesis, which may be precisely what he or she wants to avoid.[12]

A key moment for me was a day spent with two of the center's ortho-prosthetists as part of a series of participant observations. They had just received a new furnace, which was used to heat the thermoplastic from which temporary sockets are made. They did not know exactly how long the material should be left in the new furnace to make it malleable without melting, so they used a smartphone timer to run several trials until they found the right "cooking time" (a culinary expression they used). They had not been given a stand for inserting the thermoplastic into the furnace, so they had to tinker to devise one. After two unsuccessful attempts in which the material melted, they got the thermoplastic out at the right temperature and with a few quick, well-coordinated movements (they had been working together for quite some time), put the material on top of the cast of the residual limb made the day before and worked to ensure that it adhered as firmly as they could with their gloved hands. After lunch, when the thermoplastic had cooled, the two ortho-prosthetists began a negotiation with the socket: cutting, bending, unfolding, and heating and cooling the thermoplastic again until the best fit was achieved. The work I witnessed was clearly that of two craftsmen (*bricoleurs*), not two engineers. Nothing could be further, then, from such a triumphant vision of technology as the transhumanist one. The photograph below shows the thermoplastic deposited on the cast, with the new furnace visible behind it:

The following day, I attended the first trial of the prosthesis on the patient. While the patient was trying to walk, a doctor and the two ortho-prosthetists were talking with him trying to glean their sensations, and carefully observing their movements. Here, too, I was faced with a negotiation: not only between humans and non-humans (patient meeting prosthesis for the first time) but also among humans and their respective expectations of that new technical object. In particular, I witnessed a sort of reversal in terms of expectations: while I initially saw an enthusiastic patient and cautious professionals, the patient soon realized how difficult it was to deal with a prosthesis and thus how lengthy the process of mediation or approximation would be. At that point, the professionals switched to the enthusiastic side, so to speak, motivating the patient to go beyond

Image 1.1.3. Temporary socket in thermoplastic next to a furnace.
Photograph by the author.

his initial feelings. One of the things that struck me most that day was the gap between what I was seeing and experiencing (a set of negotiations, uncertainties, doubts, enthusiasms, and disillusionments) with some of the posters that lined the walls of the room I was in, which conveyed confidence. I remember an advertisement for Össur, an Icelandic bioengineering company specializing in highly technically advanced prostheses, depicting a standing man with two fully displayed prosthetic legs, wearing sportswear and staring straight into the camera with his hands on the hips. There were rocks and the ocean behind him.

This image had nothing to do with the precariousness and fragility I was seeing around me at that moment. It seemed to suggest that nothing is impossible and perhaps something more is even possible for an amputee. But in the two months I spent at the center, I saw no such people, sufficiently young and athletic.

Of course, some might object that my gaze was influenced by the peculiar choice I made about my field: not a center for Paralympic athletes or a

research laboratory, but a center on the outskirts of Lille. However, to such an objection I could respond in the same way by saying that the gaze of transhumanists and of many contemporary empirical philosophers of technology, is no less biased by what they decide to look at, which often consists of technologies in their hypothetical or emerging state—technological alterities, indeed.

During my stay at the center, I was repeatedly told about a patient who had undergone multiple lower and upper limb amputations due to fulminating meningitis. After a long period of rehabilitation, the patient had not only regained movement through prostheses but had also started playing sports again, even becoming a model for a custom prosthesis manufacturing company in the Lille region. During my stay at the center and for a long time, I forced myself to avoid meeting this patient. For more than a year, I kept her email address in my wallet. The reason was precisely the idea that these liminal cases on which reflection around technical objects is often built have little to do with the average situation. Interestingly enough, the name of this patient was relayed to me several times during my interviews, as if the interviewees were surprised that I was so interested in common people and facts—they were probably afraid that I might be disappointed and wanted to offer someone they considered extraordinary.

Much later I met this patient, almost by chance, and of course found that there was nothing extraordinary about her either, but only a series of brave mediations and imaginaries that allowed her and the people around her to think and act far beyond her disability. Going back, I would not repeat that choice; rather, I would interview this patient precisely to look for the ordinary in her supposedly extraordinary experience.

Both patients and clinic personnel treated this incredible patient as technological alterity—and a sort of hope for them, since they believed the merging between the body and the technology had been, for this patient, a perfect success. Of course, they were wrong. But I was impressed during my stay at the center by how much patients and staff liked to talk about technological alterities. For instance, prosthetists repeatedly told me about 3D printers for temporary socket preparation that were already in use elsewhere. Some physical therapists talked with me about the experimental use of virtual reality to treat phantom limb syndrome and about a failed attempt to have patients use a Nintendo Wii console for rehabilitation—the attempt failed, they argued, because of the age of most of the patients, who were not inclined to use anything so "high-tech."

None of the patients and staff members interviewed (with the exception of one fan of science fiction literature and movies) agreed with the idea that prostheses could have a human enhancement function. The common perception was that prostheses could at best repair and help retrieve some of the lost functions. Many interviewees witnessed the progressive

aestheticization of prostheses. Instead of being hidden or disguised as if they were real limbs, prostheses today are increasingly displayed as prostheses, marking a clear difference with the rest of the body. For example, one of the center's doctors showed me a sock depicting the forest from Miyazaki's *Princess Mononoke* that his daughter painted for a patient. The extraordinary patient I mentioned above was modeling for U-Exist, an orthopedic design studio in Roubaix, near Lille; it offers "customization of orthopedic devices with one goal in mind: to let each person express their personality and style in the world."[13]

The aestheticization of the prosthesis works as a symbolic substitute for the lack of merging of the prosthesis with the body, as if its function is to sublimate this current impossibility and thus make it acceptable. But this aestheticization does not of course absorb all expectations. In fact, despite a general atmosphere of caution and realism, elements that can be said to be transhumanist existed, not in the form of imaginary (which implies a certain general coherence) but in multiple and fragmented images in the interviewees' discourses and certain moments of participant observation.

For example, one of the ortho-prosthetists, an admittedly pragmatic person, dropped in the middle of our very technical conversation the idea of creating a mesh "full of nanotechnology" that might be able to fit the body perfectly and then detect sensations. Another doctor who had worked at the center for 20 years flatly refused to acknowledge any form of transhumanism or cyborg imagery in his patients' expectations. Yet, he also told me that while merging is impossible "here" in the field of prosthetics, human enhancement is imminent in genetics and that something was certainly being done along these lines in research laboratories.

On the last Friday before I left the center, I was interviewing two patients in the cafeteria. After less than ten minutes, the interview became a kind of collective discussion (an informal focus group, one might say) with about ten participants: some patients and their visiting families. The discussion was notable for how reasonable it was: the patients were surprisingly aware of their chances for recovery and their limitations. We discussed everyday and sometimes intimate problems such as incontinence. Suddenly, though, a 35-year-old amputee took the discussion to another unexpected level, bringing up the first human head transplant that had taken place "in China or the United States"—in fact, as the concept of technological alterity suggests, strange and extraordinary things always happen far away, usually in America or more recently in China (in Western imaginaries, China took the place of the Soviet Union). I tried to argue that this was impossible in the current state of our scientific progress, but most of the people around that table were convinced that if it was not quite the case in the here and now, it was only a matter of time and space. In no more than a generation, amputees would be enhanced human beings. If that did not apply to small

rehabilitation centers like the one we were in, it was likely that military personnel returning from wars would be treated quite differently.

I argue that these discourses are signs, or perhaps symptoms, of a widespread, silent, and most often unaware transhumanist attitude that permeates our societies. Again, I hold that this is not a proper imaginary, which implies a certain degree of coherence and unity, but rather a fragmented ensemble of images, impressions, and suggestions. These images are not only in peoples' heads but are also crystallized in cultural productions such as the YouTube video the 35-year-old amputee showed us, which was supposed to demonstrate the truthfulness of his claims about the head transplant.[14]

I now conclude this first chapter, in which I tried to make transhumanism a framework for approaching the attitude we have or should have toward technology and for crafting a new ontology of technical objects. In the pages above, I spoke of technological alterity precisely to indicate the fact that transhumanists tend to be interested in and concerned about technologies that are always elsewhere in time or space. By this expression, I was also referring to the fact that transhumanists are considered by those who do science and technology "for real" as the others, the pariahs of scientific and technological discovery, invention, and innovation. We are all transhumanists to some extent, especially because we must cope with technologies that are in some way inaccessible. As to technical objects, I have argued that a renovated ontology should consider—and articulate in a circular, hermeneutic manner—both their materiality and their symbolic dimension. These two dimensions are not detached from but rather implicate each other: the symbolic dimension has material effects on the processes that go from the invention to the use of the technical object, while the material dimension has symbolic consequences for our understanding of both technical objects and more broadly on our interaction with the world.

My empirical research appears to have confirmed these assumptions. The concept of technological imaginary, which I discuss extensively in the next chapter, stands precisely to indicate dissatisfaction with the empiricism that now dominates the philosophy of technology, which is overly focused on the materiality of technical objects and their more immediate effects but forgets their conditions of possibility, especially those of the symbolic order. The philosophy of technology today should neither return to Heideggerian determinism, pessimism, and ignorance of technologies nor fully embrace an empirical attitude. Between these two extremes, I propose a third path in which the transcendental and material dimensions articulate with each other. It is specifically about the limits of the empirical turn in the philosophy of technology and the antidote to it that I call technological imaginaries that I talk about in the next chapter.

Notes

1 https://en.wikipedia.org/wiki/Xavier_Bertrand. All links have been last accessed on January 10, 2023.
2 https://transhumanistes.com/.
3 https://dernierbar.com/.
4 https://transhumanistes.com/transvision2017/.
5 The interest in this technique stems from two regularities observed in the practice of hyperlink creation: (1) website authors link to other sites only if they share a thematic or social interest; (2) website authors tend not to link to sites that have a viewpoint opposing their own, even when they deal with the same topics. Web mapping relies on two kinds of tools: (1) web exploration tools and (2) web representation tools. As for exploration, the most widely used tools are crawlers (software that allows the user to navigate through a series of web pages and track all their hyperlinks). As for representation, graphs have become the classic form of visualization for this type of data.
6 https://hpluspedia.org/wiki/Main_Page.
7 https://hyphe.medialab.sciences-po.fr/.
8 https://gephi.org/. The idea of this type of visualization is that each website is represented by a node and each hyperlink by a link on the graph. The algorithm is designed such that the more related two sites are, the closer they are together.
9 It should be noted this visualization is only one way of representing the data collected. Another possibility, which is better when one wants to look at details rather than the big picture, is a simple file in CSV (or Excel) format. The data below refers to precisely such a CSV file that, however, I am not reporting in detail here.
10 The new C-Leg4 electronic knee appears to have solved some of the problems of previous models. For example, it is weatherproof and therefore protected from water splashes. Thus, it appears that a sudden rainstorm during a walk is no longer a problem; see https://www.ottobock.com/en-us/product/3C88-3~23C98-3.
11 https://www.aqualeg.com/.
12 Just recently, Ottobock began producing Kenevo, which is designed for people with less mobility.
13 https://u-exist.com/.
14 Of course, there had been no head transplant on a living human being, but only between two death bodies. An experiment with dead bodies was performed by the Italian neurosurgeon Sergio Canavero https://www.theguardian.com/science/brain-flapping/2017/nov/17/no-there-hasnt-been-a-human-head-transplant-and-may-never-be-sergio-canavero. I was not reactive enough to record the link or the name of the YouTube video, but I can attest that the video did not show the transplant but only talked about it.

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1.2 From Technological Imaginaries to *Habitus*

The purpose of this chapter is to introduce the notion of technological imaginaries. My interest in this notion is the consequence of my considerations on transhumanism and its technological alterities that I presented in the previous chapter. Thanks to the concept of technological imaginaries, I am able to criticize and propose an alternative to the current status of the philosophy of technology.

In recent years, the philosophy of technology has been dominated by what is known as the "empirical turn." According to Philip Brey (2010); however, we should speak not of one but rather of two empirical turns in the philosophy of technology: one humanities-oriented and the other engineering-oriented. In this context, I mainly refer to the humanities-oriented empirical turn for two reasons. First, an extrinsic reason, which is my familiarity with the phenomenological and hermeneutic tradition to which this turn is related. Second, a more intrinsic reason, which is the unexpressed potential of this empirical turn, by which I mean the fact that this humanities-oriented (mainly phenomenological and hermeneutic) approach has, despite the excessive empiricism that characterizes it, the potential to assume a more transcendental approach toward technology.

At a general level, the expression "empirical turn" indicates the will to distance oneself from the pessimism, determinism, and ignorance of specific technologies demonstrated by classic authors such as Martin Heidegger, Herbert Marcuse, and Jacques Ellul. For instance, as I noted in the introduction, Heidegger affirmed that the essence of technology is by no means technological and reduced all technologies to terms of *Gestell* (enframing). For empirical philosophers of technology, it is essential to move away from this transcendental perspective and return to the things themselves; that is, to take an interest in real technologies and the concrete processes of their invention, design, implementation, and use.

On the one hand, I can only agree with this perspective. The best way to practice the philosophy of technology does involve at least a certain curiosity about the technologies one wants to discuss. I do not mean that

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every philosopher of technology must be an engineer. Georges Canguilhem (1989: 33), Michel Foucault's and Gilbert's Simondon's master, said that "philosophy is a reflection for which all unknown material is good, and we would gladly say, for which all good material must be unknown."

To believe that the good philosopher of technology must also be an engineer (or computer scientist, doctor, or scientist) is like believing that the good philosopher of religion must be a priest—a confusion that alas is often made in both fields. But without a doubt, a self-respecting philosopher of technology should at the very least "love," possibly in the sense of the amateur (literally, the one who loves), the technologies with which he or she intends to deal. I could also use the hermeneutic terminology of distantiation and appropriation—that is, the idea that to interpret and understand a cultural production such as a written text, one should both establish a distance from it, such as by specific methods and technical knowledge, and appropriate it more existentially. The same goes for interpreting and understanding technologies that must be both distantiated, developing a certain expert knowledge about them, and appropriated, understood in their transformative effects on the self, society, the environment, and so on.

Although I agree with the assumptions of the empirical turn, I also think that its representatives have thrown the baby out with the bathwater. Wanting to stay as close as possible to the things themselves and seeking to conduct minute analyses, many philosophers of technology have ended up losing sight of the broader horizon of meaning within which technologies are embedded. Consequently, much contemporary philosophy of technology has become an *ancilla technologiae* (technology's handmaiden).

Agostino Cera (2021) refers to the empirical turn as an "ontophobic turn." In his view, the philosophies of the empirical turn have gone too far in their rejection of Heideggerian thought. Cera also talks of the "Mr. Wolf Syndrome" in the philosophy of technology—Mr. Wolf is the character in Quentin Tarantino's *Pulp Fiction* who "solves problems." Indeed, solving problems without ever really questioning the fundamentals of a certain technical development seems to have become the primary role of today's philosophers of technology.

To offer an example, I talk briefly about the Learning Model for Multidimensional Quantitative Movement Analysis (LOUISA, its German acronym) project, which I have been working on for almost two years at the University of Tübingen.[1] The project aims to develop a digital technology (specifically, an app for smartphones and smart watches) for the automatic detection of pain through multidimensional analysis of signs, or rather signals, traces, or clues of pain, an AI-driven analysis of emotions through facial movements, an AI-driven analysis of body movements, electromyography, and so on. My role in this project—which includes behavioral

psychologists, designers, computer scientists, and other professionals—was to provide an ethical assessment of the entire research and development process.

Consider the several issues related to using AI for face and body movement recognition. The recognition of human emotions via the analyses of facial expressions is usually based on the taxonomy of the Facial Action Coding System (FACS). According to Kate Crawford (2022: 165–169), FACS is based on scientific hypotheses that have never been demonstrated empirically. The first one is the disputable claim that all humans exhibit a small number of universal emotions or affects that are innate and cross-cultural. The second is the likewise disputable claim that emotions or affects are accurately recognizable through facial expressions. If we consider the economic, social, and political roles that automatic facial recognition plays today, the scientifically fragile ground on which it rests cannot help but be even more worrying.

It is to avoid or at least mitigate some of the risks associated with emotion recognition from facial gestures that the LOUISA project proposes a multidimensional approach. But new ethical issues arise. For example, motion analysis is based on the use of the neural network PoseNet to roughly determine the user's position, to which is added the more reliable convolutional neural network ResNet50 combined with a smoothing filter created by members of the project in the context of the AIMO app.[2] ResNet50 has been trained on more than a million images from the ImageNet database, which is an object of Crawford and Trevor Paglen's criticism.[3] These authors write that

> when it was finished, ImageNet consisted of over 14 million labeled images organized into more than 20 thousand categories. For a decade, it has been the colossus of object recognition for machine learning and a powerfully important benchmark for the field.
>
> (n.p.)

According to the authors, the problem with ImageNet is that its underlying structure is based on the semantic structure of WordNet, a database of word classifications developed in the 1980s at Princeton University. They show how the semantic structure of WordNet is full of social and cultural biases, particularly as to the classification of people, and how these same biases recur in the classification of images of people in ImageNet, which contains 2,833 subcategories under the category "person." Some of these are ethically problematic: Bad Person, Call Girl, Drug Addict, Closet Queen, Convict, Crazy, Failure, Flop, Fucker, Hypocrite, Jezebel, Kleptomaniac, Loser, Melancholic, Nonperson, Pervert, Prima Donna, Schizophrenic, Second-Rater, Spinster, Streetwalker, Stud, Tosser, Unskilled Person, Wanton, Waverer, and Wimp.

Now, I contend that all these ethical issues are very important indeed, and yet there is a broader perspective that reveals macro issues that empirical philosophers of technology are less and less prone to discuss. For me, the problem is that once the micro issues are resolved, the ostensibly ethicalized algorithm could still be used for unethical purposes. For instance, let us suppose that the issues related to LOUISA noted above are somehow overcome: the app's results could still be used by private health insurers to decide whether or not to reimburse palliative care costs. Let us go a step further: is not the creation of an *automatic* pain detection app against our most basic understanding of pain and its ontology? Is it not the best way to know if a person is in pain to ask him or her if he or she is in pain and, if so, how much? Where clinical practice has traditionally understood the importance of patients' narratives of pain, technologies like the one under development in the LOUISA project give precedence to the most external and superficial traces of pain. There is, to be sure, an externalized (communicational, so to say) dimension of pain. Moreover, there is a need to objectify and quantify pain, especially when it comes to treating it clinically. However, these two elements cannot proceed without an acknowledgment of the fact that the person who is in pain is the best witness to that pain. Any pain analysis that does not consider this fact risks incurring a form of epistemic injustice, specifically testimonial injustice (Fricker, 2011)—a term that refers to when a person says something to a listener, and that listener does not attribute an adequate level of credibility to the words of the speaker.

All these reflections serve to argue that the philosophy of technology cannot simply be the icing on the cake of technologically driven projects. The philosophy of technology should be able to intervene not only *in* the design process but also *over* it. In the LOUISA project, we started to think of design solutions to mitigate the risks of epistemic injustice by valorizing the test subjects (when I wrote these pages, we were still in the experimenting phase) and their testimonies about their own pain at several levels. For instance, next to six electromyography sensors on the body, we added a button the test subject could press during the movement to account for the emergence of pain and its intensity. Moreover, before and after the physical test, the subjects were asked to complete a questionnaire based on the German Pain Questionnaire, which considers not only the physical but also the psychological and social dimensions of pain. Another element we planned to add in the final app is related to what we started to call in the team "dialogic design"; that is, a design allowing at least partial interaction between the user and the machine's results. However, I have the feeling that all these elements are palliative and always arrive too late similar to the owl of Athena which spreads its wings only with the falling of dusk. I argue that the philosophy of technology should be able to be both syntagmatic and paradigmatic; that is, attentive to both what happens within

a single technology and to the relation between that technology and its material and symbolic environment.

In Wessel Reijers et al. (2021), we introduce for this reason the idea of a new research program in the philosophy of technology which we call "hermeneutic philosophy of technology" (HPT). The use of the term "research program" is not casual. In Imre Lakatos's terms (1992), a research program is made of a hard core of theoretical assumptions that cannot be abandoned without abandoning the program altogether, but it also tolerates more specific theories called auxiliary hypotheses. A program is considered progressive, whenever the auxiliary hypotheses contribute to improving the descriptive and predictive capacities of the hard core; it is considered degenerative, when the number of auxiliary hypotheses has become excessive, and their major function is to protect the hard core. We contend that many of the criticisms against postphenomenology, which is the dominant program in the philosophy of technology, are so similar in their perspectives and scopes that they might represent different versions, each one with its own auxiliary hypotheses and methods, of a new—progressive and original—research program, namely HPT.

HPT aims at mapping the multiple conditions of possibility in which technologies are embedded; it also aims at analyzing with different methods a certain number of these conditions of possibility. While a certain version of HPT might privilege symbolic conditions of possibility, and their concretizations in texts, documents, and monuments, I argue that other transcendentals of technology exist and deserve to be explored. The transcendental—here to be understood in a very broad sense, as another way of saying "conditions of possibility"—of technology, like the Being for Aristotle, is said in many ways. I propose to distinguish between a general and a special HPT. The general HPT corresponds to the entire research program, which pertains less to a single person than to a community of researchers, while the special HPT focuses on the symbolic conditions of possibilities of technical objects—the kind of conditions of possibility on which philosophical hermeneutics has classically reflected. In this book, I am content with theorizing and practicing the latter.

* * *

In this section, I want to account for another transcendental approach to the philosophy of technology, which has the great merit of pointing at the same limits of the empirical turn I am insisting on and yet also ends up absolutizing a transcendental technology of material nature and proposing a bizarre form of transcendental empiricism.

In an article significantly titled "Thinking Technology Big Again" (2022), the Dutch philosopher Pieter Lemmens set himself two goals: first, to criticize the empirical turn as proposed especially by postphenomenology.

Second, to show that technology (with the capital T) is the condition of possibility of technologies (plural, with a small t), as well as of our existences. Moreover, for him, thinking technology big again would be particularly useful to philosophers for thinking about big phenomena such as the Anthropocene—while the micro attitude of contemporary philosophers of technology would make it practically impossible.

I have the same ideas as Lemmens in that the empirical turn—be it engineering or humanities-oriented—has been forgetting that technology is always more than the sum of its material parts and immediate mediations. In fact, there is a systemic dimension of technology that most philosophies of technology of the empirical turn have excluded from their interests. Lemmens writes

> it cannot be denied that there is a profound systemic dimension to technology that thoroughly conditions in an all-encompassing sense what we can do and can be in our contemporary world, that technological development is cumulative and that it thoroughly conditions if not determines our existences to an even larger extent.
>
> (177)

The notion of transcendental, precisely the one explicitly rejected by philosophers of technology, and in particular postphenomenologists, like Ihde and Verbeek, has rich potential which is still mostly unexplored.

However, I contend that the way in which Lemmens interprets the transcendental of technology, particularly through the work of Bernard Stiegler, is only *one* of the possible ways of understanding the transcendental of technology. It is actually a very specific way, in which the expression "transcendental of technology" is understood according to the subjective sense of the genitive. In other words, in this perspective technology is the transcendental itself. My thesis is that there are many other transcendentals of technology besides technology itself. The task of a philosophy of technology beyond the empirical turn precisely consists of exploring these multiple transcendentals of technology, along with their multiple relations. My perspective is different from that of Stiegler and Lemmens as they tend to see technology as the first—historically, anthropologically, and ontologically—among the transcendentals.

I would like to complexify Lemmens' argument in two directions: toward his criticism of the empirical turn, and postphenomenology in particular, and with regard to his notion of transcendental.

As far as postphenomenology is concerned, I would say that it is not entirely true that, as Lemmens argues, there is no interest in it for the transcendental. In fact, I would say that postphenomenology attempted to consider the transcendental of technology in at least three ways.

First, postphenomenology never understood technologies individually, but rather in their being-in-relation, or being-mediating between humans and their world. I am referring to the human-technology-world relations in Don Ihde (embodied, hermeneutic, alterity, background), and their further extensions—cyborg, immersive, composite, et cetera (I talk about them later in the book). I contend that these relations already indicate a form of transcendence, insofar as they allow us to think of technology as a condition of possibility for a specific relationship with the world, and also because technology itself is understood within two of its own conditions of possibility—humans and the world.

Second, postphenomenologists themselves have quickly noticed the limits of their original approach, which allows consideration for only one single human-technology-relation at a time. For this reason, some of them have proposed to articulate such linear perspective alongside a reticular one, namely the perspective developed in the context of actor–network theory (ANT), especially in its Latourian version.

The third transcendence of postphenomenology, and of many other philosophies of technology of the empirical turn, is perhaps the most interesting regarding my objective. I am referring to its ethical turn, which Peter Kroes and Anthonie Meijers (2016) have name "axiological turn." It is true that Kroes and Meijers distinguish between a descriptive axiological turn and a normative one. The former is concerned with epistemic values such as explanatory power, coherence, and simplicity, while the latter is rather concerned with normative (but also moral, practical, aesthetic, and so on) values like harm, pleasure, pain, and utility. Yet, this approach considers both epistemic and normative values as entirely embedded in technologies and engineering practice. Put otherwise, this perspective does not go beyond the limits of the artifact itself, and its immediate context of invention, implementation, and use. For this reason, I would say that the axiological turn is a false departure from the empirical. The same holds true, in the case of postphenomenology, for Verbeek's "morality in design," which is only concerned with those values that are or can be mediated by technologies themselves, because they are somehow embedded in them. The paradoxical nature of such an ethics of technology can be summarized as followed: on the one hand, it highlights the necessity to go beyond the empirical descriptions of technologies and technological mediations; on the other hand, it ends up reducing ethical prescriptions to what can be embedded in technologies or in technological processes such as engineering, design, and implementation. It is a sort of "empirical transcendence," insofar as the possibility of ethical analysis and eventual change runs dry in the artifact itself.

As far as Lemmen and Stiegler's notion of transcendental is concerned, I contend that both understand the transcendental of technology (subjective genitive) as the first, if not the only, among the transcendentals, while

one should also consider other transcendentals of technology (objective genitive). In this sense, Stiegler and Lemmens not only share a considerable amount with Heidegger's *The Question Concerning Technology* (1977) but also with postphenomenology, according to which *all* human-world relations are technologically mediated. While Lemmens, via Stiegler, pretends to take a departure from the empirical attitude that characterizes the contemporary philosophy of technology, I contend that his perspective is but the latest case, the most extreme one of such an attitude.

In his article, Lemmens appropriates Stiegler's idea, which was developed in particular in the three volumes of *Technics and Time*, according to which technology is the condition of possibility of *Dasein*:

> all transcendence of beings toward their being is conditioned by technical artefacts that are indeed empirical but *as* interiorized or implicated in the cognitive or noetic existential structure of *Dasein* function as quasi-transcendental conditions of the possibility of all thinking.
>
> (Lemmens, 2022: 174)

In this way, Stiegler overcomes the limits of Heidegger's early perspective, according to which the possibility of asking the question of Being—and being questioned by Being itself—is what makes the difference between *Dasein* and the other beings. Hence, Stiegler goes beyond classic transcendentalism, which opposes the a priori to an a posteriori of an empirical nature. That of Stiegler is an "empirical transcendental" or an "a posteriori a priori." Unlike Kant's transcendental, it is non-subjective: instead of restoring a certain centrality of the human, it fragilizes it. The human understanding is indeed "always-already" constituted by means of exosomatizations that transcend the human—hence, for example, Stiegler's criticism of the forms of cognitive capitalism.

Now, on the one hand, Lemmens, following Stiegler, is certainly right in recognizing in technology a transcendental, both for humans and their relations with the world and for the technology itself. Lemmens is also right in proposing a sort of empirical account of this transcendental, describing it according to its four dimensions: historic, anthropological, techno-evolutionary, and techno-phenomenological.[4] However, on the other hand, I do not understand why one should consider this technological transcendental as the first, or the only one among the transcendentals of technology. I suggest that philosophies of technology beyond the empirical turn should empirically deal with the multiplicity of the transcendentals of technology, and eventually with their mutual relations. Let us briefly consider a passage, where Lemmens asks

> Is it really true in general, as Ihde claims, that the same technical artefact in another use, context or cultural setting becomes *quite a*

> *different* artefact […]? Is it really the case for instance that the Internet is quite a different thing in each different cultural context? Or, for that matter, the cell phone operating on either the Apple or the Android operating system (basically the only two options available today)? Is it not much more accurate to say on the contrary that these technologies impose their grammatological characteristics on cultures worldwide, indeed gradually reframing them in their own image.
>
> (180)

The only correct and honest answer to the latter of these questions is *both* yes and no. Yes, since the Internet and big companies like Apple and Google are imposing themselves on cultures—the same holds true for many other technologies, techniques, companies, et cetera like high-speed trains, fast foods, airplanes, academic English, or English-speaking philosophy of technology. No, for several reasons. First, insofar as the Internet is not just a technology, neither are of course Apple and Google and their operating systems iOS and Android. They are sociotechnical complex systems, meaning that they are the result of the entanglement between several technological and non-technological conditions of possibility. Second, despite the fact that some technologies, services, and products today are globally distributed, many differences can be seen in their use on a cultural and social basis. In the words of Michel de Certeau (2013), the strategies of the producers are counterbalanced by the tactics of the users. One could say that the meaning of technology is transformed by the multiplicity of its uses, so that "use" is ultimately a form of production. Third, and this is the aspect I am most interested in, social reality itself has its own "logic" in which social actors and groups, their possible tactics, initiatives, and desires, are already entangled. As we are going to see later in the book, this third element is related to the technological *habitus*.

In the second part of the article I discuss here, Lemmens talks about the Anthropocene and the need for a "terrestrial turn" for the philosophy of technology. For Lemmens, the Anthropocene shows the absoluteness and impossibility of escaping our technical condition

> The Anthropocene, I am inclined to think, is the true tragedy of our age, a tragedy in the sense of an unprecedented and totally unexpected encounter of humanity–and that is to say all of humanity despite the fact that it is first of all 'Western' humanity that unleashed the problem–with the dire consequences of its own technological *hybris*.
>
> (182)

Lemmens is certainly right in arguing that the Anthropocene is the result of a process that has moved human technical action to a terrestrial scale

and elevated it to the status of a technical system or *Gestell*. It cannot be denied that our contemporary condition somehow gives more support to Heidegger than to the intransigent defenders of the empirical turn in the philosophy of technology, who seem unable to account for this planetary (and even extra-planetary) dimension of our technical action. Lemmens is not alone in moving in this macro-direction. One thinks of Timothy Morton's (2013) "hyperobjects"; that is, both artificial and natural things or phenomena that exceed direct and immediate human perception and that, for this reason, a naive empirical attitude is incapable of grasping and problematizing. One can also consider the notion of Gaia, originally developed by James Lovelock and Lynn Margulis in the 1970s and more recently discussed by social theorists like Isabelle Stengers (2010) and Bruno Latour (2017), according to which living organisms interact with their inorganic surroundings on Earth to form a synergistic, self-regulating complex system that helps maintain and perpetuate conditions for life on the planet.

Lemmens gives the example of the earth system science (ESS), which seeks to integrate different fields of study such as chemistry, biology, physics, and mathematics to understand the Earth as a system. According to Lemmens,

> the technosphere as theorized in the context of ESS poses questions for philosophy of technology that […] force philosophers of technology to reconsider all those aspects of 'Technology with a capital T' that have been discarded during the last decades.
>
> (2022: 183)

Nothing could be truer, especially if this return to the philosophy of technology with a capital T does not exclude empirical forays or, even better, makes the circular relationship between empirical and transcendental interests its very mode of operation. However, I argue that the very concept of the Anthropocene suggests that the transcendental of technology is not unique but multiple. Indeed, the Anthropocene is not just a technological fact—it is not just the "Technocene" (Cera, 2017). It implies terrestrial elements, along with elements or conditions of possibility of linguistic and symbolic, cultural, and social order. Consider the mere fact that in past years we have *conceptualized* and started to *discuss* the Anthropocene, which implies a major change in our worldview.

To be sure, technology had already played an important role in this change of worldview. Consider *The Blue Marble*, the—very technological and highly mediatized—photo of the Earth taken on December 7, 1972, by the Apollo 17 crew at a distance of about 45,000 km, and the role it played

in framing our perception and understanding of the Earth. According to Alexander Federau,

> We read there [in that image] the evidence or the need for a *planetary consciousness*, faced with the fragility of our habitat in the midst of a dark and hostile universe; we also read there its finitude, particularly that of its resources; we read there finally a community of destiny that encompasses all humanity.
>
> (2017: 374. My translation)

It is not surprising, then, that *The Blue Marble* quickly became a symbol for the nascent environmental movement.

Without this image and the science and technology that made it possible, it would have been far more difficult to introduce concepts like those of Gaia and the Anthropocene. However, it would be misleading to assume a deterministic perspective, identifying in technology (and science) the cause

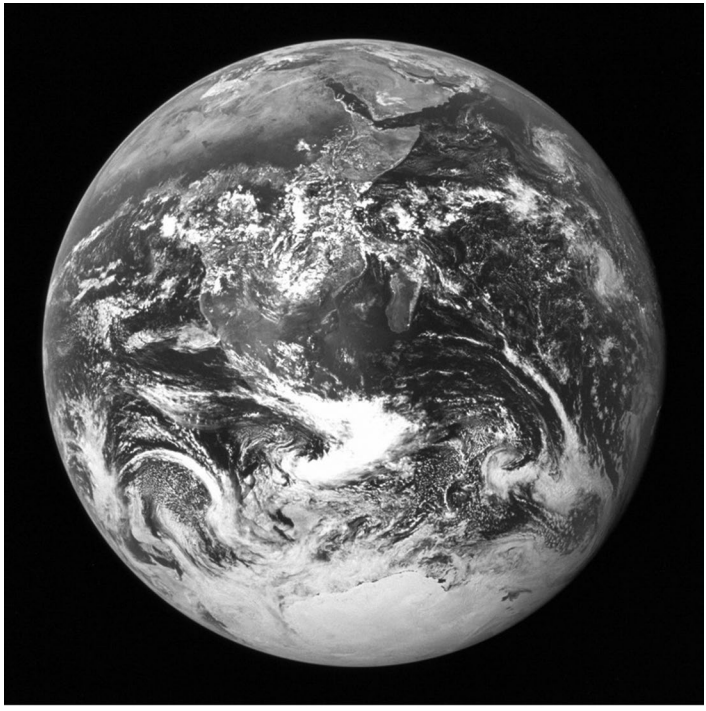

Image 1.2.1 The Blue Marble.

Source: Wikimedia Commons. https://commons.wikimedia.org/wiki/File:The_Earth_seen_from_Apollo_17.jpg. Credits: NASA/Apollo 17 Crew.

of all causes, the transcendental of all transcendentals. The emergence of an Earth consciousness and science from that consciousness is more closely related to a convergence among several transcendentals of different orders: economic, technological, linguistic, symbolic, religious, and so on.

My perspective on this point is influenced by Ernst Cassirer's philosophy of symbolic forms,[5] which are as manifold as the transcendentals I am discussing here. For Cassirer, symbolic forms are systems of signs and significations through which we access the world in multiple ways—since our access to the world is never immediate but always symbolically mediated. A symbolic form is, in short, a way of seeing "as if" the same figure, like the image of a curve, can indeed be understood as a magical symbol, an artistic expression, or as the visualization of a mathematical function.

Whereas for Kant the transcendental schemata are fixed, a priori, and universal—but, on closer inspection, constructed on the model of scientific knowledge—Cassirer recognizes in every symbolic form (art, religion, mythology, technology, and so on) a specific way of intuiting time and space or still grasping the world through categories such as those of cause and substance.

In his essay "Form and Technology" (2012), Cassirer asserts that technology *claims* a first place among the various symbolic forms:

> Even the strongest counter-forces to technology, even those intellectual forces that are the most distant from technology in their content and meaning, seem able to actualize themselves only insofar as they become conjoined with technology and […] subjected to it.
>
> (15)

He also highlights the relevance of philosophical investigations about technology by stating that if philosophy wants "to remain loyal to its mission […] it must also enquire into the "conditions of the possibility" of technological efficacy and technological formation, just as it enquires into the "conditions of the possibility" of theoretical knowledge, language, and art" (18). For Cassirer, the ultimate purpose of technology is to make a human idea concretely effective in the world—to make the human spirit and the world coincide. For this reason, technology is not extraneous but rather pertains to the domain of human thought, spirit, and mind, as is already the case for the other symbolic forms. Among many other things, technology is an externalization of the human mind. The difference between the multiple externalizations lies in the way each seeks effectiveness in the world. We could argue that technology's success is related to the fact that it has revealed itself to be particularly effective in transforming the world according to human ideas and intentions. To be sure, language and technology do not seek effectiveness in the world in the same ways and

through the same means, yet they are related by the same desire to "grasp" and transform the world. Cassirer insists on the fact that

> the "form" of the world, whether in thought or action, whether in language or in effective activity, is not simply received and accepted by the human being; rather, it must be 'built' by him. In this respect, thinking and doing are originally united, they both stem from this common root of forming gestalts, gradually unfolding and branching off from it.
>
> (24)

Given this formative or "gestalting" common root between language and technology, and among different symbolic forms, Cassirer can put magic and technology on the same side. Magic is simply the search for effectiveness in the world through other means. If anything, the problem with magic is that the human will jump too quickly at its goals—while science and technology are based on a distantiation from one's own will, which implies obedience to nature and its rules (29). According to Jos De Mul,

> [For Cassirer] everything starts, in a way, with mythical thinking. He says that's a kind of first moment in time that human beings start to symbolize the world. They are no longer just like animals reacting to external stimuli, rather, they are trying to grasp the world in a mental way. I already mentioned the hammer, which has a kind of ritualistic aspect. But the hammer is also a starting point for technology, and for science, as its use also brings along a notion of causality. Religion can also be understood as an evolution of the mythical thinking when it gradually starts with personifications of the powers of nature up to the notion of a god. For Cassirer, we still find this mythical element in modern thinking, for example, in technology. Technology still has a magical element in it. We hope to control the world with the help of technology; once we had magic hammers, now we have magic computers and magic algorithms, so to say.
>
> (De Mul & Romele, 2022: 37)

This passage is interesting because it shows that it would be wrong to think of symbolic forms in evolutionary terms—first, myth; second, religion; and finally, science and technology. Myth and religion persist despite the emergence of technology as the dominant way for human beings to grasp the world; indeed, myth and religion survive *within* technology, because technology has in some way itself become a myth and a religion. The effectiveness of technology does not rely only on its material effectiveness but also on the myth and religion—the imaginaries, as I call them—into which its material effectiveness is embedded. This passage is

also interesting because it highlights the common root of magic, technology, and the other symbolic forms, namely, the human will of grasping the world and making the world in their image and likeness.

Cassirer recognizes that technology realizes this will in a peculiar, radical, and dangerous way, first because the externalization of the human spirit and mind becomes so extreme with technology that the link between technology and the human spirit and mind runs the risk of breaking. The second—and more interesting for my purposes—reason is that technology became chronically entangled with other symbolic forms, in particular the economy. In this regard, Cassirer affirms that "[t]his connection [between technology and economic form] does not originate in the culture of technology. It is more the case that it is made necessary and thrust upon one by a particular situation, by a concrete historical position" (Cassirer, 2012: 49). Although I disagree with Cassirer, who seems to make technology a quasi-neutral means for reaching goals that can be maliciously influenced by other symbolic forms like the economy, I share his central insight that technology is a symbolic form among many other symbolic forms. I also share the idea that technology does not have an entirely autonomous logic, but its way of action is always (at least partially) determined by the specific entanglement with other symbolic forms in which it finds itself in a specific social and historical moment. Technology is certainly now a system or milieu that influences all the others. However, the opposite is also true, namely, that technology today is what it is because it is linked in a specific way to other symbolic forms, transcendentals, or conditions of possibility: the economy, myth, religion, art, and so on. For example, the last chapter of this book is devoted to the role that popular depictions of AI have in our expectations about AI, which in turn have an impact on the most concrete, technological, economic, and social developments of this technology.

* * *

In the previous two sections of this chapter, I have mainly criticized the current status of the philosophy of technology, especially its lack of attention to the multiple conditions of possibility in which technologies are embedded. In this third section, I assume a more constructive perspective. My personal contribution to the debate consists in orienting attention toward the notion of technological imaginaries. I recall that in this book I limit myself to a special HPT, yet I have in mind that there is a general HPT behind it.

By technological imaginaries, I mean a set of representations charged with expectations, hopes, and fears that a certain group of people has about a certain technology and that cannot be reduced to the material elements that constitute that technology. Technological imaginaries are both

(re)configured by technologies and (re)configure these technologies in their invention, design, implementation, and use.

The empirical philosophy of technology cannot deal with technological imaginaries because it considers them unreal or at least not empirical enough to be studied by those who want to keep their gaze as fixed as possible on the things themselves. Therefore, imaginaries and their crystallizations (e.g., in images and discourses) are treated as idols to be destroyed or, in the best-case scenario, simply ignored. For example, it is not by chance, as I argue later in the book, that an important sub-branch of the philosophy of technology such as the ethics of AI has thus far completely neglected the central topic of ethical *communication* about AI. Clifford Geertz says that "man is an animal suspended in webs of meaning that he himself has woven" (1973: 5). Our technologically mediated access to the world is symbolically mediated because technologies are always perceived, understood, and used within a specific atmosphere of meaning that depends on historical, social, and cultural factors. Today, the philosophy of technology is in need of a hermeneutical turn—without of course forgetting the important contribution of the empirical turn. Indeed, the very term "hermeneutics" also refers to the circularity between matter and symbolic forms, between the empirical and transcendental dimensions.

Now, if the empirical philosophy of technology has mainly ignored technological imaginaries, this is not the case with other research fields such as media studies and science and technology studies (STS). In this section, I import this literature into the philosophy of technology; I am also going to intersect this existing literature with some philosophical reflections on imagination and imaginaries.

The imaginary is a socialized and collectivized version of the Kantian productive imagination. As Jean-Jacques Wunenburger (2020: 5) writes, the success of the concept of the imaginary in the twentieth century is the consequence of disaffection with the concept of imagination understood as a logical, psychological, and individual faculty. The imaginary is a coherent and dynamic set of symbolic structures that are embodied in institutions, social relations, cultural productions, and even in technologies and their specific uses by a certain group of people.

In his *Lectures on Ideology and Utopia* (1986), Paul Ricœur arguably develops one of the most rigorous theories of the social imaginary. For him the social imaginary is constituted by the polarity between ideology and utopia. Ideology and utopia should not be defined in opposition to reality but in relation to it. Indeed, our access to social reality is always symbolically mediated. Ideology and utopia must be understood as the two poles of this symbolically mediated relationship that human beings, not as individuals but as social groups, entertain with the social reality to which they belong or to which they aspire. Ideology has the function of

maintaining the social order, while utopia represents the attempt to disrupt it. For Ricœur, in social life, we are always caught in an oscillation between ideology and utopia: we must cure the excesses of utopia with a bit of ideology, understood above all as an element of identity, just as we must cure the rigidity of ideology with a bit of utopia. As in the case of the hermeneutic circle, we must not abandon this circularity but inhabit it, keep it alive, and then transform the circle into a sort of spiral.

The dialectic between ideology and utopia works on three levels that can be graphically described as three concentric circles in which the outermost is also the most detached from social reality, while the innermost is the closest to it. At the first level, ideology is a distortion of reality, while utopia is a completely unrealizable fantasy. At the second level, which is the level of power, ideology is a legitimation of existing power (the status quo), while utopia represents an alternative to it. At the third level, we no longer see the negative or deconstructive but rather the constructive side of these two poles of the social imaginary: ideology has the function of preserving the identity of a social group, while utopia has the function of exploring new possibilities for that social group.

There are three merits of the Ricœurian concept of social imaginary. The first is that of including both ideology and utopia in the concept. This is crucial for revealing the tendency to understand and study sociotechnical imaginaries in terms of utopia and, in particular, fantasy. The privileged object of study of some disciplines that are interested in emerging digital technologies is "liminal discourses," that is, cultural productions such as science-fiction books, video games, and films that showcase future utopias and dystopias. Yet equally important is the study of past or present ideologies and their way of acting on technological and social reality, especially when it comes to technologies. Moreover, many fantasies that are seen as innocuous are ideologies in disguise.

The second merit is that the concept helps with understanding the relation of the imaginary to reality. To say that reality, including technological reality, is always symbolically mediated is to take a stand to some extent against the empiricism that has come to dominate the contemporary empirical philosophy of technology. Remembering that the imaginary has concrete effects on technological reality does not mean returning to a merely symbolic perspective of this reality. Whereas the debate in the philosophy of technology oscillates between simple empiricism and an equally simple "return to Heidegger," I am proposing in this book a third way of paraphrasing Heidegger's famous sentence, so that "the essence of technology is by no means *entirely* technological."

The third merit of the Ricœurian concept is to understand the move from the Kantian productive imagination to the imaginary. The imaginary is not only a social reality but is also externalized and embodied in techniques

and technologies. Therefore, I refer here to the concept of the *imaginaire* as proposed by the sociologist of technology Patrice Flichy (2007), who is inspired by Ricœur. Through his analysis, Flichy suggests understanding the process of technological innovation as a hermeneutic circle going from utopia to ideology and back.

In the traditional history of technology, inventions have been always associated with the intuition of an inventor. More recently, STS, especially in Latour and Michel Callon's version of ANT, were based on a very different hypothesis, according to which technology is the result of the articulation of human and nonhuman elements, and the innovator's strength would consist in the ability to effectively appropriate and direct these elements. Projects matter less than possibilities (208). Flichy proposes to rehabilitate the notion of a project, to be understood, however, not as the brilliant invention of a single person, but as a collective effort of a group of people. Here is Flichy's description of the hermeneutic circle of the technological *imaginaire* that I quote almost in its entirety:

> The subversive function of utopia, that allows the full range of possibilities to be explored, can be put at the start of the process. […] The projects conceived of here are widely diverse, often opposed, sometimes simply juxtaposed. […] In the second phase, a real alternative to existing technical devices is constructed as the models roughed out in the preceding phase become full-blown projects. […] At the end of this phase utopian reflection can evolve in two ways. Either it is embodied in an experimental project, or it becomes pure fantasy. […] When utopians become experimenters they are confronted not only with the technique but also with other social actors who have a different view of it. […] They need to construct a boundary object, a compromise that can be used to associate multiple partners sufficiently loosely for everyone to benefit, yet sufficiently rigidly for the device to function. […] The experimental phase is not only a time for construction of the technique and its uses but also a phase in which the utopian discourse is reconstructed and bases its claims on the exemplarity of the trials performed. […] This shift performed by the myth will eventually transform the utopia into an ideology. In this new phase, aspects of reality are readily concealed in order to promote the new technique. In this case, I refer to a *mask ideology*. The technical ideology will make it possible to legitimize the new technical system. As it becomes increasingly rigid, alternatives are cast aside and what economists call technological lock-in results. In this case, I use the term *legitimizing ideology*. Finally, since the positive function of this ideology is to mobilize the actors concerned - both the producers of the technology and its users - I call it a *mobilization ideology*.
>
> (8–11)

Flichy insists on engineers' imaginaries, but of course, technological imaginaries are not only in engineers' heads. For instance, Flichy recognizes that the imaginaries of the Internet in the 1990s were related to the American dream of the frontier, community, and individual initiative. My idea is to use Flichy's importation of Ricœur's tension between ideology and utopia in the field of science and technology to understand imaginaries as a sociotechnical phenomenon.

The social dimension of the technological imaginaries has been discussed by Sheila Jasanoff (2015), who defines sociotechnical imaginaries as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understandings of forms of social life and social order attainable through, and supportive of, advances in science and technology" (4). Behind Jasanoff's work on sociotechnical imaginaries is an admirable will of overcoming a certain flatness (according to which, for instance, human beings are deprived of their intentions, and social reality is reduced to its most visible and material elements and relations) that characterizes ANT. Later in the book, I critically consider this flatness myself. I also find convincing the objects and methods of study she proposed, namely, qualitative and quantitative analyses of institutional documents, narratives, and the like in which sociotechnical imaginaries are crystallized—a method I practice in the last chapter of this book.

However, Jasanoff's definition is partial for at least three reasons. The first is that "institutionally stabilized" sociotechnical imaginaries are only a very small part of sociotechnical imaginaries. For example, Stephen Hilgartner (2015) introduces the concept of "sociotechnical vanguards," by which he denotes relatively small collectives that intentionally formulate and act to realize particular sociotechnical visions of the future that have yet to be accepted by larger collectives, such as entire nations. The second drawback of Jasanoff's definition is that sociotechnical imaginaries, even institutionalized ones, are not always about "desirable futures." Her definition is all about a desirable future and thus functions as utopia in its positive version. But many, if not most, sociotechnical imaginaries, even those involving future technologies, are directed at ideology and a past that somehow inserts itself into the present. In the polarity between ideology and utopia and past and future (although ideology and utopia are not entirely identifiable with past and future, respectively), Jasanoff appears to address the future. From the perspective that I propose, however, the emphasis is rather on the repetition of the past in the present—just as the *habitus* is nothing other, I show, than the repetition in the present (and future) generations of those dynamics of social recognition or non-recognition that come from past generations. The third problem with Jasanoff's definition concerns her idea of "shared understanding," because I believe there is no sharing involved in the way specific forms of life are imposed by the dominant on

the dominated. In this respect, technologies and technological imaginaries are efficient ways of silently imposing, rather than sharing, specific forms of social life.

Two more elements of clarification are needed. First, I would say that technological imaginaries are most often not "intentionally" foreseen and implemented, as argued by Hilgartner; sociotechnical imaginaries usually operate at an unconscious or infra-conscious level. Second, it might be thought that sociotechnical imaginaries concern only "exceptional technologies," such as emerging and disruptive technologies or artifacts that are marginal and paradoxical. However, the sociotechnical imaginaries I am interested in are rather about the ordinary and its power; that is, habits and the uses of mundane technologies. Even when I discuss in the last chapter of this book the images depicting AI as white robots, half-flesh and half-circuit blue brains, and the like, I am not interested in the (apparently) exceptional content of these images, but rather in their ordinary effects.

I certainly understand the fascination of many philosophers of technology with the most exceptional technologies, yet I also think that the risk of getting lost in fascination is high. There are two well-distinguished philosophical attitudes: the first (think of Heidegger's thought as its paradigm) is interested in liminal cases and discourses and uses them to shed light on the elements of ordinary reality. The other (think of the later Ludwig Wittgenstein's thought as its paradigm) is instead interested in the ordinary and in the fact that the ordinary itself can be surprising and even quite exceptional. The approach to the technological imaginaries I propose in this book is closer to this second perspective. One of the important gains of the concept of *habitus* I discuss in the next chapter is to bring the analyses of technological imaginaries down to earth for at least three reasons. First, because it shows that there is nothing exceptional in the fact that people have imaginaries about technologies; technological imaginaries are part of our ordinary interaction with technology, just as the imaginary is part of our relationship with the world in general. Second, because it shows that technological imaginaries invest *all* the technologies with which we deal; to be sure, it can be easier to disclose our imaginaries when we cope with exceptional technologies or technological alterities, but it is more surprising to discover that our attitude to regular technologies is charged with specific representations and expectations that transcend the materiality of the technology in question. Third, because the notion of *habitus* indicates for me a form of technological imaginary oriented toward the past and ideology (and their silent and continuous effectiveness in the present) rather than the future and utopia.

In the first section of this chapter, I criticized the exaggerations of the empirical turn in the philosophy of technology. By trying to stay as close as possible to the things themselves, many empirical philosophers

of technology have deprived themselves of the capacity to look at the conditions of possibility within which technological artifacts and mediations are embedded. I have also announced the HPT research program in both a general and a specific version. In the former, HPT aims at mapping the multiple conditions of possibility in which technologies are embedded and using different methods to analyze a certain number of these conditions of possibility. In its specific version, HPT limits itself to studying particular conditions of possibility in the symbolic, linguistic, social, and cultural orders. In the second section of this chapter, I engaged in a discussion with Lemmens and Stiegler. These authors recognized the limits of the empirical turn and seek the "transcendental of technology," yet they understood this expression in both the objective and subjective senses of the genitive. This means that for them technologies must be investigated in light of their conditions of possibility but Technology (with a capital T, and hence as a system or milieu) is the first, if not the only, such condition of possibility. After having made some room for the transcendental and the non-technological in the philosophy of technology, in the third section of this chapter I have introduced the notion of technological imaginaries. Ricœur's polarity between ideology and utopia, via Flichy's use of it in the field of STS, and a critique of Sheila Jasanoff's concept of sociotechnical imaginaries have allowed me to argue that technological imaginaries are not detached from technological reality but instead play an active role in the technological processes of invention, design, implementation, and use and that technological imaginaries are often oriented toward ideology and the past (i.e., the conservation of a certain social and political order) rather than utopia and the future (i.e., the disruption of that social and political order). The notion of *habitus* I present in detail in the next chapter has the function of systematizing this peculiar way of understanding technological imaginaries and their role in our societies.

Notes

1 https://www.interaktive-technologien.de/projekte/louisa. All links have been last accessed on January 10, 2023.
2 The AIMO app is the central product of AIMO, the start-up that is co-funding the LOUISA project: https://aimo-fit.com/. At the core of the app is an algorithm that scans body movements (squats) and rates their quality.
3 https://excavating.ai/.
4 These are the four ways in which Technology appears according to a logic of its own and quasi-autonomous (and, for that matter, with a capital T) in Stiegler's work, according to Lemmens, who describes them as follows: (1) The first historical dimension derives basically from the work of technology historian Bertrand Gille, who showed that technology forms systems that evolve and occasionally transform as a result of reaching their internal limits, causing maladaptation in other systems (social, cultural, political, economic, etc.)

and forcing them to readjust to the new technical conditions; (2) The second (paleo)anthropological dimension is based on André Leroi-Gourhan's theory of human evolution as techno-evolution. The process of anthropogenesis as technogenesis results from the dynamic coupling—and thus co-evolution—of humans as organized organic matter and technical objects as organized inorganic matter; (3) The techno-evolutionary dimension is taken from the work of Gilbert Simondon, who points out that the evolution of technologies proceeds through a process of concretization that has an internal logic in which the role of the human engineer is limited to that of an anticipatory operator who facilitates the unfolding of the potential inherent in the technical object itself; (4) Finally, Stiegler's own techno-phenomenology theorizes what he calls the process of technical becoming or technical individuation, which rethinks the technical tendency (inspired by Leroi-Gourhan) as a process of technical externalization that continually traverses human societies, periodically upsetting them and now chronically challenging them, thus forcing them to create another social structure, which basically consists of the transformation of this becoming into a new collective future understood as a projection of collective desire and as a process of psychosocial individuation.

5 I owe my ideas about Cassirer to the discussion I had with the Dutch philosopher Jos De Mul in De Mul and Romele (2022).

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1.3 From *Habitus* to Technological *Habitus*

From my perspective, the notion of *habitus* refers to social imaginary directed toward ideology and the past. The term indicates in general that our actions and intentions in the world are not the results of personal preferences; rather, they are the result of habits that depend on the social group or culture of which we are part. Such habits are assumed to be self-evident; that is, the most natural way of looking at and behaving in the world. The term can also suggest that the world is full of things (both natural and artificial) whose attributed function by human beings (or, in some cases, unconscious effect) is to ensure the reiteration of the *habitus* and the consequent articulation among different forms of social life.

A certain philosophy and social theory identify imagination at the individual level and imaginary at the social level as creative forces; they not only serve as a refuge from the coercive forces of the world but also as engines of actions that enable us to change the states of affairs in that world. I have nothing against this beautiful idea; however, I think that before we turn to all that is good in the imagination and the imaginary, we need to critically consider their dark sides.

This does not mean, of course, that I am hostile to habits in general, which provide us with important economies at the cognitive level—not to mention the level of nerves. Habits can be defined as dispositions to be and act that are stable over time. Imagine if every morning I had to question my job, the relationship with my wife and children, or something as simple as how the coffee machine works. Even on a social level, habits and customs have great importance. They are, for example, what allows me to walk into a coffee shop and know what is to be done and what is not to be done, even if that is the first time I entered that specific coffee shop. Habits are also what allows me to look at the person in front of me and understand immediately whom I am dealing with and how I should behave. Contrary to what popular wisdom suggests, it is indeed true that the cowl (*habit*, in French; *abito*, in Italian) makes the monk.

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To be certain, *habitus* is not without its risks and various embarrassments: I walk into a café in Paris and behave as if I were in Milan, ordering cappuccino and *brioche* while standing at the counter; I treat a person who looks shabby as a piece of footwear and then I find out that they are the keynote speaker of the conference; I fall into constant prejudices, focusing on people's clothes, accents, skin colors, and so on. However, despite their evident limitations, habits remain a formidable mechanism to cope with the complexity and variety of the world. Assuming a critical perspective toward the social *habitus* does not mean either negating its role and value or simply surrendering to it. Rather, it means exploring the interstices between these two extremes.

Philosophers often jump too quickly to the first of these extremes. Think of Martin Heidegger's authenticity and Jean-Paul Sartre's freedom, which of course have prescriptive rather than descriptive functions. In this book, I instead propose a long route in which a description of the state of affairs—that can be summarized in the idea that humans are creatures of habit—should lay the groundwork for a more reasoned prescription, one that is less enthusiastic but perhaps more effective. My philosophical perspective is influenced in this respect by the social theory of Pierre Bourdieu, although it cannot be reduced to it. In his introduction to *Bourdieu: A Critical Reader* (1999), significantly titled "Bourdieu as a Philosopher," Richard Shusterman similarly distinguishes between the philosopher, a "prophet" and "utopian myth-maker" who transcends ordinary facts and conventions, and the social theorist who proposes a productive analysis of social reality. Instead of opposing these two figures, I suggest practicing a philosophy that without renouncing its prophetical and utopian yearning is also willing to be continuously instructed by the hard work of social scientists—which, in the case of Bourdieu, mainly consisted in revealing the ideologies behind our supposedly immediate relationship with the world, others, and ourselves.

In this chapter, I proceed in three steps. First, I present the history of the notion of habits, which is divided between a moralizing and a socializing or culturalizing perspective. In the first case, the Latin term is *habitus* (*habitude* in French, *habit* in English), while in the second, it is *consuetudo* (*coutume* in French, *custom* in English). My idea is that when Bourdieu speaks of *habitus*, he actually has *consuetudo* in mind. Second, I argue that if Bourdieu continues to refer to the *habitus*, that is to emphasize his connection with a certain neo-Kantian tradition that, between the nineteenth and twentieth centuries, proposed a socialized and culturalized version of Kantian schematism. Third, I show how although Bourdieu points the notion in the right direction, he does not consider the technological dimension of *habitus*.

The *habitus* is a third and unifying term (a schema) between the individual and social reality, mind and body, theory and practice, visible and invisible. Similarly, this chapter serves as a schema between the two parts of this book. By the end of the chapter, I will have, on one hand, fully justified my use of the notion of *habitus* to give theoretical substance to technological imaginaries; on the other, I will have a strong concept that I will operationalize in the second part of the book.

Marco Piazza (2018)—to which, together with Piazza (2015), I make massive recourse in this first section—observes that at the origin of the notion of habit lies a dyad expressed in Greek by the terms *hexis* and *ethos* and in Latin by *habitus* and *consuetudo*. *Hexis* is derived from the verb *echein*, which means "to have." When speaking of *habit* in English (*habitude* in French), the root is the Latin *habere*, which corresponds to the Greek *echein*. The Latin word *consuetudo* (*cum se esse*, "to be with oneself"), which is the translation of the Greek *ethos*, resonates via the French *coutume* in the English words "custom" and in "costume," in the sense of clothing in a style typical of a particular country, historical period, social group, or the like.

The dual nature of habit is already manifest in Aristotle, who in the *Nicomachean Ethics* uses the two terms *ethos* and *hexis*. By the former, he means the process of habituation by which a moral character is developed as a result of prolonged exercise over time; by the latter, he means the disposition and possession of a capacity, whether ethical, intellectual, or technical, achieved through repetition and activity that becomes the basis for action. In short, *hexis* is not congenital but a rooted mental state developed through experience. Piazza (2018: 18) writes that in Aristotle *hexis* and *ethos* represent two aspects of habit, as a stable attitude to act in a certain way and as a process leading to the formation of habits, respectively.

Augustine of Hippo begins to distinguish more sharply between virtue and *consuetudo*. The former is proper to those who live in true religion, while the latter is proper to pagans. In *On True Religion* (*De vera religione*) he starts to make abundant use of the term *consuetudo*, giving it a decidedly negative meaning. According to John G. Prendiville (1972)—who identifies five different uses of the term in this text (*consuetudo hujus vitae*, *consuetudo populorum*, *consuetudo hominum*, *consutetudo corporum*, and *consuetudo carnalis*)—the Augustinian distinction between virtue and *consuetudo* has its roots in the classical distinction between soul and body: human beings would be oriented toward the latter and forgetful of the former. In Book VIII of the *Confessions*, *consuetudo* is understood as the set of vices that draw Augustine away from God and thus from true life. He speaks, for example, of a violent *consuetudo* that made it difficult for him to choose celibacy.

Thus, a hierarchical view comes to be affirmed in the Middle Ages that places virtuous *habitus* on the side of the spiritual elites and their morally

right way of acting, while understanding *consuetudo* as the habitual way of behavior found among the laity. In the same period, the term *habitus* ended up denoting not only an ethical attitude but also the dress of those who led a holy life. On the side of *consuetudo*, the term *costume* begins to mean not only a socially widespread typical behavior but also its typification through clothing that served to identify people and their role in society.

The moralizing current of *habitus* reaches its apogee with Aquinas, who discusses *habitus* in the second part of the *Summa Theologiae*: in questions 49–54, he deals with general principles; in questions 55–69 with virtues; and in questions 70–89 with vices. In *quaestio* 49, he distinguishes habit (*habitus*) from the disposition (*dispositio*): habits are difficult to both acquire and to lose, while dispositions are transient, like health and illness. Examples of *habitus* are science and virtue. Therefore, as Robert C. Miner notes (2015: 68), *habitus* has to do with the improvement of the intellect that realizes what is proper to its nature, since its natural end is to know the truth. In short, *habitus* has to do with the actualization of one's own most proper potentiality—although, of course, *habitus* refers to a potentiality that does not have to always be in action to exist. *Habitus* is a hinge, a middle-term between potency and act. Those habits that do not realize human nature are bad, but they are nevertheless related to what the person perceives as good (*sub ratione boni*). The possibility of having a *habitus* is specific to human nature, which is somewhere between the pure actuality of God and potency that can never be realized other than how it is always realized—think of a falling stone.

In *quaestio* 50, Aquinas explains that animals do not have habits but only customs. Human beings have both, as they are closer to the rational soul. Miner (70) observes that Aquinas clearly prefers *habitus* over *consuetudo* and yet does not believe the former to be less corrupting than the latter—as Augustine seems instead to suggest. For Aquinas, the closeness of *habitus* to the intellect and the will is what makes it at once potentially superior to *consuetudo* but also potentially more corrupting. Another interesting element of Aquinas' theory of *habitus* is that it does not contradict human freedom, provided that by "freedom" one does not mean the possibility of doing everything, but rather the possibility of realizing what is best for oneself before God.

In fact, there is a history of the notion of *consuetudo* that is not the one that, starting at least from Augustine and throughout the Middle Ages, subjects it to *habitus*. It is on this alternative tradition that modern French philosophy (especially Montaigne and Pascal) relies to definitively reverse the hierarchy between *habitus* and *consuetudo* by finally making the latter a topic worthy of philosophical consideration. According to Piazza (2015: 17), the philosophical line inaugurated by Montaigne meets the

theme of *consuetudo* (*coutume* in French) in the context of the rediscovery of ancient skeptical thought thanks to the 1562 and 1569 Latin editions of Sextus Empiricus and the study of Cicero's *Academicorum libri*. With the skeptical tradition, modern French thought shares a questioning of all metaphysical dogmatism and a preference for practical life; that is, the acceptance of the conventions, customs, or *coutumes* in use by a specific society or culture.

It is Montaigne in particular, in his *Essays* (I, 22),[1] who gives useful indications for identifying the sources from which modern thinking about *coutume* stems: Pindar, who calls custom the "ruler of the world"; Pliny the Elder, who says in the *Naturalis historia* that "custom is the best master of all things"; and Cicero, who in the *Tusculanae Disputationes* affirms that "the power of customs is great." Montaigne also mentions Plato: the myth of the cave can be understood as a tale about the negative power of habit; moreover, in the *Laws*, Plato speaks about the danger of changing laws and customs, which play an important role in terms of social stability (*Essays* I, 43).

Piazza (2015: 23) points out that the explicit quotations in Montaigne's *Essays* do not exhaust the rich ancient background on which he draws to develop his considerations regarding customs. In addition to Cicero, there is for example a wide range of historical antecedents ranging from Democritus (who uses the Greek term *sunetheia*) to Seneca. For example, in *De Tranquillitate animi* (IX, 2–4), Seneca gives an ultimately positive interpretation of *consuetudo*, which for him has the power to habituate us and thus make pain and the more difficult aspects of our lives bearable.

In addition to the influence of Seneca and Stoic thought on Montaigne and the moralists of his time, the influence of ancient skeptical thought, traversed by relativistic thinking regarding customs and laws, is equally undoubted. Piazza (2015: 25–26) discusses the *Outlines of Pyrrhonism* and the *Adversus mathematicos* of Sextus Empiricus, whose topical arguments are taken up almost in their entirety by Montaigne, through Ciceronian mediation, in the *Apologie de Raymond Sebond*, the longest of Montaigne's collected essays—although Montaigne never quotes Sextus Empiricus directly. In short, there is relevance and positivity of the *consuetudo* at both the existential level (or "thrownness" [*Geworfenheit*], as Heidegger would say) and at the social level (the laws and customs of a society). This does not mean, however, that there is in this current a naïve viewpoint on *consuetudo*: our *Geworfenheit* and our social and cultural condition are not our destiny, unveilings of truth that we must appropriate most authentically, as Heidegger might say. They are relative, random, and can certainly be unfair and difficult to accept. This is the ambiguity of the *consuetudo/coutume*: no one defends its metaphysical value, which does not exist, but one does consider the advantages of its practical reasons.

Habitus is often called "second nature." This expression refers to the fact that acquired *habitus* overlaps with or even takes the place of habits that we might say are natural—that is, instincts—but it is no less strong and decisive than them. The expression is commonly attributed to Aristotle. However, it is interesting to note that Aristotle never uses this expression. The term "second nature" is first used by modern and contemporary translators of Aristotle who draw on the Latin tradition, specifically Cicero, who uses the expressions *secunda natura* and *altera natura*. These expressions are not coined to translate Aristotelian Greek expressions into Latin but to render formulas proper to the Greek proverbial tradition (Piazza, 2018: 38). Even more interestingly, the first occurrence of the expression in Cicero is found in *De natura deorum* (Cicero, 1967: 269. II, LX, 152. Translation modified) and appears to be related to the technical and technological doing of human beings: "by means of our hands we essay to create as it were in nature (*in rerum naturae*) a kind of second nature (*alteram naturam*)." This passage is found in a discourse that could have come out of a nineteenth- or twentieth-century German philosophical anthropology treatise. For example, Cicero speaks of the hand that enables us to act in the world, to hold between our fingers tools that increase our effectiveness in the world:

> [W]hat clever servants for a great variety of arts are the hands which nature has bestowed on men! […] we realize that is was by applying the hand of the artificer to the discoveries of thought and observations of the senses that all our conveniences were attained, and we were enabled to have shelter, clothing and protection, and possessed cities, fortifications, houses and temples. Moreover, men's industry, that is to say the work of their hands, procures us also our food in variety and abundance. It is the hand that gathers the diverse products of the fields, whether to be consumed immediately or to be stored in repositories for the days to come; and our diet also includes flesh, fish, and fowl, obtained partly by the chase and partly by breeding. We also tame the four-footed animals to carry us on their backs, their swiftness and strength bestowing strength and swiftness upon ourselves.
>
> (261. II, LX, 151)

Through our hands and tools, we have constructed an environment that is comfortable and suited to our needs, an environment that is precisely a second nature to replace the wild and dangerous nature. In short, Cicero seems to account for the fact that *habitus* has not only an ethical and social dimension but also a technical and technological one. Technologies are conditions of possibility for the development of a certain second nature in us precisely because they contribute to the construction of another

nature *around* us—a sphere, or bubble, that insulates us from a hostile environment that would impose other rhythms and laws on us. All this anticipates surprisingly what I say later in this chapter.

Let us return now to the theme of *consuetudo* and its philosophical ennoblement in modern French thought. Montaigne devotes the entirety of two *Essays* (I, 23 and I, 49) to the theme of *coutume*. The issue is treated extensively in other places as well, as when Montaigne talks about cannibalism (I, 31) and clothing (I, 36). In addition to the term *coutume*, he also uses the words *usage* and *moeurs*, as well as *accoutumance* (accustomization), which refers to the process of acquiring and adapting to a certain custom. In general, for Montaigne, custom is a power that becomes law, regulating our behavior so much that it is mistaken for a product of reason. It has an influence on the senses as much as on the soul. On one hand, it can habituate a sensation so much that it becomes imperceptible (think of chronic pain) or transforms the use of a limb (for example, an adaptation following an amputation). On the other, it has even greater power over our judgments and beliefs.

The issue is not only individual but also social and cultural. For example, Montaigne (*Essays* I, 22) says, "I do believe, that no so absurd or ridiculous fancy can enter into human imagination, that does not meet with some example of public practice (*usage public*), and that, consequently, our reason does not ground and back up." Immediately afterward, he gives examples like the following:

> There are people, amongst whom it is the fashion to turn their backs upon him they salute, and never look upon the man they intend to honour. There is a place, where, whenever the king spits, the greatest ladies of his court put out their hands to receive it; and another nation, where the most eminent persons about him stoop to take up his ordure in a linen cloth.

Habits and customs, which appear reasonable to those who practice them so much that they often become laws that one may wish to impose on others, have in fact no reasonable, much less metaphysical, basis. They are relative and changeable according to social and cultural contexts and eras.

The very fact that customs and mores are disguised as reason makes them difficult not only to identify as such but also to change. However, while fully acknowledging the relativism of customs, Montaigne does not instigate a struggle for change. This is undoubtedly the major difference between modern French thought and Bourdieu's social theory, which does more than show how habit hides behind what appears reasonable—including philosophy, which is frequently alleged or even assumed to be the most reasonable and reasoning of the sciences. Bourdieu also incites

social change and thinks that awareness of the relativity of *habitus* is a necessary first step toward such a change. Indeed, for him, social *habitus* systematically favors the dominants. Montaigne, on the contrary, notes the relativism of customs but accepts and defends them based on the idea that they help ensure social order and cohesion. For example, Montaigne (*Essays* I, 22) writes that "good and great" Socrates

> refused to preserve his life by a disobedience to the magistrate, though a very wicked and unjust one for it is the rule of rules, the general law of laws, that every one observe those of the place wherein he lives.

It must also be recalled, however, that immediately before, Montaigne writes that "a wise man ought to withdraw and retire his soul from the crowd, and there keep it at liberty and in power to judge freely of things." In short, Montaigne does not at all think that reason is always and everywhere watered down by illusion; there are resources in reason, or at least in the reason of wise people. For Bourdieu, sociologists are those who can set in motion a process of self-reflexivity by which they would be able, at least in part, to distance themselves from the conditioning that determines them in the study of their object of research; namely, social reality. The difference, of course, lies in the fact that Bourdieu does not relegate the activity of social reason to the inner forum or the community of sociological sages alone. For Bourdieu, the wisdom of sociology must be transferred to society. Actually, we could say that sociology for him has the function of giving people the concrete means to emancipate and empower themselves.

Montaigne's reflection on customs is further developed by Pascal, who radicalizes some key tenets of Montaigne's skepticism from an antirationalist perspective. Indeed, for Pascal (*Pensées*, 93),[2] custom is a second nature that does not just overlap with the first one but replaces and eliminates it: "Custom is a second nature which destroys the former. But what is nature? For is custom not natural? I am much afraid that nature is itself only a first custom, as custom is a second nature." For him, it is not certain that a first nature even exists; we are always immersed in social habits that we mistake for something natural. Interestingly enough, we find something similar a few centuries later, when Émile Durkheim and Marcel Mauss socialize and culturalize the Kantian categories that an entire neo-Kantian tradition in France had instead psychologized—and that had been logicized in Germany.

It is possible to think that Pascal is so radical in his account of habit and its power because he believes that, due to original sin, human beings have permanently departed from their original nature. Because of this, they can no longer escape the power of habit. If this interpretation is correct, then it can also be said that however radical it may be, the Pascalian perspective

leaves an opening for the possibility of dishabituating human beings from evil and rehabituating them to virtue, not by the work of pure reason but through the support of faith and the Grace of God (Piazza, 2015: 41–42). Like Montaigne, Pascal is a social and political conservative, not because the social and political orders existing in his time were just in themselves, but because true justice is precluded to us. We might as well thus be content with the status quo, which at least guarantees a certain political and social order and cohesion:

> On what shall man found the order of the world which he would govern? Shall it be on the caprice of each individual? What confusion! Shall it be on justice? Man is ignorant of it. Certainly, had he known it, he would not have established this maxim, the most general of all that obtain among men, that each should follow the custom of his own country.
>
> (*Pensées*, 294)

An interesting aspect of Pascalian reflection on the sociopolitical dimension of habit is the idea that habit is a means of maintaining a stable political and social order—that is, habitual relations between the dominant and the dominated—without resorting to violence. Chiara Piazzesi (2003: 47–58), who makes extensive reference to Gérard Ferreyrolles (1984), insists on this point. According to Piazzesi, habit is in Pascal the substitute for pure force, the use of which can only be provisional because if it were continuous, it would simply be uneconomical. Power obtained by violence is not just; yet, its overthrow would lead back to the original struggle of all against all. In Pascal, then, there is a strong link between power, habit, and imagination:

> Till now power makes fact; now power is sustained by imagination in a certain party, in France in the nobility, in Switzerland in the burgesses, etc. These cords which bind the respect of men to such and such an individual are therefore the cords of imagination.
>
> (*Pensées*, 304)

This passage is close to my idea that before declaring what is beautiful in the imagination, it is necessary to undertake a long detour through the ways of its power of conviction and coercion. Unlike Pascal, however, imagination for me is not, or at least not necessarily, mere illusion. Rather, illusion is only one of the two extremes of imagination, imaginary, and its consequences.

It is not hard to understand what Bourdieu finds so interesting in Pascal that he makes Pascal the hero of his meditations. It is precisely the role

Bourdieu attributes to Pascal in one of his most theoretically rich books that leads me to contend that when Bourdieu uses the notion of *habitus*, he has something closer to the *consuetudo*/*coutume* in mind. At the beginning of *Pascalian Meditations* (2000: 1), Bourdieu makes it clear what he shares with Pascal, and he feels closer to Pascal than to Marx. First, there is the idea of the symbolic force and groundlessness of law, and second, there is a non-populist interest in what is most common among all human beings. Regarding this second point, the French sociologist thus reappropriates the inversion of the hierarchy between *habitus* and *consuetudo* effectuated by modern French philosophy in the wake of Latin and Greek skepticism and against a long ancient and scholastic tradition. Indeed, Bourdieu starts his reflections from the Pascalian principle that "true philosophy makes light of philosophy" (2). Consider the theme of the "scholastic illusion," an expression by which Bourdieu refers to the fact that philosophers believe that they are speaking and looking at the world from an objective point of view that is not only neutral but also superior to the view of those who are busy in other disciplines. However, this is no less a belief than other beliefs, with the aggravation of systematically masking the fact that their beliefs are only beliefs. Philosophers usually focus on the *understanding* of what they believe to be the most authentic aspects of human existence (freedom, the good life, etc.) and consider the other sciences to be no more than ancillary *explanations*.[3]

Thus, Bourdieu's choice becomes clear: trained as a philosopher at the École Normale Supérieure, the most prestigious French institution for aspiring philosophers and *maîtres à penser*, he decides to practice sociology as a more authentic form of philosophy not because it was theoretically superior, but because it was more modest and practical:

> Without succumbing to the initiatory cult of 'fieldwork' or the positivistic fetishism of 'data,' I felt that, by virtue of their more modest and practical content […] these activities [as a sociologist] were one of the chances I had to escape from the scholastic confinement of the habitués. (6)

Regarding the symbolic force and groundlessness of law, the references to Pascal are explicit and multiple. The paragraph of the *Pascalian Meditations* entitled "Violence and the Law" begins with a long quotation from the *Pensées* (294), which states that "[usurpation] was once introduced without reason and has become reasonable. We must make it regarded as authoritative, eternal, and conceal its origin, if we do not wish that it should soon come to an end." The only foundation of the law is the law itself, or rather, "the only possible foundation of law is to be sought in history, which, precisely, abolishes any kind of foundation" (Bourdieu, 2000:

94). On the same page, Bourdieu uses this idea against Rawls' fictitious contractualism (and later in the book he uses it against Habermas' transparent communication):

> In the beginning, there is only custom (*coutume*), the historical arbitrariness of the historical institution which becomes forgotten as such by trying to ground itself in mythic reason, with theories of contract, the origin myth of the democratic religion (which have recently received their gloss of rationality with John Rawls' *A Theory of Justice*.
>
> (94)

We are thus faced with a collective (and willed by the historical institution) amnesia of the historical origin of any legislative foundation and, more broadly, of symbolic systems that claim to have universal validity. These symbolic systems, for Bourdieu (167), result in cognitive structures that present themselves as perfectly logical and absolute. Philosophy, in its scholastic attitude, is not just epiphenomenon but actively contributes, through its search for foundations, to this process. The power of symbolic systems is not limited to the cognitive realm but also operates on the body and, almost magically, does so even without any physical constraint. In short, there is a schema that links not only the collective and individual dimensions but also the cognitive and bodily ones.

To escape the symbolic illusion incorporated as *coutume*, Pascal, like Montaigne, proposes to practice "double thinking (*double pensée*)," an outward one that adheres to convention and an inward one that can instead follow, if well trained, a principle of reason. However corrupted, the reason is still capable of intuiting truth. Bourdieu criticizes this perspective because to remove the illusion that governs social practices, Pascal ends up deploying the greatest of scholastic illusions; namely, pure thought. On the one hand, then, Pascal recognizes the value of practice in social and power relations. On the other hand, however, he falls into the classic error of philosophers who make of reason something stronger than, and independent of all social conditioning.

* * *

I now take this a step further. If it is indeed true, as I have just argued, that where Bourdieu speaks of *habitus* he actually has *consuetudo* or *coutume* in mind, one question remains: why does he go on to speak of *habitus*? My thesis is that he does so to mark a continuity with the Kantian tradition or rather with a certain "heretical" reception of Kantian notions of schematism and productive imagination. I am thinking of the work of the socialization and culturalization of schematism carried out in the nineteenth and twentieth centuries, especially in France (Durkheim and

Mauss) and Germany (Cassirer and Panofsky), which contrasted with the psychologizing and logicizing receptions of Kant. Incidentally, it may be recalled that the book series *Le sens commun* that Bourdieu founded and directed for Les Éditions de Minuit welcomes some of the major works by Panofsky (including *Gothic Architecture and Scholasticism*, translated by Bourdieu himself) and Cassirer (including the three volumes of *The Philosophy of Symbolic Forms*). One may also recall a passage from *Pascalian Meditations* (175), in which Bourdieu speaks of his style of multiplying equivalent formulations almost ad nauseam; in this way, he says "trying to help to demolish the false frontiers between artificially separated theoretical universes, for example, the neo-Kantian philosophy of the symbolic forms proposed by Cassirer and Durkheimian sociology of the primitive forms of classification." In the chapter in *Language and Symbolic Power* entitled "On Symbolic Power" (1991: 163–170), Bourdieu discussed the function that "symbolic instruments" have in Cassirer's and Durkheim's systems of thought.

In Cassirer's neo-Kantian tradition, the different symbolic universes (myth, language, art, and science) are treated as tools for *knowing* and *constructing* the objective world. Durkheim also explicitly refers to Kant, but for him, symbolic forms are first and foremost *social* forms that serve to create the consensus that guarantees the reproduction of the social order. In addition to these two perspectives, Bourdieu discusses that of Marx, in which symbolic instruments are means of domination—particularly for the exercise of power by the ruling class. We should then no longer speak of myths, which are a collective and collectively appropriated product, but of ideologies, which serve specific interests by disguising them as universal interests. Imagination, schematism, and Kantian categories become in Bourdieu not only culturally and socially determined but also ideologically oriented elements and, for this reason, need to be the object of critique.[4]

In the *Critique of Pure Reason*, the productive imagination is for Kant the transcendental faculty that mediates between the passivity of sensible data and the activity of the intellect. In short, it is a cognitive function that simplifies and articulates sensible data by giving it unity and meaning. Hence, it is a form of schematization. The term used by Kant to refer to the imagination is *Einbildungskraft*, which includes the word for image (*Bild*) but is especially focused on constructing (*bilden*) or synthesizing within the process of objectification. Chiara Bottici (2019: 25) is right to note the difference between the two editions of the *Critique of Pure Reason*. In the first edition, imagination has the active capacity to unite the manifold; that is, it is the faculty that brings the plurality of intuitions into single images. In this way, Kant seems to admit a primacy of imagination over the other faculties, insofar as it becomes a transcendental condition of knowledge as such. In the second edition, however, imagination is relegated to a

properly mediating function between sensibility and intellect. Imagination in this version is understood in terms of schematism, or rather Kant distinguishes between a figurative synthesis of imagination and its intellectual counterpart, which guarantees the pure synthesis that is transcendental schematism. It is, Bottici writes (26), a mutilated imagination because it is deprived of imagination, an imagination that can synthesize but cannot undo or disturb and thus be properly critical. Here, I argue that the heretical Kantianism I account for below is precisely the attempt to overcome the limits of this intellectualist turn of the imagination.

Before going further, a caveat is necessary. There is a difference between my choice of the term *habitus* and Bottici's choice of the term "imaginal." For her, this notion has the merit of overcoming a double dichotomy intrinsic in the history of the concept of imagination. The first is the distinction between fantasy and reality, whereby today "imagination" seems to mean exclusively that which is unreal. The second is the distinction between individual and social. From the latter, she criticizes, for example, the concept of the imaginary that—while it has the advantage of indicating the social and contextual nature of imagination—ends up sacrificing the "free imagination of individuals." As Bottici writes (71), "developing the concept means embarking on a double Copernican revolution: beyond the philosophy of the subject (imagination as an individual faculty), but also beyond the equally problematic metaphysics of the context (the imaginary as a given social context)." Drawing on Arendt and her politically oriented rereading of the third Kantian critique (along with Castoriadis' radical imaginary), Bottici defends the possibility "of freeing oneself from one's own particularities and creating images of what is not immediately in front of us" (96). Indeed, she states a few pages later and still in an Arendtian tone, "[t]he creation of images is central to our capacity for action, our capacity to begin something new in the world" (103).

My idea is that both the concepts of imaginal and *habitus* (and, with it, imaginary) allow us to overcome the dichotomy between reality and fiction. In both cases, it no longer makes any sense to speak of (direct access to) reality, which instead is always symbolically mediated. If anything, the difference between the two concepts lies in the fact that "imaginal" emphasizes the subject's capacities despite the social force of the imaginary and the images that are produced at this level, whereas "*habitus*" emphasizes the force of the social imaginary despite the subject's illusions and efforts to produce by themselves (i.e., autonomously) new representations of themselves and the world.

Between the imaginal and the *habitus*, there is less of a difference in substance than a difference in accent. However, I think there is also an important difference in the question that arises about the kind of critique to conduct and its limits and risks. As far as criticism is concerned, that

of the imaginal will be oriented toward individual initiative—and it is no accident that Bottici's book ends with a reflection on anarchism, although it is counterbalanced in Bottici's book by Marxism. That of *habitus*, on the other hand, will be oriented toward proper political and institutional reforms—although, as I show below, this does not exclude the recognition of the importance of individual and exemplary actions. As for limits and risks, in the case of the imaginal, there is the danger of exhausting the critique in an easy exaltation of the capabilities of a "noble" subject. In the case of the *habitus*, there is an equally important risk of forgetting that the ultimate goal of any critique is to avoid mere acceptance of the current state of affairs.

I now return to show that *habitus* belongs to the semantic and conceptual galaxy of Kantian imagination and schematism. The proximity between *habitus* and schema is, first of all, etymological (Héran, 1987: 395–396). The word *schema* designates among the ancients a manner of being, clothing, and costume, so much so that the storehouse of theater accessories is called "schematotheque." In late antiquity, it denotes the monk's habit, as does the word *habitus*—which, at the same time, also means the *hexis*. Then again, schema and *habitus* have the same root, which is the Greek verb *echein* (to have); one is derived from a past tense form, the other from the present tense. From a morphological point of view, it can be said that schema stands for *echein*, just as *habitus* stands for the Latin verb *habere*, which also means "to have": an acquired result that subjects bring upon themselves and, consequently, a way of appearing to others. For this reason, there is a kind of tautology in wanting to define, as Bourdieu often does, *habitus* in terms of schematism. But this is not in fact a tautology because, as noted above, it is typical of Bourdieusian style to repeat and redefine the same concept in the light of different disciplinary traditions.

Bourdieu's debt to and critique of Kant are well known. For example, it is no exaggeration to say that his book *Distinction* (2010) can be read entirely as a social critique of the Kantian conception of the judgment of taste. Indeed, "Social Critique of the Judgment of Taste" is the title of the first part of the work. Bourdieu explicitly addresses Kant in the last part of the text, the postscript entitled "Toward a 'Vulgar' Critique of 'Pure' Critiques" in which, contrary to the Kantian idea of a disinterested aesthetic judgment, he discusses the historical and social reasons for taste. Aesthetic judgment varies for Bourdieu depending on the social class to which the person making it belongs. This judgment and the lifestyles related to it are determined less with respect to the object of judgment than in relation and opposition to each other. This is why the space of taste is far from innocent and removed from interests: it is, if anything, a true site of class struggle. Loïc Wacquant (2001: 110) notes in this regard that not only is bourgeois taste constituted by differentiating itself from proletarian taste but also

that proletarian taste is a taste that is by essence anti-Kantian, insofar as it is constantly driven by a spirit of necessity—whereas Kant speaks of a faculty of taste emancipated from interests.

Bourdieu's ultimate intention is to radicalize the Kantian *Critique*. Kant is in search of the conditions of possibility—that is, the sources and limits of human rationality—and he finds them in transcendentalism, which serves as a kind of "grid-base" for reading and accessing the world that is universally shared by all rational beings, regardless of their individual experiences. Bourdieu is in search of similar possibilities and limits; he finds them not in absolute transcendentalism but in the historical and social reasons that make people believe, for example, that absolute transcendentalism is a privileged condition of access to truth. It is not surprising, then, that Bourdieu eschews imagination and schematism in favor of *habitus*, since *habitus* seems to account for the historical and social transcendentalism (an a priori in the sense that it determines all our possible access and iteration with the world, but also an a posteriori precisely because it varies as social and cultural contexts vary) that Kantian imagination and schematism instead deliberately ignores.

A detailed discussion of the historical and social reception of Kantian schematism in France and Germany in the nineteenth and twentieth centuries is beyond the scope of this book. I limit myself here to a few remarks on Durkheim, who exerted a direct and major influence on Bourdieu, relying mainly on Warren Schmaus (2004) for my presentation. Durkheim is among the forerunners of the contemporary use of the notion of *habitus*, which he understands as a disposition to act, think, and feel that is the result of a process of education.[5] Schmaus' book begins with an analysis of Durkheim and Mauss' work on primitive forms of classification (1963). It is, according to Schmaus, a response to the way in which Kant and his categories—and thus imagination and schematism—have been received in France, especially in the spiritualist tradition of Victor Cousin and Maine De Biran, who regard the categories as elements of philosophical psychology of the human mind. Cousin introduced Kant's writings to France during his courses beginning in 1820. For him, categories are not only innate but even derived from the divine. For De Biran, categories are derived from an individual inner experience, that of "willed effort (*effort voulu*)."

Émile Durkheim and Marcel Mauss' text takes a stand against the psychologized and logicized—and, more generally, ahistorical and universalist—readings of categories. In the introduction, for example, the authors state that when logicians and psychologists speak of classificatory functions as being essential to human beings, they forget that "this conception of classification does not go back before Aristotle" (3). Our notions and practices of classification have a history and prehistory, and it is possible to think that there are populations that, precisely for historical and social reasons,

lack the concept and related practices of classification that logicians and psychologists tend to naturalize. This does not mean that these populations do not classify the world; rather, they simply do so in a way that is essentially different from ours. For Durkheim and Mauss, classification practices and the groupings that result from them have a social origin:

> The first logical categories were social categories; the first classes of things were classes of men, into which these things were integrated. It was because men were grouped, and thought of themselves in the form of groups, that in their ideas they grouped other things, and in the beginning the two modes of grouping were merged to the point of being indistinct.
>
> (49)

In the central part of the text, they argue that for Indigenous Australians, everything in the universe belongs to their tribe, which thus provides the archetype of the category of totality, the class that includes other classes. Just as the tribe is divided into fraternities and clans, so everything in nature has its place in a grounded hierarchy of fraternities and clans. This system of social organization thus serves as a prototype of the very concept of classifying things. Durkheim and Mauss' conclusion is thus not only essentially anti-psychological and anti-logical but also in a sense anti-Kantian:

> It is possible to classify other things than concepts, and otherwise than in accordance with the laws of pure understanding. For in order for it to be possible for ideas to be systematically arranged for reasons of sentiment, it is necessary that they should not be pure ideas, but that they should themselves be products of sentiment.
>
> (50)

Although their work focuses on the concept and practices of classification, the authors suggest that a social and cultural perspective can be applied to all categories, including space, time, cause, and substance. Schmaus (2004: 3) recalls that a number of works appeared during those very years, mainly in the journal *L'année sociologique*, by authors such as Mauss and Henri Beuchat (who gives an account of the concept of time among the Inuit), Célestin Bouglet (who deals with classification in the caste system in India), Robert Hertz (who discusses the role of dexterity and left-handedness in classification systems), and Lucien Lévy-Bruhl (who talks about "primitive mentality").

Durkheim draws on this work when he formulates his sociological theory of categories in *The Elementary Forms of Religious Life* (2008). According to him, the categories of time, space, number, cause, substance,

class or gender, totality, personality, and so on are all of social origin. For example, the category of causality derives from our experience of social forces and moral obligation. The category of time was formed from the seasonal and daily rhythms of social life, and the category of space was shaped by the spatial distribution of social groups (Schmaus, 2004: 3). There are, of course, important differences from Kant. Space and time, for example, are in Kant not categories but a priori forms of sensible intuition. Moreover, Durkheim emphasizes the difference in his use of the term "category" from what philosophers usually do with it. Indeed, Durkheim in *The Elementary Forms* (in Schmaus, 2004: 4) writes "For the recent disciples of Kant […] the categories preform the real, whereas for us, they recapitulate it. According to them, they are the natural law of thought; for us, they are a product of human art."

Even the most primitive of classification forms, he adds, presuppose an ability to recognize similarities among the things the mind perceives. According to Durkheim, a human being, just like an animal, does not need the category of space for orientation. Nor do human beings need the categories of time to meet their needs or the categories of gender and species to recognize that one thing resembles another. Finally, neither human beings nor animals need causality to search for prey or to flee from enemies. Some empirical regularities of succession among our representations are sufficient to guide our actions. In short, categories do not play a role in the psychological process of preforming reality—not least because otherwise there would be categories that are found equal to themselves in all cultures. Durkheim's categories appear as a second nature that takes the place of the first nature over time—but which, precisely because there is always already a first nature, has no metaphysical (or rather, in this case, logical, psychological, or anthropological) foundation. Beware, however, that a lack of foundation is not the same as denying the power of the categories. It could be said that what categories lose in depth (i.e., in getting a grip on the human mind or the world itself—the latter would be the Aristotelian version of categories), they gain in extension (i.e., in becoming the shared and undisputed worldview of an entire social group).

According to Schmaus (6–11), much of the twentieth-century debate about the nature of reality and our access to it originates with Durkheim. There are those who accept cultural variations in our perceptions of the world but also defend the idea that there are universal structures that are repeated unchanged in different contexts, as is the case with Claude Lévi-Strauss. Less cautious in this regard have been post-structuralists such as Michel Foucault and Jacques Derrida and, in sociology, constructivists such as Peter Berger and Thomas Luckman. For Max Horkheimer and Theodor W. Adorno, logic itself is a social construction. In philosophy of science, Thomas Samuel Kuhn speaks of his perspective as "post-Darwinian

Kantianism." By this expression, he means that taxonomies of concept types are, like Kantian categories, preconditions of experience, but he also means that, unlike Kantian categories, these taxonomies change over time and in transitions from one society to another. Ian Hacking cautiously distinguishes between an unalterable part of reality and another part made up of responsive subjects; that is, subjects who tend to react by adapting to, accepting, or rejecting the categories by which they are understood. This last perspective, developed in texts such as *The Social Constructivism of What?* (2001), is very interesting for my purposes because it shows how individuals who are digitally classified are not indifferent to but are rather transformed by these digital classifications.

Returning to Durkheim, in the years following the publication of *Elementary Forms*, such as in his courses on pragmatism (20 lectures at the Sorbonne in 1913–1914, in which he discusses Peirce, James, F. C. S. Schiller, and Dewey), he accentuates the idea of the social and cultural variability of categories and the identification of categories with their collective representations (Schmaus, 2004: 121). This second aspect—the idea that when people from the same society share moral or general concepts, they have the same mental states with the same representational content—is what Schmaus does not share with Durkheim, because he sees in it a risk of incommensurability among categories from different cultures. He then proposes to understand the meaning of categories in light of their social functions: "If two different representations from two different cultures nevertheless have similar functions or uses in their respective cultures, they are to that extent similar in meaning" (122). In the same passages, the author says that his thesis is anchored precisely in the Durkheimian idea that categories make certain social functions possible.

Schmaus' proposal is interesting insofar as it tells us something about the difference between Durkheim and Bourdieu with regard to categories and *habitus*. Indeed, it could be said that, although the heir to the Durkheimian legacy, Bourdieu differs from it precisely insofar as he distances himself from Durkheim's intellectualism through a shift from theory to practice. As Wacquant (2001) notes, things are actually a bit more complex than that. Bourdieu does indeed share with Durkheim a rationalist philosophy of knowledge as a methodical application of reason and empirical observation of the social world. This application implies a

> perpetual mistrust towards ordinary thought and towards the illusions which it continuously generates, and, on the other hand, an endless effort of analytic (de/re)construction which alone is capable of extracting from the teeming tangle of the real the 'internal causes and hidden impersonal forces which move individuals and collectivities.
>
> (106)

This is the Kantian inheritance common to the two authors. However, while Durkheim simply wants to get rid of the preconceptions that stand in the way of sociology, Bourdieu sees this distancing as an intermediate, still abstract moment, an abstract transcendence that needs its own transcendence of a practical order. Therefore, Wacquant (107) writes that "Bourdieu (re)introduces the concept of *habitus* in order to restore to the socialized body its function as active operator of the construction of the real." In short, for Bourdieu, categories are always embodied, and it is primarily through the body and its expressions that social functions within a society are distributed and recognized.

If all this is true, then it is not difficult to understand why Bourdieu turns to Mauss who, unlike Durkheim and his intellectualism, speaks of *habitus* in terms of embodiment. Categories are then no longer (or at least not only) forms of consciousness but also and especially bodily dispositions. Social injunctions do not address the intellect so much as the body. In short, it can be said that through his notion of *habitus*, Bourdieu does not merely propose a socialized and culturalized version of Kantian schematism, imagination, and categories. He also, thanks to Mauss (and Merleau-Ponty), insists on their essentially embodied dimension.

* * *

The idea I explore in the third and final section of this chapter is that of a properly technological dimension of *habitus*. Bourdieusian theory is not intolerant of this dimension; indeed, it seems ready to accommodate it, although Bourdieu himself never really thought about it. Bourdieu stops at the threshold of a technological theory of *habitus*. His reflections on taste are full of artifacts such as works of art, furniture, clothes, and cooked food; his considerations on the rural society of the Béarn or on Kabylia speak of body techniques, gaits, accents, and so on. Bourdieu's *habitus* is externalized and embodied but, I would argue, not properly technologized. With an analogy (which, like all analogies, is necessarily imperfect), one could say that Bourdieu's *habitus* is like a theory of cognition that is embodied, embedded, and enacted but still not properly (technologically) extended.

Alessandro De Cesaris (2021) questions precisely the technological dimension of *habitus*. According to him, the Aristotelian *hexis* eschews the classical distinction made by Aristotle himself between action (*praxis*) and production (*poiesis*). In the *Nicomachean Ethics* (VI, 4, 1140a 1–23), Aristotle approximates *poiesis* to *techne*. What these have in common are the externality of the principle of change and its contingent nature. Now, although Aristotle approximates *hexis* to *praxis*, for De Cesaris this does not hold conceptually, because in the process of learning that leads to the development in oneself of a certain *hexis*, the subject has to appropriate

something that is not his or her own; that is, something that is initially entirely external to him or her:

> the *hexis* is not the natural development of a faculty, something as necessary as the growth of a plant, but rather a contingent process, which may or may not take place and above all which may take place in various ways.
>
> (De Cesaris, 2021: 359. My translation)

For this reason, *hexis* can be said to be closer to *poiesis* and *techne* than Aristotle himself is willing to admit. Moreover, it is no accident that Aristotle resorts to examples of learning (the use of) *technai* to explain habituation to virtuous action. In the *Nicomachean Ethics* (II, 1103a32–b2), for example, he writes as follows:

> For the things we have to learn before we can do them, we learn by doing them, e.g., men become builders by building and lyreplayers by playing the lyre; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts;

later in the same section, he writes that

> men will be good or bad builders as a result of building well or badly. For if this were not so, there would have been no need of a teacher, but all men would have been born good or bad at their craft. This, then, is the case with the virtues also.
>
> (II, 1103b10–14)

As Tom Angier (2010: 107) states, the meaning of the passages above is reinforced by others from the *Metaphysics* and the *Politics* in which the direction of inference is always from production (*craft*) to other forms of activity, particularly virtuous acting. For De Cesaris, this technological dimension of *habitus*, since Aristotle's attempt to bring *hexis* back to the realm of *praxis* alone, has been hidden or at least underestimated throughout much of the history of philosophy.

Bourdieu's recourse to Mauss, while important, would not be sufficient to repair this damage. It should be noted that Mauss does not use the term "technology" but preferred "technique," as in his reference to the "techniques of the body" in his renowned 1934 essay. It should also be stressed, however, that the reasons that bring Mauss to neglect the technological dimension of the *habitus* are radically different from those of Aristotle and his tradition. According to De Cesaris (2021: 364), Mauss understands the technique in a non-instrumental way not because *techne*, like *praxis*, is an

operation consumed within the limits of subjectivity, but because it is also possible in the absence of any artificial instrument. The body is already enough, because it is "man's first and most natural instrument" (Mauss, 1973: 75). The same holds true for the *habitus*, which is not foreign to the realm of *poiesis*: the techniques of the body are a liminal case in which the technological dimension of the *habitus* is close to zero, but it is not for that reason absent.

The fact remains that Mauss never goes beyond this near-zero threshold and that Bourdieusian *habitus* theory, which uses Mauss to counterbalance Durkheimian intellectualism, suffers the consequences. In his article, De Cesaris then tells another story in which the concept of *habitus* is able to better account for the co-presence, within the *habitus* itself, of a practical and a poietic dimension. At the beginning of this history is the philosophical anthropology of Hegel, who in the *Encyclopedia of Philosophical Sciences in Basic Outline* speaks of the body as a "work of art of the soul." This means that for Hegel the body is neither a mere correlate of the subject nor a thing among other things:

> the body in its entirety literally becomes *second nature*, since it constitutes at once an ineradicable natural basis of the structure of the subject and the product of a spiritual reconfiguration of this same basis. […] If the tension with the practical dimension is undoubtedly confirmed […], it is presented in the first instance as *opus*, as the product of a doing suspended between *praxis* and *poiesis*.
>
> (De Cesaris, 2021: 367–368. My translation)

Hegelian reflection on habit had an important impact on German philosophy of technology. De Cesaris cites the example of Arnold Gehlen, in whom the notion of habit plays a key role. It is linked to the concept of *Entlastung*, which means "relief." In fact, for Gehlen it is through "the habit of contracting habits" at a basic level that human beings are able to release energy that they can use for the development and exercise of the higher faculties. This process of habituation occurs at two levels: that of the world (which is habituated, domesticated, and made predictable) and that of one's own body (which is habituated to react appropriately and as smoothly as possible to that world). This happens thanks to techniques and technologies or, one might add, *praxis* and *poiesis*:

> the exonerative principle makes it impossible to separate these two elements […] habit is not a pure practical performance, but is a principle embedded in that technical proto-object which is the body, but structured according to an inescapable relation to a technicalized environment. In

> Gehlen's discourse, in short, the tension between practical and objectual dimensions remains alive, but it hangs for the first time on the "objectual" side.
>
> (371. My translation)

De Cesaris's article concludes with a presentation of the work of Marshall McLuhan and Friederich Kittler, in whom reflections on habit would lean entirely, perhaps even excessively, toward the side of technologies. Indeed, in their work, a habit no longer concerns the dimension of the subject's practices but the way in which technological tools (in this case, media) become conditions of possibility for those same practices. What is notable in this regard is the reference to Kittler's "historical a priori" (also called "technological a priori" and "material a priori"). Media would be anthropological a priori in the sense that they literally produce habituating and domesticating human beings. Practices are not eliminated but are understood within this condition of possibility. The relationship between the practical (technical) dimension and the proper technological dimension is thus entirely reversed in favor of the latter.

One might conclude that my reflection on technological and digital *habitus* is meant to go in the same direction. However, it is precisely to avoid the risk of absolutizing the technological dimension of *habitus* that in the second part of the book I propose to understand the concept of technological and digital *habitus* from *both* its practical and technological sides. In Chapter 2.1, technological *habitus* refers mainly to the projection of human (not individual but social) practices on the conception and uses of technical and digital objects. In Chapter 2.2, digital *habitus* refers to the fact that digital machines themselves, especially machine learning algorithms, are conditions of possibility of the technological order of our thinking, acting, and desiring within and outside digital mediations. Finally, in Chapter 2.3, I seek to mediate between these two extremes through an analysis of the simultaneously technical and cultural artifacts that are the popular images of artificial intelligence (AI). As theorized in the previous chapters, my purpose is to hold together the material and symbolic perspectives. It would be absurd to think that the classifications of AI algorithms—the material digital *habitus*—are independent of certain worldviews, and it would be equally absurd to think that the very materiality of these world classification systems does not have effects on the symbolic forms by which human beings access the world. Put differently, the relationship between the practical and technological dimensions of *habitus* is circular or hermeneutic in nature.

There are three important achievements of this chapter. The first is to have shown how the concept of *habitus* used by Bourdieu is actually close to the *consuetudo* of modern authors such as Montaigne and Pascal. With

the term *consuetudo*, these authors want to account for a social order (set of rules and laws, customs, habits, and so on) that has no metaphysical foundation but has been consolidated over time. Unlike these authors, who seem resigned to the acceptance of this order, Bourdieu adopts a critical attitude that does not, however, consist in a simple declaration of freedom against social constraints, as in the philosophical prophetism and heroism of Nietzsche, Heidegger, Sartre, and others. Instead, it is an in-depth study of these constraints, whose ultimate goal is to identify and promote small margins of freedom. By analogy, one might think of a complex mosaic in which the subject is always entangled and through which he or she is constituted as a subject. However coercive this mosaic may be—and even if it comes to preventing all movement or making all movement utterly predictable—the solution is never to get out of the mosaic (not least because that is impossible) and perhaps not even (at least not always and in any case) to destroy its pieces but to move them to a different position while being aware that injustices from one specific set of the mosaic will give way to others.

The second achievement is to have understood *habitus* in the light of the culturalization and socialization processes of schematism, imagination, and Kantian categories. Whereas for Kant these categories are a priori and universally shared by all human beings, for a number of authors (Cassirer and Panofsky, Durkheim and Mauss, and so on) and for Bourdieu himself, the spectacles we wear to access the world are instead "a priori a posteriori"; that is, they are conditions of possibility of access to the world that have been historically, socially, and culturally constituted. In fact, "spectacles" serve as a bad metaphor because it is focused on a specific sense, namely sight. One should then talk not so much, or at least not only about spectacles but also about gloves, shoes, underwear, and so on. Indeed, we have seen that to make up for the excessive intellectualism of Durkheim's perspective, Bourdieu turns to Mauss and his theory of body techniques. The third achievement of this chapter is to have shown how, although predisposed to accommodate technologies, Bourdieusian *habitus* theory does not include a reflection on its proper technological dimension, which is the subject of the next chapter.

I think that a Bourdieu-inspired theory of technological *habitus* such as the one I detail in the chapters that follow can be of great help to the already abundant critical theory on (digital but not only digital) classification systems and their consequences—think of the foundational work of Geoffrey Bowker and Susan Star (2008). Yet, precisely because what is at stake are not only classification techniques and technologies as such but also the fact that classifications of the world are the way we access and operate *all* technical and digital objects, a critical theory of technological and digital *habitus* goes beyond the narrow scope of criticism of information classification practices and systems.

Notes

1 The Essays are quoted according to the edition freely available online as part of Project Gutenberg: https://www.gutenberg.org/files/3600/3600-h/3600-h.htm, which corresponds to de Montaigne (2019). All links have been last accessed on January 10, 2023.
2 The Pensées are quoted according to the English translation freely available online via Project Gutenberg: https://www.gutenberg.org/files/18269/18269-h/18269-h.htm, which corresponds to Pascal (1958).
3 I refer to Bourdieu (2000: 129), who speaks out against hermeneutics, particularly its predilection for understanding over explication, such as existential truth over hard methods. For Bourdieu, this is a very positivistic perspective on both the natural and social sciences. For me, this critique applies to the hermeneutics of Heidegger and Gadamer, but not to those of Ricœur.
4 Without entering too deeply into detail, I see a convergence between Bourdieu's appropriation of schematism (and thus his notion of habitus) and John B. Thompson's (2022) approach to ideology.
5 Bourdieu explicitly recognizes Durkheim as one of the precursors to his use of *habitus*, but the influences that led to the Bourdieusian concept of habitus are manifold. They range from Husserl to Mauss, from Merleau-Ponty to Panofsky. In the following chapters I try to partially account for these influences. For a detailed historical reconstruction, see Grange (2009). As for the history of the concept in Bourdieu, it was already operative in his Algerian writings of the 1950s and 1960s, although he preferred terms such as "dispositions," "attitudes," and "conducts." The concept of habitus fully emerges in Bourdieu's afterword to the French translation of Panofsky's book *Gothic Architecture and Scholasticism* (Bourdieu, 2005) and is especially well systematized in *Outline of a Theory of Practice* (2019) and *Practical Reason* (1998).

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Part II

2.1 Technological *Habitus*

In Chapter 1.1, I discussed my encounter with transhumanism. I could not help but be suspicious of a perspective that tends toward a certain optimism and toward taking leave of present technologies in favor of technological alterities (i.e., technologies that are always in another place or time). However, my thesis has been that transhumanism, precisely in its focus on technological alterities, reveals something about our attitude toward technologies in general: our approach to technologies is always symbolically mediated. This epistemological thesis paved the way for an ontological thesis: the surplus of meaning that characterizes our interaction with technologies is constitutive of the technologies themselves.

In fact, an alternative to the term "technology" could have been Gilbert Simondon's notion of "technical object." According to Xavier Guchet (2019), this notion refers to the fact that Simondon technologies exceed artifacts (i.e., the mere combination of passive matter and human explicit intentions). It is true that in the first part of *On the Mode of Existence of Technical Objects* (*METO*) (2017), Simondon insists on the internal normativity of the technical objects. However, it would be wrong to think that Simondon considers technology to be an entirely autonomous sphere. First, every technical object is related to an "associated milieu"; that is, a techno-natural milieu that the technical object creates or projects as its own elemental ground. Second, every technical object takes on meaning and value only insofar as it is oriented toward the defense of what Simondon called the "vital interests." In the third part of *METO*, Simondon introduces his version of "aesthetics," by which he denotes the ability and duty to evaluate each technology with respect to its integrity, to the overall coherence of the objects of intervention, whether it is, for example, a living being or a landscape (Guchet, 2019: 713). Even our social, political, and ethical values, which we often embody in the technical objects, have value for Simondon exclusively in light of these vital interests.

I do not agree with Simondon's absolutization of the transcendental of technology that he calls vital interests. For example, I do not think it is

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always easy to decide between the vitalist right to health and life and other rights—to work, to expression, and so on. Think of the first wave of the COVID-19 pandemic, when national governments tried to strike an impossible balance between economic well-being and the health of their citizens. Consider also the many people who risk their own lives and sometimes sacrifice themselves to defend their moral cause. I am not thinking only of terrorists or suicide bombers. I am also thinking of political activists, journalists, and all those who try to inform and promote social rights despite living in or having been exiled from authoritarian states. That said, what I admire about Simondon's perspective is precisely the effort to think about technology beyond its more immediate and passive materiality, thereby grasping part of its transcendentality.

In Chapter 1.2, I introduced the concept of the technological imaginary. I started with a critique of the current status of the philosophy of technology and its empirical turn, a topic I discuss further in this chapter. I also introduced the "hermeneutic philosophy of technology" (HPT) and distinguished between its general and specific versions. The task of the former consists of mapping and analyzing with different methods the multiple transcendentals of technology and their relations. The task of the latter—which is the kind of HPT that I practice in this book—is to explore the transcendentals revolving around symbols, culture, and society that contribute to the formation of specific forms of life and worldviews. The notion of technological imaginaries aims at accounting precisely for this amalgamation of transcendentals. Such a concept corresponds, in my view, to a socialized and culturalized version of Kantian schematism.

In my previous research (Romele, 2021), I coined the concept of "*e*magination" to indicate that our imagination is always technologically externalized and that digital technologies are one of the privileged places where individual schematism takes place nowadays. The notion of technological imaginaries indicates the always socialized dimension of our individual productive *e*maginations that I partially neglected in my previous research. In fact, we could talk of *e*maginaries to indicate the fact that imaginaries are always technologically externalized (and, in this respect, the expression "technological imaginaries" is a sort of pleonasm) and that digital technologies are one of the privileged places where social schematisms take place nowadays. This means that technologies, especially digital technologies, are both "schematizers" and "schematized." They are specific pairs of glasses that give us access to the world and are in turn accessed (and, before that, designed) according to other pairs of glasses crafted by social and cultural forces—a visual metaphor that is, as I noted at the end of the previous chapter, simplistic.

Sheila Jasanoff (2015) insists on the institutionalized dimension of sociotechnical imaginaries and on their orientation toward the utopian

future. In my research, I prefer to focus on the non-institutional dimension (collective rather than communitarian) of technological imaginaries and on the fact that most of these imaginaries, even when announcing the utopian future, actually have the function (or at least the effect) of reiterating in the present the ideological past—what in the final chapter I call, relying on Jacques Rancière's political aesthetics, the dominant "distribution of the sensible."

In Chapter 1.3, I introduced the notion of *habitus* precisely with the goal of better structuring my perspective. For Pierre Bourdieu—who represents a major source for my use of this concept—*habitus* has to do with the way social patterns both in terms of ways of accessing the world and terms of ways of presenting oneself to the world are embedded and embodied in individuals as members of a social class or group and tend to repeat themselves from generation to generation. I showed that while Bourdieu uses the term *habitus*, he has something closer to the *consuetudo* (*coutume* in French, custom in English) in mind. I also showed that Bourdieu continues to use the term *habitus* to mark the closeness with the heretical Kantianism of authors like Ernst Cassirer, Erwin Panofsky, Émile Durkheim, and Marcel Mauss. Against the psychologization and the logicization of the Kantian categories and productive imagination, these authors insist on their social and cultural nature. The categories and the productive imagination are "a priori a posteriori"—that is, necessary to our access to the world, but contingent on the ways they historically emerged in different cultures and societies. Finally, I insisted on the technological dimension of the *habitus*.

Bourdieu unquestionably points the *habitus* toward its technological dimension. In his reflection on the embodied *habitus*, he is inspired by Mauss' concept of techniques of the body. Moreover, his descriptions of the *habitus* are full of quasi-technological artifacts such as cooked foods, furniture, and works of art. His perspective is, in this respect, friendly to technological scholars. However, Bourdieu never explicitly acknowledges that "technologies are little crystallized parts of *habitus*." This expression, originally proposed by Jonathan Sterne (2003), means for me at least two things. The first is the fact that when people interact with a specific technology, they interact with it from the perspective of their own *habitus*. The second is the fact that technologies are not simply passive but actively contribute to the reiteration of specific *habitus*. The ways technologies actively contribute to the reiteration of a specific *habitus* have different degrees. In the case of digital technologies, I argue, this degree is particularly intense, because they classify human beings according to their habits, and human beings are sensitive to (i.e., they tend to modify themselves according to) the ways they are classified. By describing the technological *habitus* in these terms, I mean to say that the technological *habitus* has both a practical

and a material dimension. Again, this means that the technological *habitus* refers to both the schematized and schematizing nature of technology. It is to the schematized and schematizing nature of technologies that I devote Chapters 2.2 and 2.3, respectively.

From the perspective of the practical dimension of the technological *habitus*, technologies cannot be reduced to their materiality. They are always wrapped in a surplus of meaning that determines their uses. This surplus of meaning has its reasons that technological reason does not know. According to technological reasons, many technological uses are simply nonsense. The famous case of the ceremonial gift exchange, which implies the possible destruction of the gift itself (which is an artifact, a quasi-technology indeed), could be seen as a liminal case of this fact. From the perspective of the material dimension of the technological *habitus*, technologies are not merely passive and transparent in use. They actively contribute—with different degrees of intensity—to the configuration of the *habitus*. In the next chapter, I refer to digital technologies as *habitus* machines because they classify human beings according to their habits and offer access to a world that is customized according to these habits. The reiterated contact with these machines, I contend, has effects of habituation on the self.

This chapter builds on the hypothesis that theoretical approaches to the philosophy of technology are currently stuck in a false alternative: either embrace the empirical turn or jump back into the determinism, pessimism, and general ignorance toward specific technologies that characterized the "humanities philosophy of technology" of such authors as Martin Heidegger and Jacques Ellul. A third path is, however, possible, which consists of articulating an empirical point of view with an interest in the symbolic dimension in which technologies and technological mediations are already embedded. Bourdieu's sociology of symbolic forms (Bourdieu, 2020) represents an important and mostly unexplored resource in this respect. Consider this sentence from Bourdieu (Bourdieu, 1991: 68), in which I have changed two words ("postphenomenology" instead of "microsociology" and "technological mediations" instead of "interactions"):

> The concern to return to the 'things themselves' and to get a firmer grip on reality, a concern that often inspires the projects of postphenomenology, can lead one purely and simply to miss a 'reality' that does not yield to immediate intuition because it lies in structures transcending the technological mediations which they form.

By renouncing any form of transcendentalism in favor of the material reality of the technological mediations, postphenomenology (and, more broadly, the contemporary philosophy of technology) deprives itself of the possibility of grasping the reality of technologies that lies in symbolic

structures that transcend these mediations. The goal of this chapter is to show that technologies are always entangled in social and cultural dynamics of classification, separation, and eventual exclusion and discrimination. In other words, technologies are always more than the sum of their material parts. Bourdieu's social theory, I believe, allows us to reintroduce a transcendental dimension in philosophy of technology without falling back into forms of dogmatism.

Let me return for a moment on what I find problematic in the current status of the philosophy of technology. In 1998, Peter Kroes and Anthonie Meijers organized a conference at the Delft University of Technology in which a programmatic call for an "empirical turn" in philosophy of technology was made—see Dominic Smith (2018, Chapter 5, Section 1). In the introduction to the subsequent collection of papers, they write:

> Philosophy of technology should keep its distinctive philosophical nature. Nevertheless, it should also base its analyses on empirical material, much more than has been done so far […] The philosophy of technology should concentrate more on the clarification of basic conceptual frameworks used in the engineering sciences and in the empirical sciences studying technology and less on abstract myths and fictions of which it is not clear how they relate to the real world of technology.
>
> (Kroes & Meijers, 2001: XXI)

In 1997, Hans Achterhuis edited a book in Dutch entitled *Van stoommachine tot cyborg: Denken over techniek in de nieuwe wereld* (*From Steam Engine to Cyborg: Thinking about Technology in the New World*). The book contains chapters written by Dutch or Dutch-based philosophers of technology such as Peter-Paul Verbeek, Philip Brey, and Achterhuis himself on American philosophers of technology like Hubert Dreyfus, Don Ihde, and Andrew Feenberg. The book was published in English in 2001 with the title *American Philosophy of Technology: The Empirical Turn*. In the introduction to the English translation, Achterhuis (2001: 8) presents the empirically oriented approach to technology as the work of a constellation of authors who "stand in the middle of the world of designers and users of technology; they make abundant use of research into technology, especially from sociology and women's studies; and they communicate directly with technologists and engineers." The way in which the empirical turn in philosophy of technology is understood by Kroes and Meijers, on the one hand, and Achterhuis, on the other, is rather different.

For this reason, Philip Brey (2010) suggests that one should rather talk of two empirical turns in philosophy of technology. A first empirical turn emerges in the 1980s and 1990s, when neo-Heideggerians like Hubert Dreyfus, neo-critical theorists such as Andrew Feenberg, and postphenomenologist

such as Don Ihde start to focus on concrete technologies and issues and attempt to develop contextual, less deterministic theories of technology. Another empirical turn takes place in the 1990s and 2000s, when scholars like Kroes, Meijers, and Joseph Pitt argue that the problem is that philosophy of technology is less about technology than its social or anthropological consequences. This does not mean that philosophy of technology must be transformed into an empirical science: "its focus should be on conceptual problems, more in particular, on the clarification of basic concepts and conceptual frameworks employed in empirically adequate descriptions of parts or aspects of technology" (Kroes & Meijers, 2001: XXIV). The first empirical turn is society-oriented, while the latter is engineering-oriented.

Despite these clear differences, in research objects, goals, and methods, I believe that these two empirical turns share at least one aspect, namely the exclusion of all considerations regarding the transcendental from the philosophy of technology. For instance, Peter-Paul Verbeek (2011: 161) explicitly accuses the humanities philosophy of technology of such authors as Heidegger and Jaspers of "transcendentalism," "because of its kinship to the transcendental-philosophical focus on understanding phenomena in terms of their conditions of possibility." The empirical turn he pleas for would represent, in this respect, a "radical shift." According to Smith (2018: Chapter 1), the approaches influenced by the empirical turn tend to repeat a fallacy that they diagnose in classical approaches. In other terms, while accusing classical approaches in philosophy of technology of reifying technology as a monolithic entity, they also end up reifying the notion of transcendental. "Transcendental," Smith says, should be used as an adjective rather than a noun.

In the rest of this section, I focus on the specific case of postphenomenology. On the one hand, because of the philosophical tradition, which refers to phenomenology, hermeneutics, and more broadly continental, post-Kantian philosophy, postphenomenology has all the means at its disposal for reflecting on technology without losing sight of its non-technological conditions of possibility. On the other hand, however, despite some marginal exceptions, postphenomenology is one of the strongest and most influential proponents of an empirical and, so to say, "flat" perspective in philosophy of technology. Such a perspective could certainly be justified between the 1980s and the 1990s. It was a matter of overcoming the humanism and anthropocentrism that, despite the efforts of many structuralist and poststructuralist theorists—and, interestingly enough, of Heidegger himself—still dominated human and social sciences. It was also about going against the exaggerations of the linguistic turn that ravaged human and social sciences for decades—and of which structuralism and poststructuralism have been the most powerful and fascinating tenants. However, it also ended with throwing the baby out with the bathwater.

In particular, I depict three perspectives in postphenomenology. In order to do so, I resort to a metaphor, or model. In Edwin Abbot's novel *Flatland: A Romance of Many Dimensions* (2019), the story is told of a Square who lives in a two-dimensional world called Flatland occupied by geometric figures—whereof women are simple line segments, while men are polygons whose importance in society depends on their number of sides. The second part of the novel begins with the Square dreaming on New Year's Eve about a visit to Lineland, a one-dimensional world inhabited by "small straight lines" and "lustrous points." These points are unable to see the Square as anything other than a set of points on a line. Thus, the Square attempts to convince the realm's monarch of a second dimension but is unable to do so—resulting in the monarch's attempt to kill the Square. Following this vision, he is himself visited by a three-dimensional Sphere. The Square is unable to see the Sphere as anything other than a circle that expands and retracts. The Sphere inhabits a three-dimensional world called Sphereland and visits Flatland at the turn of each millennium to introduce a new apostle to the idea of a third dimension. The Square cannot convince anyone of Spaceland's existence, not even his brother, and is imprisoned for preaching the existence of three dimensions. Like in Abbot's novel, we might say that in postphenomenology as well, there are three worlds or dimensions.

First dimension: In its earlier version, postphenomenology is a Lineland in which one single human-technology-world relation at a time is deployed. Small straight lines and lustrous points are the basis behind Ihde's famous idealtypical distinction among four human-technology-world relations: embodiment relations (exemplified by the scheme [Subject-Technology]→ World), in which a human integrates the artifact into their bodily encounter with the world, and the artifact becomes almost transparent in use (for instance, glasses); hermeneutic relations (exemplified by the scheme Subject→ [Technology-World]), when technology must be "read" to access the world (for instance, maps or thermometers); alterity relations (exemplified by the scheme Subject→ Technology[-World]), in which the encounter with the world is suspended, and the user treats the technology as a quasi-alterity (for instance, video games); and background relations (exemplified by the scheme Technology→ [Subject-World]), when technologies create the conditions of possibility of a certain relation with the world (for instance, heating system or artificial lighting) (Ihde, 1990: 72–123). From this starting point, orthodox postphenomenological literature takes two main directions. Some scholars focus on analyzing how specific technologies fit the four ideal types. They also concentrate on how emerging technologies impose adaptations of the original framework proposed by Ihde. For example, Verbeek (2011: 140) introduces the notion of cyborg relations, to describe situations in which the boundaries between

technologies and human beings are blurred in a physical way, as in the case of psychopharmaca and neural implants. He also speaks of immersion relations (Rosenberger & Verbeek, 2015: 21–22) in which technologies merge with the environment.

Second dimension: the limits of this linear approach quickly emerged, especially when compared with the more complex analysis in other fields such as science and technology studies (STS). For instance, in actor-network theory (ANT), technologies are considered part of a broader network of interactions between humans and non-humans technologies, institutions, animals, and so on. These interactions "transcend," and one might say, the single technology or technological mediation. However, one should keep in mind that such transcendentality is still immanent, in the sense that it focuses on the ways single technological mediations are materially embedded in networks of social actants. Some mediation theorists have proposed to articulate postphenomenology with ANT, in particular in its Latourian version. According to Verbeek (2005: 165),

> While Latour in principle can study the endless number of chains, postphenomenologists seem to be restricted to two […]. But the difference between the two approaches is more subtle than that, for in these short chains the postphenomenological perspective can bring to light things that remain invisible to actor-network theory. The postphenomenological perspective, for instance, offers a more nuanced look at the connections between the entities in its chains.

To put it differently, while ANT is more suitable for analysis "in-width," postphenomenology is to be privileged for research "in-depth," especially when it is a matter of recognizing differences among the modes of existence. In Aaron Smith's (2003: 189) words, "Latour's view […] does not develop in nearly the same depth the direct personal relationships with artifacts that Ihde's does. Instead, Latour's project could be seen as picking up where Ihde's left off because it emphasizes systems of relations."

ANT is a Flatland. Actually, Bruno Latour himself contends that

> it's as if we had to emulate in social theory the marvellous book Flatland, which tries to make us 3-D animals live inside a 2-D world only made up of lines. It might seem odd at first, but we have to become the Flat-Earthers of social theory.
>
> (Latour, 2007: 171–172)

Latour's social theory aims at overcoming the individual versus society conundrum that has kept social and political theorists busy for the last two centuries; incidentally, this is also the reason why, in the past years,

he gave so much importance to digital methods for social research. I will discuss this point in the next chapter. Moreover, because of the "principle of symmetry" according to which humans and non-humans should be assigned an equal amount of agency, actor-network theorists tend to level out the differences in terms of intentionality, agency, and so on—in this respect, we have said, postphenomenology is supposed to be more attentive to the peculiarities of each mode of existence. ANT "zombifies," in sum, social actors and society itself.

According to Sheila Jasanoff (2015: 16–17), ANT is, for example,

> too distributive, too promiscuous in attributing cause and agency. As even the friendliest critics have observed […] it risks a kind of moral nihilism, making all actions and agents seem equally responsible, or irresponsible, for the network in which they function.

She then tries to bring together "the normativity of the imagination [the sociotechnical imaginaries] with the materiality of networks" (19). In more recent publications, Latour himself admits the limits of ANT. For instance, he writes

> We understand this now, this method has retained some of the limitations of critical thought: the vocabulary it offers is liberating, but too limited to distinguish the values to which the informants cling so doggedly […]. A tool in the war against the distinction between force and reason, it risked succumbing in turn to the unification of all associations under the sole reign of the number of links established by those who have, as it were, 'succeeded.'
>
> (Latour, 2018: 64)

Hence, as paradoxical as it may sound, ANT is arguably a metaphysics of presence, in the sense that it is content with the most visible aspects of the sociotechnical reality. The same holds true for postphenomenology as well.

Third dimension: In Ihde's earlier version of postphenomenology, the linear perspective of the human–technology–world relations was counterbalanced by the notion of multistability. It can be argued that while the former is the result of the phenomenological heritage stricto sensu (mainly Husserl and Merleau-Ponty), the latter is a derivation of the—often neglected—properly hermeneutic dimension of postphenomenology. The former concerns perception, while the latter regards meaning. Once understood in this light, postphenomenology appears to be a sort of Sphereland: technological linear mediations, and eventually two-dimensional networks of social actants, are embedded into a third dimension whose nature is mainly symbolic.

In the beginning, Ihde used the notion of multistability in a phenomenological and perceptual context. He often refers to the Necker cube. The Necker cube is an ambiguous image: the parallel edges of the cube are drawn with parallel lines on the drawing. When two lines cross, the image does not show which is in front and which is behind. Thus, it can be interpreted in two different ways at the same time.

Ihde introduces the notion of multistability in *Experimental Phenomenology* (2012) with the intention of accounting for illusions and multistable phenomena exceeding familiar perceptions. More specifically, he resorts to this concept to present the potential of the phenomenological approach. In his words, "phenomenological observations do violence to the passivity of ordinary viewing. There is a deliberate probing of the phenomenon for something that does not at first show itself, and a growing sense of control over what is seen" (76). However, over the years both the notion of multistability and the Necker cube become for Ihde a way to account for the socially and culturally based variations in technology uses and misuses (Ihde, 1990: 144–145). In other terms, multistability and the Necker cube abandoned the domain of perception in favor of that of signification.

It is not by chance that in Ihde (1990), the concept of multistability is introduced in Chapter 6, entitled "Cultural Hermeneutics." The articulation between the empirical perspective developed in the analysis of the human-technology-world relations and the interest in the cultural and symbolic dimension in which these relations are entangled coincides with what I call here the shift from postphenomenology to posthermeneutics. The "post-" means that such an approach aims at overcoming both the limits of the "idealism of matter" that characterizes classic hermeneutics and the empirical exaggerations of philosophy of technology after the empirical turn. The fact is that "[a]t the cultural level, […] more occurs than simply the number and type of human-technology relations" (124). Ihde gives several examples, such as the case of the oval cans of sardines left behind by Australians after they first penetrated the New Guinea highlands in the 1930s in search of gold. These tins were immediately used by New Guineans as precious objects and made into centerpieces of the elaborate headdresses they wore on special occasions. Against the predictions of analytic uniformity (Marcuse), of the victory of technique (Ellul), and of the sheer world of calculative thought (Heidegger), the American philosopher (159) announces maybe too enthusiastically that "[t]here will be diversity, even enhanced diversity, within the ensemble of technologies and their multiple ambiguities, in the near future." Ihde's perspective brings to the forefront Clifford Geertz's approach, according to which humans are animals "suspended in webs of significance." All human actions, gestures, and productions (including the technological ones) are entangled in these

webs. This is the reason why, for Geertz (1973: 6), "the difference, however unphotographable, between a twitch and a wink is vast; as anyone unfortunate enough to have had the first taken for the second knows." For me, Ihde's example of the cans of sardines is still partial, because it does not account for the fact that culture and society have a concrete impact on the processes of invention and implementation of a given technology. Moreover, the sardine cans' example misses another point, which is that things can also go the other way around: technologies (or at least some of them) have an impact on the symbolic order that structures an entire culture and society. In other words, there is a hermeneutic relation between the technological and the symbolic order.

While the notion of multistability had an important role in Ihde's earlier postphenomenological program, it seems to have lost momentum in the successive evolution of the field. In Verbeek (2005), just a few pages are devoted to it. He vaguely refers to the fact that technologies have no essence and "they are what they are only in their use" (118). He also transforms its meaning when he says that multistability implies "that specific goals can be technologically realized in different ways by a range of artifacts" (136). In this way, he implicitly moves the attention from the plurality of cultures (and also from the forms of life within each culture), in which technology is embedded, to the plurality of technologies that can realize a scope that seems to transcend the specificity of culture. In Verbeek (2011: 97), the notion seems to have the sole function of recalling the limits and the difficulties in anticipating all possible mediations, because "there is no unequivocal relationship between the activities of designers and the mediated role of the technologies they are designing."

* * *

I now wish to account for some critical voices, within and outside postphenomenology, that argues in favor of a less materialistic and flat approach to the philosophy of technology.

Lasse Blond and Kasper Schiølin (2018: 160) affirm that the problem of recognizing conditions external to technology in postphenomenology may be embedded in the very core of the theory or at least in one of its most well-known programmatic trademarks:

> Don Ihde's […] program 1, which categorizes different human-technology relations. Through Verbeek's […] reception of program 1, it has indeed become the locus classicus of postphenomenology and the point of departure for many newcomers and students in the field.

However, postphenomenology has largely neglected Ihde's program 2, the hermeneutic, social, and cultural one.

Some attempts have been done within postphenomenology to rehabilitate multistability and, more generally, to develop a series of considerations on the transcendental (mainly social and cultural) conditions that have an impact on technological invention, implementation, and use. For instance, Blond and Schiølin (2018) themselves analyze the transfer of technology between two cultures, specifically the transfer of the South Korean robot Silbot to a Danish rehabilitation center.

Robert Rosenberger (2014) introduces a two-step method consisting of variational analysis, which demonstrates a technology's multistability, and variational cross-examination, that is, a critical contrast of the stabilities that have been identified as useful for scrutinizing the dominant stability. He focuses on three categories of features that characterize various stabilities: first, the set of bodily behaviors and habits involved in each relation to technology; second, the roles a technology could potentially play in various networks of associated actors; third, "concrete tailoring," that is, the particular way a technology may be physically altered in the process of making it useful toward a specific use. It can be contended that none of these features overcome the limits of the empirical, technical, or material impacts of multistability. While the author would certainly agree with the fact that the reasons for variations and stabilizations of technology lie elsewhere (for instance, in what concerns the design of public benches he studies, in forms of domination and discrimination), in this context, he did not offer any specific account for it.

In his more recent pamphlet about design against the homeless, Rosenberger (2017: Chapter 4) explicitly affirms that "design and law come together to unjustly and unethically push the unhoused out of shared public space." This actually corresponds to the idea that the philosophy and ethics of technology are not enough, because technologies are embedded in norms that reflect, in their turn, (dominant) principles and values. A good example might be the speed bump popularized by Latour (1994). Certainly, the speed bump is a case of delegation of moral behaviors from humans to non-humans, in the sense that it perfectly works in the absence of the engineer or the (non-sleeping) policeman. However, it must not be forgotten that this artifact, throughout its invention, implementation, and use, is constantly sustained by a "force of law." If this was not the case, someone could simply get out of the car and push it out of the way. The fact is that technologies are implicated not only in linear or bidimensional relations among humans and non-humans but also in three-dimensional normative and symbolic structures. In the words of Rosenberger (Ibid.),

> technologies should also be understood as essentially wrapped up within our society's larger politics, including economic systems, law

enforcement procedures, democratic and undemocratic representational schemes, penal methods, and racial and sexual power dynamics, to name just a few of the basics.

Incidentally, one can argue that even the empirical approaches to technology are, in fact, not empirical, but rather embedded in a specific libertarian conception of society.

It is precisely for systematizing a plethora of notions and perspectives (economic systems, representational schemes, power dynamics, and so on) which remain mostly implicit in Rosenberger's approach that Bourdieu's sociology might be useful. Mark Coeckelbergh (2020) analyzes the relations between technology and language and pleas for what he calls a "transcendental turn" in philosophy of technology. For Coeckelbergh, technology has both the role of mediator between humans and the world, and of transcendental conditions that make a particular mediation possible. Referring to the philosophy of the later Wittgenstein, he speaks of "language games" and "technology games" that make possible and structure particular uses of language and technology. However, it can be argued that this transcendental turn is not transcendental enough, because language and technology as transcendental conditions have their conditions of possibility lying elsewhere.

Without entering the details of the discussion, a movement like the one proposed here can be observed in the shift in Ludwig Wittgenstein's philosophy from the concept of "language game" to the notion of "world picture." While in the Wittgenstein of the *Tractatus*, the word finds its meaning in the sentence, and in the *Philosophical Investigations*, the sentence has its meaning in the context of a language game; in *On Certainty*, language games derive their meaning from a specific culture or form of life.

In his introduction to *Language and Symbolic Power*, John B. Thompson (in Bourdieu, 1991: 8) clarifies that according to Bourdieu, "the efficacy of performative utterances is inseparable from the existence of an institution which defines the conditions (such as the place, the time, the agent) that must be fulfilled for the utterance to be effective." "Institution" does not mean any specific organization, but rather "any relatively durable set of social relations which endows individuals with power, status, and resources of various kind" (Ibid.). This means that there is no sentence or discourse which is performative per se, because the performativity of language always depends on social conditions: "Not anyone can stand before a freshly completed ship, utter the words "I name this ship Queen Elizabeth" while flinging a bottle at its stem, and succeed in naming the vessel: the person must be authorized to do so" (Ibid.). Bourdieu (66)—whose main targets are John Langshaw Austin, Noam Chomsky, and French

structuralism—offers a rigorous definition of linguistic exchange according to his perspective:

> Linguistic exchange—a relation of communication between a sender and a receiver, based on enciphering and deciphering, and therefore on the implementation of a code or a generative competence—is also an economic exchange which is established within a particular symbolic relation of power between a producer, endowed with a certain linguistic capital, and a consumer (or a market), and which is capable of procuring a certain material profit. In other words, utterances are not only (save in exceptional circumstances) signs to be understood and deciphered; they are also signs of wealth, intended to be evaluated and appreciated, and signs of authority, intended to be believed and obeyed.

What Bourdieu's says of language, in which of course, language, discourses, and narratives about technologies are included, I say concerning technology. Technology has specific mediating functions between humans and the world—a world to be understood in the threefold Heideggerian sense of *Selbstwelt*, *Umwelt*, and *Mitwelt*. But in technology, there is also an exchange between a "producer" and a "user" which is established within a particular symbolic relation of power. The producer and user must be properly understood. There are, in fact, technology producers who are mere "users," in the sense that they contribute to the creation of a technological artifact that does not symbolically fit them and their world. Similarly, there are users who are, in reality, "producers," because they resort to technological artifacts that correspond to and improve their symbolic status. Think of someone working at the assemblage of iPhones in China. Such a producer is a user, because his or her intentions, needs, and desires never enter the design process. On the other hand, think of a young engineer working in Silicon Valley. His or her ideas, intentions, needs, and desire are embedded in the iPhone he or she uses, so one could say that he or she is a producer. "Designed in California; assembled in China" is the perfect recap for this paradoxical situation. The inversion between users and producers concerns, of course, not only the individuals but also entire social groups and societies. Technologies, probably more than language, have their materialities and their affordances. And yet, they are also, or even mostly, signs of authority, intended to be believed and obeyed as they are. Indeed, the symbolic dimension penetrates the entire process of technological invention, implementation, and use.

The moment has arrived to introduce the concept of technological *habitus*. I will do it in two steps. I will first introduce the notion of technological capital, and I will present afterwards the technological *habitus* as a specific

state of it. Bourdieu (1986) famously distinguishes between three forms of capital: economic, cultural, and social. Generally speaking, capital is

> accumulated labor (in its materialized form or its 'incorporated,' embodied form) which, when appropriated on a private, i.e., exclusive, basis, by agents or groups of agents, enables them to appropriate social energy in the form of reified or living labor.
>
> (241)

The capital is what guarantees both the force of a social actor/groups of actors and the attraction for this actor/group of actors of a certain good, and the regularities of the interactions within the social world. Capital tends to accumulate, and it is precisely on the basis of such accumulation that differences in terms of hierarchy, recognition of the authority, and ultimately, in capacity or possibility of action for social actors/groups within the social world are based. The more capital a social actor/group has, the more she or he will be able to move forward and succeed within a social world that is, moreover, framed according to her/its wills and needs—because dominant social actors/ groups have the double role of players and rulers.

I propose to define technological capital in these terms: the more a social actor/group has technologies at her/its disposal (in terms of property, but also accessibility and design), the more she/it will be recognized as an authority and the more she/it will be able to move and act within a technologically mediated social world which will become increasingly tailored to her/it. As an example, think of the way city public transport or even the public transport system of an entire country is often designed according to a centralized logic that favors the dominants over the dominated. For instance, in France, if one wants to go from Nantes to Bordeaux (near the Atlantic coast of the country) by high-speed train (TGV), he or she has to travel through Paris. Hence, Paris has technologically imposed itself over other parts of the country, and those who live in Paris (and can afford, both economically and symbolically, to travel by TGV) deal with a world that better fits their needs, intentions, and desires.

The notion of capital is strictly related to that of the field. According to Bourdieu and Loïc Wacquant (1992: 100),

> [w]e may think of a field as a space within which an effect of field is exercised, so that what happens to any object that traverses this space cannot be explained solely by the intrinsic properties of the object in question. The limits of the field are situated at the point where the effects of the field cease.

The best analogy is probably that of a game, in which there are rules stating what is acceptable and what is not for the players and therefore deciding who wins and who loses. There are, however, at least two differences between field and game. First, in a field, rules are rarely explicit—and social actors who already are in the field have no interest in revealing these rules. Second, in a field, rules can quickly change, for instance when an outsider from another social actor/group succeeds in imposing herself/itself in the field.

One can distinguish between two different kinds of fields and hence of capital: first, micro-fields, each one with its own capital, that is, the ensemble of goods that has value within the field, such as the journalistic field, the artistic and literary field, and the philosophical field; second, macro-fields and capitals (for instance, in the French society studied by Bourdieu, economy, society, and culture). Linguistic capital is another form of macro-capital, in the sense that language, spoken and written, is used in a plurality of other fields for social interactions. Several elements contribute to the establishment of distinctions among social actors within this macro-field, like accents, the use of particular regional expressions, vocabulary at disposal, and knowledge of foreign or ancient languages.[1] Technological capital is precisely a form of macro-capital, at least in our Western or "westernalized" societies.

One can also distinguish among three states of technological capital—this threefold distinction is freely inspired by Bourdieu (1979): first, an objectified state, which is represented by all the technologies that are owned by the social actor/group, or can be used by him/her/it at will and desire, or are designed for him/her/its needs; second, an institutionalized state, in which some social actors are authorized to use technological artifacts in a certain way or have access to them while others are not; third, the embodied state, in which social actors/groups "authorize themselves" or prohibit the use of technological artifacts in a particular way. This last state recalls the third key notion of Bourdieu's sociology, after those of capital and field, namely the notion of *habitus*.

The *habitus* is what makes a social group or class become a group or a class; that is, what makes the single decisions and actions of each member of a social group or class, when it comes to specific objects and situations, resemble each other. In the words of the French sociologist, the *habitus* is a "conductorless orchestration which gives regularity, unity, and systematicity to the practices of a group or class, and this even in the absence of any spontaneous or externally imposed organization of individual projects" (Bourdieu, 2019: 80). And again, "the practices of the members of the same group or class are more and better harmonized than the agents know or wish" (81). The *habitus* does forge not only our actions or reactions but also our desires and, supposedly, most autonomous and authentic

aspirations. It is both cognitively embedded and embodied in gestures, postures, movements, accents, and so on.

The notion of technological *habitus* in its practical dimension suggests that behind the technological design, and normativity, there are also uses and accesses to technologies that social actors/groups authorize/prohibit themselves. One trivial example is that of the public transport systems in a metropolis. Transport systems are full of designs that allow specific uses and prohibit others, such as the anti-homeless benches described by Rosenberger. They also have several norms which cannot be directly embedded into the technological design, like the prohibition in many cities to perform music on buses and subways. But what is particularly interesting is that often social actors/group has a "sense" of what is allowed and what is not. To some extent, it is a matter of culture: in Paris, for instance, people usually do not eat or drink on the buses or in the subway, while this is not the case in several German cities. In part, it is a matter of social distinctions. For example, while all parts of Paris are well connected to each other by public transport, people from poorer arrondissements of the Rive Droite have perfectly internalized the fact of not going into the richer arrondissement of the Rive Gauche—and vice versa of course. This does not happen because they cannot (this would be the case if the public transport system was designed for impeding people from freely moving between Rive Gauche and Rive Droite), nor because they are not allowed to (this would be the case if there was a law similar to the Group Areas Act during apartheid in South Africa); it happens simply because they do not want to, and because they do not have any particular interest in walking through districts which are considered pleasant just for tourists and postcards. These social tendencies usually transcend the limits of a single culture. The example of the social silent separation between the Parisian arrondissements can also be applied to most of the cities in the world, as well as to other contexts and objects (schools, theaters, sports, etc.). It is also noteworthy that even the eventual actions of subversion can be labeled as such precisely because they take place in a sociotechnical reality that has been framed according to the unequal distribution of technological capital.

Incidentally, with this example, I show that the technological capital must not be confused with the economic accessibility of certain products, nor must it be reduced to the prestige of one brand or model over the other. These are indeed just secondary aspects of the technological capital. In the case of the Parisian subway, there is no difference in terms of economic accessibility or prestige, and yet people do not interpret, understand, and use it in the same way. Consider the numerous cases in which it is precisely the most fragile social groups who desire and own, at the cost of sacrifices, certain products (cars, smartphones, luxury handbags, etc.), while those who have the means are often the first to give them up. There are a number

of testimonies from Silicon Valley gurus who refuse to use smartphones and prevent their children from using tablets. In this sense, one could say, technological capital increases inversely with the degree to which one owns that artifact.

Needless to say, the threefold distinction between an objectified, institutionalized, and an embodied state of technological capital is idealtypical, in the sense that these three dimensions influence and penetrate each other continuously. For instance, normativity is always embedded into the technological design. The same holds true for the *habitus*. Conversely, the reiterated contact with a certain technological design and with a certain normativity contributes to framing the *habitus*. From a Bourdieusian perspective, it is, however, important not to reduce the *habitus* to its technological actualizations. This would mean, in fact, returning to the limits of the empirical turn—this happens, for instance, in Sterne (2003: 376–377) who sees a perfect continuity between Latour's famous example of the door-closer and the application of Bourdieu's concept of *habitus* to technologies. The technological *habitus* is always more than its actualizations, not only in technology but also in norms and actions/intentions. It might be said that the technological *habitus* is the interface (the schema) between the visible and the invisible, the material, and the symbolic dimensions of the sociotechnical reality.

In fact, it must be stressed that next to the micro- and macro-forms of capital, Bourdieu also introduced what might be called a meta-capital, namely the symbolic capital. Behind all dynamics of exchange and distribution of micro- and macro-capitals, there is indeed the quest and struggle for social recognition and consideration:

> All manifestations of social recognition which make up symbolic capital, all the forms of perceived being which make up that is known, "visible," famous, admired, invited, loved, etc. are so many manifestations of the grace (charisma) which saves those it touches from the distress of an existence without justification […]. Conversely, there is no worse dispossession, no worse privation, perhaps, than that of the losers in the symbolic struggle for recognition, for access to a socially recognized social being, in a word, to humanity.
>
> (Bourdieu, 2000: 241)

Every form of micro- and macro-capital functions as a symbolic or meta-capital, so that in rigorous terms, Bourdieu (242) says, one should better speak of "symbolic effects of capital." This means that all other forms of capital are contingent on a specific culture, epoch, and so on. For instance, one could imagine a society in which the economic capital has no symbolic value or at least in which its symbolic value is counterbalanced

by the symbolic value of other capitals. This has been precisely the case for Bourdieu of the cultural capital of French society, although it is decreasingly true.

Technological capital still lacks full recognition. Unquestionably, most of us live, in many respects, in technocratic societies, in which technologists (i.e., people having a relevant amount of technological capital) are widely recognized, acclaimed, or admired. Generally, technological competences are appreciated, and several measures are undertaken at this moment by public institutions to improve them among the population. However, this is not yet a complete vision of what technological capital is. Indeed, technological capital is primarily about the unequal distribution of technological resources, embedded in design, norms, and habits. In addition, technological capital also depends on symbolic capital, insofar as technological design, norms, and habits are results of processes of social recognition, distinction, and exclusion.

The idea of the lack of recognition of technological capital might seem in contradiction with the very definition of symbolic capital as "any property (any form of capital whether physical, economic, cultural or social) when it is perceived by social agents endowed with categories of perception which cause them to know it and recognize it, to give it value" (Bourdieu, 1998: 47). Technological capital is indeed mostly unrecognized, because technologies are still taken into a sort of illusion of transparency and neutrality. But this is the case with other forms of capital as well, such as the informational capital Bourdieu (45) talks about, and which was concentrated for him into the State—while today is rather concentrated in big tech companies like Meta and Google.

For me, it would be a mistake to reduce the technological capital to economic capital or to other forms of macro-capital. There are, for sure, laws and principles of convertibility between them, and between all the forms of capital. But the conversion depends on the symbolic value we attribute to each form of macro-capital within a specific culture and society. This means that technological capital has its own autonomy from other forms of macro-capital such as economic capital. For instance, there is no economic value in the technological capital of a subway bench—technological capital is understood in terms of accessibility and legitimacy in use. This also means that the technological capital, as all the other forms of macro-capital, is indeed submitted to the symbolic meta-capital.

* * *

In the first part of this chapter, I accounted for the flatness of the empirical turn in philosophy of technology, with a special focus on postphenomenology. I have also argued that the articulation between postphenomenology and ANT remains within the limits of an immanent transcendentality.

Furthermore, the seminal work of Ihde on the cultural dimension of technology has been mainly neglected by the following generations of postphenomenologists.

Jochem Zwier et al. (2016) propose to overcome the limits of the empirical turn of postphenomenology through rehabilitation of the ontological dimension of Heidegger's early phenomenology and his notion of enframing. This approach is particularly suitable for liminal situations in which we deal with what Timothy Morton (2013) calls "hyperobjects," when it comes to planetary ecological dynamics. Smith (2018: Chapter 4) introduces the notion of "exceptional technologies," that is,

> artefacts and practices that appear as marginal or paradoxical exceptions to a received sense of what empirically constitutes a technology in a given context [...] but can nevertheless act as important focal points for drawing out and challenging conditions implicated in the received sense.

While I share with these authors the same judgment about the exaggerations of the empirical turn, as well as the same concern for the conditions of possibility of the technologies, I propose to take a different and more modest path, which concerns human daily dealings with ordinary technologies. For me, the most intriguing task for a philosopher of technology who wants to overcome the limitations of the empirical imperative consists of showing the "banality of transcendentality" in all technologies.

The second part of the chapter accounted for a few attempts, within and beyond postphenomenology, at overcoming an empirical attitude, in particular through a reactualization of the "posthermeneutic" notion of multistability (Rosenberger) and through an analysis of the transcendental properties of the language (Coeckelbergh). I suggested that Bourdieu's social ontology might integrate these attempts by revealing the symbolic dimension in which technology and language, both as mediations and transcendental conditions of possibility, are always already embedded. Moreover, the concept of technological capital has been introduced, with its three states: objectified, institutionalized, and embodied. More importantly, I said that the value of technological capital depends on the social dynamics of recognition or exclusion of which technological capital in its different states is one of the possible actualizations.

In this third and final section, I would like to account for three risks related to a Bourdieusian perspective on technologies.

First, the risk of transparency. With this expression, I mean the fact that the focus on the symbolic dimension in which technologies are embedded might bring us to underestimate their materialities. For instance, this is the case of most literature resorting to Bourdieu in order to understand the

possible uses of information and communication technologies (ICTs)—for an overview, see Gabe Ignatow and Laura Robinson (2017). Scholars referring to Bourdieu in this field tend indeed to treat ICTs as an almost transparent means to observe social distinctions that would exist anyway—for instance, the difference in use between low- and middle-income families, the former resorting to ICTs according to a "taste of necessity," while the latter as a form of "serious play."

In this chapter, a different perspective has been suggested, in which material and symbolic dimensions must be hermeneutically articulated. The empirical approach to technologies must not be abandoned but integrated using a wider approach concerning the symbolic dynamics in which technologies are embedded, allowing us to better understand specific choices in design, implementation, and use. This perspective is closer to Bourdieu's own view, who, while he always fought for not reducing the reality to its most immediate and visible aspects, never reduced it to its symbolic dimension either. To put it differently, while the symbolic capital cannot be reduced to any of its actualizations in a specific social, historical, or cultural context, there is no symbolic capital that exists outside such actualizations. There is, in sum, an important difference, in social ontology, between arguing that social facts and forces have a dimension that transcends individuals and affirming that the existence of social facts and forces is independent of these individuals. The same holds true, of course, for technologies.

Second, the risk of determinism. In Bourdieu's perspective, the symbolic dimension is mainly ideological, in the sense that it has the function to confirm and reiterate the dynamics of domination that are already more or less explicitly accepted in society. According to Bourdieu, the dominants are interested (which is often not clear to them) in maintaining the status quo and the dominated tend to internalize and hence apply these same discourses to themselves. Institutions like those related to education have the main function of transmitting these social distinctions from generation to generation.

There are two ways of understanding Bourdieu's perspective. The first one consists indeed in considering his point of view as deterministic. The *habitus* reduces the actions, intentions, and desires of a social actor toward a specific object or situation to those of her social group of origin. Ultimately, the social actor does not exist qua social actor, but just as a manifestation of a social group or class. In its turn, the social group or class is already the manifestation of a higher symbolic order. According to a similar framework, no freedom or room for individual or collective change seems possible. The scope of a philosophy of technology resorting to this framework would consist of describing (and fatally accepting) both domination and the illusion of emancipation when it comes to the ways the technological capital is unequally distributed in society.

The second one rather consists in understanding Bourdieu's sociology as a "martial art," especially for a sort of collective defense. From a Bourdieusian perspective, there cannot be any individual extreme, heroic, and immediate act of liberation—such as those announced, more than practiced, in Sartre's existentialism and Heidegger's philosophy of authenticity. In fact, there is no liberation as such, but rather a long negotiation with the social determinations that constitute us as social actors. In the example of the public transport systems I previously proposed, the parodic performance of an individual or a small group of people sleeping on subway benches despite their anti-homeless design, or designing an alternative artifact allowing them and other people to do so, is certainly enjoyable, smart, and amusing. It even has the possibility to raise important questions, but that is simply not enough. Technological hacking, in general, is as flat as the nudge it eventually claims to criticize—or, at least, it suggests a "verticalization" by the sole mean of the "internalization" of virtues. To really change things, institutional and political reforms are needed, thus involving not just an enlightened individual or community, but society as a whole. I will further discuss this point in the next chapter.

Third, the risk of absolutism, that is, to believe that the social symbolic forms are the only and highest transcendental dimension in which individuals and, in the case of this chapter, technologies are embedded. I contend that this is the most concrete risk of a Bourdieusian approach to technologies. Smith proposes to consider the transcendental as an adjective rather than as a noun:

> Given X, an approach is transcendental when it enquires into a priori conditions for x […] this apparent formality and emptiness [of the definition] may be precisely what marks out this articulation as the nontrivial condition for describing a philosophical approach as transcendental, irrespective of whether that approach subsequently takes on a Kantian 'epistemological' character, a Heideggerian 'ontological' character, or a character that turns out to be irreducible to the presuppositions of either of these approaches.
>
> (Smith, 2018: Chapter 1)

Such definition has two advantages: first, it allows not to reify the transcendental, if done precisely, with respect to technology, in the philosophies of the empirical turn—but also, in philosophical tradition, in certain interpretations of the Kantian and Heideggerian schematisms. Second, it paves the way for what might be called a multidimensional perspective. In Chapter 5, Smith criticizes "turning" (such as the empirical and speculative turns he considered in the book) as a method. The problem with the

empirical turn is, for instance, that it turns away from the transcendental and speculative dimensions. Vice versa, we cannot turn toward the transcendental and speculative dimension without turning away from things. For this reason, he proposed to use "mapping" as another approach in philosophy of technology:

> Picture a series of interactive and evolving maps, on which is possible to zoom in and out in terms of complexity, detail, and abstraction […]. Imagine also that they have topological functionality: it is possible to simplify their elements in order to draw out relations between other maps and the elements on them. Imagine, crucially, that the limits of these maps are apparent […]. This, I submit, is an alternative picture of method to which philosophy of technology might productively aspire today: as 'mapping.'

Smith suggests overcoming the limitations of an empirical attitude, but also foreseeing in philosophy of technology the possibility of a multitude of (transcendental) perspectives. The empirical perspective is just one way to say or see technologies among many others. However crucial, the social symbolic forms similarly represent just one of the possible ways of dealing with the transcendental of technologies. The notion of mapping—which entertains several family resemblances with the HPT I presented in Chapter 1.2—is helpful to counterbalance the absolutizing tendencies of the approach proposed in this chapter.

In *Flatland*, after the Square's mind is opened to a new dimension, he tries to convince the Sphere of the possible existence of a fourth and higher dimension, but the Sphere returns his student to Flatland in disgrace. Somehow, this is the same situation for those who are willing to recognize a transcendental dimension in technologies but end up believing that this is the highest dimension possible. In this respect, I rather defend a principle of symmetry among the dimensions and the theoretical possibility of other dimensions that we have not yet explored.

Note

1 Luciano Floridi (2018: 483) discusses the notion of "semantic capital," defined as "any content that can enhance someone's power to give meaning to and make sense of (semanticise) something." However, Floridi's semantic capital has not much to do with the Bourdieusian capital, viz. with capital as such, insofar as capital implies a problem of scarcity and unequal distribution of the resources that Floridi's semantic capital has not. In order to develop an authentic theory of the semantic capital, it should be studied how the capability of giving meaning to facts or data is not equally distributed among the symbolically dominant and the dominated.

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2.2 Digital *Habitus* 1

In the previous chapter, I emphasized the practical side of the technological *habitus*. In this chapter, I rather focus on its material side. I use digital technologies as a case study, although they are much more than that: they represent a paradigmatic case of the way technologies reproduce the existing social *habitus*. Digital technologies do not limit themselves to embedding the dominant classifications of the world. They actively produce classifications or protoclassifications that are largely based on the way the world is already classified by dominant social groups and cultures. These classifications, moreover, are not made for their own sake. They are constantly restituted to the classified individuals in the forms of access to information and offers in terms of food, books, music, love, and so on. The loop of the technological *habitus* is, somehow, complete because over time individuals will tend to adapt to these classifications.

In the previous chapter, I named three risks related to a Bourdieusian approach to technology; among them is the risk of transparency. This risk consists in seeing in technologies neutral means on which previously existing social perspectives (*habitus*, that is, ways of seeing and understanding the world) are transposed. I mentioned the research of Gabe Ignatow and Laura Robinson (2017). For them, the Bourdieusian notions of the field, capital, and *habitus* are at the heart of one of the key subfields in digital sociology: digital inequality. They cite Jan Van Dijk who defines "information capital" as the financial resources to pay for computers and networks, technical skills, evaluation abilities, information-seeking motivation, and the capacity for implementation. Robinson (2009), furthermore, individuates two forms of "information *habitus*" in Information and Communication Technologies (ICTs) used among low- and middle-income families in an agricultural belt of California. In upper-middle-income families, the use of ICTs is encouraged as a form of "serious play"; for disadvantaged youths from low-income families, it is task-oriented and falls within what Bourdieu called the "taste for the necessity."

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While these studies have been generally attentive to the use of social actors qua members of a social group makes of ICTs, they also ended up treating ICTs as if they were transparent. In other words, ICTs become mere mirrors of social distinctions whose ultimate reason lies elsewhere—mostly in the economic, social, or cultural capital at their disposal. I call this perspective "Bourdieu outside the digital," in the sense that it does not address the question of what the digital is, both as a technological ensemble and sociocultural milieu. The notion of digital *habitus* that I develop in this chapter is instead related to a different perspective that I call "Bourdieu inside the digital." This material perspective does not seek to take the place of the former, practical outlook but wants to be articulated with it, precisely because my notion of technological (and digital) *habitus* is both practical and material.

Let me start with a question that might sound odd: how many dimensions do the digital have? In this context, I use "digital" as a noun. The nominal use comes from my French academic background (in French philosophy of technology and media theory, the subjectivation of adjectives is common), but it is also increasingly present in the literature in English. By using "digital" as a noun, I refer to a "family resemblance" among digital technologies as they are today—a logic that can be resumed in the formula "big data(base) + (machine learning) algorithms." My thesis is that while, with the emergence and success of Web 2.0, the digital was (believed to be) bidimensional, it has now become three-dimensional.

To illustrate my thesis and the use of this dimensional model, I am going to critically compare two social theories and ontologies, Pierre Bourdieu's and Bruno Latour's. My idea is that what Latour and Bourdieu said about social reality can be used to understand the digital. The main difference between them is that while Latour clearly considered the presence of the digital in our societies and the potential of digital technologies and methods for social theory, Bourdieu died a few years before the broad spread of digital media and technologies.

Bourdieu's few references to Latour's work regard the specific context of the sociology of science. For instance, in his last course at the Collège de France in 2001, Bourdieu takes a position against the anti-realist and "textualist" perspective developed by Latour and Steve Woolgar. Even Latour's later insistence on the "missing masses" remains for Bourdieu a "mere literary game," which consists of fictionally placing humans and non-humans on the same footing (Bourdieu, 2004: 29–30). In what specifically concerns the sociology of science, Bourdieu defends the idea of relative autonomy of the scientific field. He rejects Latour's description of the scientific world as "a universe in which results are won by the power of rhetoric and professional influence" (54). Bourdieu is not anti-materialist, but rather the opposite; yet for him, humans are and have something more

than non-humans, namely the symbolic dimension in which their actions, decisions, and desires are embedded.

Latour's critique of Bourdieu does not only concern the sociology of science but more broadly his conception of social reality as such. As observed by Michael Lynch (1996), Latour's main sociological goal is to resolve the classic antinomy between social structure and individual agency. According to Latour, "there is in all sociological theories a gulf between the (framed) interaction of naked bodies and the structural effects that impinge on them in the matter of a transcendent destiny that no one has willed" (Latour, 1996: 232). For him, such a gulf can be found in different forms in authors as diverse as Erving Goffman, Raymond Boudon, Émile Durkheim, and Bourdieu. And yet, it is no more than an illusion and an artifact mainly due to the poor methodologies that plagued the social sciences for a long time.

In the same article, Latour criticizes interactionism, which considers human societies as if they were societies of simians, in which actors are studied in their face-to-face actions whose dynamic depends continuously and exclusively on the reaction of others. In other words, interactionism neglects the way humans crystallize social dynamics in institutions, materialities, techniques, and technologies. On the one hand, Latour acknowledges that human interactions transcend the level of the immediate and the empirical. On the other hand, however, he seeks a "material transcendentality," which is different from the Bourdieusian "symbolic transcendentality." Social symbolic forms are not durable enough, Latour contends, to be considered as the matter in which social interactions are embedded. As noted by Christian Papilloud (2018: 185), Bourdieu's work contains a concept that Latour particularly likes—the concept of *habitus*. But for Latour, this concept is interesting only when it is freed from its social theory. While in Bourdieu the *habitus* works as the interface (the schema) between the cognitive dimension and the social structure, in Latour it shows that human and non-human actors stem from groups of other humans and non-humans, of which they represent one particular association developing other associations.

In the previous chapter, I referred to Edwin Abbot's novel *Flatland*. I mentioned that, for Latour, we should approach social reality according to the two-dimensional perspective described in this novel. In this chapter, I want to show that Latour used this same two-dimensional perspective to understand the digital. Latour is not a digital sociologist, but his considerations on the digital had a significant impact on several related fields. One might think that Latour's proverbial attention to matter would have led him to pursue an attentive analysis of the materiality of new media, such as cables, data farms, computers, and slow connections. This seems to be the direction in which his considerations on the virtual go in one of the first talks he gave on the subject in 1998 at Brunel University: "Whenever you

get near computers, whenever you get near this digitality, you get cables, masses of cables […] some myopia is necessary to counterbalance the hype around virtuality."[1]

However, Latour's interests in the digital are above all related to what the digital shows of society. From an ontological perspective, the digital is for him a paradigm of the social reality as an actor network. From an epistemological point of view, the digital offers new opportunities to study the social reality "as it is." Latour affirms, for example, that what the network revolution does is "truly amazing: it dissolves entirely the individual versus society conundrum that has kept social theorists and political theorists busy for the last two hundred years."[2] In other words, the digital enables overcoming the epistemological gulf he had denounced for a long time. The digital provides more and more fine-grained data as well as new and better methods to treat them. Social sciences can finally fill the gap with harder sciences. They can also aspire at following social reality in action, without approximations and simplifications. One of the clearest and most enthusiastic statements of Latour concerning the digital and its potential for sociology is probably the following one:

> Thanks to digital traceability, researchers no longer need to choose between precision and scope in their observations: it is now possible to follow a multitude of interactions and, simultaneously, to distinguish the specific contribution that each one makes to the construction of social phenomena. Born in an era of scarcity, the social sciences are entering an age of abundance. In the face of the richness of these new [digital] data, nothing justifies keeping old distinctions. Endowed with a quantity of data comparable to the natural sciences, the social sciences can finally correct their lazy eyes and simultaneously maintain the focus and scope of their observations.[3]

There is a strong analogy between the social reality and the digital, which has ultimately discredited Durkheim and given reason to his rival Gabriel Tarde:

> It is this experience of clicking our way through platforms such as Flickr, Academia.edu or MySpace, of surfing from document to document, encountering people and exploring communities without ever changing level that we wish to use as an occasion to rethink social theory.
>
> (Latour et al., 2012: 592)

Two sorts of criticisms can be made of these statements. The first one concerns the specific position the digital, digital methods, and digital sociology occupy within such a flat social reality. It can be external or internal,

but both are problematic from Latour's perspective. If external, it would permit the existence of a second level in social reality. This is probably why Latour and his colleagues speak of a "1.5 standpoint," which sounds as bizarre as the seventh floor and a half in the movie *Being John Malkovich*. If internal, it would mean recognizing that the materialized version of the actor network suffers from the same limitations of perspective from which the other visions suffer. The second one concerns, more specifically, the digital in its structure and effects. When Latour proposes a homology between his actor-network theory (ANT) and the digital or digital methods, he is influenced by the network imaginaries related to Web 2.0. His imagination is equally stimulated by the techniques and technologies employed at the Médialab of Sciences Po Paris through tools for web crawling and network visualization like Gephi. In sum, Latour approaches the digital as a social network or a series of networks. I contend that this no longer corresponds to the dominant aspect of the digital today.

For sure, the digital has never been flat: the flatness is rather the result of an illusion mainly due to the interfaces that usually mask—for the digital as for many other technological ensembles—the existence of a multitude of layers. But it seems fair to say that in the past, at least from a user perspective, what lay behind the interfaces was economically, socially, and culturally less relevant. Much of this changed when private corporations and public institutions started collecting and efficiently analyzing data about users and consumers. According to John Cheney-Lippold (2019: 53), the "Data Wars" began precisely on April 13, 2007, when Google acquired targeted-advertising company DoubleClick for $3.1 billion in cash. From that moment, data itself became the business and the central commodity for digital capital. We have witnessed then what can be called a "big datafication" and "algorithmization" of the digital. Consequently, a "digital superstructure" has emerged which plays an affirmative role in our digital economy, culture, and society. It is precisely this third dimension that Latour's flat perspective ignores and instead might play a central role in a Bourdieusian approach to the digital. The digital has become a Spaceland—in *Flatland*, this is the name of the world where A Sphere comes from.

I am going now to seek a "visual proof" of this thesis, according to which the digital, as it stands today, is less Latourian than Bourdieusian. The study of the internal structure of digital machines such as machine learning algorithms can be a hard task, especially without any specific competences in the field. However, I believe that the analysis of some of their externalizations or manifestations can give at least a hint of what is inside them. In other terms, my perspective is externalist, in the sense that instead of exploring the inner structure of similar techniques and technologies, I contend to observe their manifestations. Two sources inspire this approach—which does not mean, of course, that it is totally compatible with them.

The first one is Adolf Portmann's comprehensive biology, which is focused on the "surface language" of plants and animals. Portmann's works, especially from the mid-fifties of the last century, brought about the "sense of manifestation" or "appearance" (*der Sinn der Erscheinung*) of the living form, that is, its expressive (*Ausdruckswert*) or (re)presentative (*Darstellungswert*) value (Gens, 2008: 190–193). The second one is the emerging field of study called "machine behaviour," (Rahwan et al., 2019) which is concerned with the study of intelligent machines, not as engineering artifacts, but as a class of actors with particular behavioral patterns and ecology. This approach has the double advantage of avoiding, at least in part, the problem of opacity characterizing most artificial intelligence (AI) agents nowadays, and of extending the study of these agents to the environments in which they are implemented and operate. My hypothesis is that the latest developments in data analytics and visualization, especially those resorting to machine learning algorithms, are closer to Bourdieu's data analytics and visualizations than to the Latourian ones. The verification of this hypothesis would confirm my initial content, according to which we live in a three-dimensional rather than a two-dimensional age of the digital.

Bourdieu's work with data is related to his friendship with Jean-Paul Benzécri, which starts when they are university students. The friendship becomes a collaboration when both are employed at the École normale supérieure in Paris. Although Bourdieu is enrolled at the Faculty of Humanities and Benzécri at the Faculty of Science, they have a common interest in statistics. Benzécri, indeed, is among the first scholars in France to work on automated visualization systems, becoming famous for his studies on data analysis. Bourdieu is interested in applying statistical methods to confirm his theories.

In 1973, Benzécri publishes with colleagues a two-volume textbook on data analysis, whose second volume is dedicated to correspondence analysis (CA). Bourdieu's *Distinction* appears only three years later. Jörg Blasius and Andreas Schmitz (2014) bring attention to Bourdieu's interest in computational analysis since the studies that he conducts in Algeria at the beginning of the 1960s. There, he transfers around 1,500 interviews into a system of punched cards as it is a practical way to manage them. He is able to extract tabular information from this system, which is a big step in sociological analysis. However, there is a further step in such analysis that he discovers through Benzécri: dimensions of information can be reduced, and information can be visualized.

The collaboration between Bourdieu and Benzécri brings to the use of CA and MCA, multiple CA, in social science. CA and its extension, MCA, intended for larger datasets, are techniques for graphically reducing multicategorical variables in a two-dimensional space. These techniques, much

like the visual methods employed in data visualization, aim to represent datasets in a visual manner to make figures visually understandable; reductionism, in this sense, has to be intended as a transformation from a tabular form to a visual one, which is usually conceived to be displayed on bidimensional, flat surfaces (sheets of paper, screens, et cetera). Bourdieu immediately notices the potential of visualizing data, especially his interviews that can be translated from many pages in a unique image; since that moment, his approach to sociology grows in strict relation to these visual methodologies.[4]

Bourdieu's CA places a series of tastes as black dots in the space. Tastes can be represented by artists such as Raphael or Dalì, or by musical compositions such as Ravel's *Concerto pour la main gauche*. Using the CA, tastes are arranged according to the lifestyle of those interviewed. It is important to notice how individuals are not represented in spatial analysis, preferring to abstract them into general categories based on social *habitus*. These categories are made visible through Cartesian axes. The vertical axis represents the social capital, the horizontal axis represents the economic and cultural capital. Furthermore, social groups (engineers, professors, and so on) are identified using geometrical forms.

Latour's trajectory in data visualization is different. Although Latour has always been aware of the potential of data visualization (Latour, 1986), his ANT is developed independently from network visualization. Only when Latour is appointed professor at Sciences Po Paris in 2006, he starts his inquiry into network visualizations by creating the Médialab. He starts to collaborate with computer scientists, digital sociologists, and designers and advances the idea of a strong analogy between digital and social ontologies. He also realizes, as mentioned earlier, that some digital tools and methods could represent a valid way to analyze and represent social reality "as it is," that is, as a network of human and non-human actors. It is certainly noteworthy, however, that in none of his publications as a single author, Latour resorts to data visualization. The "prince of networks," as Graham Harman (2009) calls him, quite ironically never draw a network in his life.

The image accessible via the link in the footnote shows a complex data visualization created at the Médialab using Gephi.[5] The figure relies on a query run on Web of Science using the keyword "self-organization" in a time window between 2006 and 2010. The network is characterized by four types of nodes: institutions, authors, keywords, and articles, which are characterized by color (type) and size (number of appearances in articles). Nodes are connected by edges, whose force of attraction gives the global configuration. Such kind of connectivity and spatialization is a typical example of network images and imaginary produced in the Médialab in those years, which is often associated with ANT. While the Bourdieusian

visualization ignores social actors and their mutual relationships in favor of objects of taste and classes, the Latourian visualization brings them to the forefront.

Julien Boelaert and Etienne Ollion (2018) stress the continuity between contemporary machine learning techniques and some of the classic techniques in quantitative social sciences. Machine learning techniques are divided into two categories: supervised and unsupervised. In supervised learning, the goal is to predict the values of an outcome variable y, based on the values of a set of predictor variables x. In unsupervised learning, there are no y values to predict, and instead, the focus is on the detection of regularities in a set of x variables. Unsupervised learning can be divided into two subtasks—clustering and dimensionality reduction. According to the authors (479)

> some classic unsupervised algorithms are already part of the standard toolset of quantitative social science: hierarchical clustering and k-means on the clustering side, factorial analysis (correspondence analysis such as it was developed by Benzécri and popularized by Bourdieu) for dimensionality reduction.

This seems to suggest that there is a continuity between Bourdieu, his methods, and contemporary big data analytics and algorithmic practices. Such a family resemblance is verified from a visual perspective.

Consider the image available in McInnes et al. (2018: 35),[6] which shows two data visualizations created with the UMAP and t-SNE machine learning algorithms. These images are examples of how machine learning can be used to reduce multidimensional data on a flat surface. Elements are situated in a non-relational visual space where visual organization does not rely on a structure with edges. Insights come from proximity and distance as it occurs in Bourdieusian visualization. Social human and non-human actors play a prominent role in the visualizations à la Latour. Their primary goal is to observe the role of a social actor in the network, its position, and force. In the Bourdieusian CA, as well as in the case of unsupervised machine learning for data visualization, the relationship between actors and the role of each actor is neglected. Social actors do not count in their mutual relationships, but only to the extent they participate in a certain category/trend. Individuals do not actually relate to each other, but to the categories they belong.

* * *

I now return to the concept of *habitus*, and thus I make a move from the question concerning the ontology of the digital to the question concerning the effects of this ontology on the processes of subjectivation. As we

already saw in Chapter 1.3, Bourdieu coins the notion of *habitus* based on multiple sources. In this context, I would like to focus on two of them.

The first one is in Panofsky's *Gothic Architecture and Scholasticism* (2005). Bourdieu translates it into French in 1967 and writes an afterword to it. In his text, Panofsky uses the expression "mental habit" referring to Aquinas and the Scholastic tradition of the late twelfth and thirteenth centuries, which recovers the *Nicomachean Ethics*.[7] In *Nicomachean Ethics*, Aristotle affirms that virtue must not be confused with a single moral act or a series of acts. Being virtuous is not merely doing what is good but doing so as a result of a well-formed moral character or a set of moral habits. The stability of virtue is not the consequence of natural inheritance, but the result of a continuous exercise regulated by moral education. For Aquinas, the *habitus* is what distinguishes human beings from God, who is a pure act, and from animals, which cannot overcome their first nature. In Aquinas, the *habitus* is a theological concept, as far as salvation is at stake, but also because it concerns the flourishing of each human person according to their nature in a universe whose order is more or less pre-established. Gilbert Rist (1984) observes several parallelisms between the way Aquinas and Bourdieu use the concept of *habitus*. However, there is a big theoretical difference as well. For Aquinas, the virtuous ones are disposed of by a certain quality of the soul to act according to the Good, for Bourdieu there is no Good as such. It is rather a specific *habitus* that determines what humans consider as good and beautiful within a culture and society.

Such culturally oriented perspective is borrowed precisely from Panofsky, according to whom, Bourdieu says in his afterword, by means of the *habitus* "the creator [that is, the artist, the philosopher, and so on] partakes of his community and time, and guides and directs, unbeknownst to him, his apparently most creative unique acts" (Bourdieu, 2005: 226). The *habitus* is, in other words, a system of internalized schemes that generate all thoughts, actions, desires, and perceptions within a given culture. The main difference between Panofsky and Bourdieu lies in the fact that while the former understood the *habitus* in cultural terms, the latter understood it rather in social terms. In this respect, Panofsky is closer to Karl Mannheim and Ernst Cassirer, while Bourdieu is closer to Durkheim. For Bourdieu, the *habitus* pertains to a specific social class or group. However, one should not extremize this difference either. Indeed, one could also argue that the general rules of distribution of the multiple *habitus* between the social classes or groups still correspond to a unitary world picture. In other words, the *habitus* of a single social class or group depends on the public recognition and roles which are attributed to this class or group within a specific culture or society as a whole.

The second origin of the Bourdieusian *habitus* is related to Marcel Mauss and Merleau-Ponty. In Panofsky, while actualized in cultural expressions such as text structure and church facades (the Hegelian objective spirit, so to say), the *habitus* is mainly a mental entity. In his afterword, Bourdieu seems in fact inclined to adopt a similar perspective. But in other texts, some of which precede this publication, he insists on the embodied character of the *habitus*. In the *quaestio* 50 of the *Summa*, Aquinas argues that the body cannot be habituated, since its natural qualities are determined by a single mode of operation. In *The Peasant and His Body* Bourdieu speaks instead of the "bodily *habitus*" or the "motor habits" which betray the "lumbering peasant":

> Peasants in the old days, [said an old villager], always walked with their legs bowed, as if they had crooked knees, with their arms bent" […]. To explain this attitude, he evoked the posture of a man wielding a scythe. The critical observation of the urbanites, always quick to spot the *habitus* as a synthetic unity, stresses the slowness and heaviness of the gait.
>
> (Bourdieu, 2008: 82)

The expression "techniques of the body," borrowed from Mauss, is used several times in the same article. On many occasions, Bourdieu insists on the fact that the *habitus* is not only cognitively embedded but also embodied. He refers to Merleau-Ponty's "body schema" for example in *Distinction*, when he says that

> a sport is more likely to be adopted by a social class if it does not contradict that class's relation to the body at its deepest and most unconscious level, i.e. the body schema, which is the depository of a whole world view and a whole philosophy of the person and the body.
>
> (Bourdieu, 2010: 217–218)

The embodied aspect of the Bourdieusian *habitus* is particularly interesting for my purposes because it brings forward the fact that while the *habitus* is more than the sum of its material actualizations, these actualizations are its main (if not the only) form of manifestation. This means that my intention of bringing "Bourdieu inside technology" is faithful to Bourdieu's intentions. This also means that between Latour's flat perspective and his caricatural presentation of all social theories (but his own, of course) there is room for a third path, the one that has been followed precisely by Bourdieu. This is the same path I follow considering the technological *habitus* in both its practical and material dimensions.

The moment has come to import Bourdieu's *habitus* into the digital. Bourdieu defines television as a "formidable instrument for maintaining the symbolic order" (Bourdieu, 1999: 16). For him,

> all the fields of cultural production today are subject to structural pressure from the journalistic field […]. In other words, this journalistic field, which is more and more dominated by the market model, imposes its pressures more and more on other fields.
>
> (56)

This is all the more true in the case of the digital. It can be said that today there is a "digital field," with its own specific capital that exercises a particularly strong pressure on all other fields—not only the cultural ones. According to a "Bourdieu inside the digital" approach close to ours, Fourcade and Healy introduce the notion of "übercapital":

> In Bourdieu's analytical framework, individuals accumulate intangible forms of symbolic capital from their social position and social trajectory. We suggest that they may also accrue "übercapital," a form of capital arising from one's position and trajectory according to various scoring, grading and ranking methods. We use the term "über" to denote the meta-, generalized or transcendent nature of this capital. It is partly derivative of traditional forms identified by Bourdieu (e.g., economic, cultural, social, symbolic), and partly autonomous from them. The various forms of übercapital are bestowed upon individuals algorithmically, often in a manner opaque to them. Ubercapital is routinely understood and mobilized as an index of superiority (an example would be the use of credit reports by employers or apartment owners as an indicator of an applicant's "trustworthiness," for instance). As a consequence, übercapital can have strongly reactive or performative effects on individual behavior […].
>
> (Fourcade & Healy, 2016: 14)

In a similar vein, Sadowsky coins the concept of "data capital":

> I suggest a better framing of data is as a form of capital that is distinct from, but has its roots in, economic capital. Data capital is more than knowledge about the world, it is discrete bits of information that are digitally recorded, machine processable, easily agglomerated, and highly mobile. Like social and cultural capital, data capital is convertible, in certain conditions, to economic capital. But, as the next section 'Deriving value from data capital' shows, not all value derived from data is necessarily or primarily monetary. Data capital is institutionalized in

> the information infrastructure of collecting, storing, and processing data; that is, the smart devices, online platforms, data analytics, network cables, and server farms.
>
> (Sadowski, 2019: 4)

These scholars theorize the existence of a capital which is, so to say, internal to the digital itself. In a similar way, I propose the existence of a *habitus* which is internal to the digital. The notion of digital *habitus* points to the fact that the digital is, like television but with a higher degree of effectiveness, a means for maintaining or even reinforcing the existing symbolic order, that is, the dynamics of distinction and exclusion of our cultures and societies. Digital services are becoming more and more personalized. Algorithmic curation, that is, automated information selection and presentation, is an example among many others. One could also name the recommendation algorithms of Amazon, Netflix, and Spotify, or the algorithmic timelines of Facebook and Twitter. Yet such personalization is made by reducing the social actors to mere agglomerations or clusters of preferences, tendencies, and expected behaviors with respect to specific objects, products, or situations. For this reason, I contend that the digital as it is today is indifferent to personalities. This means that all the actions and contents we produce online, however important to us and to the people around us, matter from a digital supra-level only insofar as they can be datafied and hence analyzed.

The digital today is like the famous rabbit-duck illusion. For us, the digital (in particular, but not only, social media) is a rabbit: a place for developing authentic relationships and producing and sharing culture, suffering, hate, and love. In brief, the digital today plays a determining role in our subjectivations. However, for the digital itself and the companies that own much of it, the digital is a duck: these true relations, creations, and interactions are relevant only if they can be transformed into collectable and analyzable data. It is important to understand that, as in the rabbit-duck image, the two dimensions of the digital are not extraneous to each other; they rather penetrate each other. The difference with the rabbit-duck illusion is that, in the case of the digital, these two dimensions are not found at the same perceptual level. Indeed, I contend that the level of datafication and algorithmization (the duck) plays an active role in the level of subjectivation, while the rabbit (the level of digital actions and interactions) is rather impotent. Perhaps better put, this latter level has its own effectiveness, which consists in making individuals more prone to resign themselves to the effectiveness of the former. My idea is that because of its indifference to personalities and its effectiveness on the processes of subjectivation, the digital in the end makes subjects indifferent to their own personalities.

The term "personality" is understood here as intended by Gilbert Simondon. The French philosopher distinguishes between individuation, individualization, and personality. Individuation and individualization are two forms of differentiation performed by beings from their environment. The former concerns all beings, while the latter is specific to human beings. Personality is what gives each individualization its specific coherence, style, and orientation (Chateau, 2008: 61–64). Big data analytics and algorithmic practices are indifferent to personalities because they operate at both a sub- and super-personal level: on the one hand, they dismember personalities in tendencies, tastes, etc.; on the other hand, they reassemble them into clusters.[8]

John May (2019) argues that digital images are not images at all. From an ontological point of view, digital images are very different from photographs and sketches. According to him,

> Unlike photographs, in which scenic light is made visible during chemical exposure, all [digital] imaging today is a process of detecting energy emitted by an environment and chopping it into discrete, measurable electrical charges called signals, which are stored, calculated, managed, and manipulated through various statistical methods […] [digital] images are data, and all [digital] imaging is, knowingly or not, an act of data processing.
>
> (47)

For him, the visual surface of digital images does not say anything about their nature. Indeed, "[digital] images are far more closely related to spreadsheets and statistical formulas than to photographs" (50). This idea can be applied to the digital in general. If phenomenology deals with appearances (in Greek, *phainestai* means precisely "to appear"), my approach to the digital can be said to be anti-phenomenological. In fact, I believe that the appearances of the digital, especially its manifestations as the social Web, do not say much about its ontology or its effects of subjectivation on us. My idea is that behind all forms of self-presentation online and behind all social interactions, there is nothing more than databases and algorithms. In the digital, as it is today, what is at the surface counts only so far as it can be subsumed in signals, quantifications, and classifications.

Certainly, digital classifications are much more layered and fine-grained than the Bourdieusian classifications of social classes. Cheney-Lippold (2019: 76–79) opportunely speaks of "intersectional identities" and "protocategorial perspective." However, this softer way of sorting out things and persons must not be confused with the guarantee of greater freedom in the expression of the self. First, because it maximizes the indifference to the ways individuals account for themselves. Explicit testimonies of the

self such as words and narratives are, in other terms, constantly reduced to symptomatic manifestations of emerging categories. Second, because it is much more adaptive over time. The main consequence is that individuals are always flattened on their present and expected behaviors.

I would like now to give an example of digital *habitus*, namely the digital *habitus* of Tinder. Tinder is a dating app and a geosocial networking application—that is, it uses geolocalization to connect users. In Tinder, users "swipe" right or left to like or dislike other users' profiles. These profiles include photos, a short bio, and a list of interests. Until recently, the Elo score played an important role in the dating app. In the world of chess, the term is used to rate players according to their skills; in Tinder, a rating system, called "Elo score" by company insiders, parsed users to facilitate better matches between users having a similar score of desirability. As depicted in the social *habitus* by Bourdieu, the digital *habitus* of Tinder makes you desire only what (or better, in this case, who) you can, according to your status, have access to. Indeed, Tinder does not present the same profiles in the same order to people in the same geographical area at the same moment. Users are distributed among categories and levels, based on how many people have swiped right on desirable profiles. This is not the only parameter: users, for instance, are also categorized on a photographic level, and probably the basis of the education and career information voluntarily stated in the profile, messages, and so on.

In a 2019 blog post, the company affirmed that "Elo is old news at Tinder. It's an outdated measure and our cutting-edge technology no longer relies on it."[9] According to an article by Ashley Carman appeared in The Verge, "it sounds a lot like Tinder is relying on something similar to the Gale-Shapley algorithm," which is briefly explained as follows:

> If I like one guy, and so does another woman on the platform, she and I might have the same matching taste. If she's liked someone on the platform that I haven't seen yet, Tinder could show me that profile in the hopes that I might like it, too.[10]

While more complicated than a large voting system, it can be said that Tinder's algorithm promotes contact between people who resemble each other, not only physically but also and especially socially. The French journalist Judith Duportail told in The Guardian the story of how she asked and obtained from Tinder a document of 800 pages collecting all sorts of data about her activities on the platform. She says

> Tinder is often compared to a bar full of singles, but it's more like a bar full of single people chosen for me while studying my behavior, reading my diary and with new people constantly selected based on my live reactions.[11]

As in the case of any other technology, users enact tactics to respond to the company's algorithmic strategies. However, it is noteworthy that most of these tactics are not intended to elude Tinder's algorithm but to make it more effective. Instead of focusing on subject–algorithm relations, the tactics aimed at optimizing the algorithmically mediated subject–subject relation. David Myles and Martin Blais (2021) affirm that in the case of Tinder, the rhetoric of the black box (i.e., the idea that AI algorithms are impossible to explain and that their behavior can be difficult to understand) gave rise to a major speculative economy of love and sexual encounters.

The authors analyze many websites in which self-styled experts offer advice and personalized services (even chatting and arranging dates for us) to become successful on Tinder. The tips given by these experts are presented as ways of hacking the black box of Tinder's algorithm. Specifically, the tips usually concern three aspects: desirability score, frequency of activity on the platform, and consumer preferences (the app seems to employ machine learning algorithms to identify profiles from our habits on other platforms associated with the Tinder account such as Facebook, Instagram, and Spotify, along with the history of our profile selections). Thus, the tips are about changing profile pictures and bios to make them more attractive, to use the app daily, or to be consistent in our profile selection. Myles and Blays note something interesting; namely, the inversion of the concept of hacking. Hacking usually has to do with the detournement of technology—that is, the act of diverting it from its supposedly legitimate function and use.[12] In the case of the Tinder "experts," however, hacking consists more in pandering to the algorithmic system, which is regarded as both inaccessible and irresistible. The strength of the algorithm and those who own it is not minimized but maximized.

Metaphorically, if hacking consists in changing the game's rules from the inside, the "hacking" of the Tinder "experts" consists in learning the existing game's rules and adapting to them in the best way possible. In this regard, think of the first episode of *The Matrix*, the celebrated movie by the Wachowski sisters. The real hackers are Morpheus, Trinity, Neo, and all the inhabitants of Zion who want to fight and destroy the Matrix—the AI mega-machine that keeps all humans unaware prisoners in virtual reality. Instead, the "hacking" of the Tinder "experts" is more like Cypher, who in the movie betrays Morpheus and the others by collaborating with Agent Smith in exchange for the promise of living a comfortable existence in virtual reality. In the words of Myles and Blais, "it becomes difficult to understand whether the proposed hacks make the algorithms work for the users or whether they do not rather incite the users to modify their behaviors to facilitate the algorithms' task" (110. My translation). The tips for a good

user of Tinder are a way to make the digital *habitus* even more effective. The entire process is somehow reminiscent of the hermeneutic circle:

> First, Tinder implements nonneutral algorithmic processes that encourage user behaviors deemed appropriate and discriminate against those deemed deviant. The application then produces and disseminates statistics to demonstrate the success of members who follow these rules of behavior. This data is then exploited by a whole peripheral *dating* industry [...] that produces discourses that serve to guide behavior toward ideal standards of use, processing these discourses in the form of *hacks*. Users who employ these *hacking* ploys are eventually rewarded by algorithms that recognize these activities as more compatible with the values they promote. In doing so, this reorientation reinforces Tinder's statistics that obedience to algorithmic imperatives is the best option for lonely users. In short, this cycle functions as a kind of self-fulfilling prophecy that relies on the recursiveness of algorithms. Tinder participates in both constructing the user problem and offering solutions, mobilizing tautological arguments that operate a dataist ideology. (115. My translation)

However, the hermeneutic circle is, in this case, actually anti-hermeneutic. In an authentic hermeneutic circle, the initial hypotheses are constantly tested and modified in light of practical experience. In this case, the circle is vicious in the sense that its sole function is to give further strength to the initial hypotheses. Subjects realize themselves as subjects only insofar as they accept and adapt to these initial hypotheses. Thus, we can say that the digital hermeneutics of the self is really anti-hermeneutics of the self.

* * *

To better grasp this idea of anti-hermeneutics of the self, I am going now to compare the Bourdieusian *habitus* with Paul Ricœur's notion of narrative identity. Ricœur first develops his concept of narrative identity at the end of the third volume of *Time and Narrative*, which is released in French in 1985. In this context, Ricœur (2008a: 246) associates the narrative identity with the identity *ipse*: "The difference between *idem* and *ipse* is nothing more than the difference between a substantial or formal identity and a narrative identity." In *Oneself as Another*, published in French five years later, Ricœur goes beyond this alternative and presents narrative identity as the articulation between *idem* (sameness) and *ipse* (selfhood). In the sixth study of the book, he describes narrative identity as a mediating function tolerating and generating imaginative variations (Ricœur, 2008b: 148).

In general, narrative identity refers to the fact that our identities are narratively constituted. This means that there is a permanence of our identities despite all changes over time. In fact, a story is a "concordance of discordance" that keeps heterogeneous elements together through the fragile dynamics of emplotment (*mise en intrigue* in French). Moreover, the notion suggests that our identities are constituted not only through the stories we tell but also those we read, watch, or listen to, and they eventually become examples of our individual or social existences. This aspect is deeply related to the passivity that exists in us and the presence of the other in us, because to tell a story always means to make it potentially available to someone else. Furthermore, we do not have any kind of monopoly on our own stories, as the others can always tell pertinent or impertinent stories about us. Finally, the others are not only represented by those who are close to us in space and time (Ricœur calls them the "prochains"), but also by the society and tradition we are immersed into (Ricœur calls them the "lointains"). According to Ricœur (2008a: 247), narrative identity confirms that

> the self of self-knowledge is not the egotistical and narcissistic *ego* […] [but] the fruit of an examined life […]. And an examined life is, in large part, one purged, one clarified by the cathartic effects of the narratives, be they historical or fictional, conveyed by our culture.

As mentioned, *Oneself as Another* Ricœur presents narrative identity as the mediating function between sameness and selfhood. To describe these two poles, he uses two expressions "that are at once descriptive and emblematic," which are "character" and "keeping one's word." Character is a set of distinctive marks that allows the reidentification of a human individual as being the same individual. Ricœur (2008b: 124) states that "keeping one's word" means to "appear to stand as a challenge to time, a denial of change: even if my desire were to change, even if I were to change my opinion and my inclination, 'I will hold firm'." I hypothesize that sameness, as Ricœur describes it, is very close to the way Bourdieu understands the *habitus*. For Ricœur, the character is the ensemble of durable dispositions that we attribute to a person. The Bourdieusian *habitus* is similarly a system of durable and transposable dispositions. One could argue that Ricœurian character is personal, while the Bourdieusian *habitus* is socialized. However, the Bourdieusian *habitus*, while socialized, is also appropriated and personalized. In other terms, every individual, as a member of a social group or class, has their own style. Moreover, while Ricœurian character is personalized, it is also the result of a process of social and contextual habituation.

We can read the distinction between sameness and selfhood in hermeneutic terms as the difference between "white" or "dead" interpretations

and "living" interpretations. White or dead interpretations are ways of coping with the world that has been reiterated enough times that they have become part of our cognitive, social, cultural, and gestural background–however, in the beginning, we had to learn them, such as how to speak, drive, prepare a coffee, or love without being possessive. In contrast, living interpretations are caused by an encounter with something unexpected or problematic such that our schemas (our *habitus*) do not apply to them. Our existence as interpretative animals is made of the articulation between these two dimensions. Most of the time, we remain within the limits of our habits (our white and dead interpretations), but whenever we face a problematic situation that cannot fit our schemas, we undertake living interpretations as long as we can and want truly to engage with the situation at hand.

For Ricœur, sameness is just one aspect of our identities. For Bourdieu, selfhood is no more than an illusion. He speaks, for instance, of "biographical illusion" (Bourdieu, 1986). According to him, social actors are never capable of telling the truth about themselves, because all stories they create and tell about themselves are no more than an "artificial creation of meaning." For Bourdieu, only a sociologist is capable of revealing the intentions of social actors, because they have the methods and practices to cultivate distance from the situations in which social actors are completely immersed.

In his criticism of biographical illusion, Bourdieu is not thinking about Ricœur but rather about the attempt of some sociologists to give a voice back to the stories and intentions of social actors. Gérôme Truc (2011: 151) speaks of a "narrative turn" in French sociology, especially among representatives of pragmatist sociology, such as Luc Boltanski and Laurent Thévénot. These authors have been strongly influenced by the work of Ricœur. Their epistemological turn mainly consists of recuperation of biographical methods. At its origin, there is a certain dissatisfaction with Bourdieu's notion of the *habitus* and the approach to personal identity it implies. For instance, during a round table devoted to the "Ricœur Effect in Human Sciences (*L'effet Ricœur dans les Sciences Humaines*)" (2006: np), Thévénot argues that

> the conception of the person and her identity is underdeveloped in the social sciences in favor of the sameness. The stability of the identical, that sociologists conceive in terms of collectivized *habitus* […], impedes to consider the other pole of identity, the selfhood, that Ricœur linked to the promise.

One could say that contemporary sociology follows the path from Bourdieu to Ricœur and makes the effort to articulate sameness and

selfhood. However, this does not correspond to a naïve exaltation of the subject and its autonomy. Indeed, as mentioned, from a Ricœurian perspective, giving voice to actors and their stories does not mean that these actors have a monopoly on these and other stories about themselves.

I contend that digital media and technologies walk in the opposite direction, from selfhood to sameness. The literature on the digital of the 1980s and 1990s, especially the literature on the Web, insisted on its empowering potential for individuals and their identities. In the 2000s, Web 2.0 emerged. Scholars focused on the relations among users, along with their positive and negative consequences. In the last decade, issues of big data and, more recently, machine learning algorithms have dominated the literature and practices.

Big data and machine learning algorithms focus on sameness and thus *habitus* and are indifferent to selfhood. We could even say that for them selfhood must be avoided and reduced in individuals as much as possible, because it is synonymous with unquantifiability and unpredictability. Individuals are reduced to their sameness because, as I noted in the introduction, referring to Jakob von Uexküll and his description of the tick's behavior, the security that our digitally mediated behaviors are predictable is more important to the digital machines and their owners than variability. The way the digital (mis)understands individuals affects the individuals themselves through multiple forms of digital personalization in terms of access to information, algorithmic recommendations, and so on. Thus, the reiterated and almost constant contact of subjects with digital machines ends up flattening individuals into their own sameness.

When I speak of the anti-hermeneutics of the self, I mean a circularity between the subject and its algorithmic quantification that seems anything but virtuous. This circularity is reminiscent of Ricœur's *mimesis* (2008a), a Greek word usually meaning "imitation" that in Ricœur instead corresponds to a creative reappropriation. *Mimesis* for him has to do with the transformations that subjects undergo as a result of reading a novel, listening to a story, and the like. *Mimesis* is comprised of three moments: the first *mimesis* (prefiguration), which has to do with the predisposition of a human action to be textualized; the second *mimesis* (configuration), which is the moment in which the different textualized elements of the human actions are combined and recombined according to a specific temporal coherence (i.e., the emplotment in a novel); and the third *mimesis* (reconfiguration), which is when the world of the text is applied to the reader so that the reader becomes transformed by the text. In the case of the digital *habitus*, Ricœur's threefold *mimesis* can be translated as follows: the first digital *mimesis* corresponds to the fact that many components of human action are predisposed by their habitual nature to be datafied; the second digital *mimesis* has to do with the fact that machine learning algorithms

emplot (i.e., aggregate and analyze) this data; and the third digital *mimesis* suggests that this emplotted data is not *for its own sake*. Emplotted data seeks a reference that is external to the data itself; it is not only used to understand subjects' behaviors but also to transform them via targeted advertising and all forms of algorithmic curation. To be sure, digital *mimesis* transforms subjects, but it does so to make them conform more to general habits.

Of course, a sharp distinction between the "good-old" activity of reading books and the "bad-new" habit of scrolling web pages on our cellphones is untenable. Many books have been and still are used to domesticate individuals. Conversely, the datafication of the self has been used in some cases to empower individuals. It is not my intention, then, to crudely oppose the two technologies of books and computer screens. For me, the hermeneutics and anti-hermeneutics of the subject can exist in both. Nonetheless, I am also convinced that, in the case of the digital as it is today, there is a general tendency toward the anti-hermeneutics of the self. A critique of the digital must focus on that rather than on the beautiful exceptions to this general rule, even though such exceptions clearly exist.

Before the chapter's conclusion is reached, a caveat is necessary. I want to distinguish between Bourdieu's original intentions when he speaks of *habitus* and my dark intentions in this chapter. In *Dark Deleuze* (2016), Andrew Culp notes how Deleuze is known as the thinker of joyous affirmation and rhizomatic assemblages. However, these notions have been recycled and hence paradoxically reversed into business mantras that joyously affirm that "Power is vertical; potential is horizontal!" Deleuze's thought is not abandoned but is instead used in its negativity; that is, its capacity to describe and criticize the new forms of decentralized and "headless" domination that are often exercised by means of digital media and technologies. Similarly, a "dark Bourdieu" is intended to describe and criticize the effects of habituation of the self that result from reiterated contact with digital media and technologies. This dark Bourdieu does not exhaust Bourdieu's social philosophy, as his ultimate intentions were largely emancipatory.

In *Pascalian Meditations*, Bourdieu speaks of the necessity of a "thought about the social conditions of thought which offers thought the possibility of a genuine *freedom* with respect to those conditions" (2000: 118). Bourdieu's emancipation is a long route that is opposed to the short route pleading for individual, heroic, and immediate freedom. To aspire to freedom, one has at least to know that one is not free and the conditions that determine that lack of freedom. Now, the problem with the *habitus* is precisely that it is so embedded and embodied in ourselves that domination and its conditions of possibility are regarded as obvious, natural, necessary, and the like. On several occasions, Bourdieu criticizes Jean-Paul Sartre's critique of the young café waiter (*garçon de café*) who plays the

role of the waiter and voluntarily gives up his own freedom. For instance, in *Pascalian Meditations*, Bourdieu says,

> He [the café waiter] enters into the character of the waiter not as an actor playing a part, but rather as a child imitates his father and, without even needing to "pretend," adopts a way of using the mouth when talking or of swinging his shoulders when walking which seems to him constitutive of the social being of the accomplished adult.
>
> (153)

With his critique of the café waiter's attitude and his incitement to take his freedom in his own hands, Sartre has indeed "produced a kind of social chimera, a monster with a waiter's body and a philosopher's head" (155)—Bourdieu should have rather said "a sociological head," since for him philosophers are the first victims and perpetrators of the "scholastic illusion"; that is, the belief in coining pure ideas according to a "view from nowhere," without prejudices or predeterminations. Bourdieu does not negate freedom as such; he only argues that freedom is a hard task. Incitements to freedom and authenticity (the ones found in philosophers like Sartre and Heidegger) are certainly beautiful, but they are not enough.

Bourdieu also regards freedom as a sort of glitch (which can be more or less voluntary) between one habit and another. A nice way to approach this form of freedom is through Dewey's concept of intelligent habits. For Dewey, habits are not incidental, but an essential element of human existence. Human beings are their own habits. Habits refer to the wide variety of responses, patterns, and ways in which we engage in our worlds, from physical ones to mental ones. For Dewey, habits are always context responsive. In the first pages of *Human Nature and Conduct* (Dewey, 2008: 15), Dewey writes, for example, that "[w]alking implicates the ground as well as the legs; speech demands physical air and human companionship and audience as well as vocal organs […]. They are things done by the environment by means of organic structures or acquired dispositions." But our habits can lose their responsiveness, thus locking us into patterns of action that inhibit our abilities to live creatively in complex social situations. Intelligent habits are habits that remain "open" to possible changes in situation, stable in time but not locked in patterns that are destined to repeat themselves, always identical. Dewey writes, a little further on, that

> while it is admitted that the word habit has been used in a somewhat broader sense than is usual, we must protest against the tendency in psychological literature to limit its meaning to repetition […]. Repetition is in no sense the essence of habit.
>
> (32)

To be intelligent, habits must be plastic. According to Peter J. Nelsen (2015: 90)

> Dewey helps us to understand how dispositions can be *both* relatively stable and unchangeable while also simultaneously subject to educational influence. A disposition to act in a certain way can appear rigid and unchanging if the agent perceives the action as offering a valued response to a given situation (whether that perception is conscious or not). In contrast, when a response is less entrenched, less rigidly habituated, there is much more openness to considering alternative response strategies.

Now, as an effort at a conclusion, I would like to articulate Bourdieu and Ricœur to sketch the outlines of an exit strategy from the digital habituations of the self, a strategy that is articulated in three movements that are interconnected:

First, one could say that such habituation of our selves is not a problem. Human beings are constantly habituated by social and cultural instances, and digital media and technologies are just the continuations of social and cultural habituations by other means. It might even be said that digital media and technologies are rather therapeutic in this sense. Human beings have deluded themselves into thinking that they can be 'authentic,' 'attentive,' 'creative,' and 'responsive.' When an algorithm can create art that is appreciated by and sold in the artworld,[13] when another is capable of predicting the success of a young artist (Fraiberger et al., 2018), are not we discovering that we are rather creatures of habit even in our supposedly most original expressions? Today, digital humanities are revealing regular patterns behind our cultural productions. I do not mean to take all this negatively. Indeed, I believe this first point can be understood in light of the Ricœurian assumption that to explain more is to understand better. In other words, today's digital media and technologies offer the opportunity to know our habits and determinations and to separate with more precision between sameness and selfhood or, in hermeneutic terms, between white and living interpretations. Digital methods are useful, in this sense, for discriminating with greater precision between non-plastic and plastic (that is, intelligent) habits and thus to discover forms of freedom that probably look less triumphant but are assuredly more authentic.

The second response consists of undertaking a series of individual or communitarian actions, detours, or tactics. I am referring to practices like digital abstinence, hacking, and so on. Think of Archisuits,[14] suits designed by artist Sarah Ross to fit (and respond) to architectural discriminating structures in Los Angeles, such as the anti-homeless benches. I use this

example, which is not about *digital* technologies, because is the same example given by postphenomenologist Robert Rosenberger in his aforementioned book about "callous objects" (Rosenberger, 2017).[15] I am also thinking of the increasing literature on the virtue ethics of technology (Vallor, 2016). Before the phenomenon of technical acceleration, of which one could say that digital media and technologies are at the core, Hartmuth Rosa speaks of "resonance." If alienation is the impossibility of entering into relation with the other, resonance is its opposite, namely, the cultivation of reciprocity and mutual transformation between a subject and their world (Lijster et al., 2019). Could we habituate ourselves to the use of digital media and technologies promoting resonance rather than isolation? The limit of this second point lies, in my opinion, in the risk of elitism. It is not by chance that among the most cultivated segments of the population, there is a strong disdain for anything "high-tech."

The third response is collective and institutional. In the 1998 English introduction to *Masculine Domination*, Bourdieu (2001: viii. Italics are mine) speaks of a "strictly *political* mobilization, which would open for women the possibility of a *collective* act of resistance, oriented towards *legal* and *political* reforms." Such mobilization, he adds immediately after,

> Contrasts both with the resignation that is encouraged by all essentialist (biological or psychoanalytical) visions of the difference between the sexes and with a resistance that is reduced to individual acts or the endlessly recommenced discursive "happenings" that are recommended by some feminist theoreticians – these heroic breaks in the everyday routine, such as the "parodic performances" favoured by Judith Butler, probably expect too much for the meagre and uncertain results they obtain.

Instead of opposing individual and collective replies, however, I believe they should be articulated via the Ricœurian definition of ethics as "a good life, with and for others, within just institutions" (Ricœur, 2008a: 180). My interpretation is that the cultivation of virtue ethics in digital technology must not be an end in itself. Every virtuous action must aspire to become an exemplary action for others, and every exemplary action must aspire to be seen and appropriated by public institutions.

Jessa Lingel (2021: 104–111) presents a toolkit for fighting against the gentrification of the Internet in which individual, communitarian, and institutional (legislative) replies are combined; in this case, "gentrification" can be understood as a synonym for "habituation." I am thinking particularly of the effects of isolation; that is, the fact that both online and offline gentrification results in pockets of isolation from other social

contexts, opinions, and ways of life. From an individual point of view, the rule is to "be your own algorithm." With this expression, Lingel means diversifying as much as possible the information sources we follow online, instead of passively accepting the content that platforms feed us. From a communitarian point of view, the rule sounds like "your convenience isn't worth more than someone else's safety." This means that products that promise safety for the privileged can create outsized consequences for the unprivileged, who are also those who have the most to lose.[16] Finally, from an institutional point of view, Lingel argues that "in the city, as online, we need regulation": "We need to demand intervention from lawmakers on net neutrality, user privacy, and online harassment" (108–109). These three levels are interconnected. Indeed, legal reforms come from nowhere; they are instead responses to a social demand. In its turn, social demand depends on the initiatives of individuals who are not acting for their own sake but want to be exemplary for other individuals. If we really want to change the dynamics of online self-habituation, we need to work simultaneously at all three levels.

Lingel presents another tool of resistance in her book; namely, the fact that "we need new narratives of success in Big Tech." In particular, she argued that

> we need to start pushing different stories of what a successful tech company looks like. […] We need [for instance] to support efforts from within Big Tech for fairness and inclusion, which could take the form of online boycotts or media campaigns.
>
> (106)

This insistence on narratives is particularly relevant to me. Indeed, in the next chapter, I use the notion of digital *habitus* in a rather different way to describe the dominant worldview about AI, which is full of trust and enthusiasm. I insist on the role that AI imaginaries, particularly visual narratives, play in determining the effectiveness of AI far beyond its real technical capacities. I believe that a critical reflection on these narratives can play a key role (often underestimated by the empirical philosophers of technology) in promoting forms of resistance to the digital habituations of ourselves and society.

Notes

1 http://www.artefaktum.hu/it/Latour.htm. All links have been last accessed on January 10, 2023.
2 http://www.bruno-latour.fr/sites/default/files/121-CASTELLS-GB.pdf.

3 https://medialab.sciencespo.fr/publications/Venturini_Latour-The_Social_Fabric.pdf.
4 One can refer to the emblematic data visualization by Bourdieu (which, frustratingly, cannot be shown here for copyright reasons) published in the *Distinction* (1987: 262). Some reproductions of it are available online, for instance on Pinterest (https://pin.it/6WCr7IA) and Twitter (https://twitter.com/themapisnot/status/1178742125803884545).
5 https://medialab.sciencespo.fr/publications/monads/. A zoomed-in section of this image is represented in Latour et al. (2012: 594), the paper I mentioned before where a strong analogy between social and digital ontologies is proposed.
6 The image is also directly visible via Semantic Scholar: https://www.semanticscholar.org/paper/UMAP%3A-Uniform-Manifold-Approximation-and-Projection-McInnes-Healy/3a288c63576fc385910cb5bc44eaea75b442e62e.
7 According to Cary Nederman (1989), the language and concepts associated with *habitus* were already in wide circulation by the early twelfth century. Based on other Aristotelian sources, mainly Organon, and Latin authors like Cicero and Boethius, twelfth century philosophers such as Abelard and John of Salisbury resorted to habitus for articulating a fundamentally anthropocentric perspective on moral theory. The notion of *habitus* allowed them indeed to free moral theory from both theological considerations and naturalistic foundations. For a critique of Nederman's perspective, see Colish (1993).
8 For a confrontation between Simondon's individuation and Bourdieu's *habitus*, see Baptiste Morizot (2016: 187–209). Morizot argues that Simondon's individuation must be preferred to Bourdieu's *habitus*, because it says something of the subject that the *habitus* lacks to say. This is all the more true for personalization. I will develop a similar critique in the next section of this chapter, based on Ricœur's notion of narrative identity.
9 https://www.tinderpressroom.com/powering-tinder-r-the-method-behind-our-matching/.
10 https://www.theverge.com/2019/3/15/18267772/tinder-elo-score-desirability-algorithm-how-works.
11 https://www.theguardian.com/technology/2017/sep/26/tinder-personal-data-dating-app-messages-hacked-sold. Duportail also wrote a book in French on this experience (Duportail, 2020).
12 Of course, the question of what hacking and the hacker are is much more complex than that. The online Cambridge Dictionary defines a hacker as "someone who gets into other people's computer systems without permission in order to find out information or to do something illegal." However, this is a very narrow definition of the hacker. Much more interesting is the description of hacker ethics proposed by Steven Levy (2010), for whom the general principles are sharing, openness, decentralization, free access to computers, and world improvement (that is, democracy).
13 https://www.christies.com/features/a-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx.
14 https://indepest.com/2021/10/25/archisuits/.
15 A more pertinent example, related to video/digital surveillance strategies and counter-surveillance tactics, could be the work of German artist Hito Steyerl. See, for instance, her 2013 video *How not to be seen: A Fucking Didactic Educational.MOV File*. https://www.artforum.com/video/hito-steyerl-%20how-not-to-be-seen-a-fucking-didactic-educational-mov-%22le-2013-51651.

See also the recent work SocialSim, created for her first retrospective in France, organized in 2021 by the Centre Pompidou in collaboration with the Kunstsammlung Nordrhein-Westfalen. https://www.estherschipper.com/artists/102-hito-steyerl/works/24095/.

16 Lingel uses as an example of a collaboration between Amazon and police departments in running "bait box" operations. Police put decoy boxes with GPS trackers inside them on random porches. If someone steals the box, police swoop in and make an arrest; see https://www.theatlantic.com/technology/archive/2019/11/stealing-amazon-packages-age-nextdoor/598156/.

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2.3 Digital *Habitus* 2

In Chapter 2.1, I dealt with the practical dimension of the technological *habitus*. I insisted on a dimension of technology and our use of it that cannot be reduced to either materiality or normativity, a dimension that depends on the ways we authorize ourselves to approach and use—or prohibit ourselves from using—a certain technology. In Chapter 2.2, I brought forward the material dimension of the technological *habitus*. I used the digital—which, in its present form, can be understood as the articulation of big data and machine learning algorithms—as a paradigmatic case of this phenomenon. Digital media and technologies are *habitus* machines (Airoldi, 2022), which means that they actively contribute to reproducing and reinforcing the existing social *habitus*. The services these machines offer are increasingly personalized and yet are indifferent to personalities—that is, the specific style that characterizes the appropriation by each individual of a social *habitus*. The reiterated contact with these machines has the effect of reducing subjects to their sameness.

In this chapter, my intention is to explore a third path between these two dimensions. This chapter is devoted to the popular images depicting artificial intelligence (AI) and, more specifically, to microstock images of AI. My investigation of these artifacts takes in both their symbolic and material dimensions. Stock images are pre-produced images made available for license by paying a fee to both the creators and the stock agencies managing the images. The stock imagery business is divided into two broad categories: macrostock and microstock. Macrostock imagery corresponds to traditional stock photography and agencies such as Getty Images. Customers pay a higher fee to license these images because macrostock is usually (totally or partially) exclusive. Microstock imagery, for which Shutterstock is the world's largest agency, resorts to a wider range of image producers than macro agencies, including amateurs. Microstock agencies sell their images at a very low rate for royalty-free images exclusively via the Web.

The production of microstock images has undergone, especially in the past few years, a process of "algorithmization." With this expression,

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I mean that there is a chronic use of graphic editors such as Photoshop and Adobe Illustrator. In the case of the vector graphics massively used to visually represent AI, this type of technology is not simply added to but substitutes for classic (digital or analog) photography. "Algorithmization" also refers to the fact that the agencies' databases are based on a process of semi-automatic keywording[1] that allows for much more complex and dynamic proto-classifications. Finally, "algorithmization" indicates that images become immediately accessible through a search engine, which allows one to search by keywords and apply several filters to searches.

This material process has consequences on the symbolic dimension of these images. From the algorithmization derives a struggle for image success. The rules of this struggle are dictated by the algorithms themselves since much of the success of these images depends on being among the top search results. It is not so much originality that is rewarded but the repetition of the canons that have decreed the success of images that have been previously algorithmically rewarded. Hence, there is a general convergence in terms of style and content.

This is particularly evident when it comes to microstock images of AI. From a quantitative point of view, these images represent a huge phenomenon. Shutterstock's catalog contains at this moment (September 2022) more than 426,000 images for the search "Artificial Intelligence." However, this abundance is characterized by a redundancy in terms of style and contents. Think of the recurrent use of the colors white and blue. Think of the few recurrent subjects of these images: half-flesh and half-circuit brains, white robots interacting with smart touchscreens, versions of Michelangelo's *The Creation of Adam* with a human and a robot, and so on. My idea is that these images both embed and reinforce a specific imaginary about AI, made of enthusiasm and trust. Such imaginary essentially contributes to the success of AI beyond its real effectiveness. In this chapter, I contend that the esthetics of these images is an "anesthetics," because it has the effect of anesthetizing any possible form of agonistic debate about AI and its implementation in our societies.

It is noteworthy that via microstock images of AI, AI is in some way producing the symbolic conditions of possibility of itself. Microstock images depicting AI are algorithmized images: they are still produced by human beings but with the AI already in view—both in the sense that the algorithmic success of these images is fundamental for their producers and in the sense that we can imagine a future in which human producers will be pushed completely out of the loop. Think of Dall-E, the AI program developed by OpenAI which creates images from textual descriptions.[2] It seems no coincidence that using Dall-E Mini (a simplified version freely available online) and entering the terms "Artificial Intelligence," "algorithm," "machine learning," "robot," "human brain," and "body," the

result is very similar to the microstock images of AI available on the agency websites.[3]

In this chapter, I am resorting again to the concept of digital *habitus*. However, that term must be understood here less à la Bourdieu than à la Panofsky. The shift from Bourdieu to Panofsky represents a move from a digital hermeneutics of the subject to what might be called a digital hermeneutics of cultures. My point is that microstock images of AI are representative (and actively contribute to the reinforcement of) an entire worldview transcending the *habitus* of a single social group. We could even argue that, because of their global diffusion and the global diffusion of the AI systems to which they are related, these images have consequences that go beyond the specificity of a single culture. In other words, they play a crucial role in the framing of a globalized attitude toward technology, which is made of enthusiasm and trust on one hand but resignation on the other. In the previous chapter, I spoke of anti-hermeneutics of the self. In this chapter, I could speak of an anti-hermeneutics of cultures: the reiterated contact with such visual representations of AI provokes forms of disengagement. Instead of claiming a greater right in terms of participation, social groups and cultures passively accept innovations in and the implementation of AI systems as planned and carried out by experts.

This chapter is divided into three sections. In the remainder of this first section, I present Panofsky's *habitus* and account for the limitations of that approach to art and images. I also dedicate some time to considering the possible reluctance to take microstock images of AI seriously. In the second section, I focus on microstock images of AI and the ethical and political issues related to them. More specifically, I argue that the problem with these images is not the lack of reference to the "things themselves"—that is, what is really done in the research lab and companies dealing with AI. Instead, their problem consists in taking part in a specific "distribution of the sensible"—a concept I borrow from Jacques Rancière—which consists of a separation between experts and non-experts and the exclusion of the latter from the processes of innovation related to AI. In the third section, I develop this point further by mobilizing two other notions from Rancière; namely, "disagreement" and "pensiveness." I also use as an example the abundant use of the color blue in popular depictions of AI.

Let me begin by explaining what *habitus* is for Panofsky. The introduction to his *Studies in Iconology* (1991) includes the famous example of a man raising his hat to greet an acquaintance. Panofsky uses this example to identify three levels of observation and interpretation of a work of art: a perceptual level, in which one identifies in that gesture a simple series of colors, lines, and shapes; a social level in which one recognizes that gesture a greeting. To understand the meaning of that gesture, one must be familiar with the practical world of objects and events and the

"more-than-practical" world of customs and cultural traditions typical of a specific civilization; an "intrinsic" or "content" level that takes us from iconography to iconology: at this level, both the more specific elements (how exactly did that man raise his hat?) and the more general ones will be brought forward. At this third level, art history comes to its end, which is to see in a single work of art the style and habit of a time, of the underlying principles that determine its existence.

Panofsky's iconology goes beyond the limits of art history to apply to all cultural expressions of an epoch. For example, in *Gothic Architecture and Scholasticism* (2005), he advances the hypothesis that, in the twelfth and thirteenth centuries, there was a connection between Gothic art and Scholastic philosophy that was more concrete than mere parallelism, yet also more general than a direct influence that scholastic scholars would have had on painters, sculptors, and architects. Between scholastic scholars and artists, there would be not a relationship of cause and effect (according to which, for example, architects would have been avid readers of scholastic treatises) but one of diffusion. It is precisely this diffusion that Panofsky calls *habitus* or mental habit. The mental *habitus* that Gothic architects and scholastic philosophers shared, as well as their works, had as its basis a renewed trust in reason, which seems capable of giving evidence for anything that could be deduced from principles other than faith. In particular, Panofsky identifies three elements or principles of similarity between Gothic architecture and scholastic texts: totality or sufficient numbering, the arrangement according to a homologous system of parts and parts of parts, and distinctiveness and power of deduction. Exemplary is the comparison between the Door of Judgment of Notre Dame Cathedral in Paris and the structure of the first part of the Summa of Thomas Aquinas.

The French philosopher and art historian Georges Didi-Huberman strongly criticizes the Panofskian method regarding art and, more generally, images. Didi-Huberman's thesis is that the history of art from which we come and in which we find ourselves is of neo-Kantian inspiration for the most part. The responsibility for this situation is attributed to Panofsky, when he left Germany for the United States. Didi-Huberman considers the two versions, one of 1932 in German, the other of the 1939 English article in which the example of the gentleman who raises his hat was introduced for the first time—an example taken from Karl Mannheim.[4] Didi-Huberman notes the existence, already in 1932, of terms (also influenced by Mannheim) such as "supreme region" and "sense of essence" to indicate the ultimate purpose of art history. However, the manner of realizing this project of synthesis was quite different in 1932: "This project was radical, it was different: uneasy, traversed by a force that, far from being pedagogical, was questioning, almost convulsive […] and quite authentically philosophical" (Didi-Huberman, 2009: 98). From Germany

to the United States, what died is the antithesis in favor of the optimistic, positive, and even positivistic synthesis.

Panofsky participated in the intellectual movement that historicized, socialized, and culturalized Kant's schematism in Germany and France in the twentieth century—the one I accounted for in Chapter 1.3. The thesis put forward by Didi-Huberman is that this work of historicization, socialization, and culturalization of the Kantian schematism has not been sufficient in Panofsky as well as in Cassirer, Durkheim, Mauss, and up to Bourdieu (168), to overcome the synthetic temptation that is at the heart of Kant's thought. On the one hand, Didi-Huberman recognizes the difference between Panofsky's historicism from Kantian apriorism and a psychologizing interpretation of Kant. On the other hand, he contends that, in the end, Panofsky has simply replaced one universalism (the transcendental or psychologizing one) with another of a historical nature. Panofsky's iconology is no less a transcendental synthesis than Kant's transcendentalism, so much so that in a footnote, speaking of Panofsky's famous interpretation of Titian's *Allegory of Prudence*, Didi-Huberman (293) writes, "he was (they were) looking not at the painting itself—with its dark, evenly colored focal mass—but rather at a black and white photograph of it […]". He also quotes a passage from Panofsky's 1932 article, according to which "the greatness of an artistic production is ultimately dependent upon the quantity of "*Weltanschauung*-energy" that is incorporated into the worked material and radiates back from it to the spectator" (126).

Didi-Huberman alternative methodology consists in recognizing the work of "the negative" in the image, in short, in privileging the symptom (or lapsus) over the sign and the positive discourse that a work of art advances. He suggests focusing not on the synthesis but instead on what makes synthesis incomplete and, in the end, impossible. He acknowledges the genius of Panofsky, who paved the way for the symptom at the level of iconology. However, he criticizes him because this new path has been immediately closed, insofar as Panofsky's symptoms are not something irreducible. Still, he reduced symptoms to documents of a homogeneous worldview.

My methodological proposal consists of juggles between Panofsky and Didi-Huberman: this entails resorting to the notion of symptom—as well as trace and remainder (*reste* in French)—to propose a "fragile epistemology," that is, a synthesis that is neither absolute nor impossible, but always open-ended. As much as I use a few images to show an entire worldview, I do not want to close the door to other images and cultural productions, just as I do not want to close the door to other possible interpretations of these traces or remainders. Incidentally, I think that Didi-Huberman's proposal is less distant from Panofsky and of all those who have worked on the historicization, socialization, and culturalization

of Kantian transcendentalism than Didi-Huberman has been willing to admit. The difference between the two perspectives lies, if anything, in their focus: an accent placed on the impossibility of synthesis in the case of Didi-Huberman (who did not stop synthesizing by making symptoms and lapsus the first elements of a method, just as Freud did) and on the possibility of synthesis despite everything in the case of Panofsky and, with him, Cassirer, Durkheim, Mauss, and Bourdieu (who, after all, did not stop setting temporal and spatial limits to any synthesis, which is always relative to a culture, an era, a social class, et cetera).

Let me now focus on microstock images of AI. Disciplines such as science and technology studies have long been concerned with images. There are at least two reasons why these disciplines have moved toward images. The first is that highlighting images' role also means highlighting technology's role in developing scientific knowledge. In short, discussing images portrays science as becoming increasingly and chronically dependent on technical instruments, such as those technologies that produce images of objects and phenomena that would otherwise remain inaccessible. The second reason coincides with the necessity of overcoming some exaggerations of the logocentrism and textocentrism that characterized much of twentieth-century human and social sciences.

However, despite a heated interest in imagery on the part of these disciplines, it is noteworthy that there is also a great void here. On the one hand, scholars have been interested in images produced by scientists for other scientists via technical instrumentation—see the seminal work of Michael Lynch and Steve Woolgar (1990) and its updated version by Catelijne Coopmans et al. (2014). On the other hand, they have been interested in producing scientific images by artists, mostly in collaboration with scientists (think of the artist's impressions)—for example, see Caroline Jones and Peter Galison (1998). In short, it seems that the attention of researchers goes toward those images of science and technology under the aegis of two regimes of truth: the regime of scientific reference and the regime of esthetic taste. It does not matter if the reference is accepted in a naïve way or if it is criticized; it does not matter if the esthetic taste, when applied to science and technology images, can still be disinterested (as the Kantian tradition would like) or not. In both cases, discussion and interest remain within these two regimes of truth. In this way, however, between the Scylla of technical images and the Charybdis of artistic images, what does not pass are all those images of science and technology that are not produced by scientists and have no artistic claim. These are popular and vulgar images, more artisanal than artistic, with a history that precedes and goes beyond that of stock images alone but which seems to have their glory today in the proliferation of stock images of science and technology.

I understand the reluctance of philosophers of technology and critical theorists to engage in a reflection on microstock images of AI. Do they not represent merely a marginal phenomenon in the depiction and more generally the communication about AI? Moreover, how exactly do they relate to AI as such or to the ontological, ethical, and political issues related to it?

In general, stock images have been overlooked by both public debate and scholarly literature because they are seen as the "wallpaper" of our consumer culture (Frosh, 2003: 145). When considered, they have been instead simply ridiculed for their highly stereotypical way of representing reality. For example, there are online collections making fun of (and being critical toward) stock images of women laughing alone while eating a salad[5] or women who have difficulty drinking from a water bottle without spilling some on themselves.[6] However, stock images are practically everywhere: college course brochures are full of successful-looking students, lounging on green lawns or throwing their square academic caps after graduation; magazines abound with businesspeople, busy but smiling, muscular no doubt but wearing glasses, et cetera. Incidentally, we can notice how many of these clichés have helped to import into other cultures aspects of life and practices that belong to Northern American society. We could say that stock imagery is almost as influential in our lives as Hollywood cinema. For this reason, notwithstanding their banality and being deeply kitschy, stock images deserve our full attention—the same kind of attention philosophers like Adorno and Horkheimer paid to the Hollywood studio film system.[7]

In what specifically concerns microstock images of AI, as I said earlier, we must consider that they represent a quantitatively impressive phenomenon. In addition, there is an economic and algorithmic logic behind stock images, whose ultimate purpose is to be sold, so they are always among the first results of our Web searches. Finally, we should not forget that many public institutions and private companies have specific economic agreements with stock imagery agencies, with the result that these institutions' and companies' communication services routinely use stock imagery to represent emerging technologies such as AI.

One might argue that the ethics of communication about AI is not AI ethics, but ethics of science communication applied to the specific topic of AI. This is disputable, however. Indeed, it would be misleading to think of AI as a collection of techniques and technologies independent of the way innovation in AI is mediated and communicated. Communication about innovation in AI essentially contributes to framing the imaginaries about AI that play a fundamental role in the concrete development of AI and its implementation in our societies. The philosophy of AI, and the philosophy of technology in general, have paid little or no attention to the issue of technological imaginaries. This is not surprising, considering the empirical

attitude dominating the field. On the contrary, disciplines like science and technology studies and media studies have been particularly attentive to the ways the representations of technology, be they visual or written, institutional or not, become conditions of possibility for the existence and development of specific technologies.[8] My ontological premise is that one cannot develop any comprehensive understanding of AI without taking into account the imaginaries about AI. Since these imaginaries are crystallized in visual or textual narratives, I also contend that comprehensive AI ethics/politics should include considerations on the representations of and the communication about AI.

* * *

Type "Artificial Intelligence" in a web browser and look for images: Among the results, you will see unreal holographic interfaces, half-flesh half-circuit brains, lines of code waving in space, robots tapping on smart touchscreens, and at least one of the hundred variations of Michelangelo's *The Creation of Adam* in a human–robot version. Most of these images are microstock images. Stock images of AI have not only invaded the popular Web. They are also widely used, both online and offline, to communicate about events, publications, courses, etc., on AI proposed and organized by scientific institutions that are often considered to be leading in the field of AI research (be it in engineering or social sciences and humanities).

Consider these two examples, both relating to the specific field of AI ethics. It is indeed interesting to note that AI ethics itself sometimes shows little attention to the ethical implications of visual representations of AI. The first image is a screenshot of the cover of *The Oxford Handbook of Ethics of AI*.[9] Interestingly enough, in this 881-page volume, not a single line is devoted to the ethics of communication about AI. The deleterious effects of this lack of attention are fully visible on the book cover. As one can read on the bottom-left of the back cover of the book, the cover image is retrieved from iStock, a subsidiary of Getty Images specialized in microstock imagery. The author is the professional Moldovan illustrator Feodora Chiosea. At the color level, a predominance of blue and white can be seen. I will discuss the implications of the use of blue below. On the use of white, especially for depicting humanoid robots, Cave and Dihal (2020) argue that to imagine machines that are intelligent, professional, or powerful is to imagine White machines because the White racial frame ascribes these attributes predominantly to White people. AI racialized as White allows for a full erasure of people of color from the White utopian imaginary.

The subject of this first image is a classic androgynous face that, in this case, is made of "digital particles" that become a printed circuit board. On the website of iStock, the image is presented as follows: "Vector of a face made of digital particles as symbol of artificial intelligence and machine

learning. Abstract human head outline with a printed circuit board. Technology and engineering concept."[10] Something interesting can be said about the internal dynamics of the image, particularly with regard to time. In the original image, the one available on iStock's website, the image goes in the opposite direction, going from the printed circuit board on the left to the face made of digital particles on the right. According to classical Western logic, as manifested, for example, in the practice of reading, time flows from left to right. This means that the sense of the original image is that of a digital object made of circuits, which now becomes a *quasi*-human (an AI). Once inverted, as in the case of the *Oxford Handbook*'s cover, the image might suggest something very different: a human being who transforms and becomes *non*-human, a digital object—in fact, in this case, the circuit board represents a principle of dematerialization and, more specifically, datafication.

The second image comes from a webpage of the website of Futurium, a European Commission's platform "dedicated to European citizens for discussing EU policies." From this webpage, one could download (and read about the piloting process concerning) the "European Guidelines for a Trustworthy AI" in multiple languages, first published in April 2019.[11] This is an image from iStock as well, by Thai illustrator Kittipong Jirasukhanont (Phonlamaiphoto). European institutions have been engaged for years in the development of a "European way" to AI, which should be characterized not only by technological excellence but also, and above all, by ethical values. It is then interesting to observe how there is here a lack of attention to the ethical implications of the images through which Europe's ethical commitment to AI is represented. Blue is the dominant color in this image. Moreover, there is a movement from left to right that suggests a shift from the past (the human being) to the present and future (the robotic hand). But in this case, the most interesting aspect is perhaps the subject of the image itself, in which there is a clear reference to Michelangelo's *The Creation of Adam*. In this way, a general aura of transcendence is attributed to AI, as if AI were the result of a divine emanation rather than a human creation subject to possible imperfections. Incidentally, it is interesting to note that in *The Creation of Adam,* the right side of the image is occupied by God and not by Adam, so one might wonder whether in this second image, it is the AI itself, represented as a robot hand, that is divinized. Moreover, the sparkling finger of the robot is a reminder of E.T. the Extra-Terrestrial and its healing power. It is not by chance that some critics found religious parallels between E.T. and Jesus. Finally, the fact that the touch screen is transparent suggests that there is no longer a "behind" and "in front" of the screen but rather an encounter between two conscious entities.

My goal in the rest of this section is to apply to these two examples what I believe to be a very common ethical perspective in science

communication. I refer to Michael Dahlstrom and Shirley Ho, who investigate the ethical implications of using narrative to communicate science to a non-expert audience—and, of course, not only texts but also photographs and images, in general, have narrative properties.

Based on the existing literature on narrative and its cognitive and social effects, the authors state that narrative can have a multitude of consequences, such as improving comprehension, generating more interest and engagement, increasing self-efficacy through modeling, influencing real-world beliefs, and persuading an otherwise resistant audience.

The authors introduce three ethical considerations/questions concerning the use of narrative in scientific communication. First, what is the underlying purpose of using narrative: comprehension or persuasion? This includes two sub-considerations: first, do I want to facilitate potential controversy through greater understanding or reduce potential controversy through greater acceptance? Can I justify manipulating my audience? Second, what are the appropriate levels of accuracy to maintain within the narrative? This includes the following sub-considerations: Which elements of my topic must remain rigidly accurate and which can be relaxed to construct a more effective narrative? Is it necessary that my narrative portrays a generalizable example or can it justifiably portray an extreme example? Third, should narrative be used at all? This also includes two sub-considerations: Will my audience accept a narrative from my position? Will others within my issue be using narrative?

I hypothesize that behind Dahlstrom and Ho's ethical considerations about using narrative in science communication, there is a "referentialist bias," that is, the issue of reference or adherence of the narrative to the scientific or technological object/fact in question, and to the evidence-based kind of reasoning that presumably characterizes scientific discovery and technological innovation. My thesis is that if considered from this point of view, visual representations of AI like those I have described above, representative of the dominant imagery of AI in our view, are simply unethical.

In all three ethical considerations that Dahlstrom and Ho propose, the ethical value of narrative is directly proportionate to its capacity to leave the room, in the end, for science and technology and their way of reasoning. It is not by chance that virtues like humility, sincerity, transparency, openness, honesty, *kairos* (meaning in Greek "the opportune moment"), and generosity are put at the center of virtue ethics of science communication—see in particular Fabien Medvecky and Joan Leach (2019, Chapter 9). The first consideration concerns the possibility of resorting to a narrative in science communication either for persuasion or for comprehension. The authors have two frameworks in mind: PUS (Public Understanding of Science) and PEST (Public Engagement in Science and Technology), respectively. It is important to highlight that in this context, I am not discussing

what scientific practice is or what kind of attitude or reasoning best fits science and technology. As such, the difference between PUS and PEST can be disregarded here. The fact is that in both cases, the use of narrative has the sole function of paving the way to a dynamic that is entirely internal to science and technology. The same holds for the second consideration, which is about the appropriate level of accuracy (strict or relaxed) to maintain in the use of narrative in science communication. Once again, there is no recognition of narrative per se: its ethical value is always measured on the basis of its "accuracy," that is, its capacity to properly refer to the things themselves. Finally, the last consideration is about the possibility of not using narrative at all, which means that narrative in science communication is somehow reduced to a sometimes necessary, but always unpleasant, stratagem to realize the scopes of science. With theological terminology, we could say that the logic of the use of narrative in science communication is a logic of *kenosis*, which in Ancient Greek means "self-emptying."

Images such as those I have described above follow the opposite logic. They are not humble, honest, sincere, or transparent. Rather, they are arrogant and overconfident. In sum, they are not "accurate." They indicate more scientific progress than they should, certainly more than actually exists in current science and technology. No human head/brain/mind has ever been turned into, and probably will never be, "digital particles"; the robotic hand depicted in the second image is a fantasy: whoever has visited a prosthetic center, or even a scientific laboratory working on upper-limb prostheses, knows that the status of research and innovation in the field is very different. Not to mention the transparent touch screen, which is very different from the screens we deal with in our everyday lives. According to the referentialist framework proposed by Dahlstrom and Ho, these images are simply unethical.

It must be acknowledged that depicting AI, especially to a non-expert audience, is a real challenge. In this regard, one could distinguish three levels of visual representation of AI. The first is the one that wants to be closer to the "thing itself," that is, the algorithm. Think of the representation of a decision tree, of a network of artificial neurons, or the way the algorithm is encoded in a computer program. Yet, one might wonder if such representations really show the "thing itself." Is an image of the brain enough to depict human intelligence? Moreover, how can such a complex representation be helpful for a public of non-experts (or even for experts that are not directly involved in the projects since an AI algorithm can include hundreds of lines of code)? Finally, can we really reduce the AI to its code, without considering its multiple effects as a social and cultural fact?

The second is the one that depicts AI as being embedded in different technologies (drones, smartphones, mechanical arms, etc.) and specific contexts (agriculture, medicine, military actions, and so on). In this case,

however, AI is clearly black-boxed into another technology. How can we be sure that the depicted technology is not just an empty box? Moreover, such images are often already third-level images, for example, when they choose specific technical objects (in particular, humanoid robots), or when they "enhance" existing technologies (for instance, by adding elements that come out three-dimensionally from the screen of a smartphone), or even when they place simple objects against backgrounds (for example, sunsets or particularly clear skies) that instill feelings of hope or fear.

Finally, the third level is that of the images I consider in this chapter. From a referentialist point of view, these are definitely the worst ones. The fact is that they do not so much refer to the "thing themselves" as they do to expectations and imaginaries, whether those of engineers, organizations, and companies, or potential spectators. Each of these levels, I believe, is legitimate in its own way, but under certain conditions. Therefore, it is important to emphasize that I do not want to advocate for a return from the third to the first level, according to what would be a classical referentialist approach. I do not believe that images of AI are all the more true, good, and esthetically appreciable the closer they are to the things they are meant to represent. Moreover, it would be wrong to think that the abundant use of third-level images would be merely transient and that, afterwards, a process of "normalization" would follow. The images of this level respond to a specific need that the other levels are unable to address. So, my idea is that referentialism cannot be the way we judge the images of this third level. Actually, because of the intrinsic difficulty in depicting AI, I would say that referentialism cannot be the canon of our ontological, ethical, and esthetical judgment about AI images at all.

My thesis is that images of AI like those I discussed above are not unethical or, at least, the fact of being unethical according to a referential perspective is so evident that it does not represent a true problem. Similar images are rather "unpolitical." To justify this thesis, I am going to refer to Jacques Rancière's notion of "distribution of the sensible."

For Rancière (2006: 12), the expression indicates "the system of self-evident facts of sense-perception that simultaneously disclose the existence of something in common and the delimitations that define the respective parts and positions within it." In other words, the distribution of the sensible regards the constitution of a shared time, space, and horizon of understanding, and the distribution of access and roles (i.e., recognition, legitimacy, and ultimately power) within such a delimited space, time, and horizon of understanding. The distribution of the sensible, and the consequent distribution of access and roles, imply exclusions, sometimes from specific access and roles, sometimes from the whole space, time, and horizon of understanding. The distribution of the sensible is for Rancière a political practice, because "politics revolves around what is seen and

what can be said about it, around who can see and the talent to speak, around the properties of space and the possibilities of time" (13). Politics and esthetics are strongly connected, where "esthetics" is to be understood both in the sense of the Greek *aisthesis*, which means perception and in the sense of art and cultural productions in general. On the one hand, politics is a matter of distribution (or exclusion from) roles and access to perception—seeing/being seen, listening/being listened to, and so on. On the other hand, art and cultural productions can either contribute to the reproductions of the dominant regimes of perception or contribute to their suspension and eventual transformation.

I contend that the dominant imagery of AI implies a specific distribution of the sensible whose ultimate effect is to mark a gap between experts and non-experts, insiders and outsiders. It has been argued that the use of images in science popularization has an introductory function. For instance, Maria E. Gigante (2018) coined the term "portal images." However, I contend that stock images of AI in science communication are "screen images," where "screen" refers to its etymology, meaning "to cut, divide, cover, shelter, and separate." The fact is that one can watch thousands of similar images of AI without having to develop any critical reasoning about AI. These images instead have an "anesthetic" effect, which means that the reiterated contact with them makes non-experts and outsiders less and less sensitive to the most urgent issues related to AI and increases their feelings of resignation about AI.

It is commonly believed that narrative has an explicative function. This is why narrative is usually considered an important tool for science popularization, also in addition to, for instance, the popularization of religious precepts. However, the British literary critic Franck Kermode (1979) argues that narrative often has the function of separating and obscuring. He uses the parables of the Gospels as a paradigmatic example. In particular, he emphasizes the following passage of the Gospel of Marc (4, 11–12):

> The secret of the kingdom of God has been given to you. But to those on the outside, everything is said in parables *so that* (*hina* in Greek) they may be ever seeing but never perceiving, and ever hearing but never understanding; otherwise, they might turn and be forgiven!

This passage would indicate that parables are arbitrary means of separation between insiders and outsiders, the ultimate scope of which would be to exclude the latter from the Kingdom of God.[12]

I propose to apply these considerations to our object of study. In particular, I introduce the notion of "an*e*sthetics," a word referring to the fact that the distribution of the sensible related to similar images (esthetics) has anesthetic effects on those who are "outside." The concept of anesthetics is

also important for another reason. One might think that the loss in terms of both ethics and politics at the level of the single image of AI is somehow retrieved at the level of the context in which the image is used, and to which it finally belongs. Hence, a possible criticism of my discourse might consist in affirming that there is no ethics or politics of similar images per se, because similar images are always used in context, and the ethical or political assessment should be made not on the single image, but with regard to the whole context. To put it plainly, science communication on AI is full of ugly and bad images, yet these images can still be used ethically or politically whenever they are integrated into a rigorous discourse. However, such criticism forgets that in the media environment in which we live, images are most often detached from, and perceived outside from, their context. Think of how often we content ourselves with scrolling the home screen of our news feeds without actually reading the article or even the titles. This criticism also forgets that similar images can, through their "force," anesthetize the communicational context in which they are supposed to be embedded and on which they are supposed to depend.

* * *

My idea is that microstock images of AI are unpolitical because they anesthetize any form of "disagreement." Above, I have argued that politics has to do with the distribution of the sensible. However, on other occasions, Rancière proposes distinguishing more carefully between politics and police. We might say that the distribution of the sensible as a form of domination is related to the police, while politics in a proper sense is rather related to the practice of disagreement, which can also be understood as a suspension of the dominant distribution of the sensible. Rancière (2006: 29) defines the police as

> an order of bodies that defines the allocation of ways of doing, ways of being, and ways of saying […]; it is an order of the visible and sayable that sees that a particular activity is visible and another is not, that this speech is understood as discourse and another is noise.

In the same passage, he defines politics as "an extremely determined activity antagonistic to policing: whatever breaks with the tangible configuration whereby parties and parts or lack of them are defined by a presupposition that, by definition, has no place in that configuration." He also says that

> political activity is whatever shifts a body from the place assigned to it or changes a place's destination. It makes visible what had no business being seen and makes heard a discourse where once there was only place for noise.
>
> (Rancière, 1999: 30)

Politics in a proper sense implies the possibility of disagreement, which is neither ignorance nor misunderstanding. Disagreement is neither a matter of teaching to others what they do not know yet, nor is it a question of explaining more, to allow better understanding. Disagreement is somehow more radical: it is

> a specific type of speaking situation (*situation de parole*): one where one of the interlocutors does not hear what the other is saying. Disagreement is not the conflict between the one who says white and the one who says black. It is the conflict between the one who says white and the one who says white but does not hear the same thing.
>
> (Rancière, 1995: 12. My translation)[13]

Police anesthetize disagreement and promote consensus, but the consensus is nothing but the disappearance of politics.

Let us now apply these ideas to the use of microstock images and the like in science communication about AI. I already said that stock images are usually characterized by their generalized and stereotyped way of representing reality. These images regard the imaginaries, that is, hopes and fears, enthusiasms, and hostilities about AI that the concerned groups of non-experts (but also experts, insofar as experts are not constantly reasoning and acting as experts) have about AI. Microstock images and all sorts of popular representations of AI might be considered public arenas that attract different audiences trying to cope with AI despite its inaccessibility. However, this is still a desideratum, because most microstock images of AI currently have little to do with disagreement. On the contrary, one can say that they anesthetize disagreement by promoting forms of consensus about the general hopes and fears about AI.

To give empirical proof of my anesthetical perspective on microstock images of AI—a perspective that, indeed, could be extended to many other narratives of AI and emerging digital and non-digital technologies—, let us focus on the use of blue in the background of many of these images.[14]

In the first pages of *Confronting Images* (2009), Didi-Huberman comments on Fra Angelico's *Annunciation,* painted in 1440 in the cell 3 of the convent of San Marco in Florence. According to Didi-Huberman, a Panofskyan reading of this work cannot but disappoint: the story (meaning) is told in a poor and meager way. Fra Angelico seems entirely unsuited for representing fifteenth-century Italian painting whose one of its salient qualities is variety (i.e., apocryphal details, illusionist fantasies, complex spaces, or everyday accessories). For this reason, art historians often consider Fra Angelico a sketchy, naïve, and "blessed (*beato*)" painter—almost

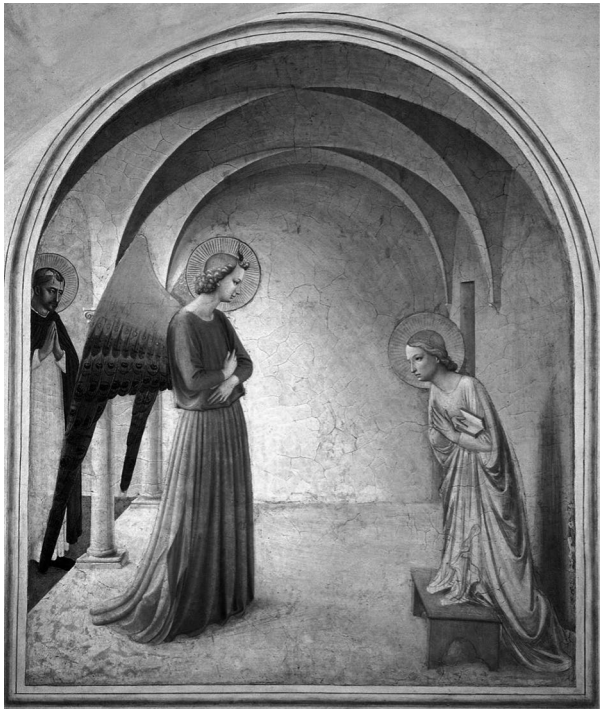

Image 2.3.1 Fra Angelico's *Annunciation* in San Marco (cell 3).

Source: Wikimedia Commons. https://fr.wikipedia.org/wiki/Fichier:Fra_Angelico_-_Annunciation_(Cell_3)_-_WGA00538.jpg.

in a negative sense, as a mystic looking at the invisible and ineffable. Didi-Huberman says the alternative

> is based on the general hypothesis that the efficacy of these images is not due solely to the transmission of knowledge—visible, legible, or invisible—but that, on the contrary, their efficacy constantly operates in the intertwining, even the imbroglio, of transmitted and dismantled bits of knowledge, of produced and transformed not-knowledges. (16)

The French philosopher and art critic insists above all on the white present in the fresco that spreads throughout the cell in which the fresco was painted. This white does not mean lack (*manque* in French), but it is something:

> It is not *visible* in the sense of an object that is displayed or outlined; but neither is it *invisible,* for it strikes our eye, and even does much more

> than that. It is material. It is a stream of luminous particles in one case and a powder of chalky particles in the other. It is an essential and massive component of the work's pictorial presentation. Let us say that it is *visual*.
>
> (17)

Didi-Huberman did not hesitate to call this white a "symptom:" "So perhaps we must call it a *symptom*, the suddenly manifested knot of an arborescence of associations or conflicting meanings" (19).

In short, white, far from representing a lack of something, is something that in Fra Angelico's work leaves one to think. In particular, what white says in Fra Angelico is the very meaning of the Annunciation, which Albert the Great and his disciples saw not only as a unique event but also as an "absolutely extravagant efflorescence of inclusive or associated meanings, of virtual connections, of memories, of prophecies […]" (22).

The image above brings together some 7,500 microstock images of AI taken from the Shutterstock catalog. This is the result of research I conducted with Dario Rodighiero, a digital humanist at the University of

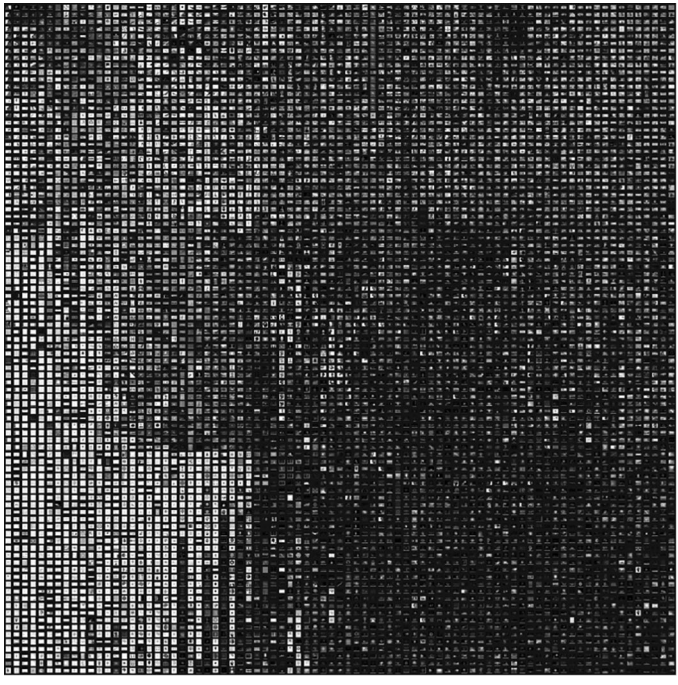

Image 2.3.2 7,500 microstock images of AI from the catalogue of Shutterstock.
Image by Dario Rodighiero in collaboration with the author.

Groningen, in the Netherlands. First, we used the web crawler Shutterscape, which allows massive downloads of images and videos from Shutterstock.[15] Second, we used PixPlot, a tool developed by Yale Digital Humanities Lab.[16] PixPlot allows to visualize the extensive collections of images within an interactive WebGL scene. Each image is processed with an Inception Convolutional Neural Network, trained on ImageNet 2012, and projected into a two-dimensional manifold with the UMAP (Uniform Manifold Approximation and Projection)[17] algorithm so that similar images appear close to each other. The result can be accessed through the link in the footnote.[18]

In the image above, the UMAP clusters are represented on a grid. This image is interesting for two reasons. First, because it is quite ironic that an AI algorithm is used to recognize resemblances and differences concerning images of itself. Second, because the use of an AI algorithm makes the "distant viewing"—which here means the visual alternative to Moretti's "distant reading" (2013)—of all these images possible. From such a distant viewing, the overuse of blue in the background emerges as a key feature of microstock images of AI.

Now, my idea is that precisely this overuse has anesthetizing consequences. Fra Angelico's white—which, in this respect, is the antithesis of the whiteness of AI—opens up infinite or at least multiple ways of signification. On the contrary, the use of blue ends up closing, restricting—like what sociologists of science and technology call "lock-in," but which here is no longer understood in technical, economic, or material terms, but in terms of imaginary and symbolic forms.

The French historian Michel Pastoureau (2018) distinguishes between several phases of the history of the blue: the first phase, up to the twelfth century, in which the color was almost absent; an explosion of blue between the twelfth and thirteenth centuries (consider the stained glass windows of many Gothic cathedrals); a moral and noble phase of blue (in which it became the color of the dress of Mary and the kings of France); and finally, a popularization of blue, starting with Young Werther and Madame Bovary and ending with Levi's blue jeans industry and IBM, which is referred to as the Big Blue. To this day, blue is the statistically preferred color in the world. According to Pastoureau, the success of blue is not the expression of some impulse, as could be the case with red; instead, one gets the impression that blue is loved because it is peaceful, calming, and anesthetizing. It is no coincidence that blue is the color used by supranational institutions such as the United Nations, UNESCO, and European Community, as well as Facebook and Meta. In Italy, the police force is blue, which is why policemen are disdainfully called "Smurfs."

Considering the anesthetizing effect of blue and its overabundance in stock imagery of AI, I can argue that the problem with microstock AI

images is that, instead of provoking debate and "disagreement," they lead the viewer into forms of acceptance and resignation. Just as Fra Angelico's white expanded throughout the fresco and, beyond the fresco, into the cell, it is possible to think that the anesthetizing effects of blue expand to the subjects and the entire media communication environment in which these AI images proliferate.

Despite all this, I do not think that iconoclasm is the solution. I do not think we must renounce this kind of image of AI, because, as I said earlier, they fulfill a role (or at least, they have a potential role) that the other depictions of AI do not have. I believe that more engaged imagery of AI could be created not so much following the classic urge for reference, but rather pursuing what Rancière calls the "pensiveness" of the image. According to the French philosopher,

> a pensive image is […] an image that conceals (*recèle*) unthought thought, a thought that cannot be attributed to the intention of the person who produces it and has an effect on the person who views it without her linking it to a determinate object.
>
> (Rancière, 2011: 107. Translation modified)

Among the several examples, he considers the famous 1865 photo by Alexander Gardner of the sentenced-to-death Lewis Payne.

The pensiveness of this photography depends on the tangle between several forms of indeterminacy. First, the one concerning the visual composition: we cannot know if the position—Lewis Payne is seated according to a highly pictorial arrangement—has been chosen by the photographer or not. We do not even know whether the photographer has simply recorded the wedges and marks on the wall, or whether he has deliberately highlighted them. Second, the one concerning the work of time: the body, the clothes, and the posture of Lewis Payne are at home in our present, yet the texture of the photograph bears the stamp of times past. Third, the one concerning the attitude of the character: we know that Lewis Payne is going to die, but we cannot read his feelings in his gaze.

It might be thought that the pensiveness of the images depends exclusively on our ignorance and the resistance of the image to be interpreted—for instance, when its provenance or the thought of its author is unknown. However, Rancière insists on the fact that pensiveness rather depends on the capacity of the image to bring together different regimes of expression without homogenizing them. He talks, for example, of "dis-appropriate similarity" (129), which is more than mere juxtaposition and yet less than identification. In other words, images are pensive insofar as they form always-open and never-exhausted metaphors on different spatial and temporal levels.

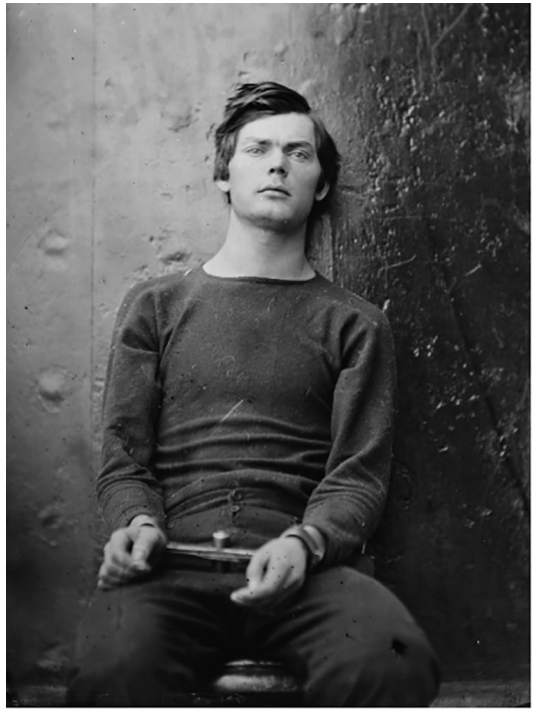

Image 2.3.3 Picture of Lewis Payne by Alexander Gardner.
Source: Wikimedia Commons. https://commons.wikimedia.org/wiki/File:Lewis_Payne.jpg.

The concept of the pensive image is particularly interesting because it detaches the possibility for an image to be pensive from the need for it to be adherent to the reality it represents. Whether adherent to reality or not, an image can be thoughtful to the extent that it can provoke thought in the spectator. The presence of multiple planes, spatial and temporal, of interpretation, in short, a metaphoricity intrinsic to the image itself, is what allows it to be pensive. Now, why are the AI stock images we have considered not pensive? Precisely insofar as they direct thought in a unique direction, made of hope and trust. Without going into the details of the analysis, we can consider again the abundant use of a calming, anesthetizing color like blue as an example.

The paradigm through which Rancière builds his notion of a pensive image is art. I believe as well that artistic productions today offer several possibilities for visually representing AI beyond the usual clichés, and without much concern for the reference to the technical artifact. Consider the robotic sculpture *Black Box* by the French artist Fabien Zocco.[19] Robotic

black cubes move slowly on the ground. Their movements let a sort of enigmatic behavior emerge, lending a semblance of life to these minimalist artifacts. *Black Box* thus aims to give substance to the often used, but less often thought of, metaphor of the "black box," which in the ethical discourses on AI indicates the inaccessibility to the internal functions of a system such as a machine learning algorithm. This work does not refer to AI as a collection of techniques and technologies—we do not know how the black boxes move. It rather refers to AI as an imaginary, which is, however, not anesthetized according to the easy opposition between fear and hope. *Black Box* inspires both fascination and uncanniness, attraction, and repulsion. The black boxes move, they behave and seem alive, and yet they cannot be understood.

A second example is the *Anatomy of an AI System* by Kate Crawford and Vladan Joler,[20] whose goal is to present Amazon Echo as "an anatomical map of human labor, data and planetary resources." I believe that this map can be approached from two different levels. The first one is the level of representativeness. For instance, one can download and *read* the map in its details to have a better understanding of AI not in isolation, but rather in its multiple human and environmental implications. The second other one consists of *perceiving* the map as a whole. In this second case, the spectator is taken by a kind of vertigo, given the complexity and the many dimensions that are suggested by the opening of the AI black box—like the opening of a human body and the arrangement of all its internal organs. The effect, after all, is not unlike that of the *Black Box*. Certainly, this latter work extremizes opacity, while the other one extremizes "monstration" (from the Latin *monstratio* and *monstrare*, meaning "to show"). Yet, in both cases, it is a matter of problematizing AI and our daily relationship with it.

I believe that the main challenge for the politics of AI images would consist of going beyond the limits of the artistic (and hence most often elitist) production to import the pensiveness of works like *Black Box* and the *Anatomy of an AI System* in more popular contexts, in particular in the context of the production of microstock images about AI, and science and technology, in general.

In February 2020, Getty Images launched a visual trend dedicated to AI called "AI: Visualizing the Invisible."[21] The presentation of the trend notes the following:

> Our search data shows customer search for 'Artificial Intelligence' has gone up 179% in the last 12 months. Demand for AIrelated visuals has ballooned. This includes images and videos of everyday tech. […] But it also includes searches for more abstract technological concepts. Searches for 'cybersecurity' were up 107%, 'cloud technology' was

> up 153% and 'innovation', consistently one of the highest searched concept keyword, we saw in the last 12 months a 238% increase in 'innovative technology' [*sic*].

These numbers give actually force to my argument that stock imagery plays a crucial role in framing our imaginaries of AI. The same presentation also notes that

> at a time when concerns about cybersecurity and AI taking human jobs are also growing, there's a recognized need for images and video that shows Artificial Intelligence *benefitting*, or at least working alongside, humans and also for brands to show *transparency* in how they are using AI, particularly when being used by the consumer.
>
> So forget the traditional blue and gray tones often associated with artificial storytelling. Move towards more varied tones. Show the diverse ways in which AI is *benefitting* us as humans. Embrace conceptdriven imagery to show the *humanizing relationship* we are having with this technology as we bring meaning to it. (My italics)

It seems clear to me that Getty Images is not especially interested in promoting the pensiveness of its images for the benefit of consumers. According to sales logic, it is instead interested in its clients (those who craft communications about AI) and the clients of its clients (those who produce AI or use AI-based solutions). By changing one palette for another, Getty Images is not responding to the problem of anesthetics but is merely substituting one form of anesthetics for another that is probably less rough but for precisely this reason no less effective. The new Getty Images AI imagery is still shaped by the interests of the ideologies of consumer capitalism (Aiello & Woodhouse, 2016). Thus, an enormous work of redefinition of AI imagery is still necessary, such as the one recently started by the Better Images of AI initiative.[22] My simple proposition consists in using Rancière's notions of distribution of the sensible, disagreement, and pensiveness as a guide for the production and for the esthetic, ethical, and ontological judgment of AI images. Indeed, I sense that this work will have a positive impact not only on communication about AI but also on the ways in which AI is implemented in our societies.

Notes

1 Shutterstock offers for instance to its contributors the "Keyword Tool." It suggests a series of keywords, which are automatically generated by a computer vision technology: "It finds images that are visually similar to the one you are submitting and suggests relevant and previously-successful keywords for you

to choose from." https://support.submit.shutterstock.com/s/article/Portfolio-Tools-New-Keyword-Tool?language=en_US. All links have been last accessed on January 10, 2023.

2 https://openai.com/dall-e-2/.

3 https://huggingface.co/spaces/dalle-mini/dalle-mini.

4 The 1939 version, transformed twice in 1955 and 1962, is the one that is put in the introduction to the *Studies in Iconology*. The 1932 version was published in the journal *Logos* (XXI) under the title *Zum Problem der Beschreibung und Inhaltsdeutung von Werken der bildenden Kunst* and was later included in Panofsky (2012).

5 https://www.thehairpin.com/2011/01/women-laughing-alone-with-salad/.

6 https://www.thehairpin.com/2011/11/women-struggling-to-drink-water/.

7 Of course, I am not the first to realize the importance of stock images. Literature, still marginal but growing, can be found mainly in the fields of media studies and social semiotics—see, for example, Aiello and Woodhouse (2016); Thurlow et al. (2020); Frosh (2021).

8 See, for instance, Natale and Ballatore (2020); Cave et al. (2020); Bareis and Katzenbach (2022).

9 https://www.instagram.com/p/CPH_Iwmr216/. For copyright reasons, these images cannot be used in the book. The link sends to the Instagram profile "ugly.ai" I have created to collect microstock images (and, more generally, popular depictions) of AI used in science communication and marketing. For those who do not have an Instagram account, the image can be retrieved at https://academic.oup.com/edited-volume/34287.

10 I have used the reverse image search engine TinEye (https://tineye.com/), which enables one to find the original source of the image by looking for results among only stock images.

11 https://www.instagram.com/p/CPH8xoCLTm7/. The image is also retrievable at https://ec.europa.eu/futurium/sites/futurium/files/capture_1_0.jpg. Since mid-May 2021 the website is archived, and a new Futurium platform has been launched. On this specific image and the "AI creation meme," see Singler (2020).

12 Some argue that Mark's "so that" or "in order that," the Greek *hina*, is a mistranslation of a word that in the lost Aramaic original rather meant "in that" or "in such a manner as." This would mean that the Greek translation of Marc's Gospel would distort the true meaning of the sentence, which would rather mean: "I have to speak to them in parables, seeing that they are the kind of people that can take stories but no straight doctrine" (Kermode, 1979: 30). This is an attempt of making *hina* mean "because," and so make a sentence that has been considered "intolerable" and even "repellent" somehow bearable. In the Gospel of Matthew–Marc is usually believed to be the source of Matthew–the *hina* is transformed in *hoti*, which precisely means "because." However, Kermode rejected similar edulcorating, and used the example of parables to develop what he called a "*hoti* doctrine of narrative." For him, stories can be always enigmatic, and can sometimes be terrible.

13 For some reason, the English version of the book lacks two important paragraphs of the original French version (Rancière, 1995: 11–12) in which Rancière defines the concept of disagreement.

14 On the use of the color blue in depicting AI, see also Grieser (2017).

15 https://github.com/chuanenlin/shutterscrape.

16 https://dhlab.yale.edu/projects/pixplot/.

17 https://arxiv.org/abs/1802.03426#:~:text=UMAP%20(Uniform%20Manifold%20Approximation%20and,applies%20to%20real%20world%20data.
18 https://rodighiero.github.io/AI-Imaginary/#.
19 https://www.fabienzocco.net/blackbox.html.
20 https://anatomyof.ai/.
21 https://creativeinsights.gettyimages.com/en/trends/technology/ai-visualising-the-invisible. Visual trends are image collections that are aimed at capturing emerging cultural and visual trends based on the analysis of user search data, market analysis, and expert opinion.
22 https://betterimagesofai.org/.

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Conclusion

Instead of going back through the different stages of this book, I propose in this conclusion to take a step forward. Specifically, I want to ask whether it is possible to expand the approach developed in Chapter 2.3 beyond the limits of science communication about artificial intelligence (AI) and apply it to the ethics of AI as a whole. When I started this book, not many people were interested in the political philosophy of AI; the focus was on the ethics of AI. The reasons for this are, in my opinion, not only extrinsic. Some are related to the empirical attitude of the contemporary philosophy of technology, the practitioners of which tend to neglect any social and cultural dimension transcending the most concrete aspects of technology and the most immediate consequences of technological mediations. One of the main goals of this book has been to free the philosophy of technology from this flat perspective by critically considering the role technological imaginaries have in the processes of innovation related to AI. The notion of technological *habitus* suggests that every technology is always much more than the sum of its material parts. Technologies and technological mediations are always wrapped in social and cultural symbolic forms. I contend that today we need less ethics and more politics of AI.

My problem with the ethics of AI is that, at the end of the day, it never seems to go beyond seeking consensus with respect to certain values and worldviews. Think of the several reports and guidelines about ethical AI that have proposed "universal" principles such as transparency, trustworthiness, and beneficence. Anna Jobin et al. (2019) state that while a convergence around some of these principles is observable today, disagreement arises when it comes to putting them into practice. A similar disagreement depends, for instance, on the social and cultural contexts in which the principles must be applied. Scholars are increasingly attentive to the contextualization of AI ethics and the kind of misunderstandings and disagreements that the implementation of a globalized product such as AI technologies can cause in a specific social and cultural context or whenever different spheres of justice enter into conflict. I believe that

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Jacques Rancière's esthetics and political philosophy might represent a good theoretical framework to think about AI on a different basis. On such a basis, the disagreement would be less an obstacle to be sooner or later overcome than a resource. This is what Rancière (1999: 102) says about consensus democracy:

> According to the reigning idyll, consensus democracy is a reasonable agreement between individuals and social groups who have understood that knowing what is possible and negotiating between partners is a way for each party to obtain the optimal share that the objective givens of the situation allow them to hope for and which is preferable to conflict. But for parties to opt for discussion rather than a fight, they must first exist as parties who then have to choose between two ways of obtaining their share. Before becoming a preference for peace over war, consensus is a certain regime of the perceptible: the regime in which the parties are presupposed as already given, their community established, and the count of their speech identical to their linguistic performance. What consensus thus presupposes is the disappearance of any gap between a party to a dispute and a part of society. It is the disappearance of the mechanisms of appearance, of the miscount and the dispute opened up by the name "people" and the vacuum of their freedom. It is, in a word, the disappearance of politics.

In other words, the consensus is already based on a certain distribution of the sensible that legitimates some actors, discourses, and ways of argumentation, while excluding in principle some others. The consensus is the "disappearance of politics" because it is always-already legitimized by the police. Consensus excludes any form of disagreement, so one can suppose that several efforts currently undertaken to include marginalized individuals or groups in what concerns technological innovation in AI are rather forms of anesthetization of the disagreement that these marginalized individuals or groups may manifest. So, the question arises if a radically different AI ethics is possible; one in which the search for inclusion and consensus (on universal principles and virtues, for instance) leaves room for the creativity of disagreement and agonism among the multiple concerned groups.

I use the term "agonism" here in the wake of Chantal Mouffe (2013). It is interesting to notice that there is a common ground bringing close to each other the political and social philosophies of Mouffe, Rancière, and Pierre Bourdieu. This common ground is the critique of the contractualism and rationalism that characterize many modern theories of political philosophy—on this point, see (Coeckelbergh, 2022: 7). Habermas represents one of the favorite targets. According to Bourdieu, Habermas' theoretical

universalization has brought to fictitious universalism that forgets the social and economic conditions of possibility to access the universal. In particular, Habermas has neglected the social and economic conditions of possibility that must be fulfilled "in order to allow the public deliberation capable of leading to a rational consensus" (Bourdieu, 2000: 64).

On the same page, Bourdieu asks himself:

> How indeed can it be ignored that […] cognitive interests are rooted in strategic or instrumental interests, that the force of arguments counts for little against the argument of force […], and that domination is never absent from social relations of communications?
>
> (Ibid.)

Several arguments are contained in this sentence. First, the idea that language, and hence communication, is not autonomous, but always depends on social dynamics of recognition, domination, and exclusion. Second, this means that the force of the argument, for instance when it comes to "democratic" debate to deliberation, does not only exclusively rely on the argument itself but also, and in particular, on the social status of those who advance that specific argument. Third, those who have a stronger argument are probably also those who designed the rules of the argumentation, the accepted way of talking, debating, etc. Inclusion and exclusion from the possibility of participating in debate and deliberation are already embedded in these rules. Fourth, those who are at the margins or excluded from debate and deliberation are also probably those who are less interested in participating. Fifth, there is no reason to believe that the inclusion of the excluded ones would coincide with a more democratic debate and deliberation. It seems more legitimate to suppose that, if the excluded were included, other strategic and instrumental interests would take the upper hand in determining the rules of acceptable debate and deliberation.

The problem of Habermas is that "he throws the political back onto the terrain of ethics. He reduces political power relations to relations of [ethical] communication" (66). His communicative ethics is nothing but the re-actualization of the Kantian principle of the universalization of moral judgment.

As I said Habermas is, like for Bourdieu, one of Mouffe's favorite targets.[1] However, there is also a fundamental difference between the two. Bourdieu's perspective is appreciable for its unromantic way of describing social reality. Social groups and classes, whether dominant or dominated, are driven by *habitus* and particular interests. The only difference between dominant and dominated is that the former has managed to impose his or her worldview on the latter. Yet, I also realize that there is a non-negligible limitation in the Bourdieusian perspective. While for Bourdieu social reality

is not rational, it can be rationalized. The rationalization of the irrational society is delegated to the scientific work of sociologists—see, in particular, Bourdieu (2004), where he discusses the capacity for self-reflexivity amongst social scientists. Bourdieu's sociology thus turns out to be scientistic and, one could say, even elitist: the rationality that is refused to social actors is instead attributed to the social scientist. The social scientist would then make a gift (in the sense of *kharis* and *gratia*) of rational analyses to social groups and institutions. This perspective is then not very different from the reliance on engineers and scientists that characterizes our societies, as well as much contemporary work in the philosophy of technology.

Mouffe's (and Rancière's, since I consider "disagreement" and "agonism" as quasi-synonyms) perspective is, in this respect, more radical. In Bourdieu's perspective, society is a battlefield from which only the sociologist, precisely by abstaining or making an abstraction from it, can emerge victoriously. For Mouffe, this battlefield that is society is not to be abandoned or transcended, but to be accepted and promoted. What Mouffe accepts is the conflictual nature of social reality. It is a matter for her to make of this nature (or at least to see in it) not a destructive but rather a creative element. This naturally has a cost, which consists of being able to see and eventually transform antagonism into agonism. There is a difference between antagonism, which does not recognize the other and whose purpose is precisely to annihilate the other, and agonism, in which the other is a contender who enjoys the same rights to participate in the competition or game. Agonistic democracy is one in which these rights are accorded to all contenders, whatever their methods and approaches to the contending matter are. The only rule of the game is to recognize the other as a legitimate contender. The rationality of the social is certainly not eliminated. After all, agreeing on the legitimacy of the dispute, that is, on the agonistic and not the antagonistic nature of participation, already implies postulating a horizon of comprehensibility. Yet, this horizon is minimized and so the room for critique is maximized. We could also say that Mouffe touches, in this way, the limit of all possible critique, that also in its radicality must not be criticism at all costs, otherwise it risks falling into the pure negativity or, still worse, mere neutrality.[2]

The democracy of Mouffe is not poor, but rather one that is much richer than that proposed in theories that end up, willingly or unwillingly, domesticating and therefore submitting its participants to the rationality of the dominant participants.

There are already some attempts to import Mouffe's agonism into fields such as the philosophy of science, the philosophy of technology, and media/digital studies. As for the philosophy of science, Anne-Lise Rey (2017) criticizes the deliberative reading of scientific controversies, resorting to Mouffe's antagonism. According to her, "the deliberative analysis

[dominant] model […], should be replaced by a model which would allow [scientific] controversies to be conceived of beyond the scope of an inevitable collapse back into rational consensus" (47). This would pave the way to an " 'adversarial-model' in which pluralism supposes the legitimate coexistence of divergences without presupposing their resolution, while framing these divergences within a common symbolic space where their conflict is played out" (Ibid.).

In the field of philosophy of technology, a similar position is proposed by Eugen Popa et al. (2021).[3] According to them, the dominant approaches to the issue of technological conflict are oriented toward establishing (or re-establishing) consensus, either in the form of a resolution of the conflict or in the form of an "agree-to-disagree" standstill between the stakeholders. The authors distinguish between two dominant perspectives. The first is the conciliatory approach, which sees conflict as a danger and even a disease or deviant activity. The second is the constructive approach. The merit of this approach is that it considers conflict as necessary. Yet, according to the authors, the practices set up by those who follow this approach often seem to be mere theoretical exercises–for example listening to the narratives of the other–without any guarantee that these exercises will have any effect in practice–a change in the actions. In response to these two approaches, the authors proposed importing the agonistic approach in the debate on technological conflicts:

> From an agonistic perspective, conflict is to be sought and agonistic respect must take the form of being responsive to the other party's ethical demand. Concretely, this will mean that Greenpeace and Shell must seek conflict with each other not because of the possibility of an ideal agreement, or a comfortable 'agree-to-disagree' standstill, but rather in order to continually restate and reinterpret each other's ethical demands and translate these demands into responsive behaviour. A resolution or a standstill, in agonistic thinking at least, would be bad news for both organizations (722).

The agonistic approach in philosophy of technology certainly poses some problems with regard to the *description* of the dynamics of technological innovation. For example, one could ask if the agonism in the field of technological innovation, where the clash is often between big companies and small concerned groups–sometimes supported by national and international institutions–is not in fact a disguised form of antagonism. This antagonism would be similar to a slow and positional war in which the final winner is the one who manages to exhaust the other's resources–and we know well that the resources of some large companies are practically infinite. One might also wonder, in the context of technological

innovation, how long agonism can really last. After all, is it not right at the heart of technological innovation that something must finally be created and produced? And is it not true that this product can satisfy some but will inevitably end up excluding others?

However, the agonistic approach may prove fruitful in *prescriptions* related to technological innovation. If we take the first example above, we could say that an agonistic perspective would consist of the effort to guarantee equal resources to all contenders. If we take the second example, we could say that an agonistic perspective would consist in ensuring that technological innovation processes are represented not by one, but by multiple cycles. In this way, the technological lock-in could be periodically re-opened. Of course, this is easier with technologies that do not immediately require heavy, expensive infrastructure, such as software updates that do not necessitate changes in terms of hardware.

In the context of media and digital studies, Johan Farkas and Jannick Schou (2019) apply agonism to the issue of fake news. For them, institutions and most researchers have responded to this serious problem with a problematic "truth-based solutionism." Those who rightly see the spread of fake news as a threat to democratic systems generally end up arguing that reason and the truth of "hard facts" offer the best (if not the only) solution to the problem. But the meaning of democracy, for Farkas and Schou, "is not so much its ability to navigate based on reason and truth, but its ability to include and give voice to different political projects and groups. Democracy is about different visions for how society should be organized" (7). This does not mean giving up the search for truth; it means being able to contextualize it. Furthermore, it is about understanding that truth-seeking and the promotion of agonism in our democracies are not necessarily contradictory. Thinking and making believe that the whole debate about fake news boils down to the issue of truth is a political gesture that ends up anesthetizing any form of politics. In Chapter 7 of their work, Farkas and Schou describe the different solutions proposed from this truth-based perspective: moral condemnation (usually proposed by intellectuals), policing (that is, legislation about) the truth (generally proposed by public institutions), technological solutionism (the preference of big tech companies and by many researchers in fields like computer science), re-establishing centers of truth-making (proposed by religious entities, journalists, and science communicators). According to Farkas and Schou, all these solutions end up reintroducing the principles of reason and reasonableness that critical studies have worked hard to deconstruct.

The problem is of course enormous. Think of the debates related to the COVID-19 pandemic and the way they were quickly and frequently polarized in terms of science (that is, scientism) and conspiracy. My point is that there are many—too many—conspiracists out there and that, yes,

fake news has played and continues to play a key role in shaping and supporting their theses on this and many other topics. However, I also believe that philosophers should not necessarily throw a century of critical theory out the window. I think we need to be more agonistic and less antagonistic in the way we think about the relationship between truth-seeking and agonism in our societies.

A good example is offered, in my opinion, by Lorraine Daston (2021). Writing at the beginning of the COVID-19 pandemic, she observes that

> we've suddenly been catapulted back to the seventeenth century: we are living in a moment of ground-zero empiricism, in which almost everything is up for grabs, just as it was for the members of the earliest scientific societies—and everyone else—circa 1660.
>
> (S56)

For that generation from centuries ago, determining what a phenomenon was, how to study it, why it happened, and so on could all be enormous challenges. Although the situation today is not quite the same—over the centuries, we have accumulated techniques and technologies—we are experiencing a similar moment of scientific uncertainty:

> Is the disease airborne (and if so, how long can it linger in the air)? Do some antiviral drugs help alleviate symptoms in acute cases—and for whom? How much do ventilators, even when available, prolong the life of patients sick enough to warrant their use? Does COVID-19 cause heart attacks?
>
> (S57)

What Daston says about science can be extended to most social dynamics. Can I hug a friend I have not seen in a long time? What do I do if a colleague wants to shake hands? How ethical it is to go with my children to their grandparents' house during the holidays?

Of course, many of these scientific and social questions have since been answered. However, I think it is still important to stress that there is a vast difference between recognizing the fragility of science at a certain time (hence, we should be more predisposed to open the technoscientific debate to a multiplicity of voices) and claiming that there is no truth at all in technoscience, but only interpretations and personal interests.

In conclusion, I note that AI could represent a fertile ground for testing and practicing forms of agonism. I am thinking, for instance, of the possibility of using the notion of agonism to assess (politically rather than ethically) AI-based technologies, just as in Chapter 2.3 I proposed using pensiveness and disagreement to assess images of AI. I am also thinking of

the possibility of considering agonism among the principles for designing AI both in the sense of opening innovation processes in this field to a plurality of voices and in the sense that agonism could be embedded in the way AI works. In this latter case, we might one day have digital technologies that, instead of locking individuals in their echo chambers and information bubbles, push them to agonistically meet one another with their different perspectives on the world. We would be dealing in this case with technologies of dishabituation of the self or even liberation of the self, one could say, provided of course that by 'liberation' and 'freedom' we mean just a series of little slips or glitches between one habitude and another.

Notes

1 Another author that deserves to be included in this critical perspective of naïve rationalism is certainly Andrew Feenberg. Against Habermas, see Feenberg (1996), in which he proposes a "return to Marcuse." Another element that makes Feenberg's perspective interesting for me is his reluctance toward the strong empiricism of the contemporary philosophy of technology, in particular postphenomenology. Postphenomenology has excessively concentrated on technological mediations and their role in approaching the world rather than on the social, economic, and political conditions of possibility of these relations: "[i]nstruments make modern science possible and influence our interpretation of nature, even our interpretation of our own sense experience. […] But unfortunately, our science-influenced perceptual culture has also been influenced by commercialism and masculinist ideology" (Feenberg, 2015: 231). This is the reason why in a more recent occasion, he argues: "were it [critical constructivism] to be schematized as a human-technology-world relation it would look like this: Humans ↑ (world-technology)" (Feenberg, 2020: 29).
2 On this point, see Roberto Esposito (2018), who distinguishes (1) the Negativity of German Philosophy, in particular the Frankfurt School; (2) the Neutrality of the French Theory, in particular deconstruction, and (3) the Affirmativeness of the Italian Thought, in particular a tradition that goes from Machiavelli to Negri and Agamben. There is no room of a detailed reflection on this here, but it can be said that Mouffe is theoretically closer to (3) than (2).
3 See also the notion of technical agonism recently introduced by Holloway et al. (2022).

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