Form and Technology
(1930)

I

·39· If we judge the *signification* of the individual subdomains of human culture primarily by their actual *effectiveness,* if we determine the value of these domains according to the magnitude of their direct *accomplishments,* there can hardly be any doubt that by *this* measure technology claims first place in the construction of our contemporary culture. Likewise, no matter whether we reproach or praise, exalt or damn this "primacy of technology," its pure factuality seems to be beyond question. All the forces of configuration in contemporary culture are increasingly concentrated on this one point. Even the strongest *counterforces* to technology, even those spiritual potencies that are most distant from technology in their content and meaning, seem able to actualize themselves only insofar as they become conjoined with technology and, through this alliance, become imperceptibly subjected to it. Today, many consider this subjugation the ultimate goal of modern culture, and its inevitable fate. However, even if we think it impossible to constrain or stop this course of things, a final

[First published as "Form und Technik" in *Kunst und Technik,* ed. Leo Kestenberg (Berlin: Volksverband der Bücherfreude-Verband, 1930), 15–61. Translated from *Symbol, Technik, Sprache: Aufsätze aus den Jahren 1927–1933,* ed. Ernst Wolfgang Orth and John Michael Krois (Hamburg: Felix Meiner, 1985), 39–90. The current translation is a collaborative effort by Steve Lofts, Antonio Calcagno, John Krois, and Wilson Dunlavey.]

question remains. The essence and basic determination of *spirit* does not tolerate any *external* determination. Even where it entrusts itself to a foreign power and sees its progress determined by it, spirit must at least attempt to penetrate the core and meaning of this determination. Spirit thereby reconciles itself with its fate and becomes free. Even if spirit is not able to repel and conquer the power to which it is subjected, it nevertheless demands to know this power and to *see* it for what it is. If this demand is made in earnest, it does not possess a merely "ideal" signification and is not limited to the realm of "pure thought." From the clarity and certainty of *seeing* follows a new force of *effective action*, a force with which spirit strikes back against every external determination, against the mere fatality of matter and the effects of things. Insofar as spirit is *mindful of* the powers that seem to determine it externally, this mindfulness already contains a characteristic turning back and turning inward. Instead of grasping outwardly at the world of things, it now turns back onto itself. Instead of exploring the depths of effects, it returns to itself and, by means of this concentration, achieves a new strength and depth. ·40·

Admittedly, we are still far away from fulfilling this ideal demand today, particularly in the domain of technology. A gulf that separates thought and activity [*Tun*], knowledge [*Wissen*] and effective action repeatedly emerges. If Hegel is correct when he states that the philosophy of an age is nothing more than that very age "grasped in thought," and if this philosophy, understood as the idea of the world, only appears after reality has completed this process of formation and so "finished itself,"[1] then we would have to expect that the incomparable development of technology over the course of the past century corresponds to a change in the *way of thinking*. If, however, we look at philosophy's present situation, this expectation has been only partially fulfilled. Admittedly, from approximately the middle of the nineteenth century onward, problems that had their origins in the realm of technology have increasingly made their way into abstract "philosophical" examinations, thereby giving them a new goal and direction. Neither the theory of science nor the theory of value has escaped this influence. The theory of knowledge, the philosophy of cul-

1. [Georg Wilhelm Friedrich Hegel, *Grundlinien der Philosophie des Rechts, oder Naturrecht und Staatswissenschaft im Grundrisse*, ed. Eduard Gans, in *Werke*, vol. VIII (Berlin, 1833), 19f.]

ture, and metaphysics all attest to technology's breadth and growing power. This interconnection exhibits itself most clearly in certain currents of the modern theory of knowledge, which attempt to transform the traditional relationship between "theory" and "praxis" into its opposite, defining theoretical "truth" merely as a special case of "utility."

·41·

Beyond these properly "pragmatic" trains of thought, however, the growing influence of technical concepts and questions on philosophy as a *whole* is unmistakable. Even modern *Lebensphilosophie* is often subject to it, though *Lebensphilosophie* believes it takes the most vigorous stand against it. It, too, is not free from the chains that it mocks. However, all of these inevitable points of contact between the *domains* of technology and philosophy in no way prove that an inner communality is being initiated and built up between the two. Such a community can never result from a mere sum of external "influences," however manifold and strong we may think them. While philosophy and technology have jointly entered into the systems of positivism and empiricism—we need only think of Mach's principle of economy as the basis of a theory of knowledge—this *bond* must not produce the semblance of a true *unification* of the two. Such unification would be reached only if philosophy succeeded in fulfilling, on *this* point, the general function that it has increasingly fulfilled with ever-greater clarity for other domains of culture. Since the days of the Renaissance, philosophy has brought all the powers of modern thought before its forum, questioning them about their meaning and right, their origin and validity. This question of the ground of validity, the *quid juris* as Kant calls it, is directed to all of the formal principles of spirit; in posing this question, the grounds of their specific characteristics are first uncovered, their own proper meaning and value discovered and assured. Philosophy has achieved such assurance, such "critical" mindfulness and justification, for mathematics, the theoretical knowledge of nature, the "historical" world, and the human sciences. Although new problems constantly arise here, although the work of "critique" will never come to an end, the *direction* of this work has been set since the days of Kant and his founding of "transcendental philosophy." Technology, however, has not yet been seriously integrated within this circle of philosophical self-reflection. Technology still seems to retain a singularly peripheral character. Genuine knowledge of technology, insight into its spiritual "essence," has not kept pace with the growth in its scope. A fundamental

·42·

motive for the inner tension and antagonism found in the formative tendencies of our epoch lies precisely in this disparity: in this impotence of "abstract" thought to be able to penetrate into the core of the technological world. A resolution of this tension can never be hoped for or sought by adjusting the extreme points of the tension or by effecting a mere compromise between them. Rather, their possible unity requires the insight and clear and frank acknowledgment that this particular case involves more than a mere difference; it is a genuine *polarity.* This fact determines the task that philosophy has to fulfill with respect to the current development of technology. This task cannot be limited to assigning technology a predetermined "place" in the whole of culture and, therefore, in the whole of a systematic philosophy that aims to be the intellectual expression of culture. Technology cannot simply be placed *next to* other areas and formations [*Gebilden*], such as "economics" and "the state," "morality" and "law," "art" and "religion." For in the realm of spirit, separate domains never stand simply together or next to one another. Here, the community is never spatially static but possesses a dynamic character. One element is found "with" the other only to the extent that both assert themselves *in opposition to each other,* thereby mutually "setting each other into opposition" [*auseinandersetzen*]. Thus, every introduction of a new element [*Element*] not only widens the *scope* of the spiritual horizon in which this confrontation [*Auseinandersetzung*] takes place but also alters the very *mode* of seeing. This process of configuration not only expands outwardly; it also experiences in itself an intensification and heightening so that a simultaneous qualitative transformation, a specific metamorphosis, occurs. It is not enough for modern philosophy simply to find a "space" for technology in the edifice of its doctrine. A space that is created in this way will always remain an aggregate space and never become truly systematic. If philosophy wants to remain loyal to its mission, if it wants to maintain its privilege, so to speak, of representing the logical *conscience* of culture, it must also inquire into the "conditions of possibility" of technical effective action and technical configuration, just as it inquires into the "conditions of possibility" of theoretical knowledge, language, and art. Here, too, philosophy will be able to ask the questions of being and validity only when it has clarified the question of meaning. This clarification, however, cannot succeed so long as one's considerations are limited to the sphere of the *works* of technology in the

·43·

domain of the effected and created. The world of technology remains mute as long as we look at it and investigate it from this single point of view. It begins to open up and to divulge its secret only if we return from the *forma formata* to the *forma formans,* from that which has become to the very principle of becoming.

Today, the urgency to return to this principle is felt much more by those who work in technological fields and are engaged in its productive labor than by those who work in systematic philosophy. In technology, the power of "materialistic" ways of thinking and questioning has been given up. The search for the purpose and legitimacy of technology requires posing this question ever more clearly and ever more consciously in reference to the "idea" [*Idee*] it embodies and the essential spiritual determination that is fulfilled in it. "The origin of technology," as expressed in one of the newest works in the philosophy of technology, "lies in the idea [*Idee*]."[2] Another author formulates the task as follows:

> We will examine technology as the organic partial appearance of a larger phenomenon, the development of culture as such. We will attempt to understand it as the corporal expression, as the historical fulfillment of a basic idea [*Idee*] required for a system of cultural ideas [*Ideen*] where the tangible material of technological creations comes to be inwardly mastered, regardless of how varied the articulation of the idea [*Idee*] is in the battle of motives and tendencies among those engaged in these activities. It is essential to see the *transpersonal,* above the lower sphere of interests of mediating subjects, as an overall *ideal commonality* in the history that determines human actions—not as a kind of blind law, but as something they freely take up, in order to become historical reality.[3]

·44·

Whatever the answer, the *question* itself is transferred to the level where all genuine historical decisions belong. The question also leads the problem back to its initial historical origin and is linked to it in a remarkable and surprising way. Just as a modern thinker standing in the midst of the con-

2. Friedrich Dessauer, *Philosophie der Technik. Das Problem der Realisierung* (Bonn: Cohen, 1927), 146.

3. Ederhard Zschimmer, *Philosophie der Technik. Vom Sinn der Technik und Kritik des Unsinns über die Technik* (Jena: E. Diederichs, 1914), 28.

crete existence and life of technology comes to see the crux of the problem, so too the discoverer of the "Idea" [*Idee*] and the "World of Ideas" conceived it more than 2,000 years ago. When Plato develops the relationship between "idea" [*Idee*] and "appearance" and seeks to justify it systematically, he seeks to ground it not in the figures of nature but in the works and formations [*Gebilde*] of τέχνη [techne]. The art of the "craftsman," the "demiurge," provides him with one of the great examples and models with which he exhibits the meaning and signification of the idea [*Idee*]. According to Plato, this art is no mere *reproduction* [*Nachbildung*] of something that is objectively present and existing [*Vorhandenen und Daseinden*]; rather, art is possible only on the basis of a *prototype* [*Vorbildes*] and *archetype* [*Urbildes*] to which the artist looks in his creative work. The artist who first invented the loom did not initially *find* it as something given in the sensible world; rather, he *introduced* it into the sensible world by looking toward the form and purpose, toward the *eidos* and *telos* of the tool itself. Today, the constructor [*Bildner*] of the loom still looks to that form. For instance, ·45·
if a loom is broken and a new one must be constructed, the broken loom is not used as a model and pattern; rather, what gives direction to his labor is his gaze upon the *original* form as exhibited in the spirit of the first inventors. This general form, however, and not an individual thing existing in the sensible world, grounds and constitutes the true and proper "being" of the loom.[4] Is it a coincidence, then, that this basic motive of Platonism is also increasingly asserting itself in contemporary reflections on the meaning and essence of technology? Dessauer, for example, remarks:

> From a higher sphere of power and reality, through the spirit and hands of the technician and worker, an immense stream of experience and power descends into earthly existence. A spiritual stream pours into the chaotic material world, and everyone, from the creator to the final worker, takes part: all are recipients.

Similarly, Max Eyth writes:

> Technology is everything that gives the human will a corporeal form. Here, human willing coincides with the human spirit, which contains an unending number of externalizations and possibilities

4. Plato, *Cratylus* 389 A (for details, see my presentation of the history of Greek philosophy in Max Dessoir, *Lehrbuch der Philosophie,* vol. I, 92ff.).

> of life. Thus, technology, despite being bound to the material world, also received something of the boundlessness of the pure life of the mind.[5]

Such remarks clearly illustrate that the modern mindfulness of the ground and essence of technology is no longer satisfied with viewing it merely as an "applied natural science" that is somehow harnessed and captured in the concepts and categories of the thinking of the natural sciences. What is sought, rather, is technology's relation to cultural life in its totality and universality. This relation, however, is to be found and established only when we focus on the *concept of form* rather than on the *concept* ·46· *of being* of natural science, and when we reflect on its ground and origin, *its* content and meaning. For it is only by the concept of form that the expanse of spirit first becomes accessible and that its scope and its horizons are first determined *for* us.[6] If, instead of beginning from the existence of technological works, we were to begin from the form of the effective action of technology and shift our gaze from the mere product to the mode and type of production—and to the lawfulness revealed in it—then technology would lose the narrow, limited, and fragmentary character that otherwise seems to adhere to it. Technology adapts itself—not directly in its end *result*, but with a view to its task and *problematic*—into a comprehensive sphere of inquiry within which its specific meaning and original spiritual tendency can be determined.

In order to penetrate this sphere and truly grasp its core, another fundamental and purely *methodological* mindfulness is needed. The particular character of the question of *meaning* that confronts us here repeatedly threatens to become obscure; its borders repeatedly threaten to become blurred because of other motives that not only join it but also gradually and imperceptibly lead to its displacement. Such a displacement has already occurred if we believe that the question of meaning can be equated with the *question of value,* and that such a starting point can bring about a genuine solution to the question. In this identification of "mean-

5. Friedrich Dessauer, op cit., 150; Max Eyth, *Lebendige Kräfte. Sieben Vorträge aus dem Gebiete der Technik*, 4th ed. (Berlin: J. Springer, 1924), 1ff.

6. In the scope of this work, I can only state this thesis. For the development and the systematic justification of this claim, I refer the reader to my *Philosophy of Symbolic Forms* (3 vols.) (Berlin, 1923–29).

ing" and "value," a deferral of the problem has already taken place. Admittedly, this *logical* lacuna continues to be largely unnoticed because it not only belongs to the problem being investigated here but also extends to the whole expanse of the "philosophy of culture" and spans all of its tasks. So often in the history of thought, the "transcendental" question is posed about the "possibility" of culture, its conditions and principles, ·47· but rarely has this question been held on to and explored with great acuity, especially concerning its pure essence [*Ansich*]. It constantly slid away in two different directions: the question concerning cultural *achievement* has been subordinated to the question concerning its *content*. We could understand the measure of this achievement from the viewpoint of the most different spiritual dimensions, but no matter how high or how low we might estimate it, this would not rectify the mistake committed in the first *statement* of the problem. This state of affairs already emerges with the first real "critic" of modern culture, Rousseau. When Rousseau placed the whole of the intellectual and spiritual formation of his time before the real questions of conscience and destiny, the framing of his question was dictated by external sources, that is, the competition sponsored by the Academy of Dijon in 1750. The question was whether the rebirth of the arts and sciences had contributed to the *ethical* perfection of humanity (*si le rétablissement des Sciences et des Arts a contribué à épurer les mœurs*).[7] According to Rousseau, who typified the basic orientation of Enlightenment ethics, this perfection was reached by fulfilling desire and enjoying a standard of "happiness" won through humankind's transition from the state of "nature" to that of culture. "Happiness" and "perfection" are the two dimensions within which he sought the answer to his problem. They provide the standards by which his responses are to be adjudicated. It was not until German Idealism that a crucial turn was brought about; German Idealism was the first to pose the "question of essence" with great acuity and clarity, disengaging it from the accessory questions of happiness and moral "perfection." Thus, for instance, in the *Critique of Judgment,* the realm of the *beautiful* could be philosophically grounded

7. [Jean-Jacques Rousseau, *Discours qui a remporté le prix a l'Académie de Dijon, en l'année 1750. Sur cette question proposée par la même Académie: Si le rétablissement des sciences et des arts a contribué à épurer les mœurs,* in *Collection complète des œuvres,* vol. XIII (Zweibrücken, 1782), 27–62.]

through the autonomy, the self-legislation, and the self-signification of the beautiful, which is discovered and guaranteed in opposition to the feelings of pleasure and displeasure as well as to the norms and rules of the ethical "ought." If we turn to the realm of technology and to the
·48· ever-intensifying struggle that goes on within it in order to grasp its specific meaning and content, we discover that the struggle remains for the most part at a preliminary stage, a stage through which the *other* domains of spiritual culture have long since passed. We may bless technology or curse it, we may admire it as one of the greatest possessions of the age or lament its necessity and depravity—in judgments such as these, a measure that does not originate from it is applied to it. Consciously or unconsciously, purposes are ascribed to it that are foreign to the pure creative will [*Gestaltungswillen*] and pure creative power [*Gestaltungskraft*] of technology. And yet, an authentic judgment can come only from within technology itself, that is, only from insight into its own inherent, immanent law. The *philosophy* of technology, at least, is tied to this demand. Admittedly, philosophy confronts the contents of spiritual culture not only by observing and testing them but also by judging them. It does not want merely to know them but wants also to approve and reject, assess and evaluate, adjudicate and pass judgment upon. This philosophy can and must do. Its intellectual conscience, however, forbids it to make a judgment before it has penetrated into the essence of that which is being judged, grasping it on its own terms. This freedom of the philosophical gaze, however, is rarely found in modern *apologias* for technology or in the attacks and accusations directed against it. Again, we are tempted to employ the maxim that Spinoza formulated in his political philosophy for the accused as well as the plaintiff: *non ridere, non lugere, neque detestari, sed intelligere* [Do not laugh, do not lament, even do not hate; rather, understand].[8] The determination of "being" and "being-a-certain-way," the intuition of what technology is, must precede the judgment of its value.

8. See, for example, the disparate judgments over the meaning and worth of technology, which Zschimmer has summarized in his *Philosophie der Technik*, e.g., 45ff., 136ff. [Baruch de Spinoza, *Tractatus politicus. In quo demonstratur, quomodo societas, ubi imperium monarchicum locum habet, sicut et ea, ubi optimi imperant, debet institui, ne in tyrannidem labatur, et ut pax, libertasque civium inviolata maneat*, in *Opera postuma* (Hamburg, 1677), 268.]

Here arises a new dilemma: the "being" of technology permits itself to be grasped and exhibited in no way other than in its activity. It appears only in its function. It exists neither in its external appearance nor ·49· in what it externalizes; rather, it exists in the manner and direction of the *externalization* itself, in the impulse and process of configuration to which this externalization is subjected. Thus, being can become visible only in *becoming*, work can become visible only in energy—but this particular difficulty clears the way and indicates the direction for further consideration. For here, at this point, the affinity and internal relation between technology and the pure form and principle of other basic powers of culture [*Geist*], no matter how different they may be with respect to their content, become clear. What Humboldt has proven for *language* is also valid for these other powers: the genuine conceptual determination, the only true "definition" that can be given for these powers, is a genetic one. They cannot and must not be understood as "dead *products*," but as a way and basic direction of *production*. It is from this intellectual tendency that we should inquire into the essence of technology. Goethe says that when a human being acts meaningfully, he always and simultaneously acts as a lawmaker. It belongs to the essential task of philosophy to penetrate into this human lawgiving, to measure and penetrate its unity and internal differences, its universality and particularity. Only through such a comprehensive endeavor can we secure a basis for a detailed judgment. What is hoped for is the determination of a norm above all merely subjective expressions of praise and reprimand, favor and displeasure, seizing instead the authentically objective "form" of the perceived object in its nature and necessity.

2

Max Eyth, one of the most enthusiastic and eloquent pioneers of the spiritual sovereignty of technology, begins his lecture "Poetry and Technology" from the known relationship between the function of technology and the function of *language*. ·50·

> Two things essentially distinguish animals from human beings, understood from the perspective of their external appearance: the *word* and the *tool*. The ability to create words and tools has . . .

made the human being out of the animal. How these abilities have come into the world will undoubtedly remain an eternal puzzle that no theory of evolution will be capable of solving, because they originate in a spiritual wellspring from which no animal has ever drunk. Both abilities were imperative for the survival of the human being in a hostile world in which he, physically more helpless, weaker, and less resistant than most animals, would undoubtedly have quickly perished. What saved him . . . in the sphere of knowledge [*Wissen*] was language; in the sphere of ability, the tool. The power that turned the mere defenseless human being into the sovereign over every living thing on earth rests on knowledge [*Wissen*] and ability, on the word and the tool. . . . In prehistoric times, far from the beginnings of culture, the tool undoubtedly played the primary role in the configuration of *human* existence. . . . Later, a decisive alteration in the relationship between word and tool emerged. Language, just because it can speak, knew how to create for itself a superior, one might say improper meaning. In the sensibility of human beings, the mute tool was increasingly relegated to the background. Knowledge [*Wissen*] was master and ability served. This relationship continued to intensify and has continued to be accepted until now. Today we stand amid a fierce struggle that is endeavoring, if not to alter, then to return the relationship of the two to its proper foundation. In its growing domination, language exalted its improper claim to be the only tool of the spirit. In general, language believes this still today. Concerning the tool of the spirit, language forgets the spirit of the tool. Both word and tool are a product of the same originary spiritual force that has made the animal *homo* into the human being, *homo sapiens,* as it is
·51· called by the scholars who, of course, allude only to the human being's knowledge [*Wissen*] and forget the skill that has rendered all his knowledge [*Wissen*] possible.[9]

I have singled out these sentences by a technician and a thinker of technology because a real *philosophical* problem is hidden in the parallel

9. Max Eyth, "Poesie und Technik" (op. cit., 12ff.); see the lecture "Zur Philosophie des Erfindens" (op. cit., 230ff.).

asserted here between language and tools. It is not merely wit, or an external analogy, that brings together language and tools and attempts to understand them by *one* spiritual principle. The idea of such an essential relation was not foreign to the first "philosophers of language" within European thought. They did not primarily preconceive the word and language as the mere means of presentation, as the means for the *description* of external reality. Rather, they saw in language a means for the *mastery* of reality. For them, language became a weapon and a tool that human beings employed in order to compete in the struggle with nature and with their peers in social and political conflict.[10] "Logos" itself, as the expression of the particular intellectuality of the human being, appears here to have a "theoretical" as well as an "instrumental" signification. Yet, implicitly contained in this is the counter-thesis that the power of logos also rests in every simple material tool, in every application of a material thing that serves human will. Thus, the determination of essence, the definition of the human being, develops in this twofold direction. The human being is a "rational" being [*Wesen*] in the sense that "reason" comes from language and is insolubly bound to it; *ratio* and *oratio,* thinking and speaking, become interchangeable concepts.[11] However, at the same time, and no less originally, man appears as a technical, a tool-forming being [*Wesen*]—"a tool-making animal,"[12] to employ Benjamin Franklin's words. The power with which man asserts ·52·
himself against external reality, and by virtue of which he first gains a mental "image" of this reality, is determined by these *two* sides of his essence. All spiritual handling of reality is bound to this double act of "grasping" [*Fassen*], of "conceiving" [*Begreifen*] reality in linguistic-theoretical *thought* and "comprehending" [*Erfassen*] through the medium of *effective action* the intellectual and technological giving of form.

In both cases, it is essential to guard against a misunderstanding in

10. For details about this "analogical character of logos" in the theory of language of the *Sophists,* see the explanation of Ernst Hoffmann, *Die Sprache und die archäische Logik* (Tübingen: J. C. B. Mohr, 1925), 28ff.

11. [The original text reads: "*ratio* and *oratio,* speaking and thinking." However, as thinking corresponds to ratio and speaking to oratio, we have inverted the terms.]

12. [Verified by James Boswell (conversation on April 7, 1778), in *Life of Samuel Johnson,* vol. II (London: Macmillan, 1900), 425.]

order to penetrate into the actual meaning of this giving of form. The "form" of the world, whether in thinking or doing, whether in speech or in effective action, is not simply received and accepted by the human being; rather, it must be "formed" by him. In this respect, thinking and doing are originally united; they both stem from this common root of forming figures, gradually unfolding and branching off from it. Wilhelm von Humboldt[13] has shown this basic relationship in language. He demonstrates how the act of speaking is never a mere receiving of the object, a *reception* of the existing form of the object in the I. Rather, it contains in itself a real act of world-creation, the raising up of the world to form. The idea that different languages only denote the same mass, independent of the objects and concepts available to them, is, for Humboldt, truly pernicious for the study of language. This view masks that which constitutes language's genuine meaning and value. It conceals language's creative role in the laying out, production, and securing of the intuitive worldview. The difference among languages is not a difference between sounds and signs, rather it is "a difference of worldviews."[14] Correctly understood, what is said here about the use of language also holds for each use of the material tool, however elementary and "primitive." Here, too, that which is crucial is never found in the material goods that are
·53· gained through it, in the quantitative expansion of the sphere of influence through which, little by little, one part of external reality after another is submitted to the will of the human being. The will that initially seemed limited by its proximity to the lived human body, to the movement of its own limbs, gradually explodes and breaks through all spatial and temporal barriers. In the end, this overcoming would be fruitless if spirit only contained and dragged along with it new world-*matter.* Here, a more genuine and greater profit lies in the gaining of "form," in the fact that the *expansion* of effective action changes along with its qualitative *meaning,* creating the possibility of a new aspect of the world. Effective action, in its continuous increase, in its expansion and intensification,

13. Wilhelm von Humboldt, *Werke* (Akademie-Ausgabe), vol. VII, part I, 119; for more details see my *Philosophy of Symbolic Forms,* vol. I, *Language* (New Haven and London: Yale University Press, 1923).

14. [Wilhelm von Humboldt, *Über das vergleichende Sprachstudium in Beziehung auf die verschiedenen Epochen der Sprachentwicklung,* in *Werke,* vol. IV, 27.]

would finally have to be recognized as powerless, as internally aimless and weak, if an inner transformation, an ideal turn in its meaning, were not simultaneously being prepared and constantly carried out. What philosophy is able to achieve for technology, for its understanding and legitimacy in thought, is the demonstration of *this* turn in meaning. To do this, however, philosophy must reach deep into the past. It must seek to penetrate back to when the secret of the "form" first opened itself to the human being, when it began to rise up in thought and accomplishment—in order, admittedly, to cloak itself just as much as to reveal itself—so as to exhibit itself only as in a puzzling mist, in the "twilight of the idols" of the magical-mythical worldview.

If we compare the worldviews of various civilized peoples to those of primitive peoples, the deep opposition between them reveals itself perhaps no more sharply than in the direction the human will adopts in order to become master over nature and gradually to take possession of it. A type of a *technological* will and accomplishment confronts the type of *magical* will and accomplishment. Attempts have been made to derive this originary-opposition from the totality [*Gesamtheit*] of differences that exists between the worlds of civilized peoples and those of primitive peoples. Humans from an earlier stage are distinguished from those of a later stage, just as magic is distinguished from technology. The former may be designated as *homo divinans* and the latter as *homo faber.* The whole development of humanity presents itself, then, as a completed process, containing innumerable intermediary forms through which the human being moves from the initial stage of *homo divinans* to the stage of *homo faber.* If we accept this distinction, as Danzel has forcefully maintained in his *Culture and Religion of Primitive Man,*[15] then we have not reached a solution to the problem; rather, we have only acquired a perspective, a formulation of the problem. For it would only be an assertion and extrapolation if ethnology, from which this distinction originates, attempted to explain it by attributing to the comportment of "magical" man a predominance of "subjective" determinations and motives more than purely "objective" ones. The worldview of *homo divinans* is supposed to come about through the projection of his own states onto reality; he sees in the

·54·

15. Theodor-Wilhelm Danzel, *Kultur und Religion des primitiven Menschen* (Stuttgart: Strecker und Schröder, 1924), 2ff., 45ff., 54ff.

external world what is going on within himself. Inner processes that take place entirely within the psyche are transferred to the outside. Drives and stirrings of volition are interpreted as forces that intervene directly into events, steering and altering them. However, from a purely logical perspective, this explanation is marred by a *petitio principii*—it confuses that which is to be explained with the ground of explanation. When we reproach primitive peoples for "confusing" the objective and subjective, for letting the borders of both areas flow into one another, we are speaking from the standpoint of *our* theoretical observation of the world founded on the principle of "reasons," on the category of causality as the condition of experience and the objects of experience. For these borders are not "in themselves" objectively before us; rather, they must first be set down and secured, they must first be *erected* by the labor of spirit. The manner of setting these borders takes place differently according to the overall attitude in which spirit exists and according to the ·55· direction in which it moves. Each transition from one comportment and direction into another always ends in a new "orientation," a new relationship between the "I" and "reality." This relation is not set down as unique and unambiguous from the beginning; rather, it first comes to be because of the manifold ideal processes of "setting into opposition" [*Auseinandersetzung*] as in myth and religion, language and art, science and the different basic forms of "theoretical" comportment in general. For human beings, a fixed representation of subject and object according to which they comport themselves does not exist from the beginning; rather, in the entirety of these comportments, in the entirety of his lived bodily and his psycho-spiritual activities, there first arises knowledge [*Wissen*] of both subject and object; the horizon of the I first separates itself from that of reality.[16] There is no fixed, static relationship between them from the outset, rather there is, as it were, a fluctuating back-and-forth movement. From this movement, a form gradually crystallizes in which the human being first grasps his own being as well as the being of objects.

If we apply this general insight to the problem presented here, we see

16. For a more detailed argument see the Introduction to my *Philosophy of Symbolic Forms,* vol. I, 134ff.

that, for the human being, in his magical as well as in his technological comportment, the world does not already *have* a determined form; rather, he must *search* for this form and must *find* it in various ways. The way in which he finds it depends on the dynamic principle that the general movement of spirit follows. If we assume that the principle of "causality" [*Kausalität*] and the question concerning the "reasons" of being and the "causes" [*Ursachen*] of events already prevail in the magical apprehension of nature, then the barrier between magic and science falls away. In his work *The Magic Art,* J. G. Frazer, one of the best specialists on ·56· magical phenomena, expressly draws this conclusion in his attempt to lay out completely the factual sphere of the magical arts; at the same time, he links a certain theory about the meaning and origin of magic to his description of this factual sphere. On Frazer's account, magic amounts to nothing more and nothing less than the beginnings of "experimental physics." In magic, the human first acquires an intuition of objective being and events, which are ordered according to fixed rules. The course of things now presents itself to him as a closed nexus, a chain of "causes" and "effects" in which no supernatural power [*Macht*] can arbitrarily intervene. According to Frazer, it is here that the world of magic is clearly separated from the religious world. In religious intuition, the human is subjected to foreign violent powers to which he entrusts the whole of his being. Here, there is still no fixed natural course, for as yet the world does not have its own figure and its own power; rather, it is a plaything in the hands of superior transcendent forces. It is, however, just this basic view against which the magical view of the world protests. It grasps nature as a strictly *determined* sequence of events and seeks to penetrate into the essence of this determination. It knows no coincidence; rather, it rises to the intuition of a strict *uniformity* of events. And, in this way, it achieves, in contrast to religion, the first stage of scientific knowledge of the world. Admittedly, magic differs from science in its result, but not in its principle and its problem. This is the case because the principle "like causes, like effects" governs it as well, giving it its imprint. That it is not able to *employ* this principle in the same sense as the theoretical science of nature is due, according to Frazer, not to a logical reason but only to a factual one. It is "primitive" not in its *form* of thought but in the measure and the security of its knowledge content. The circle of observation is too

narrow, the nature of observation too fluctuating and uncertain, for it to be able to erect truly durable empirical laws. The consciousness of lawfulness as such, however, has been awakened in it and is tightly and
·57· steadfastly held on to by it. Thus, in the end, Frazer sees in both fundamental forms of magic nothing other than the application and variation of the "scientific" principle of causality, which he understands and expounds here in accordance with the views of English empiricism: "sympathetic" magic and "homoeopathic" or "imitative" magic are both founded on the fundamental laws of ideal association that rule over all causal thinking. In the case of the former, it results in the law of "association by similarity," and in the case of the latter, it results in the law of "association by contact" and becomes the guiding principle of theoretical and practical comportment.[17]

The flaw in Frazer's theory upon which a large number of ethnologists have remarked, can be stated as follows: it awards *magical* comportment a signification that vindicates it as an achievement that is reserved for *technological* comportment. Magic may differ from religion insofar as the human being is able to escape the merely passive relationship to nature —that is, he no longer receives the world as the mere gift of a superior divine power but wants to take possession of it and stamp it with a determined form. The *manner* of this appropriation, however, is entirely different from the appropriation carried out by the effective action of technology and in the thinking of the natural sciences. The magical human being, the *homo divinans,* believes, in a certain sense, in the omnipotence of the I. This omnipotence expresses itself, however, only in the force of a *desire.* In its highest intensification and potency, reality is not able in the end to elude desire. It is connected and subjected to it. The outcome is linked to a particular activity [*Tun*] in the following way: the goal of the activity [*Tun*] is precisely anticipated in the representation, and the image of this goal is worked on and held to with great intensity. All "real" actions, if they are to be successful, need such magical prepa-
·58· ration and anticipation. Warring or raiding, fishing or hunting can succeed only if every individual phase is magically anticipated and at the

17. See James George Frazer, *The Golden Bough, Part I: The Magic Art and the Evolution of Kings* (London: Macmillan, 1911), vol. I, chapters 3 and 4.

same time "rehearsed" in the right way.[18] Already in the magical view of the world, the human being tears himself away from the immediate presence of things and builds his own empire, with which he reaches out into the future. However, if, in a certain sense, he is freed from the power of immediate sensation, he has only exchanged it for the immediacy of desire. In this immediacy, he believes he is able to seize reality directly and to conquer it. The totality [*Gesamtheit*] of magical practices is, so to speak, only the interpretative laying out [*Auseinanderlegung*], the progressive unfolding of the desired image that the spirit carries within itself to the goal. The simple, ever more intense *repetition* of this goal is already regarded as the way that must inevitably lead to it. Herein originate the two originary-forms of magic: word-magic and image-magic. Word and image, then, are the two ways in which the human being embraces a nonpresent thing as present, by which he, as it were, places [*hinstellen*] something desired and longed for before [*vor*] himself, in order, in this very act of "representing" [*Vorstellen*], to enjoy and make it his own. That which is spatially remote and temporally distant is "called forth" in speech or is "imagined" [*eingebildet*] and "prefigured" [*vorgebildet*]. Already here, the *regnum hominis* [reign of man] is sought after, but it immediately escapes the human being and dissolves into a mere idol. Undoubtedly, magic is not simply a mode of the *apprehension* of the world, rather within it is found the real seeds of the *configuration* of the world. The medium in which it moves, however, does not let these seeds develop. For experienceable reality is still not seen in *its* orders and rules; rather, it is enveloped more densely in a simple, wishful dream that conceals its own form. Moreover, *this* accomplishment of "subjectivity" is not to be assessed in an exclusively negative fashion, for it is already a first and, in a ·59·
certain sense, crucial step when the human being does not simply abandon and submit himself to the impressions of things, to their mere "givenness," but instead changes them, generating a world out of himself. When he is no longer satisfied by mere existence but demands being-a-certain-way and being-otherwise. However, this first active direction in

18. Rich ethnological material for this fundamental view can be found in Lévy-Bruhl, *Das Denken der Naturvölker* [*La Mentalité primitive*] (German translation, Vienna, 1921).

which the world of being faces the world of doing still lacks the means of actuation. Because the will jumps directly toward its goal in the magical identification of "I" and "world," no true "setting into opposition" [*Auseinandersetzung*] between them occurs. For every such confrontation [*Auseinandersetzung*] calls for proximity as well as distance, empowerment as well as relinquishment, the force of grasping but also the force of distantiation.

It is precisely this double process that is revealed in *technological comportment,* which specifically differentiates it from magical comportment. Here, the power of the will replaces the power of mere desire. This will reveal itself not only in the force of the forward-driving impulse but also in the way in which this impulse is led and mastered. It reveals itself not only in the ability to seize its goal but also in the particular ability to distance itself from the goal and to leave it at this distance, "letting it stand" there. It is only this letting-stand of the goal that makes an "objective" intuition possible, an intuition of the world as a world of "objects." For the will, the object is just as much the guiding principle and thread that first gives it its determination and its solidity as it is the limit of the will, its counterpart and its resistance. The strength of the will first grows and becomes stronger on the strength of this limit. The will can never succeed in its implementation simply by making itself stronger; rather, success demands that the will intervene in an originally foreign order and that it know and recognize this order as such. This knowing is at the same time a mode of recognition. Nature is not, as in magic, merely
·60· repressed by desiring and believing; rather, its own independent being is acknowledged. And the true victory of thought is only achieved in this self-modesty. *Natura non vincitur nisi parendo:*[19] victory over nature is only achieved through obedience to it. By means of this obedience, which lets the forces of nature prevail and no longer seeks to captivate and subjugate it magically, a new figure—in a purely "theoretical" sense—of the world emerges. Human beings no longer attempt to make reality amenable to their desires with various methods of magic and enchantment, rather they take it as an independent and characteristic "structure." In this way, nature has ceased to be an amorphous material that yields to

19. [Francis Bacon, *Novum organum,* in *Works,* ed. Robert Leslie Ellis, James Spedding, and Douglas Denon Heath, vol. I (London, 1858), 157.]

every metamorphosis and, in the end, allows itself to be forced into any figure through the power of magical words and images. In place of magical compulsion emerges the "discovery" of nature, which is contained in all technological comportment, no matter how simple and primitive the application of the tool may be. This discovery is a disclosure; it is the grasping and the making one's own of an essential and necessary interconnection that previously lay hidden. Thus, only here are the fullness and the limitless changes of the figures of the magical-mythical world traced back to a fixed norm, a determined measure. And yet, reality does not become a *rigid* existence [*Sein*] through a reduction to its inner relationship of measure; rather, its inner mobility has been preserved. It has lost nothing of its "plasticity." However, this plasticity, this "formability," is now set as if in a fixed intellectual framework that is limited by certain rules of the "possible." This objective possibility now appears as the border where the omnipotence of desire and affective fantasy are placed. In place of merely libidinous desire, there first emerges a genuine, conscious relationship of the will—a relationship in which ruling and serving, demanding and obeying, victory and submission are united. In such a mutual determination, a new meaning of the "I" and a new meaning of the world are grasped. The arbitrariness, self-will, and obstinacy of the I withdraw, and, insofar as this happens, the proper meaning of ex- ·61·
istence and events, reality as cosmos—as order and form—stands out.

To make this clear, we need not look at the complete unfolding and present configuration of technology; rather, a fundamental comportment presents itself in the most ordinary and inconspicuous phenomena, in the first and simplest beginnings of tool use, more clearly than in almost all the marvels of modern technology. Already, here, we penetrate, from a purely *philosophical* perspective, to the core and heart of the problem. Although the distance between the most cumbersome and imperfect tools and the results and achievements of technological execution appears vast, at least with respect to their content, if we focus on the *principle* of action, we find that the gap is much smaller than the gulf that separates the first invention and application of the crudest tool from mere animal behavior. It would not be an exaggeration to say that the transition to the first tool not only contains the seeds of a new *mastery of the world* but also marks a turning point in *knowledge.* The mode of action established here grounds and steadies, for the first time, a type of mediacy that belongs

to the essence of thought. All thought in its pure logical form is mediated. It is directed to the discovery and extraction of a mediating structure that joins the opening sentence and the ending sentence of a communicative chain. The tool fulfills the same function, presented here in the logical sphere, in the *objective* sphere. It is grasped, as it were, in objective intuition; it is not merely the *terminus medius* of thinking. It sets itself *between* the first position taken by the will and its goal. Only in this in-between position is it permitted to separate them and set them at a proper distance. So long as the human being makes use only of his limbs, his bodily "organs," in order to achieve his goals, such distancing is not yet reached. Admittedly, he *effectively acts* on his environment—however, there is a great distance between this effective activity and the *knowledge* [*Wis-*
·62· *sen*] *of this effective activity.* Whereas all human doing is absorbed in apprehending the world, human beings cannot yet *comprehend* [*ergreifen*] it, because they do not yet conceive [*begreifen*] of it as an objective figure, as a world of objects. The elementary taking-possession-of, immediate physical grasping [*Fassen*], is not a constructive "comprehending" [*Erfassen*]. It does not lead to a construction in the region of pure looking or in the region of thinking. In the tool and its use, however, the goal sought after is, for the first time, moved off into the distance. Instead of looking spellbound at this goal, the human being learns to "fore-see" it. It is initially this "fore-seeing" that becomes both a means and a condition of attaining the goal. This form of seeing is all that distinguishes human "intentional" doing from animal instinct. This "fore-seeing" [*Ab-Sicht*] establishes "fore-sight" [*Voraus-Sicht*]; it establishes the possibility of directing attention to a goal, toward something spatially absent and temporally remote, rather than acting on an immediately given sensuous stimulus. It is not so much because animals are inferior to the human in bodily skill, but because this line of *sight* is denied to animals, that there is no genuine tool use in animal existence.[20] And it is also from this line of sight that there first arises the thought of *causal connection* in the strict and genuine sense of the word. If one takes the concept of causality so casually and loosely that it can be present wherever spatial and temporal coextension occurs through mere "association," then the origin of this concept must be considered to be much earlier. There is no doubt that

20. For details, see *Philosophy of Symbolic Forms*, vol. III, 226ff.

association is present in the mythical world and that the pure magical effective action is filled by the pervaded "association." Frazer follows this view of causality when he subordinates the world of magic to the principle of causality, when he sees in magic the true beginning of "experimental physics."[21] However, another picture—and judgment—of ·63· the spiritual interconnections and spiritual differences between the basic forms of the apprehension of the world emerges if we take the concept of causality in the sharper and stricter sense Kant gave to it in his criticism of Hume's theory of causality. The main focus of this critique lies in the proof that it is in no way the merely habitual combination but the thought of a "necessary connection" that determines the nucleus of the concept of causality as a category of "pure understanding." And the *correctness* of this concept is to be proven by showing that, without it, the relation of our representations to an *object* would not be possible. The concept of causality belongs to the originary forms of synthesis through which alone it is possible to give representation an object. It is, as the condition of possibility of experience, the condition of possibility of the objects of experience. The mythical-magical world knows nothing about a sense of causality that both constructs and renders possible the sphere of objects, making them accessible to thought. For the mythical-magical world, the whole of nature dissolves into a play of forces, into actions and reactions. These forces, however, are essentially of the sort that the human being lives with and experiences in his immediate drives. They are personal, dæmonic-divine powers which direct and determine events, and whose participation human beings must secure in order to influence these events. With the creation of the *tool* and by means of its regular use, the limits of this type of representation were first breached.

21. "Wherever sympathetic magic occurs in its pure unadulterated form, it assumes that in nature one event follows another necessarily and invariably without the intervention of any spiritual or personal agency. Thus, its fundamental conception is identical with that of modern science. The magician does not doubt that the same causes will always produce the same effects. Thus, the analogy between the magical and the scientific conceptions of the world is close. In both of them, the succession of events is perfectly regular and certain, being determined by immutable laws, the operation of which can be foreseen and calculated precisely; the elements of caprice, of chance and of accident are banished from the course of nature" (James Frazer, *The Magic Art,* I, 220ff.).

Here we encounter the "twilight of the gods" of the magical-mythical
·64· world. Only here does the thought of causality emerge from the limitations of "inner experience," from being bound to the subjective feelings of the will. The tool becomes a bond that joins pure *objective* determinations together and sets down a fixed rule for their mutual dependence. The tool no longer belongs immediately, like the lived body and its limbs, to the human being: it signifies something detached from its immediate existence, something that has itself consistence, a consistent existence that can far outlast the life of the individual human being. This determined "tangibility" and "actuality" does not, however, now stand alone; rather, it is truly actual only in the *effect* it exerts on other beings. This effect is not simply joined to the tool externally; rather, it belongs to its determined essence. The intuition of a certain tool—for instance, the intuition of an axe or a hammer—never exhausts itself in the intuition of a thing with particular characteristics, of materials with certain qualities. Here, its use—its authentic function—becomes apparent in its very stuff. The form of its activity comes to be in "matter." They are not separated from one another but are apprehended and comprehended as an insoluble unity. The object is determined *as* [*als*] something only insofar as it is *for* [*zu*] something. This is because in the world of tools there are no mere things with properties; rather, there are only, to use a mathematical expression, ensembles of "vector-magnitudes." Although every being is determined here in-itself, it is, at the same time, the expression of a certain *performance* [*Verrichtung*]; and in the intuition of this performance, a fundamentally new *direction of seeing* [*Blickrichtung*] opens up for the human being: the apprehension of "objective causality."

Of course, when we consider the achievement facilitated here, we should bear in mind that the gap between the two different aspects of the world confronting one another cannot be leaped over all at *once*. The distance between the two poles continues to exist and can be traversed only step by step. Long after the human spirit has produced, in both
·65· language and tools, the most important means of its liberation, these means still appear enveloped in the magical-mythical atmosphere that it is supposed to overcome in its final and highest development.[22] The

22. Ludwig Noiré in his book *Das Werkzeug und seine Bedeutung für die Entwicklungsgeschichte der Menschheit* (Mainz: I. Diemer, 1880) has emphasized that the

world of language, like that of tools, is in no way immediately conceived as the *creation* of the human spirit but is conceived as the efficacy of foreign and superior forces. The dæmonic character that belongs to the mythical view as such also includes these two worlds and at first threatens to draw them completely under its spell. The whole of the word and the whole of the tool appear as a kind of pandemonium. Originally, language is not the means of a matter-of-fact *presentation,* a medium of mere communication that serves to bring about reciprocal understanding in the logical sense of the word. The more we attempt to return to the "origins" of language, the more its purely "thing-like character" is lost. Herder says that the oldest dictionary and grammar of humanity were nothing more than a "pantheon of tones," a realm consisting less of things and their names than of animate, acting beings. The same held for the first and most primitive tools. They, too, are regarded as "given from above," as gifts from a God or savior. They are worshipped as divine. The Ewe tribe in southern Togo still regard the blacksmith's hammer as a mighty deity, to which they pray and offer sacrifice. The traces of this sentiment and intuition can be seen in the great cultural religions.[23] This awe, however, subsides. The mythical darkness that surrounds the tool gradually begins to clear to the degree that it is not only *used* but also, through this very use, continually *transformed*. So the human becomes increasingly conscious of being a free sovereign in the realm of tools. Through the power of the tool, the tool user comes, at the same

·66·

particular signification of the work tool, in its purely spiritual sense, lies in the fact that it represents a basic means in the process of "objectivation" out of which alone the world of "language" and the world of "reason" emerge. "The great importance of the work tool," so he emphasizes, "lies mainly in two things: first in the solution or selection of causal relations by which the latter receives in human consciousness an ever growing clarity and, secondly, in the objectivation or the projection of his organs which had up to now taken place only in the darkness of the consciousness of an instinctual function." This thesis remains valid, even if the justification given by Noiré—a justification that is founded mainly on linguistic-historical facts and on a certain theory about the origin of the language—does not follow.

23. For details, see my work "Sprache und Mythos. Ein Beitrag zum Problem der Götternamen," Studien der Bibliothek Warburg, 6 (Leipzig: B. G. Teubner, 1925), 48ff. and 68f. ["Language and Myth: A Contribution to the Problem of the Names of the Gods," pp. 18off. and 191ff. in this volume.]

time, to a new intuition of himself, now as the administrator and producer of the tool. "The human being experiences and enjoys nothing," says Goethe, "without at the same time being *productive.* This is the innermost quality of human nature. We can even say without exaggeration that it is human nature itself."[24] This fundamental force of the human being reveals itself perhaps nowhere as clearly as in the sphere of the tool. The human works *with* it only insofar as he, in some way, even if initially with only modest results, works *on* it. It is not merely his means for reconfiguring the world of objects—rather, in this process of the metamorphosis of the objective, the tool experiences in itself a transformation and moves from place to place. And in *this* change, the human now experiences a progressive intensification, a particular strengthening, of his self-consciousness. A new world-attitude and a new world-mood now announce themselves over and against the mythical-religious view of the world. The human being now stands at that great turning point in his destiny and self-knowledge that Greek myth embodied in the figure of Prometheus. Titanic pride and consciousness of freedom confront fear and reverence for dæmons and gods. The divine fire is wrested from the seat of the immortals and placed in the sphere of the human being, in his home and hearth. The world of desire and dreams in which magic
·67· had enveloped the human being is destroyed. Man sees himself led into a new reality that receives him with a seriousness, severity, and necessity that obliterate all of his desires. However, if he cannot escape this necessity, and he is no longer able to control the world according to his desires, he now learns to master it increasingly with his will. He no longer attempts to control its course; he falls into line with the iron law of nature. This law does not, however, enclose him like the walls of a prison; rather, by means of this law, he tests and wins a new freedom. For reality shows itself, regardless of its strict and irrevocable lawfulness, not as an essentially rigid existence, but rather as a modifiable, malleable material. Its figure is not finished and complete. Rather, it offers human will and activity [*Tun*] enormous latitude. And it is by moving about in this latitude, in the whole of that which is achieved through his labor, and through which his labor first becomes possible, that the human progressively builds

24. [Johann Wolfgang von Goethe, in *Werke,* vol. XLVII (Weimar, 1887–1919), 323.]

up *his* world, his horizon of "objects" [*Objekte*], and his intuition of his own essence. He now sees himself expelled from that magical realm of *immediate* wish-fulfillment that magic had enticingly placed before him. He is expelled onto a limitless path of creative work that promises him no essential goal, no more final stop or resting point. In lieu of all this, however, a new determination of value and meaning is now established for his consciousness: the genuine "meaning" of doing is no longer measured by what it brings about and finally achieves; rather, it is the pure *form* of doing, the type and direction of the constitutive force as such, that determines this meaning.

3

The indispensable participation of technological creation in the conquest, securing, and consolidation of the world of "objective" intuition has become clearer through the preceding considerations. It has also ·68·
become increasingly clear that a certain misgiving not only threatens to problematize the value of technological achievements but also to turn them directly into their opposite. Is not what was regarded here as the authentic *achievement* of technology nothing other than the basic evil from which it suffers? Does not this *exploitation* of the world of objects [*Objekte*] at the same time necessarily result in the *estrangement* of human beings from their own essence, from what they originally are and feel? With the first step into the world of facts that technological labor secures and constructs for him, the human being also appears to be subjected to the law, to the brute force of factual matters. And is this brutality not the strongest enemy of the inner life enclosed in his I, in the being of his soul? All technology is a creation of *spirit;* spirit can only ground its own mastery in this way because it conquers all the forces that find themselves enclosed within it, despotically holding them down. To become master, it must not only restrict the free realm of the *soul* but also deny and destroy it. No compromise is possible in this conflict. Spirit, whose goal and power emerge in technology, is the irreconcilable opponent of the soul. And as it progressively estranges the human being from his own center of life, the same thing occurs concerning the human relationship to the whole of nature, insofar as this is not taken in one of the senses already distorted by technology, insofar as it is not thought of as a mere

mechanism obeying general laws, but is felt in its organic peculiarity and fullness of life. The more the power of technology grew within the spheres of modern culture, the more passionately and inexorably did philosophy levy this complaint and accusation against it. As Ludwig Klages, the most eloquent and radical proponent of this fundamental idea, writes:

> Whereas all living creatures except for human beings beat with the *rhythm* of cosmic life, the human being has severed the *law* of spirit from this. What appears to him, the bearer of I-consciousness, in light of the superiority of anticipatory thinking over the world, appears to metaphysicians, when they penetrate deeply enough, in
> ·69· light of the enslavement of life under the servitude of concepts. [The human being] has himself fallen out with the planets that bore and nurtured him, even with the cycle of change of all heavenly bodies, because he is possessed by this vampiric and soul-destroying power.[25]

We miss the actual meaning of these accusations, if we believe ourselves able to moderate or overcome them by simply remaining here with the observation of appearances, with the bare *effects.* Here, it does not suffice to compare the pernicious *effects* of the rational-technical spirit, which are perfectly clear, with other pleasant and beneficial *consequences,* drawing an acceptable or favorable balance out of this comparison by a "hedonistic calculus." For the question is directed not to the consequences but to the ground, not to the events but to the functions. It is from such *functional* considerations and analysis that the critique of a determined cultural content and cultural domain must begin. At the center of this critique must always stand the question about the human being himself, about his signification and "determination."

In this sense, Schiller, standing at the apex of a determined epoch of aesthetic-humanist culture, poses the question about the signification and value of the "aesthetic." And he answers this question by saying that art is no mere human *possession,* just as little as it exhibits a mere achievement or *feat* of the human being; rather, it must be understood as a neces-

25. Ludwig Klages, *Vom kosmogonischen Eros* (Munich: G. Müller, 1922), 45; see *Mensch und Erde* (Munich: G. Müller, 1920), 40ff.

sary path toward becoming human and as a particular *phase* along this path. It is not the human being who, as mere natural being [*Wesen*], as a physical-organic being [*Wesen*], becomes the creator of art; rather, it is art that proves to be the creator of humanity, that first constitutes and makes possible the specific "mode" of being of the human. The ludic drive upon which Schiller grounds the region of beauty does not simply enter alongside the mere natural drives such that it would be a broadening of their *scope;* rather, this drive transforms their specific *content*, first opening up and conquering the proper sphere of "humanity." "The ·70· human only plays where he exists in the genuine meaning of the word 'human,' and he is completely human only when he plays."[26] This *totality* of humanity appears to have been realized in the same sense and to the same measure in no other function as in art. We could easily trace how in German intellectual history this purely aesthetically composed and grounded "humanism" gradually grew, and how another spiritual power locates itself, independently and equally, next to art. For Herder and Humboldt, it is *language* that shares with art the role of creator and seems to be the basic motive for the real "anthropogeny." The domain of effective activity of technology seems, however, to be denied any such acknowledgment. For this effective activity appears to be completely subjected by the mastery of those drives that Schiller characterizes as the sentient impulse or as the "material drive." The urge toward the *outside*, that typically "centrifugal" impulse, manifests itself in it. It brings one piece of the world after another under the dominion of the human will; however, this spread, this expansion of the periphery of being, thereby leads further and further away from the center of the "person" and personal existence. Thus it seems that every advance in width must be bought at the cost of a loss in depth. Can it in any way be said of such a function, even if we turn to the most indirect sense of the word that Schiller has stamped on art, that it is not only a creation of the human being, it is also his "second creator"?

Certainly, a general consideration arises against the view that wants to see technology as an endeavor directed only toward an *outside*. Here,

26. [Friedrich Schiller, *Über die äesthetische Erziehung des Menschen in einer Reihe von Briefen* (1793/94), in *Philosophische Schriften*, vol. II (Stuttgart and Berlin: W. Spemann, 1905), 59.]

Goethe's claim that *nature* has neither core nor shell rightly applies to the totality [*Gesamtheit*] of spiritual activities and energies. Here, there is no separation, no absolute barrier between the "outer" and "inner." Each new figure of the world opened up by these energies is likewise always a new opening out of inner being; it does not obscure this being but makes
·71· it visible from a new perspective. We always have before us a manifestation from the inner to the outer and from the outer to the inner—and in this double movement, in this particular oscillation, the contours of the inner and the outer world and their two-sided borders are determined. This is also true for the effective activity of technology, because it is in no way directed toward the seizing of a mere "outside"; rather, it encloses in itself a particular turn inward and backward. Here, too, it is not about *breaking free* of one pole from another but about both being *determined* through each other in a new sense. If we move from this determination, then it would appear at first that *knowledge* [*Wissen*] of the I is tied in a very particular sense to the form of technical *doing*. The border that separates purely organic effective activity from this technological doing is likewise a sharp and clear line of demarcation within the development of I-consciousness and authentic "self-knowledge." From the purely physical side, this exhibits itself in the fact that a determined and clear consciousness of his own lived body, both a consciousness of his corporeal figure and his corporeal functions, first grows in the human being after he turns both of these toward the outside and, so to speak, regains both from the reflection of the external world. In his *Philosophy of Technology,* Ernst Kapp sought to think through the idea that the human being is granted *knowledge* of his organs only by a detour through *organ-projection*. By organ-projection, he understands the fact that an individual limb of the human body does not simply work outward but creates in the external existence, so to speak, an image of itself. Every primitive work tool is just such an image of the lived body; it is a contrary playing-out and reflection of the form and relationships of the lived body in a determined material formation [*Gebilde*] of the external world. Likewise, every hand tool appears in this sense as a further positing and re-formation, as an exteriorization, of the hand itself. In all of its conceivable positions and movements, the hand has provided the organic originary form after
·72· which the human being has unconsciously formed his first necessary pieces of equipment. Hammers and axes, chisels and drills, scissors and

tongs are projections of the hand. "In their organization, the parts of the hand, the palm, thumb and fingers, the open, hollow, finger-spreading, turning, grasping and clenched hand are, either alone or simultaneously with the stretched or bent forearm, the common mother of the hand tool named after it." From this Kapp draws the conclusion that the human being was only able to gain insight into the composition of his body, into his physiological structure, through the *artificial* counterimage, through the world of *artifacts* he himself created. Only insofar as he learned to produce certain physical-technical apparatuses did he truly come to know, in and through them, the structure of his organs. The eye, for example, was the model for all optical apparatuses. The properties and function of the eye, however, have only been understood through these apparatuses:

> Only as the sight organ had projected itself into a number of mechanical tasks, thus preparing their relation back to its anatomical structure, could this physiological puzzle be solved. From the instrument unconsciously formed according to the organic tool of seeing, the human being has, in a conscious manner, transferred the name to the actual focus of the reflection of light in the eye—the *crystal lens.*[27]

We cannot closely follow the *metaphysical* content of this thesis or the metaphysical foundation that Kapp has given for it. Insofar as this foundation is based upon essentially speculative assumptions, including Schopenhauer's theory of the will and Eduard von Hardmann's "Philosophy of the Unconscious," it is justly disputed and sharply criticized.[28] This criticism, however, does not destroy Kapp's essential perspective and insight that technological effective action, when directed outward, always exhibits a self-revelation and, through this, a means of self-knowledge of ·73·
the human being.[29] Admittedly, if we assume this view, a radical consequence cannot be avoided, namely, that with this first enjoyment of the fruit from the tree of knowledge, the human being has cast himself

27. Ernst Kapp, *Grundlinien einer Philosophie der Technik* (Braunschweig: G. Westermann, 1877), 41ff., 76ff., 122ff.

28. See, for example, Max Eyth, *Zur Philosophie des Erfindens* (see 234ff.); Eberhard Zschimmer, *Philosophie der Technik*, 106ff.

29. Ernst Kapp, *Philosophie der Technik*, 26.

forever from the paradise of pure organic existence and life. We may still, with Kapp, attempt to understand and interpret the first human tools as mere continuations of this existence; we may rediscover in the shape of the hammer, axe, chisel, drill, and tongs nothing other than the being and structure of the hand itself. If we go one step further, however, and enter into the sphere of advanced technology, this analogy immediately breaks down. For this sphere is governed by a law that Karl Marx called the law of the "emancipation of the organic barrier." What separates the instruments of fully developed technology from primitive tools is that they have, so to speak, detached and dissociated themselves from the model that nature is able immediately to offer them. What these instruments have to say and accomplish—their independent sense and their autonomous function—completely comes to light only because of this "dissociating." As to the basic principle that rules over the entire development of modern mechanical engineering, it has been pointed out that the general situation of machines is such that they no longer seek to imitate the work of the hand or nature but instead seek to carry out tasks with their own authentic means, which are often completely different from natural means.[30] Technology first attained its own ability to speak for itself by means of this principle and its ever-sharper implementation. It now erects a new order that is grounded not on contact with nature but rather, not infrequently, in conscious opposition to it. The discovery of new tools exhibits a transformation, a revolution of the previous *types* of effective activity and the mode of labor itself. Thus, as we have emphasized, with the advent of the sewing machine comes
·74· a new way of sewing, with the steel mill a new way of smithing—witness the problem of flight, which could only finally be solved once technological thought freed itself from the model of bird flight and abandoned the principle of the moving wing.[31] Once again, a penetrating and surprising analogy appears here between the technical and the linguistic function, between the "spirit of the tool" and "the tool of the spirit." For language, in its beginning, still seeks to hold fast to the "proximity with

30. See Franz Reuleaux, *Theoretische Kinematik. Grundzüge einer Theorie des Machinenwesens* (Braunschweig: F. Vieweg und Sohn, 1875).

31. For more details, see Friedrich Dessauer, *Philosophie der Technik*, 40ff. Zschimmer, *Philosophie der Technik*, 102ff.

nature." It devotes itself to the direct sense-impression of the thing, and then strives to hold on to its sound and, as much as possible, to its sound-image, and, in a sense, to exhaust itself in it. The further it progresses on its way, however, the more it dissociates itself from this immediate constraint. It abandons the path of onomatopoeic expression; it wrestles itself free from the mere metaphor of sound in order to turn into the pure symbol. And with this it has found and established its own spiritual figure; the power dormant in it has arrived at a true breakthrough.[32]

Thus, here, too, the march of technology is mastered by a universal norm that rules the whole of cultural development. However, the transition to this norm cannot, of course, take place here, as in the other domains, without struggle and the sharpest opposition. The human being faces the risk of absolving himself from the guardianship of nature, standing purely on his own and on his own wanting and thinking. He has herewith renounced all the benefit that is contained in his immediate proximity to nature. And once the bond that binds him to nature is cut, it can never again be tied in the old way. The moment the human being devotes himself to the hard law of technological labor, the abundance of immediate and unbiased happiness that organic existence and pure organic activity had given him fades away forever. From the first and most ·75·
primitive levels, it appears as if a close interconnection still existed between the two forms of effective action, as if there occurred between them a constant, almost unremarkable transition. Karl Bücher, in his book *Work and Rhythm,* explains how the simplest works accomplished by humanity are still closely connected and related to certain originary forms of the rhythmic movement of one's own body.[33] They appear as the simple continuation of these movements; they are not so much directed by a determined representation of an external goal as they are inwardly motivated and determined. What is represented in these works, and what directs and regulates them, is not a goal-conscious will but a pure expressive impulse and a *naïve* joy of expression.

Even today, this interconnection can be directly detected in the widespread customs of native peoples. It is reported that in many indigenous tribes, *dance* and *work* are designated by the same word: for both are, for

32. For more details, see my *Philosophy of Symbolic Forms,* vol. I, 184ff.

33. Karl Bücher, *Arbeit und Rhythmus* (Leipzig: B. G. Teubner, 1899), 24ff.

them, phenomena so immediately related and so insolubly bound together that they cannot linguistically or intellectually be distinguished from one another. In the case of his tribe, the success of agricultural labor depends not only upon certain external technical performances but also upon the correct execution of their cultural chants and dances; it is the one and the same rhythmic movement that both forms of activity enclose, bringing them together into the unity of a singular, unbroken feeling of life.[34] This unity appears immediately endangered and threatened as soon as activity [*Tun*] acquires a mediated form, as soon as the tool comes between the human being and his work. For the tool obeys its own law, a law which belongs to the world of things, and which, accordingly, breaks into the free rhythm of natural movements with a foreign dimen-
·76· sion and norm. The organic corporeal activity asserts itself over and against this disturbance and inhibition insofar as it manages to include the tool itself in the cycle of natural existence. This inclusion appears to succeed without difficulty at the relatively early stages of technological activity. Organic unity and coherence reinstate and reproduce themselves insofar as the human being continues to "grow together" with the tool he uses, so long as he does not look upon the tool as merely stuff, a mere thing composed of matter, but instead, relocates the tool to the center of its function and, by virtue of this shifting of focus, feels a kind of solidarity with it. It is this feeling of solidarity that animates the genuine craftsman [*Handwerker*]. In the particular individual work [*Werk*] created by his hands he has no mere thing before him; rather, in it, he sees both himself and his own personal activity [*Tun*]. The further the technology progresses and the more the law of "emancipation from the organic barrier" affects it, the more this original unity slackens until it finally breaks up completely. The interconnection of labor [*Arbeit*] and work [*Werk*] ceases in any way to be an experienceable [*erlebbarer*] interconnection, because the *end* of working, its proper telos, is now entrusted to the machine, while the human being essentially becomes, in the whole of the work process, something dependent—a section or part that is in-

34. For more details, see Konrad Theodor Preuß, *Religion und Mythologie der Uitoto,* vol. I (Göttingen: Vandenhoek und Ruprecht and Leipzig: J. L. Hinrichts, 1923), 123ff., as well as Preuß's essay "Der Ursprung der Religon und Kunst," *Globus,* 1905, vol. 87.

creasingly converted into a mere fragment. Simmel sees the essential reason for what he calls the "tragedy of modern culture"[35] in the fact that all creative cultures increasingly set out certain orders of things [*Sache*] for themselves that confront the world of the I in their objective being and in their being-a-certain-way. The I, the free subjectivity, has created these orders of things [*Sache*], but it no longer knows how to grasp, how to penetrate them. The movement of the I breaks upon its own creations; the greater the scope and stronger the power of this creation become, the more its original tide of life subsides. This tragic impact of all cultural development is, perhaps, no more evident than in the development of modern technology. Those who turn away from it on the basis of this state of affairs forget, however, that, in their damning judgment of technology, they must logically include the *whole* of spiritual culture. Technology has not created this consistent existence; rather, it merely places an especially remarkable example urgently before us. It is, if one speaks here of suffering and sickness, not the ground of suffering but merely a manifestation, a symptom of it. What is crucial here is not an individual *domain* of culture but its *function,* not a particular *way* that it follows but the general *direction* it takes. Thus, technology may at least demand that the complaints raised against it not be brought before the wrong court. The standard by which it alone can be measured can, in the end, be none other than the standard of spirit, not that of mere organic life. The law that one applies to it must be taken from the whole of the spiritual world of forms, not merely from the vital sphere. Thus grasped, however, the question of the value and demerit of technology immediately receives another meaning. It cannot be resolved simply by considering and setting off against each other the "utility" and "disadvantages" of technology. We cannot judge it by comparing the good that it gives to humankind with the idyll of some pretechnological "state of nature." Here, it is about neither pleasure nor displeasure, neither happiness nor sorrow; rather, it is about freedom and bondage. If the growth of technological ability and wares necessarily and essentially secures in itself an ever-stronger measure of *servitude,* such that it increasingly enslaves and constrains humanity rather than being a vehicle for its

·77·

35. [See Georg Simmel, "Der Begriff und die Tragödie der Kultur," in *Philosophische Kultur* (Potsdam: G. Kiepenheuer, 1923), 236–67.]

self-liberation, then we no longer control technology. If the reverse is the case—that is, if it is the idea of freedom itself that shows the way and finally breaks through in technology—then the significance of *this* goal cannot be curtailed by looking at the suffering and troubles along the
·78· way. For the path of spirit stands here, as everywhere, under the law of renunciation, under the command of a heroic will that knows it can only reach its goal through such renunciation, establishing itself through it and renouncing all naïve and impulsive longings for happiness.

4

The conflict generated between the human longing for happiness and the demands imposed on it by the technical spirit and technical will is, however, in no way the sole or strongest opposition that emerges here. The conflict becomes deeper and more menacing when it emerges in the domain of cultural forms. The true battlefront first appears where the mediating spirit no longer merely struggles with the immediacy of life, when the spiritual tasks become increasingly differentiated and simultaneously estrange themselves further from one another. For then, it is not only the organic unity of existence but also the unity of the "idea" [*Idee*], the unity of the direction and positing of a goal, which are threatened by this estrangement. What is more, as it unfolds, technology does not simply place itself *next* to other fundamental directions of spirit, nor does it order itself harmoniously and peacefully with them. Insofar as it differentiates itself from them, it both separates itself from and positions itself against them. It not only insists on its own norm but threatens to posit this norm as an absolute and to force it upon the other domains. Here, a new conflict erupts within the sphere of spiritual activity [*Tun*], indeed, in its own womb. What is now demanded is no simple confrontation [*Auseinandersetzung*] with "nature" but the positing [*Setzung*] of a boundary within spirit itself—a universal norm that both satisfies and restrains individual norms.

The determination of this boundary is most easily configured in technology's relationship to the *theoretical knowledge of nature.* Here, harmony
·79· seems to be given and guaranteed from the beginning; here there is no struggle for superiority and subordination but a reciprocal giving and taking. Each of the two basic orientations stands on its own. Even this

independence, however, unfolds freely and spontaneously in an unforeseen manner toward a pure subservience to the other and with the other. The truth of Goethe's words—that doing and thinking, thinking and doing constitute the sum of all wisdom—appears nowhere more clearly than here. For it is in no way the "abstract," pure theoretical knowledge of the laws of nature that leads the way, showing first the technical aspect of the problem and its concrete technical activity. Rather, from the very beginning, both processes grasp one another and, as it were, remain in balance.

This relationship of one with the other can be made clear *historically* when we look back at the "discovery of nature" that has taken place in European consciousness since the Renaissance. This discovery is in no way the work of only the great *researchers* of nature—rather it returns, essentially, to an impulse originating out of the questions of the great *inventors.* In a spirit like that of Leonardo da Vinci, the intertwining of these two basic orientations appears with a classic simplicity and depth. What separates Leonardo from mere bookish learning, from the spirit of "litterati," as he himself called it, is the fact that "theory" and "praxis," "praxis" and "poise" penetrate one another in his person in a completely different measure than ever before. Foremost an artist, he became a technician and then a scientific researcher. Likewise, for Leonardo, all research transformed directly into technical problems and artistic tasks.[36] This is hardly a question of a mere one-time combination but, rather, a basic factual relationship that pointed the way, from here onward, for the entire science of the Renaissance. The founder of theoretical dynamics, Galileo, also began from technical problems. In his book on Galileo, Olschki rightly places the strongest emphasis on this element. He notes:

> Very few of the biographies have directed attention to this side of ·80·
> Galileo's creations and scientific development. To be more precise, however, this more original and persistent of his varied dispositions constituted the main focus of his seemingly disparate life works. . . . One must keep in mind the fact that each of Galileo's

36. For more details, see my book *Individuum und Kosmos in der Philosophie der Renaissance,* in Studien der Bibliothek, volume 10 (Leipzig: B. G. Teubner, 1927). [*The Individual and the Cosmos in Renaissance Philosophy,* tr. Mario Domandi (New York: Harper and Row, 1964).]

> discoveries in the domains of physics and astronomy are closely linked to some instrument of his own invention or to some special set-up. His technical genius is the authentic prerequisite for the scientific efforts through which his theoretical originality first received its direction and expression.[37]

The authentic explanation of these circumstances lies in the fact that theoretical and technical activity not only touch one another externally, insofar as they both operate on the same "material" of nature, but, more importantly, insofar as they relate to one another in the principle and core of their productivity. For the *image* of nature that thought produces is not captured by a mere idle beholding of the image, rather it requires the use of an active force. The more one steeps oneself in critical epistemological reflection about the origins and conditions of this image, the more it becomes clear that this image is no simple copy, that its outline is not simply drawn from nature, but that it must be formed by an independent energy of thought. Here we have arrived at the point where reason, to speak with Kant, appears as the "author of nature." This authorship, however, assumes another direction and attests to a new path as soon as we consider the domain of technological creation. Technical work and theoretical truth share a basic determination in that both are ruled by the demand for a "correspondence" between thought and reality, an *adaequatio rei et intellectus* [adequateness of thing and intellect]. That this "correspondence" is not immediately given but is to be searched for and continuously produced, appears, however, even more clearly in tech-
·81· nological creation than in theoretical knowledge. Technology submits to nature in that it obeys its laws and considers them the inviolable requirements of its own effective action. Notwithstanding this obedience to the laws of nature, however, nature is never for technology something finished, wherein laws are merely *posited*. It is something to be perpetually *posited anew,* something to be repeatedly configured. Spirit always measures anew objects in relation to itself and itself in relation to objects in order to find and guarantee in this twofold act the genuine *adaequatio,* the genuine "appropriateness," of both. The more this movement takes hold, the more its force grows, the more the spirit feels and knows its

37. Leonardo Olschki, *Geschichte der neusprachlichen wissenschaftlichen Literatur,* vol. III, *Galilei und seine Zeit* (Halle: Max Niemeyer, 1927), 139f.

reality to have "grown." This inner growth does not simply take place under a continuous leadership, under the rule and guardianship of the actual; rather, it demands that we constantly return from the "actual" into a realm of the "possible," and see the actual itself according to this image of the possible. Acquiring this point of view and orientation signifies, from a purely theoretical perspective, perhaps the greatest and most memorable achievement of technology. Standing in the middle of the domain of necessity and remaining within the intuition of necessity, it discovers a sphere of free possibilities. There is no uncertainty, no subjective insecurity attached to these; they confront thought as something thoroughly objective. Technology does not initially ask what *is* but what *can* be. This "ability," however, designates no mere assumption or supposition but an assertive claim and certainty—a certainty whose final authentication, of course, is to be sought not in mere *judgment* but in the output and production of certain *formations* [*Gebilden*]. In this sense, every truly original technological achievement has the character of both a discovering and an un-covering. A certain state of affairs is, in a sense, extracted from the region of the possible and transplanted into the actual. Here, the technician is similar to the activity Leibniz, in his metaphysics, ascribes to the divine "demiurge" who does not create the essence or possibility of objects but selects only one, the most perfect, among those ·82·
possibilities that exist in themselves and are objectively present. Thus, technology repeatedly teaches us that the sphere of the "objective," which is determined by fixed and general laws, never coincides with the sphere of that which is objectively present, that is, which is sensibly actualized.[38] Pure theoretical natural science can, of course, never know

38. In his *Philosophie der Technik* (47), Dessauer keenly and poignantly remarks: "The reunion of an inventor with the 'object' that he once produced first is an encounter of great vitality and revelation. The inventor looks at that which was achieved by his work, though not by it alone, not with a "I have made you," but with a "I have found you." You were already somewhere, I had to search long for you. . . . That you only now are comes from the fact that I only now found that you are so. You could no sooner appear, filling your purpose, *as until you were so in my look, as you are in yourself, because you can only be so!* Now, though you are in the visible world, I have found you in another world, and for a long time you refused to cross over into the visible realm, just until I rightly saw your true Gestalt in that other realm."

the actual without constantly reaching out into the realm of the possible, the purely ideal. In the end, however, the only reality to which its gaze appears to be directed seems itself to be exhausted in the clear and distinct description of the factual processes of nature. A technological creation, however, never binds itself to this pure facticity, to the given look of objects; rather, it obeys the law of a pure anticipation, a forward-looking vision that in anticipating the future ushers in a new future.

With the insight into this state of affairs, however, the authentic center of the world of technological "form" now seems increasingly to shift, and to cross over from the pure theoretical sphere into the domain of *art* and artistic creation. Here, we need not prove how tightly both spheres are interwoven with one another. A glance at the general history of spirit suffices to teach us how fluid the transitions are in the concrete becoming, in the genesis, of the technological world of form and in artistic ·83· form. Again, the Renaissance, with its formation of the "uomo universale" [universal man] in spirits such as Leon Battista Alberti and Leonardo da Vinci, provides us with great examples of the constant interweaving of technical and artistic motives. Nothing appears more natural and more enticing than concluding that a factual union can come from such a personal union. There are, in fact, those among the modern apologists of technology who believe that they can serve their cause in no better way than by equating it with the cause of art. They are, as it were, the romantics of technology. They attempt to ground and justify technology by dressing it up with all the magic of poetry.[39] However, poetic hymns about the *achievements* of technology cannot, of course, raise us above the task of determining the difference between technical and artistic *creation*. This difference immediately emerges if we consider the kind of "objectification" that is actual in the artist and in the technician.

In the current literature on the "philosophy of technology," we repeatedly encounter the questions of whether and to what extent a technical work is capable of producing pure aesthetic effects and to what extent it is subject to pure aesthetic norms. The answers given to these questions are diametrically opposed to one another. "Beautiful" is quickly claimed and praised as an inalienable good of technical products, and

39. One thinks here, in particular, of the essay by Max Eyth, "Poesie und Technik" (see 9ff.).

just as quickly rejected as a "false tendency." This battle, often fought with great bitterness, wanes when one considers that, in the thesis and antithesis, the concept of beauty is, for the most part, taken in an entirely different sense. We grasp the norm of "beauty" so widely that we speak of it everywhere there emerges a victory of "form" over "stuff," "idea" [*Idee*] over "matter," such that there can be no doubt as to the great extent of technology's direct role. However, this beauty of form encompasses, *as such*, the whole expanse of spiritual activity and con- ·84·
figuration in general. Understood in this sense, there is, as Plato said in the *Symposium*, a beauty not only of physical formations but also of logic and ethics, a "beauty of knowledge" and a "beauty of custom and endeavors."[40] To reach the special region of artistic creation from this all-embracing concept of form, an essential limitation and a specific determination are required. This results from the particular relationship in which all artistic beauty stands vis-à-vis the fundamental and originary phenomenon of *expression*. In an absolutely unique way that is reserved for it alone, the work of art permits "figure" and "expression" to merge into one another. It is a creation that reaches out into the realm of the objective and places before us a rigorous objective lawfulness. This "objective," however, is in no way a mere "external appearance," rather it is the externalizing of the interior that is, as it were, transparent within it. The poetic, painted, or plastic form is, in its highest perfection, in its pure "detachment" from the I, still flooded by the pure movement of the I. The rhythm of this movement lives on mysteriously in the form and speaks to us immediately in it. The outline of the figure repeatedly turns back here to a certain trait of the soul that manifests itself in it; and, in the end, it is to be rendered understandable only through the whole of this soul, from its totality that is enclosed in each true, artistic, individual thing. Such wholeness and individual particularity are denied to technological work. Admittedly, if one observes the pure *content of lived-experience* of technological and artistic creations, nowhere is a strict border between the two manifest. In no way is one inferior to the other in terms of intensity, fullness, and passionate emotion. It is no less a psychical-spiritual shock when the work of the discoverer or the inventor, after being

40. [Plato, *Symposium* 210 C ("ἐπσιημῶν κάλλος") and 211 C ("τὰ καλὰ ἐπιτηδεύηατα").]

carried within for years and decades, first breaks through into reality than when the poetic or plastic figure detaches itself from its originator,
·85· confronting him as a formation [*Gebilde*] existing in its own right. After this separation has taken place even once, however, a quite different relationship between the creator and his work prevails in the purely technical sphere as compared to the artist and his work. The accomplished configured work in reality belongs henceforth to this reality. It is situated in a pure thing-world whose laws it obeys and by whose measure it must be measured. It must henceforth speak for itself, and it speaks only of itself and not of the creator to whom it originally belonged. This type of detachment is not demanded of the artist, nor is it possible for him. Even when he becomes completely absorbed in his work, he does not become lost in it. The work always simultaneously remains, insofar as it stands purely on its own, the testimony of an individual form of life, an individual existence [*Dasein*], and a being-a-certain-way [*So-sein*]. Technological creation can neither reach nor aspire to reach this sort of "harmony" between the beautiful work and beautiful expression. When, with the erection of the Eiffel Tower, the artists of Paris united and rallied in the name of artistic taste to object to this "useless and monstrous" construction, Eiffel answered that he was firmly convinced that his work had its own beauty:

> Are the right conditions of stability not always in agreement with those of harmony? The foundation of the architecture [*Baukunst*] is that the main lines of the building must completely correspond to certain rules. What is, however, the basic condition of my tower? Its resistance against the wind! And here I claim that the curves of the four pillars of the tower that climb higher and higher into the air in accordance with the fixed measurements of the weight of the base make for a powerful impression of force and beauty.[41]

This beauty, which originates from the perfect solution to a given problem, is, however, not of the same type and origin as the beauty that
·86· confronts us in the work of poets, sculptors, and musicians: for the latter beauty is not based on "being bound" by the forces of nature but exhib-

41. Quoted by Julius Goldstein, *Die Technik* (*Die Gesellschaft,* ed. Martin Buber, vol. 40), 51.

its a new and unique synthesis of I and world. If we can denote the world of *expression* and the world of pure *signification* as the two extremes between which all cultural development moves, then the ideal balance between them is, as it were, achieved in art. Technology combined with theoretical knowledge, to which it is closely related, increasingly renounces all that is measured by expression in order to lift itself up into the strictly "objective" sphere of pure signification.[42] At the same time, it is indisputable that the gain achieved here contains a sacrifice. However, even this sacrifice and renunciation, this possibility to cross over and rise up into a pure world of things, shows itself to be a specific human power, an independent and indispensable descriptor of "humanity."

A deeper and more serious conflict, however, erupts before us if, rather than measuring effective technological activity and creations by aesthetic norms, we ask after its *ethical* right and its ethical meaning. The instant this question is vigorously put forth and understood in its severity, the answer seems already to be apparent. The skeptical and negative critique of culture, which Rousseau introduced in the eighteenth century, seems to be able to give no more weighty evidence, no stronger example than the development of modern technology. Does this development not, under the promise and alluring image of freedom of the traveling juggler, involve human beings even more inexorably in un-freedom and slavery? By removing him from the bond with nature, has it not increased his social dependence to the point of being unbearable? The thinkers who have struggled most profoundly with the basic problem of technology are precisely those who have repeatedly indulged in this ethi- ·87·
cally damning judgment of it. Whoever does not from the beginning subscribe to the demands of simple utility, and instead treasures the meaning of ethical and spiritual standards, cannot carelessly pass over the grave inner damages of a lauded "technological culture." Few modern thinkers have as keenly observed and forcefully uncovered this damage as Walther Rathenau,[43] with growing energy and passion in his writing. On the one hand, there is completely soulless and mechanized labor, the

42. Concerning *theoretical knowledge,* this process is explained and developed further in my *Philosophy of Symbolic Forms,* vol. III, part III, chapters 5 and 6.

43. See Walther Rathenau, *Von kommenden Dingen: Zur Kritik der Zeit; Zur Mechanik des Geistes* (Berlin: S. Fischer, 1917).

hardest chore. On the other hand, there is the unrestricted will to power and will to rule, unrestrained ambition and meaningless consumerism. Such is, for Rathenau, the image of the times captured in the mirror of technology:

> If one considers . . . world production, the insanity of the economy appears to us terribly frightening. Superfluous, trivial, harmful, contemptuous things are heaped in our stores, useless fashion statements that should, in a few days, emit a false radiance, ways of getting intoxicated, stimulus, a numbing. . . . Every new financial quarter, all these worthless things fill stores and warehouses. Their manufacture, transportation, and consumption require the labor of millions of hands; they demand raw materials, machines, plants, occupying approximately one-third of the world's industry and workers.[44]

Thus, modern technology—and the economy it has created and maintains with its own means—is truly the water jug of the Danaides. This image, already used by Plato in *Gorgias* to describe the vanity and absurdity of an ethics measured according to purely hedonistic criteria, spontaneously forces itself upon us when we read Rathenau's description. Every satisfied need serves only to bring forth new needs in increasing measure; and, once you have entered this cycle, there is no escape from it. Seizing the human being even more relentlessly than the workings of his own drives is the working of the drives of his situation, the result
·88· [*Ergebnisse*] and product of technological culture; he is thrown by technological culture into a never-ending vertigo that moves from desire to consumption, from consumption to desire.

So long as we remain in the sphere of its external appearance, its consequences and effects, the hard verdict cast here upon technology is without appeal. Only *one* question can still be asked: whether these effects can necessarily be attributed to its *essence,* that is, whether they are implicit in the configuring *principle* of technology, and whether they are demanded by it. When the problem is taken in *this* sense, a thoroughly different aspect of the observation and assessment emerges. Rathenau leaves no doubt that all the gaps and defects of modern technological

44. [Ibid., 91f.]

culture he inexorably uncovers are to be understood not so much in themselves as in terms of their connection with a certain *form and order of an economic system* and that every attempt at improvement must begin here. This connection does not originate in the *spirit* of technology. It is more the case that this spirit is made necessary and thrust upon one by a particular situation, by concrete historical circumstances.[45] Once this interweave is established, however, it cannot be undone by means of technology *alone.* It is not enough to appeal to the forces of nature or to the forces of mere understanding by technological and scientific intellects; rather, here it suffices to indicate the point at which only the deployment of a new *will*power can create change. In this construction of the realms of will and the basic *convictions* upon which all moral community rests, technology can only ever be a servant, never a leader. It cannot by itself determine the goal, although it can and should collaborate in carrying it out. It best understands its own meaning and its own telos when it is content with the fact that it can never be an end in itself. ·89·
Rather, it has to fit itself into another "realm of purpose," into a genuine and final teleology that Kant described as ethico-teleological. In this sense, the "dematerialization" of technology, rendering it ethical, forms one of the central problems of contemporary culture.[46] Just as technology cannot immediately create ethical values out of itself, neither can there be an estrangement and opposition between technology's values and its specific direction and basic convictions. This is the case because technology is governed by "specialized service thinking," by the ideal of solidarity of labor in which all ultimately work for one and one works for all. It creates, even before the truly free community of wills, a sort of *community of fate* between all those who are active in its work. Thus, we can correctly define the implicit meaning of the technological labor and technological culture as the idea of "freedom through serviceability."[47]

45. Concerning the necessary disjunction between the spirit of *technology* and the spirit of capitalist *economy,* see, in addition to the writing of Rathenau, the remarks by Zschimmer (see 154ff.) and Dessauer (see 113ff.).

46. The problem of this "moralization" is rightly placed at the focal point by Viktor Engelhardt, *Weltanschauung und Technik* (Leipzig: F. Meiner, 1922), esp. 63ff., and by Richard Nikolaus Coudenhove-Kalergi, *Apologie der Technik* (Leipzig: Verlag der Neue Geist, 1922), 10ff.

47. Friedrich Dessauer, *Philosophie der Technik*, 86, especially 131ff.

If this idea is truly to have an effect, it is, of course, necessary that it increasingly transform its implicit meaning into an explicit one. That which happens in technological creation must be recognized and *understood* in its basic direction if it is to be raised into spiritual and moral *consciousness.* Only if this happens does technology prove to be not only the vanquisher of the forces of nature but also the vanquisher of the chaotic forces of the human being. All the defects and failings of technology that one is in the habit of advancing today are, in the end, based upon the fact that until now it has not fulfilled its highest mission. In fact, it has hardly yet recognized it. All "organization" of nature, however, remains questionable and sterile if it does not lead to the goal of the formation of the will to work, and the real and fundamental work attitude. Our culture and our present society are still far from this goal. Only
·90· when this is understood as such and methodically and energetically grasped, however, will the real relationship between "technology" and "form," its deepest form-forming force, be able to prove itself.

The Warburg Years
(1919–1933)

Essays on Language, Art, Myth, and Technology

Ernst Cassirer

Translated and with an Introduction by
S. G. Lofts with A. Calcagno

Yale University Press
New Haven and London

Contents