

Questioning Heidegger on Modern Technology

‘In what follows we shall be *questioning* concerning technology. Questioning builds a way. We would be advised, therefore, above all to pay heed to the way, and not to fix our attention on isolated sentences and topics. The way is one of thinking. All ways of thinking, more or less perceptibly, lead through language in a manner that is extraordinary. We shall be questioning concerning *technology*, and in so doing we should think to prepare a free relationship to it. The relationship will be free if it opens our human existence to the essence of technology. When we can respond to this essence, we shall be able to experience the technological within its own bounds.’ (Heidegger, 1977: 3-4)

Introduction

Academic writing on mobile technologies – e.g., mobile phones, laptops, iPods, or tablets – hovers around a few commonplace themes. A typical article will start with a formulaic statement about our globalized world, perhaps remarking on the worldwide spread of new communication technologies, or on the increasing mobility of people/commodities across borders. It will then develop an argument about how mobile technologies influence, alter, or radically transform individual selves and/or social relations across different cultures; and it will end with hints, discussions, or suggestions about how changes occasioned by mobile technologies should affect policy-making or should elicit ethical debates. There is, therefore, a wealth of conjectures about mobile technology’s effects on human existence. Yet these effects are not seen to arise from mobile technologies *qua* technologies, except in crude, matter-of-factly recognition that these technologies exist, that they are widespread, and that humans use them. Mobile technologies are efficacious, as it were, without needing to be ‘technological’.

And what is ‘technological’ about mobile technologies? Is it that, by virtue of belonging to a particular class of tools, understood as ‘means-to-an-end’, they acquire a specific technological status, analogous to that of other tools? This is likely to be correct so far as mobile technologies are means to different ends – to write emails, to call someone, to text, to take pictures, etc. They

are, to simplify grossly, means of communication. Yet there is a sense in which contemporary communication technologies differ, say, from European newspapers in the 19th century, which are also ‘means of communication’. Is it, then, that their technological status as ‘tools’ is bounded within particular socio-historical configurations, where they acquire different meanings in human practice? This is certainly correct, since mobile technologies have emerged in an age variously characterized as ‘post-industrial’, ‘post-modern’, or ‘late capitalist’, where mobile communications have a status very distinct from that of newspapers in 19th-century Europe. Yet differences across societies or, more specifically, across technologies embedded in different societies do not explain what they share as ‘technological’ things. We should think, therefore, about an alternative way to look at mobile technologies *qua* technologies – to grasp, in C. S. Peirce’s words, what is ‘general’ about them.

We will develop such an account starting from Martin Heidegger’s famous essay, ‘The Question Concerning Technology’¹ (QT). This essay is among the first modern texts to engage with ‘technology’ as an autonomous philosophical problem. As it is noted for its unusual linguistic difficulty (Lovitt, 1973), it has given rise to several straight exegeses (Pattison, 2000; Waddington, 2005; Rocjewicz, 2006; Ruin, 2010), with few critical ones (Zimmerman, 1991; Feenberg, 2005; Verbeek, 2005). These exegeses tend to address one central question – which is, essentially, how we can define a ‘free’ ontological relation to modern technology. In Heidegger’s view, modern technology is, broadly speaking, a lens through which reality is disclosed to us. Since modern technology discloses *all* reality (including human beings) as an exploitable sum of resources, it endangers us by totalizing our ontological relation to reality; a totalization which, furthermore, renders us oblivious to technology’s totalizing effects. Interpretations of QT generally tend to focus on the ethical implications of this viewpoint², without giving critical attention to – or simply rejecting – his analytical insights into modern technology.

¹ The essay was first published in *Vorträge und Aufsätze* (1954).

² The question becomes, here, ‘how can we avoid the totalizing danger of modern technology?’ QT’s exegetes engage with this central question in different ways. Some seek to answer it with a close reading of QT’s concluding remarks, which mention an enigmatic “saving power” hidden in the very essence of modern technology (Heidegger, 1977: 28-29; Dreyfus & Spinoza, 2003; Richardson, 2012). Others reflect on the question’s implications for Western modernity, where a “free” relation to technology would mean, beyond its metaphysical import, a concrete emancipation from modern techno-social forms of oppression (Feenberg, 2005). Others outright avoid the question, rejecting the notion that modern technology represents any “danger” in Heidegger’s sense (Latour, 1999: 176).

This paper argues, in contrast, that Heidegger's reflections on modern technology are central to understand what is 'technological' about modern technology in general, including mobile technology in particular. The argument is crucial in two respects. First, it yields original insights into what is 'general' about modern technologies in general, and mobile ones in particular. As Peter-Paul Verbeek (2005) remarks, contemporary studies of technology tend to focus on particular technologies with particular uses and histories, without taking a broader outlook on technology as a general phenomenon. Second, it shows how Heidegger's views on modern technology can be extended beyond pure metaphysics, contrary to what many critics maintain (Latour, 1999; Verbeek, 2005). We seek to counteract this perception in presenting an application of Heidegger's philosophy of technology to mobile technologies.

Since 'questioning builds a way' (1977: 3), as Heidegger says, we will try to rebuild Heidegger's perspective in 'questioning' his essay – i.e., in posing both interrogations and challenges to his way of thinking. The argument proceeds in four main questions. The first question (What is 'essence'?) provides basic guidance into Heidegger's metaphysical views, insisting on his distinction between the ontic and the ontological. The second question (What is the 'essence' of modern technology?) builds on the first question to retrace Heidegger's ontological reflection on technology, while assessing its most recurrent critiques. The third question (What does this essence involve in general term?) furthers our interpretation of Heidegger's ontological reflection in identifying its discrete elements (e.g., challenging-forth, standing-reserve). The fourth question (What does it mean to be a standing-reserve?) shows how mobile technologies are to be viewed as a series of standing-reserves, that is, as a series of exploitable potentialities with quantifiable, undifferentiated, and indefinite 'energy'. A concluding question (Who challenges standing-reserves, and why?) will engage with the problematic status of human intention within Heidegger's perspective on modern technology.

Question #1: What is 'essence'?

Heidegger distinguishes between two concepts of essence in QT, each giving rise to different views on modern technology. Under its traditional definition, the 'essence' of a thing is 'what this thing is' (1977: 3-4). Technology has a double 'essence' in this sense. On one hand, it is

essentially *instrumental* – i.e., it is a utilitarian means-to-an-end. On the other, it is essentially *anthropological* – i.e., it is a human practice subject to human desires. In Heidegger’s view, this twofold characterization of technology is not objectionable, but it does not correspond to his own understanding of ‘essence’. According to him, an ‘essence’ is a mode of disclosing reality; a way in which truth is revealed³ to human existence (1977: 13-14). Heidegger customarily distinguishes between two ideas of truth: 1) ‘ontic’ truth, which generally corresponds to the ‘correctness’ of our ordinary experience; and 2) ‘ontological’ truth, which corresponds to the truth of human existence in its most fundamental sense (Hernández, 2009; Wrathall, 2011). The instrumental-cum-anthropological view on technology is ‘correct’ in *ontic* terms, because it designates an observed and verified phenomenon, but it is not ‘true’ in *ontological* terms, since it does not correspond to the way in which technology, in its essence, is disclosed to us (Heidegger, 1977: 5-6)⁴.

This, of course, begs the question: how is technology disclosed to us? In other words, what is the ‘essence’ of modern technology? Before moving to this question, we need to understand what is ‘modern’ about modern technology. Simply put, modern technology is ‘modern’ because it is different from ‘ancient’ technology. In *ontic* terms – i.e., in terms of ordinary experience – there is an obvious instrumental-cum-anthropological difference between, say, the manual tools used in Ancient Greek societies and the electronic tools we use today. In *ontological* terms, however, the difference between ancient and modern technology lies not in technical superiority, nor in changing socio-historical conditions, but in a changing way in which truth is disclosed to modern man – that is, in a changing ‘essence’⁵. Thus, in Heidegger’s view, ‘essence’ is not an

³ Heidegger uses such words as “disclosure”, “unveiling”, “granting”, “revealing”, or “unconcealing” to describe ways in which reality presents itself to human existence. As Andrew Feenberg (2005) argues, these words avoid characterizing ontological truth as a man-made product, as objective knowledge produced by Cartesian subjects. They highlight, in fact, how truth is never presented in its entirety – or, to be more exact, how truth, as revealed in its entirety, is but a fraction of what is “unknown”, “concealed” or “veiled”. For a more complete discussion on truth and unconcealment in Heidegger, see Mark Wrathall’s recent book (2011)

⁴ We could be lead to characterize the “ontic” as a superficial, deceptive truth and the “ontological” as a deep, authentic one. This characterization is not entirely inaccurate, since Heidegger tends to privilege the ontological over the ontic in his writings. Yet the ontic rests on the ontological, which means that they are inseparable. What is observed in the ontic is only observable when it is disclosed, in its true essence, in the ontological realm; and conversely, we can add, we have no direct insight into the ontological without, first, examining the ontic.

⁵ In fact, as Hubert Dreyfus & Charles Spinosa instruct us (2003: 339), Heidegger thought that there were six historical stages, each with a specific mode of revealing, where reality was differently disclosed to human existence.

unchanging Idea, or a stable state of affairs: it is a lasting mode of revealing, inscribed in time, and changing in time.

Question #2: What is the ‘essence’ of modern technology?

According to Heidegger, ‘the revealing that rules in modern technology is a challenging [*Herausfordern*], which puts to nature the unreasonable demand that it supply energy which can be extracted and stored as such’ (Heidegger, 1977: 14). The essential character of modern technology lies, then, in unlocking, transforming, storing, distributing, and switching nature into pure (exploitable) energy. Thus, it reveals all things in the world as ‘standing-reserves’ (*Bestände*) – i.e., as stocks of energy which are bound to be unlocked and exploited when ‘challenged-forth’ (Heidegger, 1977: 17). Heidegger contrasts the way in which modern technology reveals reality with the way in which technology (or *techné*) was revealed to ancient Greeks. The contrast is instructive in several regards. We will just remark, for now, that while modern technology is an exclusive, total lens through which reality is disclosed, ancient technology was a phenomenon disclosed as part of a larger mode of revealing – i.e., *poiesis*. What is ‘modern’ about modern technology is, therefore, its total grip on our ontological relation to reality – vs. earlier technologies, which were disclosed within larger modes of revealing.

Notice that, until now, we have only spoken about the way in which reality is *revealed to* human existence *as a result of* modern technology, not about how humans *perceive* reality *through* their technical activity. This seems problematic. After all, to use Heidegger’s famous example, it is humans who build hydroelectric plants in order to exploit the Rhine River. This view is simplistic, according to Heidegger, since it remains content with an ontic explanation – i.e., humans use modern technologies (e.g., hydroelectric plants) as instruments towards human ends (e.g., producing electricity). What is more fundamental, however, is that the world is revealed to these humans as an endless source of exploitable energy. This is because, still according to Heidegger, there is a more powerful force driving ontological disclosure – a force which

discloses nature, objects and (most importantly) humans as standing-reserves. This force is the ‘true’ essence of modern technology. It is called *das Gestell*⁶.

Heidegger introduced the notion of *Gestell* in his 1949 lectures in Bremen, entitled ‘Insight into that which is’, which sketched an earlier version of QT (Harman, 2007). The notion was originally meant to express a totalizing way in which reality is ordered – a way which constitutes, incidentally, the ‘essence’ of modern technology. Its distinct nature lies in its disclosure of human existence itself as exploitable energy. This is why modern technology is dangerous, according to Heidegger, because it not only reveals everything (including humans) as vulgar exploitable material, but it also masks alternative ways to relate to our ontological existence (1977: 26-28). There is, therefore, a double danger with modern technology: 1) a danger to human existence, whose ontological relation to reality becomes reduced to mere exploitability; and 2) a danger to human thought, which becomes unable to conceive of an alternative ontological relation to the world.

Most critiques targeting Heidegger’s insights into modern technology are, in fact, targeted towards his understanding of *Gestell* as an omnipresent, omnipotent, technological mode of revealing reality. According to Verbeek, these critiques deem Heidegger to be either: 1) too ‘abstract’; 2) too ‘monolithic’; and/or 3) too ‘nostalgic’ (2005: 61-75). While the two initial charges are clearly directed towards his general understanding of *Gestell*, the third charge targets his romantic longing for a pre-technological age – a longing which, while not straightforwardly technophobic, is implicit in his discussion on modern technology (see Ihde, 1993; Dreyfus, 1995). These charges are unsurprising, in a way, since Heidegger never considers modern technologies from a strictly empirical perspective. He instead concentrates on broad claims about the way in which Technology reveals Reality as a whole to Human Existence.

Now Heidegger’s claims are admittedly removed from the way in which technology operates in ordinary experience (Séris, 1994; Feenberg, 2005); they do lump several, empirically nuanced,

⁶ The conventional translation for *Gestell* is ‘enframing’ in English. This translation is misleading, however, since it relates *Gestell* to a ‘framing’ of human existence, which is a far too neutral term to convey the force with which *Gestell* impinges upon ontological disclosure. The French translation “arrondissement” is probably closer to the meaning of Heidegger’s concept.

historically contingent, technological advances in broad, monolithic characterizations (Feenberg & Belu, 2010; Ruin, 2010); and, to be sure, they allow for easy dichotomies between ‘ancient’ and ‘modern’ technology, where modernity takes a dystopic guise to contrast with an idealized ancient world (Ihde, 1993; Latour, 1999: 176; Verbeek, 2005: 74-75). But while these critiques are more or less accurate, they are not sufficient to discard Heidegger’s viewpoint straight away. Critics chastise Heidegger for not studying technology from an empirical viewpoint, and for taking an unjustified moral stance against modern technologies, when its dangers are not always empirically clear. However, these critics offer little to no comments about his actual description of *Gestell*, i.e., the essence of modern technology, which we now move to consider.

Question #3: What does the ‘essence’ of modern technology involve in Heidegger’s view?

The most complete definition of *Gestell* comes in an impenetrable passage in QT,

[*Gestell*] is the gathering together which belongs to that setting-upon which challenges man and puts him in position to reveal the actual, in the mode of ordering, as standing-reserve. As the one who is challenged forth in this way, man stands within the essential realm of [*Gestell*]. (Heidegger, 1977: 24).

In its last sentence, Heidegger’s definition does make salient how modern technology, in its essence, ‘challenges-forth’ human beings into becoming exploitable resources – whence its debated dangers for modern man. We should ask, nonetheless, what such expressions as ‘gathering-together’, ‘setting-upon’, or ‘challenge’ mean; and how they relate to one another. Paul Rocjewicz’s (2006) book-long analysis of QT can help us in uncovering different connotations to Heidegger’s definition. Rocjewicz’s detailed analysis boils down to the following point: *Gestell* is an imposition (i.e., a ‘setting-upon’), which orders reality in a cohesive manner (i.e., it is also a ‘gathering-together’).

This ‘ordering imposition’, as it were, operates in terms of a ‘challenging-forth’, i.e., a demand put to nature, to objects, or to humans to unleash their energies. This challenging-forth covers seemingly contrasting examples in QT: it can designate how the Rhine River is ‘challenged’ to release hydroelectric power, or how a plane is ‘challenged’ to become available for

transportation. There are important ontic differences between both cases. What is summoned to release its energies is different (i.e., a natural sight vs. a complex technological object); and what is released is very different as well (i.e., an electrical force vs. a capacity for transportation). The common (ontological) point, however, is that challenging-forth occurs as a ‘destining’ (*Geschik*), that is, as a singular *telos* driving the unlocking and the exploitation of energy for its own sake. As George Pattison instructs us (2000: 68), ‘destining’ involves a double connotation as ‘fittingness’ and ‘fate’: it is, on one hand, an equation of a particular ‘challenge’ with its auto-telic goal (e.g., to extract, to store, to transform ‘energy’); and it is, on the other hand, an inherent destiny to all ontological disclosure under *Gestell*. The ‘ordering imposition’ that is *Gestell* is destined, in other words, to work as a ‘challenging-forth’, whose occurrence is destined, in equal measure, to exploit the world for the mere sake of maximizing exploitation⁷.

The world, in this scheme, is disclosed as a series of ‘standing-reserves’, or stocks of energy waiting to be challenged-forth. The notion of ‘standing-reserve’ (*Bestand*) is crucial, we argue, to understand what is ‘general’ about mobile technologies, since all ontological entities – nature, objects, human existence – are confounded in it under *Gestell*. On an ontological level, the ‘standing-reserve’ (*Bestand*) is to be distinguished from the object in its ‘objectness’ (*Gegenstand*). The distinction, here, is not just between ‘essence’ and ‘matter’. It is, more importantly, a distinction between ontological dependence and ontological autonomy. Mere objects (*Gegenstände*) are not just raw material. They also ‘stand on their own’, as Heidegger says (1994: 196-198): they need nothing but sheer materiality to exist – i.e., to ensure their ‘objectness’ as objects. Standing-reserves, in contrast, cannot ‘stand on their own’: they can only stand in relation to *Gestell*, i.e., the ordered imposition of instances in which their capabilities are ‘challenged’ or ‘made to be exploitable’. Thus, standing-reserves are defined by their constant availability for further use: they always depend on (future) potential exploitation⁸.

⁷ According to Wrathall (2011: 195-206), Heidegger suggests that the endless exploitation under *Gestell* is responsible for a loss of meaning in our existence. This is why, among other reasons, he tries to define a ‘free’ ontological relation to technology – that is, in order to restore meaning to our existence. This restoration involves, according to Wrathall’s interpretation of Heidegger, an ethical stance whereby we accept to be ‘conditioned’ by a ‘fourfold’ action of earth, sky, mortals, and divinities – or, in clearer yet imprecise terms, our environment, our universe, our society, our spirituality.

⁸ There are interesting parallels to draw between Heidegger’s early analysis of ‘readiness-to-hand’ (*Zuhandenheit*) and ‘presence-at-hand’ (*Vorhandenheit*), and his later distinction between *Bestand* and *Gegenstand*. We will not discuss these parallels here, yet it is important to underline that Heidegger’s later views on modern technology

Heidegger's description leaves us, here, with an important insight – namely, that standing-reserves are inherently virtual entities. In fact, Heidegger never moves beyond characterizing standing-reserves as pure potentialities in QT, except in his numerous disconnected examples. We can confidently say, however, that these potentialities cannot exist as pure ontological entities, since it would be equating standing-reserves with reality as a whole. Reality, at its very limit, is nothing but the realm of what is ontologically possible. When Heidegger says that reality is disclosed in *Gestell*, he never means that *Gestell* discloses reality in its entire truth. *Gestell* only discloses a possible world, where reality is ordered as a series of standing-reserves. Now, if these standing-reserves are in fact pure transformable energy, i.e., if their virtual content covers the entire realm of what is possible, then they are not just one way in which reality is disclosed – they become indistinguishable from reality itself.

On Heidegger's own account, this conclusion is absurd. The reason is that standing-reserves are not pure, ontological potentialities. They are, we argue, ontological potentialities *in reference to* something ontic. This point is easily shown when we examine Heidegger's examples. He talks, for instance, about the Rhine River as a standing-reserve, not because the River could yield anything it wants, but because it is an exploitable source *of hydroelectric energy*. In a similar way, he talks about a landed plane as a standing-reserve, not because we can do anything with a plane, but because it has a potential *to fly*. Thus, a standing-reserve is not an object with specifiable properties in its 'objectness' (i.e., a *Gegenstand*); it is an object which exists only in relation to what it could *give* to similar objects disclosed in *Gestell*.

We need to insist, here, that what is 'given' is not merely instrumental use. When a landed plane is 'challenged-forth' to provide a means of transportation, what is extracted is not just a single instance of transportation (e.g., a plane flies people into London), or regular instances of transportation (e.g., a regular Valencia-London flight), or even a range of instrumental purposes it can have (e.g., to transport people, to ship commodities, to service a warzone). What is extracted, on an ontological level, is a quantifiable, undifferentiated, indefinite capacity for use,

depart in one important respect from his earlier views: namely, he is not so much interested in a phenomenology of technological use as he is in ontological world-disclosure in a technological age (Pattison, 2000)

whose ontic actualization is *only* potent *when* a ‘challenge’ is posed. The instrumental purpose of a standing-reserve is, therefore, inseparable from the act of ‘challenging’. It seems evident, then, that we cannot talk about standing-reserves as potentials without making reference to the particular way in which their potential unfolds. The focal ‘question’ posed by Heidegger’s reflection on modern technology is not, therefore, whether its totalizing tendencies pose an ethical or an intellectual danger for mankind. The more important question, for us, is: what meaning can we attribute to nature, to human existence, or even to mobile technologies, when their ‘essence’ is reduced to becoming exploitable potentialities?

Question #4: What does it mean to be a standing-reserve?

We will descend, here, from Heidegger’s metaphysical heights onto our own technological world. What would it mean to say that mobile technologies – e.g., mobile phones, laptops, iPods, tablets – are disclosed as ‘standing-reserves’? We would have to make two initial assumptions: 1) the world is disclosed by a force – call it *Gestell* – which impinges on it in such a way as to order it as a series of standing-reserves; and 2) this ‘ordering imposition’ always operates in terms of a challenging-forth, whereby the world is indefinitely summoned to release its potentiality for the mere sake of exploitation. Granting these assumptions, we can make two initial statements about mobile technologies, understood as standing-reserves. First, just like nature, objects, and humans, mobile technologies are ordered in such a way as to be revealed as standing-reserves. Thus, in ontological terms, mobile technologies share a similar ‘essence’ to nature, objects, or humans under *Gestell*. Second, mobile technologies are ‘destined’ – in Heidegger’s sense of ‘destining’ – to be summoned into delivering quantifiable, undifferentiated, indefinite services to its users; just as its users are summoned to deliver quantifiable, undifferentiated, indefinite answers.

We will hit two immediate objections, here. One might argue, first, that mobile technologies are an obviously different class of phenomena from trees, animals, hydroelectric plants, or human beings; and that, second, mobile technologies are not ‘exploited’ in the same way as trees, animals, or humans are. We will avoid both objections in saying, like Heidegger, that differences between mobile technologies and other worldly entities are ontic, not ontological. This is not to

say that these differences are ‘superficial’ in any sense, but that they are irrelevant in terms of their ontological ‘essence’, that is, their lasting disclosure to human existence. It remains to show, therefore, what ‘general’ traits mobile technologies share with other entities if they are disclosed as standing-reserves. We should first insist that mobile technologies are rarely if ever disclosed as objects in their ‘objectness’ (*Gegenstände*). We rarely engage with them as mere electronic matter, just as we never interact with humans as mere organic stuff. Under *Gestell*, the world is not revealed as a series of discrete entities (*Gegenstände*) with an additional capacity to store exploitable energy. A mobile phone, for instance, is not revealed as a discrete mass of electronic stuff which, in addition, has the property of being exploitable or ‘challengeable’. Rather, technologies are revealed as a series of virtual entities (*Bestände*), whose potential determines what relations they entertain with other virtual entities.

What properties do these virtual entities have? As we mentioned earlier, standing-reserves are challenged to release a quantifiable, undifferentiated, indefinite energy. This ‘energy’ is ‘quantifiable’, first, insofar as it is inserted in overlaid systems of quantification – e.g., hardware circuitry, software programs, storage servers, bandwidth speeds, market dynamics regulating consumer prices, etc. It is ‘undifferentiated’, second, insofar as its ontological status as ‘energy’ matters little so long as it remains commensurable with other standing-reserves. In other words, it matters little whether mobile technologies summon a capacity to talk, to text, to send images, to listen to music, etc. What matters is that this ‘energy content’ is commensurable with others; that texting, talking or sending images are not different instrumental operations, but commensurable ‘data’ with commensurable ‘prices’ and commensurable ‘effects’. This ‘data’, these ‘prices’, these ‘effects’ – in short, this quantifiable, undifferentiated ‘energy’ – are, finally, ‘indefinite’. They are neither unlimited nor infinite, for they remain bound to the workings of quantification and commensurability, but they are ‘indefinite’ since their endpoint is unforeseeable⁹.

⁹ After all, can anyone claim to know who will tweet the last tweet, or who will read it last? The answer is quite obviously ‘no’, yet it is not an entirely rhetorical question. The idea that there could be a last tweeter or, worse, a last tweetee seems wholly foreign to the way in which Twitter is revealed to human existence, as an endless source of 140 characters messages.

One will wonder, here, why we insist on using the term ‘energy’ to describe what standing-reserves release when challenged-forth. The reason lies in part in QT, where Heidegger traces the origins of *Gestell* into early modern physics. According to him, early modern physics is founded on the conviction that the entire universe is an indefinite sum of calculable forces. This is, for him, a shorthand description for our own technological world: it is disclosed as an indefinite series of quantifiable/commensurable entities. The notion of ‘energy’, in this scheme, warrants a quantifiable/commensurable link between entities: it is, in this restricted sense, akin to the notion of ‘information’ in cybernetics, or the notion of ‘value’ in economics. It is, properly speaking, without content: its only content lies in its capacity to relate different entities in the world. This is indeed why we use the term ‘energy’: to argue that mobile technologies, just like human beings, are not discrete objects with an additional capacity for indefinite quantification and commensuration, but that they are inherently disclosed as having such a capacity.

This argument has important ramifications in practice. It means that what is ‘general’ about mobile technologies is not some unspecified multi-functionality, where these technologies actualize multiple instrumental tasks (e.g., talking, texting, sending images). What is ‘general’ about them is, in fact, a specified potentiality, where they are summoned to release a quantifiable, undifferentiated, indefinite energy. It matters little, then, what specific functions a particular mobile technology can have, or what particular technology it is in the first place (whether it is a phone, a tablet, a laptop...). These technologies are ‘technological’ by virtue of a disclosed capacity to be quantified; to be commensurate; to be indefinite. Again, this capacity is virtual without being necessarily actualized. Consider text messages, for instance. We need not actually know how text messages work in order to understand that they work in quantifiable ways; we need not actually access text messages on a variety of gadgets to understand that they are indifferently accessible on different gadgets; and we need not actually delve in the limitlessness of text messaging in order to understand that messages are indefinitely storable, accessible, transformable – or, in short, exploitable.

We now need to raise two objections against our own argument, dealing with our initial assumptions. It should be objected, first, that the disclosure of mobile technology as ‘standing-reserves’ is only ‘destined’ to summon a quantifiable, undifferentiated, indefinite energy if we

understand *Gestell* to be a total mode of revealing. If *Gestell* is not total, then there are surely alternative ways in which mobile technologies can be disclosed as ‘technologies’. Second, it will be objected that the ‘destining’ of standing-reserves towards exploitation ‘for its own sake’ is only relative to an impersonal system – *Gestell* – whose mechanic workings leave no place for human intention to strive. Both objections raise, in fact, our concluding question: who challenges-forth standing-reserves, and why?

Conclusion: Who challenges standing-reserves, and why?

To the question ‘who challenges standing-reserves’, Heidegger’s answer seems quite clear. In ontic terms, humans execute technical activities which, in ontological terms, are disclosed to human existence as a ‘challenging-forth’. Ultimately, then, humans do not ‘challenge’ nature, objects, humans... into becoming standing-reserves. It is *Gestell*, as an impersonal force, which reveals standing-reserves. We need to remark, here, that it makes no practical difference to state that *Gestell*, not humans, is responsible for ‘challenging’ things, except in displacing intention from a central, purposeful, human subject to a ‘higher’, impersonal, intentional agency. This displacement is useful when it comes to criticizing Cartesian notions regarding man’s technological dominance over nature, or man’s usage of technology as means to a rational end. However, it gives god-like qualities to a force (i.e., *Gestell*) whose limits are unknown and unknowable. Thus, it gives license to explain any technological phenomenon in reference to a mysterious, uncontrolled agency – which amounts, in fact, to no explanation at all.

We argue, here, that it is not necessary to assume the existence of *Gestell* in order to discard Cartesian prejudices regarding modern technology. When we ask ‘who challenges standing-reserves’, our answer can still be ‘no one particular subject does’, without imputing responsibility on an autonomous ontological agency. Our ontological claim would not be about the existence of *Gestell*; it would be about the existence of its ‘general’ effects. We can assume, in other words, that the world *is* ordered as a series of potentialities (i.e., standing-reserves), whose interaction (i.e., ‘challenging-forth’) reveals their true ontological nature. ‘Challenging-forth’, in this view, does not occur as a result of a quasi-agentic force, or as a result of an intentional human activity. It occurs, rather, in interactions between different potentialities in the

world. When we further extend Heidegger's reasoning, we see that what it means to be a standing-reserve lies, ultimately, in *its relation to* other standing-reserves – for example, other phones, or other interlocutors, whose potentiality is, in turn, 'challenged-forth' in the interaction.

To think about what it means to be a standing-reserve requires, in this view, to think about what it means to exist in relation to other standing-reserves. Most importantly, it means to think about how mankind's existence as exploitable potentiality is related to other technologies as exploitable potentialities. In this respect, our argument is that these potentialities interact on the basis of mutual, indefinite challenges of quantifiable, undifferentiated energy: we send indefinite text messages on our mobile phones in the same way our mobile phone repeatedly mobilizes us with incoming messages; we challenge our phone to access the Internet in the same way as the Internet repeatedly mobilizes our attention. This is not to say that we literally spend all our time texting or surfing the Internet: it means, simply, that our engagement with mobile technology is conditioned by virtual interactions between standing-reserves¹⁰.

This raises a second fold in our concluding question, 'why are standing-reserves challenged?' Our argument hinges on the assumption that standing-reserves are always challenged for the mere sake of challenge; that they are always summoned to release energy for the mere sake of exploitation. This is very evidently not the case in ontic terms, since technological use is geared towards various instrumental and human ends; and in ontological terms, it can only be the case if we posit a total system – i.e., *Gestell* – whose inherent working is 'destined' to be auto-telic. Now, as we have said, *Gestell* is not necessarily a total 'ordering imposition', disclosing reality in a monolithic way: it can also be a sum of virtual interactions between entities disclosed in a similar way (i.e., as standing-reserves). What if these interactions are not 'destined' to be auto-telic? What if they answer to intentions inhering in standing-reserves? We would need to establish, here, what kinds of non-exploitative intentions can inhere in standing-reserves, whose significance would be 'general' to humans, mobile technologies, and their surrounding world.

¹⁰ It is possible, of course, that there are ways in which mobile technologies are not 'destined' to be disclosed as standing-reserves. Heidegger would clearly be reticent to admit the possibility; yet his argument about 'freeing' our ontological relation to technology hinges, in some measure, on alternative ontological relations to technology – which means that the world would not be disclosed as a series of standing-reserves, or at least not always.

While we cannot give a complete account of these intentions here, we will cite a contrasting case from QT, where Heidegger contrasts ‘challenging-forth’ to ‘bringing-forth’. ‘Bringing-forth’ (*Herstellen*) designates the way in which technology (*techné*) was disclosed in ancient Greece. Bringing-forth is to *poiesis* what challenging-forth is to *Gestell*: we have, in both cases, a way in which technology is made to work under a given mode of ontological disclosure. In contrast to challenging-forth, which works as an exigency for endless exploitation, bringing-forth works as a ‘pro-duction’, understood as a ‘bringing into salience’ of different elements¹¹. These elements are Aristotle’s four causes: material, formal, efficient, final. Without ever acting on separate terms, all four causes are ‘brought-forth’ in concomitant fashion in given technological objects¹². ‘Production’, in this sense, is akin to an event, a unique occasion, whose salience to human existence guarantees its meaningfulness. There is a sense in which mobile technologies, as mass-produced objects, are devoid of ‘aura’, ‘enchantment’, ‘subjectivity’ – or, in short, ‘eventfulness’. Nonetheless, one can still imagine how mobile technologies can be ‘brought-forth’ as a concomitant interaction between plastic (material cause), hardware/software shape (formal cause), producer/consumer usage (efficient cause), and a communicative context (final cause), instead of simply being ‘challenged’ into endless exploitation.

¹¹ The German word, *Herstellen*, means in fact ‘production’. Yet it is not ‘production’ in the usual sense of ‘making’ or ‘creating’, but in the Latin sense of *pro-ducere*, which means ‘to bring forth’, ‘to bring into being’. This etymological signification is evident in the contemporary legal expression ‘*producing evidence*’, where evidence is not ‘made-up’ by lawyers, but ‘made salient to the tribunal’.

¹² Heidegger illustrates his notion of ‘bringing-forth’ with another famous example: the silver chalice. A silver chalice, he argues, is not just a vulgar object made by a creative artisan: it is a concomitant ‘production’ involving silver ore (material cause), a chalice shape (formal cause), a craftsman with craftsmanship (efficient cause), and a ritual context (final cause), whose overall mutual indebtedness ‘produce’ the chalice to human existence (Heidegger, 1977: 6-8).

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