



**Ethics of**  
*Socially*  
*Disruptive*  
*Technologies*  
**An Introduction**

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# 1. Introduction

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Technologies have all kinds of impacts on the environment, on human behavior, on our society and on what we believe and value. But some technologies are not just impactful, they are also socially disruptive: they challenge existing institutions, social practices, beliefs and conceptual categories. Here we are particularly interested in technologies that disrupt existing concepts, for example because they lead to profound uncertainty about how to classify matters. Is a humanoid robot — which looks and even acts like a human — to be classified as a person or is it just an inert machine? Conceptual disruption occurs when the meaning of concepts is challenged, and such challenges may potentially lead to a revision of concepts. We illustrate how technologies can be conceptually disruptive through a range of examples, and we argue for an intercultural outlook in studying these socially disruptive technologies and conceptual disruption. Such an outlook is needed to avoid a Western bias in labeling technologies socially or conceptually disruptive, as this outlook takes inspiration from a broad range of philosophical traditions.

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1 All mentioned lead authors and contributors contributed in some way to this chapter and approved the final version. IvdP is the lead author of this chapter. He coordinated the contributions to this chapter and did the final editing. He also wrote the first version of Section 1.5. SB wrote a first version of Section 1.1. and contributed to and commented on several other sections. JH wrote a first version of Section 1.2 and further contributed mainly to Section 1.3. GL wrote a first version of Section 1.3. EZ wrote Section 1.4. PB contributed to some of the examples given in Section 1.3.

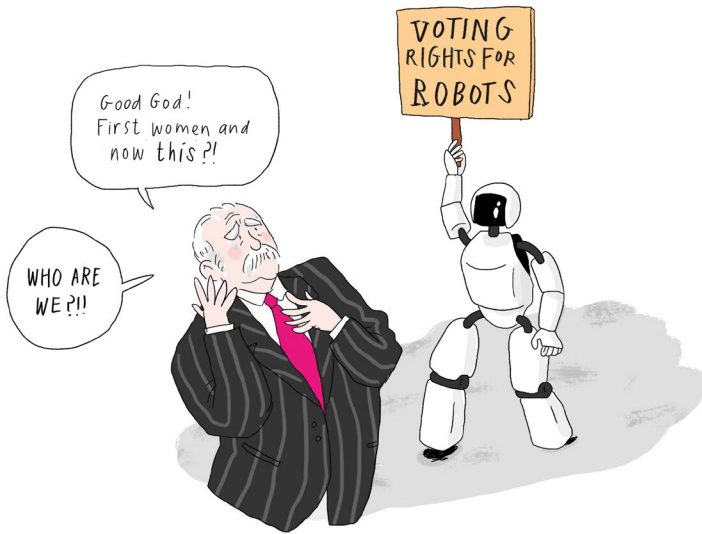


Fig. 1.1 Conceptual disruption. Credit: Menah Wellen

## 1.1 Introduction

When the birth control pill was introduced in the 1960s, society changed (Diczfalusy, 2000; Van der Burg, 2003; Swierstra, 2013). Women could suddenly delay pregnancy or decide not to have children at all, whereas earlier methods such as Aristotle’s cedar oil or ancient Egypt’s crocodile dung never really offered women a choice. With the pill there was a choice, and sex became increasingly divorced from reproduction. As a result, family sizes changed. The introduction of the pill also had larger social ramifications, alongside other social factors. It became feasible to invest long periods of time in studying, without having to worry about children that needed to be cared for. The proportion of women studying subjects such as law and medicine rose dramatically briefly after the pill became available to unmarried women (Bernstein and Jones, 2019). Marriage practices changed as well now that prolonged dating was feasible. Everyone, including those not on the pill, married later. In short, a single invention changed not just our reproduction, but also wider

aspects of society such as gender equality and sexuality. Technology has always had these profound implications for human beings and society and will continue to have them.

What's more, technologies don't just alter the way we behave. They can also change the way in which we think by challenging concepts and ways of dividing up the world that we had taken for granted. Consider an example that has been discussed in many recent works of ethics of technology: the notion of 'brain death', which emerged in response to the invention of the mechanical ventilator halfway the twentieth century (Baker, 2013; Nickel et al., 2022). As a result of this technology, situations could emerge where a person could retain a capacity to breathe and have a beating heart, yet lack any kind of responsiveness. These patients displayed features considered paradigmatic of being dead (a lack of behavioral capacities; a lack of brain activity), but also some features considered typical of being alive (a heartbeat) (Belkin, 2003). A medical committee discussed the implications of this new state and the medical norms that should be followed, including the ethics of organ transplantation (should this patient be treated as being dead or alive?). In the course of these discussions they considered various options about how these patients should be conceptualized, including redefining the concept of 'death', and assessed the ethical ramifications of various conceptual strategies. They ended up proposing the new notion of 'brain-death' — a new concept that emerged directly as a consequence of the new situation created by the mechanical ventilator.

Still other technologies challenge what is considered 'natural'. With the advent of geoengineering, also called climate engineering, the set of technologies that tries to solve some of the issues brought by climate change through deliberate intervention in the Earth's climate system, it is becoming less clear what 'nature' really is. If we can change the composition of the atmosphere and dim the light of the sun through technology, then where does the natural begin and the artificial end? Some have suggested that in the twentieth century we have been witnessing 'the end of nature' (McKibben, 1990). While such a claim may rest on a too simplistic notion of 'nature', and a too dualistic distinction between 'natural' and 'artificial', it nevertheless signals that something fundamentally is changing in the relation between humans and the living environment (Preston, 2012). When our actions change

the environment so drastically, questions arise regarding whether we should allow the 'natural' course of things, where species go extinct and changing temperatures wreak havoc? Or should we adopt a notion of 'nature', in which we can control and steer it? Again, the advent of technology and the far-reaching implications of the new capabilities present some tough issues. Both in terms of how we ought to apply the technologies we have, and in terms of how we ought to think about entities such as nature, death, reproduction, and so on.

This new situation is the main concern of this book. How can we investigate and conceptualize the socially disruptive implications of new technologies? And how can we expand the ethical concepts, frameworks and theories that we use to assess these implications, and guide the development, implementation and use of these technologies?

We will discuss these issues in six chapters. This first, introductory chapter will introduce the notions of socially disruptive technologies and of conceptual disruption, and discuss them against the background of the philosophy and ethics of technology as they have developed so far. Chapters 2, 3, 4, and 5 will discuss four socially disruptive technologies, i.e., social media, social robots, climate engineering and new reproductive technologies, following a similar structure. Each of these chapters will start by analyzing the ways in which these technologies are socially disruptive: what are their implications for human beings, nature, and societies, and how can we investigate these impacts? We will then investigate the conceptual disruption that these technologies bring by focusing on the ways in which technologies challenge our understanding of humanity, nature, and society.

Furthermore, we will examine the disruption of ethical or normative concepts: which normative concepts are at stake, and to what extent do they need to be revised or expanded? Finally, these chapters will investigate the further implications of these social and conceptual disruptions. The final chapter of this book will draw some conclusions by explicitly addressing the theme of conceptual disruption and the need for conceptual engineering and conceptual change. What kinds of conceptual disruption can be envisaged? How can these disruptions be addressed? And what do they imply for ethical theory and for philosophy at large?

## 1.2 Impacts of technology and social disruption

We have discussed how a wide range of technologies can have a huge impact, both on how people behave and on how people think. Disciplines such as Ethics of Technology, Technology Assessment and Science and Technology Studies have long conceptualized this in terms of impacts. This might suggest that there is a one-directional and deterministic relation between the emergence of new technology and all kinds of social and environmental impacts. But, as empirical studies have shown, this relation is often more complex and haphazard (Bijker et al., 1987; Smith and Marx, 1994). For example, blockchain<sup>2</sup> is often portrayed as an energy-intensive but privacy preserving technology, but its actual impact depends on the purposes it is used for, and how it is exactly designed. It might be used for tax evasion (through electronic currencies like Bitcoin) but it can also help farmers in Africa with land registration (Mintah et al., 2020), and its energy use is highly dependent on how exactly it is designed (Sedlmeir et al., 2020). As this example illustrates, there are many choices that humans and societies make, or at least can make, on the path from the conception of new technological possibilities to actual impacts. In fact, one of the main tenets of current ethics of technology is that we should move ethical reflection upstream in this process, to the early phases of technological research and development, to avoid or mitigate moral problems upfront.

Despite the best efforts of ethicists and developers, we still feel an increasing impact of technology on our daily lives and societies. Sometimes for the better (as with the pill), and sometimes for the worse (as with social media), but often at a large scale that makes it worth calling these impacts social disruptions. What do we mean by ‘social disruption’? The Cambridge dictionary defines the verb ‘to disrupt’ as ‘[t]o prevent something, especially a system, process, or event, from continuing as usual or as expected’. Similarly, the Merriam-Webster dictionary defines it as ‘[t]o break apart; to throw into disorder; to

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2 Blockchain is a kind of digital database that allows storing data in blocks that are linked together in a chain. The individual blocks are cryptographically linked together after the newest block is verified and added to the chain. This makes it very difficult to tamper with the chain and makes any alterations to the chain permanent. It allows safely storing data with digital signatures but without central control.

interrupt the normal course or unity of; to cause upheaval in ...'. Expanding on these definitions, social disruptions may be understood as changes that prevent important aspects of human society (broadly understood) from continuing without change, thereby generating disorder or upheaval.<sup>3</sup> In the wake of a social disruption, business as usual can no longer proceed: a rupture occurs that instigates substantial social, institutional, existential, or ethical challenges.

Disruptions involve both a 'disruptor', i.e. whatever it is that instigates the disruption, as well as an object of disruption. The disruptor may be a single technology, but typically, it is better understood by considering the wider context of sociotechnical systems, in which emerging technologies play a distinctive role. Warfare and pandemics can be seen as disruptors to human societies of the recent past, and emerging technologies have in turn disrupted how we acted during war and pandemics. Think of the unmanned drones used at the battlefield in Ukraine and the social media campaigns instigated to win public sympathy or to discredit fake news during wartime. Or consider the contact tracing apps and mass vaccination programs that were instigated to curb the COVID-19 pandemic that disrupted human societies globally. As these examples suggest, technologies often exert their transformative potential as part of larger systems.

To be clear, we don't mean disruption here in the economic sense. Scholars on disruptive innovation (especially Christensen, 2013) have pushed the idea that new technologies can disrupt markets, creating new kinds of products or services that make older companies obsolete. That definitely has an impact, but the impacts we're critiquing are more fundamental. Technologies can also affect strongly held values and beliefs, core concepts, theories, norms, institutions and human capabilities. These deep disruptions (Hopster, 2021) merit study at least as much as the economic ones. Disruptions may occur in various domains, three of which centrally figure in this book: the domains of the individual human, society, and nature.

The domains of human, of society, and of nature are not neatly delineated. Nonetheless, their distinction provides a useful starting point

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3 In this book, we will also consider disruptions to nature and to non-human species as 'social disruptions' if they do not allow continuing as usual or cause disorder or upheaval. One may think of climate change or loss of biodiversity as an example of social disruption.



for thinking of the different levels and contexts in which technology may exert disruptive effects.

The human domain pertains to questions of human nature and human existence, as well as human capabilities, sensory experiences, and human self-understanding, all of which may be implicated by technology. Some scholars speculate that in the future, artificial womb technology may serve to decouple pregnancy from the (female) body (Enriquez, 2021). Obviously, such decoupling would also have major repercussions to human society.

The domain of society pertains to the quality of social life at a larger scale, including the cultural, institutional, and political practices that weave human social life together. An important concern at this level is that of differential disruption (Nickel et al., 2022): different groups may not be similarly affected by technological changes. For example, the use of artificial intelligence by commercial banks to make decisions about who receive a loan or mortgage may affect already underprivileged groups more than the average citizen because this technology may have a discriminatory bias (Garcia et al., 2023).

The domain of nature, in turn, extends to technological disruptions in the non-human realm, which affect other animals and the natural environment. Powerful new genetic technologies employing the CRISPR-cas9 gene-editing technique, as well as the perils of global warming and the resulting technologies that are contemplated and developed to stabilize the earth's climate, make disruptions in the natural domain a main topic of philosophical and ethical concern.

Deep disruptions challenge established natural boundaries, entrenched social categories, stable social and normative equilibria, as well as our conceptual schemes. They often engender deep uncertainty and ambiguity, as they make us lose our normative, theoretical, and conceptual bearings. Accordingly, deep disruptions call for reflection and reorientation. They require us not only to engage with new philosophical and ethical issues but also to rethink the very concepts and theories we use to think about these issues.

### 1.3 Conceptual disruption

This brings us to a core theme of this book: conceptual disruption. Concepts are the basic constituents of thought and theorizing. We use

words and concepts to give expression to moral and social values, human capabilities, virtues and vices, as well as several other phenomena and features we deem morally relevant. At first sight, it seems that important concepts — agency, freedom, life, vulnerability, well-being, to name just a few (see Fig. 1.2 for a more extensive list) — are rather stable: philosophers may quibble about their precise meaning and application, but in outline their contents seem clear and fixed. But under closer scrutiny, this does not appear to be the case. Ethical concepts are frequently up for debate, and subject to uncertainty, as well as change. Some have even suggested that normative concepts are fundamentally contested (e.g., Gallie, 1955). We claim that technological development often plays a notable role in disrupting fundamental concepts — a role that has only recently been appreciated, but will be given pride of place in this book.

What is conceptual disruption? We take it to be a challenge to the meaning of a concept, which may prompt its future revision. Just as with other disruptions, it means that business as usual cannot continue. Our thinking has to change. Often this means that because of the disruption we are no longer certain how to apply a concept. We face classificatory uncertainty (Löhr, 2022), in the same the way doctors were not sure whether people with a heartbeat but without brain activity were still alive.

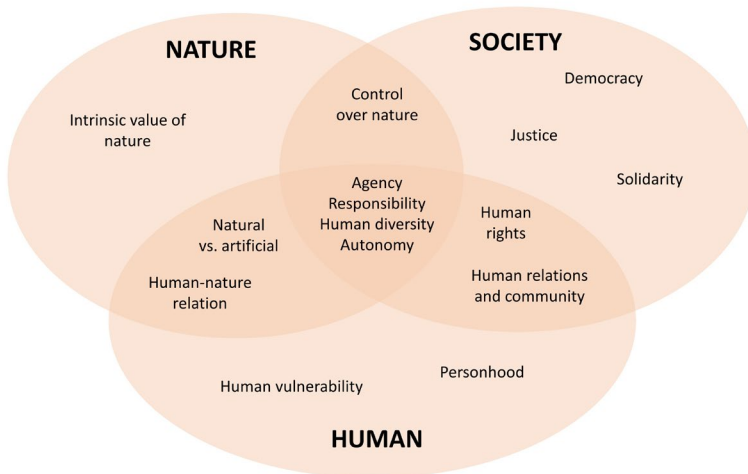


Fig. 1.2 Concepts in three domains that are studied in the ESDiT research program (Picture redrawn and adapted from original research proposal)

When technologies are conceptually disruptive, this may be an invitation to rethink the very concepts we use to comprehend and ethically judge these technologies. The conclusion of such reflection need not be a new concept or even a revision of existing concepts. It is equally possible that we have good reasons to retain an existing concept or to make it more precise.

Conceptual disruptions can come in different types (Hopster and Löhr, 2023). First, technological change may yield gaps in our conceptual repertoire. Such a *conceptual gap* occurs if a new technology yields artifacts, actions, relations, etc., on which we do not have an adequate conceptual grasp. In other words, existing concepts do not provide the needed descriptive or action-guiding tools; therefore, their revision or the introduction of new concepts is needed. Consider humanoid artificial agents like social robots and voice assistants that can evoke affective reactions (Nyholm, 2020; Lee et al., 2021; see also Chapter 3). People can feel upset when a robot is kicked or when a voice assistant is abused. Yet are such responses appropriate? They would be if the social robot and voice assistant were considered to be a ‘person’ or ‘agent’: after all, if a person is harmed, this calls for an empathetic response. Yet concepts like ‘personhood’ or ‘agency’ have traditionally been reserved for humans, and it is not yet established whether they can be extended to humanoid artificial agents, which may lack other relevant features of ‘agency’ and ‘personhood’, such as ‘intentionality’ or ‘free will’.

One solution would be to extend attributions of ‘personhood’ and ‘agency’ to humanoid robots. But doing so also requires us to rethink what these concepts mean, and what their application conditions are, given the distinct characteristics of new digital technologies. Consider that at the same time, people have called for the responsible design of voice assistants: the fact that they often have female voices and continue to patiently respond and politely to harassment and insults could result in misogyny, and is therefore considered an undesirable design feature (Kudina, 2021; Nass and Brave, 2005; West et al., 2019). Thus humanoid robots simultaneously give rise to two rather different responses: an affective response, and an urge to design them as responsible and assertive agents. How should we deal with such entities, in descriptive and normative terms? Arguably, here we are confronted with a conceptual gap: we seem to lack a concept for entities that both evoke

an affective response and that we should design in a responsible way.<sup>4</sup> For example, persons should be treated with empathy (and dignity), but it would seem improper to think of them as the object of responsible design.<sup>5</sup> Therefore, in order to account for the new roles of artificial agents, we need to recalibrate our concepts of ‘personhood’ and ‘agency’.

Secondly, technological change may also give rise to *conceptual overlaps*. A conceptual overlap emerges when there is more than one concept that describes a new type of artifact, action or event. This might be unproblematic if two non-conflicting concepts apply, but in some cases conflicting concepts may seem to apply to one and the same artifact, action, or event. In turn, this may prompt us to decide as to which concept to apply. As an example, consider the traditional distinction between natural and artificial, and nature and artifact.<sup>6</sup> Particularly in Western conceptions of nature, there is a tendency to imagine part of the world untouched by human hands as natural, and picture human-made objects as artificial. Both concepts have various normative connotations. What is ‘natural’ is considered healthy, but also wild and dangerous, and what is ‘artificial’ might be less healthy, but is also safer and more regulated, and falls under the responsibility of human beings. However, very few things in the world are either fully natural or fully artificial, and those that are become more hybrid by the day. For example, few forests in the world are old growth forests; most are restored or newly planted forests that have been heavily influenced by human activity. Many animals and plants are the results of selective breeding. Recent

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4 This assumes that both aforementioned responses are appropriate and normatively relevant. But one could also take a different stance and argue that our affective responses (and/or, perhaps, the appeal to responsible design) are misguided. In this case, one might instead want to speak of conceptual overlap. More generally, there seems room for different interpretations of examples in terms of conceptual gap, conceptual overlap and conceptual misalignment. For further discussion, see Chapter 6.

5 Technologies like CRISPR-cas9 might challenge the notion that humans cannot be designed. However, the genetic make-up of humans (that might perhaps be altered with such technologies) only partly determines their personality (nurture plays an important role as well). Moreover, it is questionable whether such design can be ‘responsible’ as genetic modification of humans is usually considered morally unacceptable.

6 Here we are mainly referencing Western folk conceptions of ‘natural’ and ‘artificial’. There are, of course, much more nuanced and diverse conceptions to be found in the philosophical literature. Also note that some cultures do not have the natural-artificial distinction (IPBES, 2022). For further discussion, see Chapter 4.

developments in genetic engineering and synthetic biology make some organisms even more the subject of human design. Human-made artifacts tend to make use of organic materials and natural resources, with or without further processing. With the advent of geoengineering, even the climate may be partially brought under human control (see Chapter 4). Here, we seem to be confronted with a conceptual overlap because some entities — such as genetically modified tomatoes — are both ‘natural’ and ‘artificial’. Perhaps the nature-artifact distinction is no longer useful, and the Western conception of the world might benefit from a new conceptual framework that does not fall into this simple dualism but instead is able to assess the world in a more nuanced way.

Thirdly, technological change that generates conceptual change may give rise to *conceptual misalignments*, i.e., situations where certain concepts are no longer aligned with our values and other concepts. Consider the concept of responsibility. Recent technologies, such as semi-autonomous weapons (drones) and self-driving cars, have raised questions about responsibility, and particularly the relation between control and responsibility. Traditionally, control is seen as a precondition for responsibility: without control, there is no responsibility (Sand, 2021). However, drones and self-driving cars are semi-autonomous and make their own ‘decisions’ independent from human operators; humans thus lack control and can seemingly not be held responsible. At the same time these systems lack reflective capacities and an awareness of their actions that we usually consider necessary to be responsible. Does this mean that we face a responsibility gap, where nobody is responsible for an action (Matthias, 2004)?

Consider military drones. The people ordering or overseeing a drone attack may lack control over it if the drone is programmed to autonomously decide what and when to attack. Suppose the drone mistakenly attacks a civil target, confusing it with a military target. Who is responsible for this mistake? Might we hold the commander responsible, or perhaps the designers of these systems? Maybe, but a broader issue seems at stake.

What we are witnessing here might well be a case of conceptual misalignment; the way we tend to think about responsibility (and control) in these cases might no longer align with certain values and moral convictions, such as the conviction that we should avoid

responsibility gaps because their occurrence is undesirable. There are several ways we might resolve such misalignments. We may, for example, give up the moral conviction that responsibility gaps are always bad (Danaher, 2023). Another reply is the proposal for a new notion of control, so-called ‘meaningful human control’, that should ensure that autonomous systems remain under human control, so that humans remain responsible for them (Santoni de Sio and Van den Hoven, 2018). This latter might be seen as a form of concept revision (of ‘control’) in response to conceptual disruption (Veluwenkamp et al., 2022).

Or consider the concept of democracy. Democratic practices, such as elections, are increasingly influenced, if not undermined, by the use of social media technologies (see Chapter 2). But technologies like climate engineering may also raise questions about democracy. Such technologies may be extremely risky, not only for human beings but also for other living beings, and for entire ecosystems. How can we represent non-humans in democratic decision-making? Do they have moral rights, just like humans do? And how should we represent beings who are not alive yet, but who might experience the impact of climate engineering technology in the future? Upholding democratic decision-making might require us to expand our concept of the ‘demos’ that should be given power, and our notion of the democratic rights and duties that belong to the ‘demos’. This might again be seen as a case of conceptual misalignment: it seems that the traditional notion of ‘demos’ may no longer align with the values we want to attain with ‘democratic decision-making’ and ‘democratic representation’. Here, intercultural ethics might play a role in rethinking the concept of democratic representation. Ubuntu ethics, for instance, makes it possible to include ancestors and future generations in the moral community (Behrens, 2012; Pellegrini-Masini et al., 2020), while Maori ethics offers a basis to conceptualize the rights of ecosystems (Patterson, 1998; Watene, 2016).

As these examples demonstrate, technology has major potential to yield conceptual disruptions of various sorts. Technological change yields new entities, practices, and relations, which in turn call for the introduction of new concepts, or for rethinking and refining our current ones. Technological change may leave us with conceptual gaps, overlaps, and mismatches. In the face of these challenges, it is not enough to analyze the meaning of our concepts. Instead, we have to engage in

normative and ethical reflection about the concepts we use to think about a rapidly changing world. These are the questions that conceptual disruption prompts and which we will address in the next chapters.

These conceptual changes resulting from technological change are often accompanied by shifts in values. The way we fundamentally think about the world is closely bound to what we find important in the world. So, when we change our concepts, this can have profound moral and social implications. Our value system is challenged, and this may result in profound changes in the way we evaluate the world and act on it (van de Poel and Kudina, 2022). For example, in the last century, we have witnessed the emergence of new moral concepts such as ‘intergenerational justice’ and ‘planetary justice’ (Hickey and Robeyns, 2020). Such concepts express new values and moral convictions, or at least values and moral convictions that have become much more prominent than in previous ages.

These new values and concepts, which express new responsibilities and obligations towards nature and future generations, may be seen as a response to the disruptive effect of certain technologies on the natural environment. However, while technology is a powerful instigator of conceptual disruption, it is not the only one. Concepts and conceptual schemes can also be challenged by other mechanisms. One such mechanism is intercultural dialogue. Conceptual disruption may occur through the interaction of communities that rely on somewhat different values, or on different ontologies. These prompt a rethinking of dominant concepts, and possibly a future revision of these very concepts. This is one of the reasons that underpins our emphasis, throughout this book, on the importance of intercultural philosophy in the ethics of socially disruptive technologies.

## 1.4 Intercultural outlook

What constitutes a social or conceptual disruption depends on the status quo, i.e., something is a disruption relative to a certain society, or certain practices, or a certain conceptual framework. However, too often, philosophers (of technology) have tacitly assumed their own society and their own conceptual framework as point of departure when talking about disruption. This issue has become more pressing than ever

as more and more voices call for decolonizing and deparochializing the field of philosophy (Van Norden, 2017; Pérez-Muñoz 2021; Williams, 2020). We therefore have to ensure that when reshaping the way we think about the world in response to conceptual disruptions, we don't fall in the same trap of looking only at our own conceptual frameworks.

For decades, normative concepts and frameworks of thought derived from European historical experiences have dominated the international debate on philosophy and ethics of technology. This has led many students and scholars to assume that 'Western philosophy' is the definition of 'philosophy' and that Western normative paradigms apply universally to most human beings. However, for many, this *modus operandi* has become intolerable. Centering ethical and political discussions solely on issues affecting Western societies amplifies Eurocentrism. Furthermore, assuming that Western normative paradigms apply universally to the vast majority of human beings perpetrates coloniality — the epistemic repression intrinsic to colonial ideology (Wiredu, 1996; Mignolo, 2007; Quijano, 1992). The momentum of contemporary decolonising and deparochialising movements suggests that today's pressing question is not '*whether*' philosophical debates must be pluralized, but '*how*' to achieve this.

Although disruption is, in the following chapters, often discussed from a more Western perspective, we also pay attention to intercultural perspectives. An intercultural perspective helps prevent Eurocentric biases and fully understand technological disruptions' ethical implications. To the extent that the social consequences of the technologies discussed in this book affect the ways of life and social practices of inhabitants of both the Global North and South, an intercultural approach is key to assess this novel phenomenon appropriately.

There are two complementary strategies to pursue interculturality. One strategy uses experiences from a culture different from one's own to understand the magnitude of technology's social disruptions. This strategy contributes to decentering academic debates and helps uncover conceptual disruptions that would otherwise be harder or impossible to identify. For example, in Chapter 2, the analysis of social media in African societies is key to grasping the conceptual disruption that social media causes on the democratic idea of the public sphere. The dramatic



situation of many African communities where public political debates unfold on foreign-owned digital infrastructure under very weak national institutional checks raises the question of whether the concept of public sphere is misaligned with the concept of demos. Viewed from this perspective, social media's disruption is broader than if it were viewed from a purely Western perspective.

The second strategy is to ask whether technology-driven social changes disrupt non-Western concepts and conceptual frameworks, in other ways than simply affecting Western philosophical discourse. This strategy contributes to the reorientation of the academic debates by increasing the relevance of non-Western philosophical concepts in contemporary philosophical theorizing and showing that Western conceptual frameworks are one among many possible alternatives. Thus, if the first strategy aims to change the terminology of the philosophical debate, the second strategy uses non-Western concepts to change the terms of the philosophical debate. For example, an Ubuntu perspective exposes new implications of social robots in Chapter 3. It reveals that if social robots crowd out human relations, this can impact our moral character and personhood, as these terms are understood within Ubuntu philosophy. In Ubuntu philosophy, interdependent relations are essential for personal cultivation. Thus, such a goal is harder to reach if robots crowd out human relations because humans cannot develop interdependent relationships with robots. Centering these terms as important, then, exposes the magnitude of this disruption.

Similarly, Buddhist traditions may help to overcome the inability of traditional Western ethical perspectives to articulate forcefully the full scope of some social disruptions, such as the character of our attention, which is transformed by new technologies (Bombaerts et al., 2023). In turn, this raises fundamental questions about how ethical practices of attention are related to self-control and willpower: the very idea of exercising control over one's thoughts is a fundamental moral issue within Buddhism, and this can inspire conceptual innovation in values such as responsibility and autonomy, as they relate to how we attend to others, ourselves, and the world.

By pursuing these two methodological strategies, we do not claim that this book presents an 'objective' understanding of technologies' conceptual disruption. Nor do we believe that the book is immune to

Eurocentrism. However, these two strategies can be a step forward in developing a more respectful and effective methodological basis for dealing with technology-driven conceptual disruption.

## 1.5 Expanding the research agenda of ethics of technology

The drive for more intercultural perspectives in the debate is part of a broader aim for the book, and the underlying research program ESDiT. We want to expand the research agenda of philosophy and ethics of technology. The point we want to drive home is that ethics of technology in the twenty-first century requires a conceptual turn by explicitly addressing social and conceptual disruption through technology, as well as attention to the question of when it is appropriate to revise concepts and how this should be done.

In philosophy, such questions about conceptual change have recently been addressed under the headings of ‘conceptual engineering’ and ‘conceptual ethics’. We will discuss these approaches in more detail in Chapter 6. For now, the important point is that the advocated expansion of the research agenda of ethics of technology also implies closer collaboration between philosophy and ethics of technology and other subdisciplines of philosophy, like conceptual engineering, which explicitly thematizes how to adapt or ameliorate concepts. It also implies closer collaboration with philosophical disciplines that have traditionally developed and analyzed (core) concepts in the domains of nature, the human condition and society, such as philosophical anthropology, environmental ethics and political philosophy. In the past, these other subdisciplines of philosophy have often only paid scant attention to technology.

Ethics of technology has a long and fruitful tradition of collaborating with STEM disciplines, where STEM stands for science, technology, engineering and mathematics. Particularly since the 1980s, ethics of technology has developed from an emphasis on critique to an emphasis on more constructive, proactive and applied approaches. Oftentimes it is aimed not just at criticizing technology or putting a brake on technological developments, but rather at improving technological development by proactively addressing ethical issues and values in

close collaboration with engineers, technology developers and policy makers.

Expanding the research agenda of ethics of technology also requires, we submit, new methods and approaches, for example for the ethical assessment of new technologies (Brey, 2012) or for addressing ethical issues and values through design (Friedman and Hendry, 2019; Van den Hoven et al., 2015). It may also have implications for other important themes in the ethics of technology such as the acceptability and management of technological risks (Roeser et al., 2012), moral responsibility (of engineers and others), social control and regulation of technology (Collingridge, 1980), the mediation of human perception and behavior through technology (Verbeek, 2005), and how to deal with (technological) uncertainty, to name just a few.

During the past few decades there has been increased attention on ethical issues brought about by specific technologies, which has led to the establishment of new fields of ethical inquiry. We now not only have computer ethics and bioethics, but also nanoethics, robot ethics, energy ethics, climate ethics, neuro-ethics, AI ethics, digital ethics, and so forth. While there is added value in specialized ethical inquiries into specific technologies, there is also a danger that larger themes go unnoticed and do not receive the theoretical treatment they deserve. This book therefore delves into the details of specific technologies in the following chapters, but does that in order to bring to the fore and to better understand a general phenomenon: the potential socially and conceptually disruptive character of new technological developments, and what new conceptual, theoretical and normative questions this raises.

Here we should not forget the dynamic interaction between technology, society and morality (Van de Poel, 2020). On the one hand, technologies reflect social choices and values, and therefore can be deliberately designed for certain positive moral values or to address ethical issues. On the other hand, technologies will not only raise new, sometimes unpredictable, ethical issues, but will also affect how people act and think, and what they consider desirable and undesirable. Mediation theory has argued that technology may change our perceptions and actions (Verbeek, 2005). For example, an echo of the fetus during pregnancy will affect people's perceptions of the unborn child, as well as their actions and choices. Others have pointed

out that technology may induce technomoral change, i.e., a change in moral values, norms or routines that is triggered by technological advancements (Swierstra, 2013). This book takes the dynamic relation between technology, society and morality a step further by not just paying attention to the socially disruptive character of technology, but also by focusing on how technology may disrupt the very concepts by which we philosophically and ethically reflect on technology.

### Further listening and watching

Readers who would like to learn more about the topics discussed in this chapter might be interested in listening to these episodes of the ESDiT podcast (<https://anchor.fm/esdit>) and other videos:

Jeroen Hopster on ‘The nature of socially disruptive technologies’: <https://podcasters.spotify.com/pod/show/esdit/episodes/Jeroen-Hopster-on-The-Nature-of-Socially-Disruptive-Technologies-e19g3d8/a-a6pto8m>

Olya Kudina on ‘Voice assistants’: [https://youtu.be/ve6qJGt1\\_kk](https://youtu.be/ve6qJGt1_kk)

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