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Up until the mid-nineteenth century, the question and problem of technology was not seen as an issue of great philosophical interest. It is in the social philosophy of Marx and other left Hegelians that one can first see a genuine shift among philosophers in this respect. The modes of production and thus the very technical means of life are now seen as cultural forces in their own right, and thus as influencing the thoughts, experiences, and self-understanding of a society. In 1877 Ernst Kapp, a philosopher and a contemporary of Marx, publishes the first book with the title “Outline for a Philosophy of technology” (*Grundlinien einer Philosophie der Technik*), where he launches the idea of the tool as an “organ-extension” of man.

With the First World War the question takes on another urgency. The war was not only a human and cultural disaster of previously unseen dimensions. It was also an experience of how the machinery of war somehow seemed to have taken over the lives of men, and made them into its servants rather than its masters. Together with the rapid and convulsive industrialization of the West it contributed to bringing the question of technology to the forefront of the cultural and philosophical debates in postwar Europe.

In the 1920s many European philosophers and intellectuals turn their interest toward

technology as the defining issue of our time. Ortega y Gasset in Spain, Nikolai Berdjajev in Russia (and France), Oswald Spengler, Ernst Jünger, and Ernst Cassirer in Germany, and many others take part in the discussion of the meaning and consequences of the technologizing of culture. The culmination of the Second World War brought the whole matter to yet another level. The atomic bomb marked a new step in both the technological and the spiritual evolution of humankind. It now had the ability to abolish life on earth as such. With the parallel discovery of the human genome, humanity appeared to have fulfilled the ancient phantasies of a demiurge that in his hands had the power and the *techne* to create and destroy life.

The first phase of this discussion takes place when Heidegger is developing his own version of phenomenology as existential ontology. Yet, in his early published works, including *Being and Time*, the question of technology does not stand forth as a fundamental concern. It is not until the early 1950s that he explicitly and publicly takes on the question of technology as a philosophical theme in its own right. He then gives several public lectures on this theme, which are then edited into the immensely influential essay “The Question Concerning Technology” in 1954. Here he describes the essence of

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technology as “enframing” (*Ge-stell*) and as the defining characteristic of our age. *Techne* in its double legacy, as both technology and as art, is here presented as the source of the greatest danger but also as a potentially saving power, as both *Gefahr* and *Rettung*. To contemplate (*besinnen*) this situation is a crucial task for philosophy, perhaps even its greatest responsibility in the present. In his last words to his colleagues and friends in America in 1976, the year of his death, he writes that contemplating technology is the most important task if we are to counter the forgetfulness of being.

For a long time it was believed that the problem of technology was something that belonged only to Heidegger’s later work. But with the publication of his lectures from the 1920s onward it has become clear that his interest in and perspective on this problem must be seen in a new light. First of all, he was greatly influenced by the earlier cultural and philosophical debate about the role and meaning of technology, in particular by the writings of Ernst Jünger. Also, the problem of the technical and its effect on language and thinking is something that guides his critical assessment of the history of metaphysics from the very earliest writings onward.

Heidegger’s essay on the question of technology is today the single most quoted paper in the field of Science and Technology Studies. One reason that it has become so influential is that it seeks to capture the problem of the technical on such an extremely general level, both philosophically and historically, connecting it with the meaning and development of the metaphysical and philosophical tradition as such. Yet, because of how intricately it is folded into his overall philosophical problematic, it is often poorly understood. It is only by locating its analyses and conclusions in the broader context of the emergence

and development of his phenomenological ontology and its inner tensions that one can make better sense of it, and also that one can formulate relevant criticisms.

As a short historical background it is helpful to rehearse a few basic points from Aristotle, who remained the main reference for Heidegger on this issue throughout his life. In book six of *Nicomachean Ethics*, Aristotle provides the first known philosophical definition of *techne*: “A *techne* is a rational quality concerned with making, that reasons truly” (1140a). The translation of *techne* is here a philosophical problem in itself. The standard Latin translation of *techne* was always *ars*, and following this it was rendered in the modern Latinized European languages as *art*, and in the Germanic languages as *Kunst* (where the etymology points back toward a verb for knowledge and ability, *kunna*). In some translations of Aristotle we find the extended translation “art or technical skill,” to mark the difference from art in the more modern aesthetic sense. But it is important to note that Aristotle and the Greeks did not clearly distinguish between what we think of as technology on the one hand and the fine arts on the other. *Techne* was essentially the name for a creative and productive form of knowledge, an intellectual virtue comparable to other intellectual virtues, notably scientific knowledge and wisdom. As such it also had something to do with *truth*. In another famous and somewhat enigmatic passage from the same text, Aristotle writes: “There are five ways in which the soul achieves truth (*aletheuein*), namely through *techne*, scientific knowledge, prudence, wisdom, and intelligence” (1139b).

The meaning of this statement has been the source of much debate. Whatever Aristotle meant, its importance for Heidegger’s understanding of technology can hardly be

overestimated. The relation between *techne* and truth and the disclosure of being is a question that guides his attempts to think technology philosophically from the very earliest lectures. Throughout this trajectory, the double legacy of *techne*, as both art and technology, will also generate shifting constellations. We will come back to it as we proceed, but with this background in mind I now turn to how the problem of technology first appears in his work.

In 1922, Heidegger composed a survey article to summarize the interpretations of Aristotle on which he had been working for several years (PIA). The dense text can be read as a condensed outline of *Being and Time* five years before its publication. It also contains some very important remarks on the technical that anticipates his later thinking. He stresses here the importance of analyzing how the vocabulary of early Greek metaphysics is created, and what its guiding models and motives are. As an example he turns to how Aristotle conceptualizes *substance*, Greek *ousia*. When designating the most fundamental nature of being by this term, Aristotle has been guided, Heidegger argues, by an understanding of being as something created in *poiesis*, as a *Hergestelltsein*, a “being-fabricated.” The German word is important here, for it marks the first in a long sequence of concepts forged around the root verb *stellen*, to place or put, at the extension of which he eventually coins that of *Ge-stell*.

In Greek metaphysics being is thought in its general essence as something produced that is then grasped in language through its *eidōs*, its visibility. This way of making being appear and stand forth, and thus to be true, Heidegger continues, is the way of *techne* or technics. So the technological understanding of being is in fact what we could call the basic model of understanding being, and the

one according to which Greek metaphysics built its fundamental conceptual structure. Only by becoming critically aware of what we could thus call a certain *technical bias* in the very construction of metaphysical language, can we also engage in an exploration directed toward other, complementary, and supposedly also more fundamental senses of being.

This conclusion is not simply a descriptive hypothesis that concerns the first emergence of a metaphysical conceptuality. It also holds a critical potential. For in questioning the validity of the original conceptual configuration it also opens up a space for critical reflection on the inherited understanding and meaning of being that will continue to direct his critical questioning of inherited metaphysics.

When Heidegger publishes *Being and Time* five years later, the core of its argument is the critique of a substance metaphysics, which understands being along the line of what is present-at-hand (*Vorhandenheit*). The connection to the earlier analysis of the “technical” roots of metaphysics is not, however, obvious at first glance. In *Being and Time*, the explicit theme of technology and *techne* is hardly mentioned. It is clear from some remarks in passing that he attaches a somewhat negative sense to *the technical*. When discussing the phenomenological method, he emphasizes, for example, that it should not be understood along the lines of a “technical device” (GA 2, 27/BT, 26). And in a later passage from the book he makes a distinction between what he calls a “genuine reflection on method” from “empty discussions of technology” (GA 2, 303/BT, 290). In order to ground this vaguely negative conception of the technical we need to see it in the context of the larger project in BT, its criticism of modern Cartesian substance ontology,

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and how it carries on the basic connection between a technical approach to being and metaphysical language.

In *Being and Time* the critique of substance ontology does not, unlike the earlier draft, take its starting point in a Greek “technical” sense of being. Instead it points to Cartesian metaphysics as the root of seeing being as a pure extension in space. Heidegger uses Descartes’ famous example of a piece of wax to demonstrate his point. By reducing the object to its pure extension in space, Descartes has abstracted it from its immediate surroundings, in order to visualize it only as a calculable material extension.

In order to “destruct” this understanding of thingness, Heidegger turns to the Greek word for “thing,” which is *pragmata*, signifying etymologically “that with which we are concerned.” These entities are not meaningless extensions in space, but always contextually meaningful in terms of a surrounding world of concerns. They are, he says, “readiness-to-hand,” *Zuhandenheit*. Their understanding and meaningfulness presupposes precisely that they are not objectified, but rather lived in their spontaneous referential context. From this perspective it is possible for him to develop his analysis of “world” as something more than simply a constellation of material entities. The primary phenomenon of world is a lived, meaningful referential context, into which we are always already thrown.

From the viewpoint of the earlier critique of substance metaphysics this is a bit confusing. Through his interpretations of Aristotle he had reached the conclusion that Greek instrumental and technical understanding of being accounts for a kind of elementary forgetfulness in the history of metaphysics. But now the artifact, tool or equipment, as in Greek *pragmata*, is instead presented as a critical contrast in relation to a more

distanced and objectifying modern Cartesian understanding of nature in modernity. This is what permits him to speak of readiness-to-hand, *Zuhandenheit*, as a more original manifestation of being than present-at-hand, *Vorhandenheit*.

From one perspective the ontology developed in *Being and Time* could thus be described as a pragmatist ontology of the artifact and the tool, since the being of readiness-to-hand is argued to be more fundamental than the secondary and theoretically mediated present-at-hand of the simply contemplated object of nature. It has also been interpreted in this way, especially by some of Heidegger’s American readers.

Even though the rationale behind his analysis was to critically reflect on the form of objectification of nature that emerges with modern science and its metaphysics, its implications nevertheless remain problematic, not least for Heidegger himself. For if nature is understood along the model of a useful thing or readiness-to-hand, then the phenomenological analysis would seem to reinstall a subjectivist and anthropocentric determination of the world that it sought to transcend. If we read *Being and Time* from this angle we can also sense why he subsequently adopted a critical distance toward its analyses.

This is the case in particular in the essay “Origin of the Work of Art” from 1935. This is his most important statement on Art, but as such it is also an important statement on the *technical*, since art or *Kunst* goes back to the same Greek word *techne*. Readers often fail to fully appreciate the interconnectedness of the question of art and technology in Heidegger’s work. But here, in the artwork essay, he literally builds his argument by pitting the two senses of ancient *techne* against one another. In seeking to expand

his earlier critique of substance ontology, he states that the true being of an artwork cannot be grasped along the model of objective present-at-hand entities, as *Vorhandenheit*. However, neither can it be understood along the model of the useful tool or readiness-to-hand, as *Zuhandenheit*. Nor indeed can nature be understood along any of these models. For natural being is rather characterized by an elusive way of self-containment (*Eigenwuchsig*), a kind of auto-emergence.

When we turn to the artwork, however, it turns out that it in fact differs from all of these three types of being. Instead it is a special way of bringing together and letting appear the being of nature, not *consuming* it as a raw material for the purpose of its own utility, but rather by *letting it appear* and come to presence. It is in this sense that the artwork can be a “happening of truth.”

In contrast to the analysis in *Being and Time*, the mode of equipment or usefulness is thus here what lies in the way of grasping the genuine phenomenon of nature. On the other hand, this truth can be discerned through the event of the artwork. As a work of truth, the artwork is what reveals the deeper meaning of nature that is concealed as long as nature is interpreted only through the traditional—technologically oriented—matrix of matter and form. So in the place of *techne* as artifact, the essay opts for *techne* as artwork. From the viewpoint of the Artwork essay, there is thus also a positive possibility emanating from the Greek *techne*, not as the instrument of immediate life concerns, but as the poetic bringing forth of something into its presence.

At this stage in Heidegger’s thinking the two conflicting modes of *techne* thus begin to structure his thinking in a cross-wise, chiasmic way. *Techne* in the sense of the fabricated artifact functions from the inception of

metaphysics as the matrix for thinking being as a disconnected entity, in a way that comes to the fore in modernity, where the truth or event of being is covered over and domesticated in a representational and objectifying (technical) understanding. At the same time, *techne* as art emerges as a unique avenue toward thinking the event of truth, in a way that does not objectify being, but rather permits it to prevail in its own essence, in its dual nature as presence and absence at once. As we shall see shortly, the 1953 essay on technology brings this confrontation between the two forms of *techne* to an even higher level.

In the years that follow upon the Artwork essay, from the mid-1930s onward, Heidegger embarks on a huge undertaking, to reassess the entire movement and inner motivation of German idealism and its legacy, including Nietzsche. From an initial positive appreciation of both Schelling and Nietzsche as attempts to escape from the confines of metaphysics in its traditional form, he gradually reaches the conclusion that not only all of German idealism, but also Nietzsche himself, are ultimately symptoms of a more encompassing metaphysical development. The true legacy of metaphysics is a will to power and domination that brings everything under its yoke, and that finds its concretization in modern technology, especially in its relation to nature.

His own radicalized attempt to abandon the confines of Western thinking is manifested most dramatically in his writings from the mid-1930s onward, notably in *Contributions to Philosophy* and *Besinnung* (GA 65 and GA 66). In these posthumously published works we find the first steps in his critical assessment of technology as a world shaping power, a power that is about to transform the sense of nature, leading to a forgetfulness of being (GA 65, 277). Here he

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also tries to develop new modes of thought, as well as a series of new concepts. Central for the former attempt is to shape a mode of thinking that avoids the objectification of conceptual thought, by including its own “belonging” to that which is thought. In these experimental works, written mostly under the years of dictatorship, Heidegger elaborates many of the thoughts that will eventually surface in his postwar lectures and writings. It is a question of saying things so as to call forth the attention of the listener to how she has already been claimed by what she is trying to think.

In the 1953 lecture on technology this strategy and therapy is at the heart of its argument and style. Unlike the common approach to the philosophical question of technology, Heidegger holds that the *essence* of something is not simply the answer to its fundamental *what*. In the case of technology the standard answer is that technology is a means to an end, an instrument for action, or as in the earlier theorists an “organ-projection.” But against this standard response, he suggests that we look instead for *how* technology brings about its truth. Then we do not only ask for the truth *about* technology, but rather for the truth *of* and *through* technology.

At this stage he also recalls the passage from the *Nicomachean Ethics* referred to above, according to which “*techne* is a way of making true.” He uses it to convey the point that *techne* has to do with bringing about the true, in the sense of letting something come into its appearance, and thus of disclosing it. The primary way in which technology discloses nature is as “exploitation,” or a “commanding,” as *Herausfordern*. It discloses nature as that which can and should be commanded. But not only that, it also discloses man to himself as “commanded to

command nature,” *herausgefordert die Natur herauszufördern* (VA, 21/BW, 320). This is the concentrated formulation behind the idea of *Ge-stell* as the essence of technology. It manifests itself as a *demand* inherent in man himself and as a consequence of his freedom, in and through which he takes control over nature and over himself. It is a “destiny,” but not in the sense of being ordained by a superior power, but as a way in which humans encounter nature and themselves.

As such a destiny it is not given once and for all, but rather as something toward which we can seek to establish a more free relation. By *listening* to its claim or its demand (*Anspruch*), and by permitting it to resonate as such, it can also become a “freeing claim” (VA, 29/BW, 331). For this reason the *Ge-stell* constitutes a fundamentally ambiguous situation. From a superficial perspective the concept and diagnosis itself may appear only as an anti-modernist and even reactionary assessment of the present. But Heidegger’s point is that it also contains new possibilities of experiencing this very modernity, if we are able to listen to the way that it speaks in and through us.

The danger inherent in the *Ge-stell* also holds a saving potential. In his later writings, Heidegger would often quote the lines from Hölderlin’s *Patmos*, “But where danger is, grows the saving power also.” In the essay on technology this quotation holds a very special place, for it summarizes the way in which he wants the *Ge-stell* to be understood, namely as an “ambiguous” situation of danger and saving at once. The latter possibility rests, however, on the condition that man can reach a thoughtful and reflective relation to that which is, as it is disclosed in the *Ge-stell*.

At the very end of the essay he explicitly takes up this ambiguity in terms of the

aforementioned double inheritance of the Greek *techne*. Once, he says, *techne* also meant the “bringing forth of the true into the beautiful” (VA, 38/BW, 339). To the hope of technology belongs this possibility of bringing it back to a sense of a poietic disclosure, first carried and made possible in the arts,

which were known by the Greeks also as *techne*. But this is only possible on the condition that philosophy thinks the technological condition to its end. So at the end of it all it is as if *techne* comes forward to reveal a liberating perspective on that which is, liberating it, as it were, from itself.