

organization. Standard examples of the megamachine are large armies or organized work crews such as those that built the Pyramids and the Great Wall of China. The megamachine often brings with it striking material benefits, but at the expense of a dehumanizing limitation of human endeavors and aspirations. A large army can conquer territory and extend power, but only by enforcing among its soldiers a discipline that either does away with family life, play, poetry, music, and art or rigorously subordinates them to military ends. The consequence is the "myth of the machine," or the notion that megatechnics is both irresistible and ultimately beneficent. This is a myth and not reality because the megamachine can be resisted, and it is not ultimately beneficial. Mumford's work as a whole is an attempt to demythologize and delimit megatechnics and thereby to initiate a radical reorientation of mental attitudes that would transform monoteknical civilization. As he says in an earlier essay, "to save technics itself we shall have to place limits on its heretofore unqualified expansion."<sup>10</sup>

An important feature of Mumford's work, however, is that his negative criticisms of monoteknics are complemented by positive studies of art and urban life, culminating with *The City in History*, which won a National Book Award for 1961. *Technics and Civilization* is itself designated the first in a four-volume "renewal of life" series, and the second volume states the case for a technology modeled on patterns of human biology and a "biotechnic economy."<sup>11</sup> In *Art and Technics* (1952), midway between *Technics and Civilization* and *The Myth of the Machine*, Mumford contrasts art as symbolic communication of the inner life of the mind with technics as power-manipulation of external objects. Mumford is clearly not arguing for a simpleminded rejection of any and all technology. Instead, he seeks to make a reasoned distinction between two kinds of technology, one that is in accord with human nature, and another that is not. His aim is not to discard the Promethean myth of human beings as tool-using animals, but to "supplement" it with that of Orpheus as "man's first teacher and benefactor." The animal became human "not because he made fire [a] servant, but because he found it possible, by means of his symbols, to express fellowship and love, to enrich [a] present life with vivid memories of the past and formative impulses toward the future, to expand and intensify those moments of life that had value and significance."<sup>12</sup> Technology is thus to be promoted when it contributes to and enhances what Mumford calls this "personal" aspect of existence, not when it restricts and narrows human life with a focus on power.



José Ortega y Gasset. Drawing by Dirk Leach.

#### José Ortega y Gasset: Meditation on Technics

Ortega is the first professional philosopher to address the question of technology, which he does in a series of university lectures delivered in 1933 in Spain and then first published in 1935 in Buenos Aires in the newspaper *La Nación*. The first authorized book publication occurred four years later. Ortega thus raises the issue of technology about the same time as Mumford and in the context of a philosophical anthropology that, although it exhibits some similarity to Mumford's, is certainly of greater metaphysical depth.

The importance that Ortega himself places on his "Meditations on Technics," which has not (even among Ortega scholars) been accorded the attention it deserves, is indicated by its very title. Two decades earlier, in his first book, *Meditations on Quixote* (1914)—with its allusion to and criticism of Descartes—Ortega puts forth a new understanding of what it is to be human with the formula "Yo soy yo y mi circunstancia" (I am I plus my circumstances). Before publishing this inaugural work he had spent two years in Germany and had come into contact with the phenomenology of Edmund Husserl. In criticizing the Husserlian analysis of consciousness Ortega developed a version of existential intentionality or "real human life" as the coexistence of the ego and its circumstances—a view that would later become more widely associated with the thought of the early Heidegger of *Being and Time* (1927).

Ortega's book, like Descartes's meditations at the beginning of the modern period, proposes to bring about a revolution in philosophy. Yet Ortega's meditation is not on "first philosophy." It is instead on a figure of central importance for anyone existing in Spanish circumstances. His meditation is not rationalist but existential, although Ortega himself eschews the term "existentialism" in favor of "rationalism." *Meditations on Quixote*—a rational reflection on real life—further announces that it is the first of a series of meditations. But only a very few other works with this title follow. Among the most substantial is "Meditations on Technics."

According to Ortega, technics is necessarily involved with what is to be human. Ortega's philosophy of technology rests on the idea of human life as entailing a relationship with circumstances—not, however, in a passive manner, but as an active response to and creator of those circumstances. "I am I plus my circumstances"—meaning "I" is not to be identified with just itself (idealism) or with just its circumstances (materialist empiricism), but with both and their interaction. The opening sections of his "Meditations on Technics" are designed to develop this metaphysical thesis. Human nature, unlike that of a rock, tree, or animal, is not something given by existence; rather, it is something people must create for themselves. A person's "life does not correspond with the profile of organic necessities" (p. 323)<sup>13</sup> but projects beyond itself.

This self-interpretative, self-creative undertaking proceeds through two distinct stages. First, there is the creative imagination of a project or attitude toward the world that the person desires to realize. Second, there is the material realization of that project, since once we have

imagined what we want to become, what we want to make ourselves—whether this is a gentleman, bodhisattva, or hidalgo (to use Ortega's own historical illustrations)—there are certain technical requirements for its realization. And of course, because these requirements will differ according to the project to be realized—the gentleman requires a water closet, unlike both bodhisattva and hidalgo—there are as many different kinds of technics as there are human projects.

For Ortega the human being actually might, to some extent, be defined as *Homo faber*, provided *faber* is not restricted to material fabrication but includes spiritual creativity. "This invented life, invented as the invention of a novel or a work of the theater, is what a person calls human . . . and this a person makes himself beginning with the invention of it" (pp. 334–335). Inner invention precedes and provides the basis for external invention. Technics, again, may even be thought of as a kind of human projection, but not on strictly natural or organic foundations (as with Kapp or Gehlen). There is a break or a rupture between the human and the world.

Near the end of his life, at a conference in Darmstadt, Germany, in 1951, Ortega returned to this theme with a story titled "The Myth of Humanity outside Technics." In this presentation he begins by affirming from external observation that the human being is indeed "a technical being" (p. 618).<sup>14</sup> But why should this be? The reason, he argues, is that the human being is not part of nature but has an *idea*, an *interpretation* of nature. Although there is only extremely limited scientific knowledge about the origins of such a being, since science explains only how things arise within or as part of nature, it is possible to construct a myth of how the human might have been in nature and outside technics and then was transformed into a being outside nature and within technics.

Ortega imagines a prehuman species that simply accepts whatever is given to it by nature. Its members do not think about anything other than what simply happens; they are happy, content. Then through some genetic mutation this animal develops an inner life of multiple fantasies, so that a member of the new species "has to choose, to select" between fantastic possibilities (p. 622). This new animal is essentially what the Latins called *eligenis*, from which are derived the words *intellegens* and *intellegentia*, that is "intelligent." Such intelligence gives rise to an *insatisfaction*, a discontent with the world, to the desire to create a new world, and thus to technics.

"Meditation on Technics" begins with a metaphysical argument (sections 1–5) which is then illustrated with references to technics of

different historical periods that exhibit more or less equal status as technics (sections 6 and 7). There is nevertheless some truth in the myth of human beings existing outside technics. This truth is the common notion that modern technics is the epitome of technology. Indeed, following his historical illustrations in "Meditation on Technics" Ortega develops a history of technology that argues this thesis (sections 8–12).

To present this thesis Ortega outlines the evolution of technology, dividing it into three main periods similar to those found in Mumford: the technics of chance, the technics of the craftsman, and the technics of the technician or engineer. The difference between these three is in the way one discovers the means to realize the project one has chosen to become—that is, in the "technicity" (*el tecnicismo*) of technical thinking. In the first period, there are no methods or techniques at all, and a technics must be discovered simply by chance. In the second, certain technics have become conscious and are passed from one generation to the next by a special class, the artisans. Still, there is no systematic or conscious study called technology; technics is simply a skill, not a science. It is only in the third period, with the development of that analytic way of thinking associated with the rise of modern science, that the technics of the technician or engineer—scientific technics, "technology" in the literal sense—comes to be. Discovering the technical means for realizing any end itself becomes a self-conscious scientific method or technique. "The technicity of modern technics is radically different from that which inspired all previous technics" and indeed is "a new way for the mind to operate that manifests itself both in technics and even more in pure [or scientific] theory" (p. 371). In our time, as Ortega puts it, humanity has "*la técnica*" (that is, technology) before "a technics." People can know how to realize any project they might choose even before they choose some particular project.

The perfection of scientific technics leads, for Ortega, to a uniquely modern problem: the drying up or withering away of the imaginative or wishing faculty, an aboriginal faculty that accounts for the invention of human ideals in the first place. In the past people were mainly conscious of things they were unable to do, of their limitations and restrictions. After willing some project, a person had to expend years of energy in solving the technical problems involved in its realization. Now, however, with the possession of a general method for discovering the technical means to realize any projected ideal, people often lose the

ability to will any ends at all. In the absurd logic of a "brilliant construction engineer," Alexei Kirilov argues (in Dostoyevsky's *The Possessed*) that human beings are completely free and anything is possible, but nothing is required—except suicide, as a definitive demonstration of freedom.<sup>15</sup> And such suicide need not be the result of an explicit act. Human beings have become so entranced with their new technology that they have forgotten that "to be a technician and only a technician means to be able to be everything and consequently not to be anything determinate" (p. 366). In the hands of technicians alone, people devoid of the imaginative faculty, technics is "an empty form—like the most formalistic logic; it is unable to determine the content of life" (p. 366). Scientific technicians are dependent on a source they cannot master by reducing it to scientific or technical terms. Because of this, Ortega provocatively suggests, the West may be forced to turn to the technicians of Asia.

#### Martin Heidegger: The Question concerning Technology

Heidegger's philosophy of technology is not easily summarized, although it has features in common with Mumford's and, at a deeper level, with Ortega's. Like Mumford, Heidegger adopts a strategy of distinguishing between two kinds of technology and, without rejecting technology in any general sense, trying to enclose modern technology within a more expansive framework. Like Ortega, Heidegger approaches the issue of technology from the perspective of what he terms fundamental ontology and ultimately raises issues about the historical destiny of the West.

In approaching Heidegger's discussion of technology, however, there are two points to keep in mind. First, Heidegger is to some extent a philosopher in the Socratic tradition of raising questions rather than providing answers. He thinks that more than anything else questions, difficulties, or problems are what philosophy is all about. He has no desire to resolve questions like the positivists or to dissolve problems after the manner of Ludwig Wittgenstein and some other analytic philosophers. In truth, Heidegger is inordinately suspicious of all answers or solutions. Second, the overriding question for Heidegger concerns Being. Now, exactly what this question is has been much debated. Heidegger himself has worded it differently at different points in his life. Originally it was the question of the meaning of Being; then it became the question of the truth of Being; later it was the question of the place

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THINKING THROUGH  
TECHNOLOGY

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The Path between Engineering and Philosophy

CARL MITCHAM

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