

TECHNICS
AND TIME, 1

The Fault of Epimetheus

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and George Collins

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For Gilles, my deceased brother

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Preface

The object of this work is technics, apprehended as the horizon of all possibility to come and of all possibility of a future.

This question still seemed secondary when, ten years ago, I was setting down its first delineations. Today, it informs all types of research, and the enormousness of the question summons us all. This calls for a work whose urgency is still hardly grasped despite the high stakes of the issue and the disquiet it arouses—a long and exacting task, as exciting as it will be difficult, stirring a necessary but deaf and dangerous impatience. Here I would like to warn the reader of this difficulty and of its necessity: at its very origin and up until now, philosophy has repressed technics as an object of thought. Technics is the unthought.

The reactions, immediate or mediate and mediatized, “epidermic” or calculated, that are provoked by the extraordinary changes characteristic of our age, in which technics constitutes the most powerful dynamic factor, must be *imperatively overcome*. The present time is caught up in a whirlwind in which decision making (*krisis*) has become increasingly numb, the mechanisms and tendencies of which remain obscure, and which must be made intelligible at the cost of a considerable effort of anamnesis as much as of meticulous attention to the complexity of what is taking place. The work presented here is nothing but a tentative approach to these questions, as subject to trial and error as it is resolute—advancing by trial and error (with the hand permitting) is the very object of this reflection.

The frenzy of time is all the more paradoxical in that, although it should open onto the evidence of a future, never before has the immi-

nence of an impossibility to come been more acute. That a radical change in outlook and attitude is demanded induces all the more reactivity because it is unavoidable. *Ressentiment* and denegation are factors of ruin as well as irreducible tendencies, which Nietzsche and Freud placed at the heart of their reflections a century ago. They will never have been exemplified so diversely as today. The reader will know, then, that these authors, if seldom quoted in these pages, form the vanishing point of the perspectives I have attempted to open.

Unfortunately, I will not be able to acknowledge here everything I owe to so many friends and allies encountered in the course of this undertaking. I would at least like to express my profound gratitude to Gérard Granel, who, as professor at the University of Toulouse-LeMirail, awakened me, with the warm exigency that all those who have had the opportunity to study under his direction know, to the necessity of returns (to things themselves, to metaphysics) as well as to that of a major overturning.

I would also like to thank Madame Montet, Eliane Escoubas, Annick Jaulin, Madame Lévy Hébrard, and Elizabeth Rigal, whose excellent teachings find an echo here.

Jacques Derrida has made this work possible through his own, and the reader will find in these pages a reading that strives to remain faithful while taking on ("starting from," "beside," and in the deviation (*écart*) of a *différance*) the fascinating inheritance that the spectral authority of a master engenders—all the more fascinating when the master suspects any and all figures of mastery. Jacques Derrida's immense devotion to the *possibility of the other* not only is the object of his exemplary discourse and meditation but also governs a lifestyle, a thought of life and a life of thought where, in his relationship to students, to those who are close to him, to the private and public spheres, the author authorizes his text in the facts of existence the more he is vigilant in observing the limits of his authority.

Without the welcome extended to me by Jean-François Lyotard at the Collège International de Philosophie, and without the dialogue he so generously allowed me to enter into with him and with others (whom I also thank without mentioning their names here), steps that were decisive to my project could no doubt not have been made.

Frequent conversations with Paul Virilio, Régis Debray, and Antoine Dulaure have greatly enriched this work and have given me inestimable encouragement.

The most precious stimuli to work are often friends. I have shared with Antoine Berman, Thierry Chaput, and Michel Servière, all of whom have since died, the care and the enigma of the memory haunting this work.

Catherine Malabou has encouraged and accompanied me in the work as well as in the banal difficulties of everyday life, while setting out on her own investigations. Tenderness has been our bond in the aim of philosophical exigency, which ties together as much as it opens out the spaces of struggle—a fruitful and threatening emulation that Hesiod sings about under the name of *Ēris*, the daughter of Night. Never before has the experience of the *community of a de-fault of community*, residing magnificent and terrifying at the heart of what I attempt to explore, been more radical than with Catherine, in the concept and the circle of love, if only to conceptualize out of love for the concept—what she also names the end of love (in these times when philosophy will have wished to "lay down its name as love of wisdom in order to be effectively and actually real knowledge").

My children Barbara and Julien Stiegler had to bear, when growing up, the conception and the birth of this other progeny: a book. May this hectic period of my life have brought them some kind of joy, and may this object, now behind me, which I hope is turned toward a future already no longer my own, be for them in their own right fruitful.

I thank my students who attended my courses and often contributed to the maturing of the theses set out here. I also thank the higher administration of the University of Compiègne, which has not forgotten the urgency and necessity of an encounter between philosophy and technology. A grateful beneficiary as much as a devoted actor, I wish to recognize their unusual clairvoyance.

Lastly, I would like to express my thanks to Roger Lesgards, to Jacques Tarnero, and to the Cité des Sciences et de l'Industrie; without their help, this book could not have been published.

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Translators' Note

Most quotations appearing here in English are from published English editions, as cited in the notes. Occasionally, however, we have modified these translations to reflect the original sources or the French translations used by Stiegler. Emphasis in quotations follows the cited editions unless otherwise specified.

Stiegler's interpolations of words or phrases in quotations are enclosed in curly brackets. Our own interpolations in quotations and in Stiegler's text are enclosed in square brackets. Stiegler's omissions in quotations are indicated with spaced ellipsis dots (thus: . . .). His ellipses in his own text are marked with unspaced suspension points (thus: ...).

TECHNICS
AND TIME, 1

General Introduction

Do you admit to this certainty: that we are at a turning point?

—If it is a certainty, then it is not a turning point. The fact of being part of the moment in which an epochal change (if there is one) comes about also takes hold of the certain knowledge that would wish to determine this change, making certainty as inappropriate as uncertainty. We are never less able to circumvent ourselves than at such a moment: the discreet force of the turning point is first and foremost that.

—Maurice Blanchot

At the beginning of its history philosophy separates *tekhne* from *episteme*, a distinction that had not yet been made in Homeric times. The separation is determined by a political context, one in which the philosopher accuses the Sophist of instrumentalizing the *logos* as rhetoric and logography, that is, as both an instrument of power and a renunciation of knowledge (Châtelet 1965, 60–61). It is in the inheritance of this conflict—in which the philosophical *episteme* is pitched against the sophistic *tekhne*, whereby all technical knowledge is devalued—that the essence of technical entities in general is conceived:

Every natural being . . . has within itself a beginning of movement and rest, whether the “movement” is a locomotion, growth or decline, or a qualitative change . . . [whereas] not one product of art has the source of its own production within itself.¹

No form of “self-causality” animates technical beings. Owing to this ontology, the analysis of technics is made in terms of ends and means, which implies necessarily that no dynamic proper belongs to technical beings.

Much later, Lamarck distributes physical bodies into two principal fields: firstly, the physiochemistry of inert beings, and secondly, the science of organic beings. There are

two classes of body: the inorganic [is] non-living, inanimate, inert; the organic [is] what breathes, feeds, and reproduces; it [is] “inevitably doomed to die” (Lamarck, *Philosophie zoologique*). Organization becomes identified with the living. Beings [are] definitively separated from things. (Jacob 1973, 101)

To these two regions of beings correspond two dynamics: mechanics and biology. Lodged between them, technical beings are nothing but a hybrid, enjoying no more ontological status than they did in ancient philosophy. Since matter receives accidentally the mark of a vital activity, a series of objects that are manufactured over a period of time does nothing but report an evolution: a technical being belongs essentially to mechanics, doing little more than conveying the vital behavior of which it is but a thin trace.

Envisaging the possibility of a technology that would constitute a *theory* of the evolution of technics, Marx outlined a new perspective. Engels evoked a dialectic between tool and hand that was to trouble the frontier between the inert and the organic. In the same period, archaeology discovered manufactured objects more ancient than those known before, and after Darwin the origins of humanity became a vexed question. Gilbert Kapp developed his theory of organic projection, which inspired the work of Alfred Espinas at the end of the nineteenth century. At the moment when historians of the Industrial Revolution began to consider the role played by new forms of technics, the discipline of ethnology amassed enough documentation on primitive industries for the question of technical development, irreducible to the disciplines of sociology, anthropology, general history, and psychology, finally to impose its importance. On the basis of this work, Bertrand Gille, André Leroi-Gourhan, and Gilbert Simondon elaborated in this century the concepts of technical system, technical tendency, and process of concretization.

Lodged between mechanics and biology, a technical being came to be considered a complex of heterogeneous forces. In a parallel development, while industrialization was overthrowing both the contemporary order of knowledge and contemporary social organization, technics acquired a new place in philosophical questioning. Philosophical reflection was now faced with such widespread technical expansion that all forms of knowledge were mobilized by, and brought closer to, the field of instrumentality, to which science, with its ends determined by the imperatives of economic struggle or war, and with its epistemic status shifting accordingly, became more and more subject. The power that emerged from this new relation was unleashed in the course of the two world wars. While Nazism took hold of Germany, Husserl analyzed the technicization of mathematical thought by algebra in terms of a technique of calculation, one that he traced back to Galileo. For Husserl, this process gave rise to an arithmeticization of geometry that

leads almost automatically to the emptying of its meaning. The actually spatio-temporal idealities, as they are presented first hand in geometrical thinking under the common rubric of "pure intuitions," are transformed, so to speak, into pure numerical configurations, into algebraic structures. (Husserl 1970, 41)

Numeration is a loss of originary meaning and *sight*, a loss of the eidetic intentionality that underlies scientificity as such:

In algebraic calculation, one lets the geometric signification recede into the background as a matter of course, indeed one drops it altogether; one calculates, remembering only at the end that the numbers signify magnitudes. Of course one does not calculate "mechanically," as in ordinary numerical calculation; one thinks, one invents, one makes discoveries—but they have acquired, unnoticed, a displaced, "symbolic" meaning. (44–45)

The technicization of science constitutes its eidetic *blinding*. Considered in terms of the Leibnizian project of a *mathēsis universalis*, the ensuing displacement of meaning leads to an elaboration of method that is metaphysical. Algebraic arithmetic, through which nature falls under systematic "instruction" and instrumentalization,

is drawn into a process of transformation, which . . . becomes a mere art of achieving results, through a calculating technique according to technical rules. . . . "Original" thinking *that genuinely gives meaning to this technical process, and truth to the correct results* . . . is here excluded. (46)

Technicization is what produces loss of memory, as was already the case in Plato's *Phaedrus*. In this dialogue's staging of the conflict between Sophist and philosopher, hypomnesic logography menaces the anamnestic memory of knowledge, and *hypomnēsis* risks contaminating all memory, thereby even destroying it. With the advent of calculation, which will come to determine the essence of modernity, the memory of originary eidetic intuitions, upon which all apodictic processes and meaning are founded, is lost. Technicization through calculation drives Western knowledge down a path that leads to a forgetting of its origin, which is also a forgetting of its truth. This is the "crisis of the European sciences." Without a refoundation of rational philosophy, science—having lost the object itself of any science—leads, it is argued, to the technicization of the world. This fate is announced in a historical context in which, to use the words of G. Granel,

great humanists . . . like Cassirer and Husserl tried in the 1930's to oppose to the rise of fascist "barbarism" various forms of "regeneration" of modern rational philosophy. (Granel 1976, v)

An existential analytic (in Heidegger's sense) no longer seeks to refound rational philosophy: if the technicization of knowledge remains at the heart of the Heideggerian reflection on the history of being, *ratio* appears, in its essence, to be given over to calculation; *ratio* is a technical process that constitutes the *Gestell* (*ar-raisonnement*)² of all beings. And yet, at a much more profound level, destiny and "historiality"³ are also thought by Heidegger in terms of an originary technicity, articulating the analyses of worldhood at the close of the 1920's with the "other thought" of "Time and Being" in the age of cybernetics—with the reading of *Antigone* in *An Introduction to Metaphysics*, "The Age of the World Picture," and *Identity and Difference* lying in between.⁴

The theme of forgetting dominates Heidegger's thinking of being. Being is historial, and the history of being is nothing but its inscription in technicity. If truth is itself thought in terms of this originary forgetting, it is insofar as the determination of the meaning of *alētheia* still echoes the Platonic structure of reminiscence such as it is determined in opposition to hypomnesic memory, while this memory constitutes the destiny of being as the forgetting of being.

Thinking truth as an exit from "withdrawal" and the history of being as forgetting will lead necessarily to thinking time within the horizon of an originary technicity *qua* an originary forgetting of the origin. For Heidegger, forgetting is inscribed: firstly, in the existential constitution of Dasein as instrumentality or equipmentality and, via equipment, as *calculation*; and secondly, in the (Western) history of being, thought since the pre-Socratics as *omoiōsis*, since Plato as correctness (*orthotēs*), and, with Descartes and Leibniz, according to the principle of reason that determines *mathēsis universalis* as *calculation*.

Heidegger's reflection upon technics only becomes clear, insofar as it is clear, if it is understood on these two levels at once: on the first, the existential structure of Dasein, as a relation to time determined by *intratemporality*; on the second, as the destiny of the Western history of being through the "metaphysical" history of philosophy in which being is determined as presence and is characterized by a "vulgar" understanding of time in terms of the *now* of intratemporality, determined by calcula-

tion and by the measuring instruments of time. The task of thinking is consequently to "deconstruct" the history of metaphysics by repeating it, and to return to the originary question of the meaning of being. Such a project of thought appears to consist all the more in a "critique" of modern technics given that modern technics is apprehended as the effective completion of metaphysics.

Dasein, the "entity which we are ourselves,"⁵ is the guarantor of being in its temporality, a temporality that is also its truth as the history of being. It is characterized by four traits: temporality, historiality, self-understanding, and facticity.

Dasein is temporal: it has a past on the basis of which it can anticipate and thereby be. Inherited, this past is "historial": my past is not my past; it is first that of my ancestors, although it is in essential relation with the heritage of a past already there before me that my own past is established. This historial, nonlived past can be inherited inauthentically: historiality is also a facticity. The past harbors possibilities that Dasein may not inherit *as* possibilities. The facticity implied by heritage opens up a twofold possibility for self-understanding. On the one hand, Dasein can comprehend itself on the basis of an understanding of existence which is banal and "opining" (subject to everyday opinion). On the other hand, Dasein can "possibilize" this past, in that it is not its own, insofar it has inherited it: it is then on the basis of *its* possibility—such that its past is constituted therein—that it inherits possibilities of "its" factual past. Dasein is in the mode of "having-to-be" because it never yet totally is; inasmuch as it exists, it is never finished, it always already anticipates itself in the mode of "not yet." Between birth and death, existence is what extends itself [*Er-streckung*] between "already" and "not yet." This ecstasis is constituted through the horizon of death in that Dasein, in any act of self-anticipation, is always already anticipating its own death (its own end). Any activity on Dasein's part is always essentially ordered by anticipation of the end that is "the most extreme possibility" and that constitutes the originary temporality of existence.

This possibility of anticipation is, nevertheless, twofold. On the one hand, Dasein can in its activity always not "possibilize" the being-toward-the-end that forms its very essence, refusing thereby to open itself to its future insofar as it is its own, a future that is as radically indeterminate as the "when," "why," and "how" of its end. In this case, it reduces all its possibilities to those shared and recognized in the publicness of "being-

in-common." It reduces them to the possibilities of others. On the other hand, Dasein can live its own possibilities *as* its incommensurable "ipseity," refusing to retreat before the essential solitude in which the anticipation of its own end ultimately always leaves it. Authentic existence is as radically indeterminable by "others" (by the publicness of being-in-common) as the death of Dasein, which can only be its own, is only its own because, radically indeterminate, death can remain nothing but unknown to it. *Its* death is what it cannot know, and to this extent, death gives to "mine-ness" its excess. Death is not an event within existence because it is the very possibility of existence, a possibility that is at the same time essentially and interminably deferred. This originary deferral is also what gives Dasein its difference to another.

The possibility of refusing the horizon of authentic possibility takes root in "concern" (*Besorgen*), a relation to the future which conceals in the future the opening of all authentic possibility. Concern is constituted by a mode of anticipation which, as foresight, essentially aims to determine possibility, that is, the undetermined. The support of all concern is "equipment" (*das Zeug*), itself the support of the system of references that constructs the significance of the world; and the horizon of anticipation, the originary structure of all worldliness, is the *technical* world—the technicity of the world is what reveals the world "firstly" and most frequently in its *facticity*. Facticity, understood as what makes possible the attempt to determine the indeterminate (to take flight from "the most extreme possibility"), forms the existential root of *calculation*. Calculation, the existential rooting of which is organized by facticity as an essential trait of technics—which also makes a heritage possible, constituting from the start the originary horizon of all authentic temporalization—is the falling of existence.

It is within these deep strata of temporality that the question of technics is located in Heidegger's work. In texts subsequent to *Being and Time*, after the "turning," the question is articulated no longer in terms of the existential dimension of the analytic of Dasein but as a motif constitutive of the very possibility of the deconstruction of the history of metaphysics. If it is true that the metaphysical side of philosophy culminates in the projection of a *mathēsis universalis* that encourages a *subject* to establish itself "as the master and possessor of nature," where the essence of reason ends up as calculation, then this turning of metaphysics forms an entrance to the technical age of philosophical thought, as a result of

which technics in its modern guise brings subjectivity to its completion as objectivity. The *modern age* is essentially that of modern *technics*.

Thus the difficulty of an interpretation of the meaning of modern technics for Heidegger is on a par with the difficulty of his entire thought. Modern technics is the concern of numerous texts, which do not always appear to move in the same direction. In other words, the meaning of modern technics is ambiguous in Heidegger's work. It appears simultaneously as the ultimate obstacle to and as the ultimate possibility of thought. Among the works that deem it an obstacle, "The Question of Technics" and "The Age of the World Picture" are often quoted. However, the late essays "Time and Being" and "The End of Philosophy and the Task of Thinking" inscribe the possibility of another thinking within the task of contemplating the belonging-together of being and time in the *Gestell*. In "The Principle of Identity," *Gestell* designates

the gathering of this challenge which places man and being face to face in such a way that they challenge each other. . . . That in which and from which man and being are of concern to each other in the technical world claims us in the manner of the *Gestell*. In the mutual confrontation of man and being we discern the claim that determines the constellation of our age. (Heidegger 1969b, 35)

To argue that modern technics is nothing but the completion of metaphysics is to consider only one side of *Gestell*. For *Gestell* also determines the co-appropriating of being and of time in terms of the "there is" (*es gibt*) of being and time. As a result the metaphysical determination of time is removed. Thenceforth the question is one of thinking being without beings—that is, without Dasein.

The *Gestell* no longer concerns us as something that is present—therefore the *Gestell* seems at first strange. It remains strange above all because it is not an ultimate, but rather first gives us that which prevails throughout the constellation of being and man. (36)

Gestell forms a prelude to *Er-eignis* where

man and being reach each other in their nature, achieve their active nature by losing those qualities with which metaphysics has endowed them. (37)

Identity, which is firstly identity of being and thought, constitutes the fundamental trait of being. But the principle of identity

has become a principle bearing the characteristics of a spring that departs from being as the ground of beings, and thus springs into the abyss [*Abgrund*]. But this abyss is neither empty nothingness nor murky confusion, but rather the *Er-eignis* itself. (39)

Gestell is the global development of modern technics, and, as such, the completion of metaphysics.

“The Question of Technics” opens up a way of reflecting upon the essence of technics that moves against its metaphysical determination, specifying, moreover, the sense of modern technics in respect to technics in general. The major argument is that the traditional view of thinking technics under the category of “means” deprives one of any access to the essence of technics. This critique constitutes to a certain extent a reevaluation of the interpretation of technics given by the tradition from Aristotle onward. With reference to the *Nicomachean Ethics*⁶ Heidegger contests the idea that the analysis of *Physics*, book 2, can be interpreted in terms of the categories of end and means.

The current conception of technics, according to which it is a means and a human activity, can . . . be called the instrumental and anthropological definition of technics. (Heidegger 1977, 5)

He adds:

But suppose now that technics were no mere means, how would it stand with the will to master it? (5)

The instrumental conception of technics is correct [*exacte*], but it reveals nothing of the essence of technics. So, the “correct” conception of technics does not go far enough.⁷

The analysis of technics in terms of end and means refers to the theory of material, formal, final, and efficient causes. The traditional interpretation of the theory of the four causes has privileged, in its understanding of technics, the efficient cause, the cause that operates—in the artisanal fabrication of an object, for example, the artist himself. The privilege accorded to the efficient cause leads to the instrumental conception of technics according to ends and means. Since the technical product is not a natural being, it does not have its final cause in itself. The final cause, appearing exterior to the product, resides in the producer, who, while being the efficient cause, equipped with the end,

brings to the object the final cause—the object thereby being no more than the means.

As production (*poiēsis*), technics is a “way of revealing.” Like *poiēsis*, it brings into being what is not. In the *Nicomachean Ethics* Aristotle writes:

Every art [*tekhnē*] is concerned with bringing something into being, and looks for technical and theoretical means of producing a thing which belongs to the category of possibility and the cause of which lies in the producer and not in what is produced.⁸

If the technical product does not carry the principle of movement within itself but draws it from another—often allowing for the judgment that such and such a product is the means of which another product is the end—nevertheless, insofar as it effects a passage from a concealed state to a nonconcealed state, one of disclosure, this bringing-forth that is particular to technics constitutes a mode of truth. This means that the final cause is not the efficient operator but being as growth and unfolding: *phusis* and being are synonyms, the unconcealing of *phusis* is the truth of being as growth and bringing-forth (*poiēsis*). *Tekhnē qua poiēsis* is thus submitted to the final cause that *phusis*, working through the efficient cause, constitutes, without the efficient cause being in any way confused with the final cause. *Tekhnē*

reveals whatever does not bring itself forth and does not yet lie here before us. (Heidegger 1977, 12)

Thus what is decisive in *tekhnē* does not lie at all in making and manipulating nor in the using of means, but rather in the revealing mentioned before. It is as revealing, and not as manufacturing, that *tekhnē* is a bringing-forth. (13)

In the case of the “anthropological” conception of technics, in contrast, the efficient cause and the final cause are confused. Counter to this conception—that of subjectivity—it is, for Heidegger, only in art, the highest form of *tekhnē*, that the sense of *tekhnē* is fully grasped.

Nothing has been said yet of modern technics. It is also a form of disclosure, but one that

does not unfold into a bringing-forth in the sense of *poiēsis*. The revealing that rules in modern technics is a challenging, which puts to nature the unreasonable demand that it supply energy which can be extracted and stored as such. (Heidegger 1977, 14)

Modern technics inflicts violence upon *phusis*; technics is no longer a modality of disclosure in accordance with the growing of being *as phusis*. Technics becomes modern when metaphysics expresses and completes itself as the project of calculative reason with a view to the mastery and possession of nature, itself no longer understood as *phusis*. And yet the being that we ourselves are is much less placed in a situation of mastery over nature by technics than it is subjected, as an entity belonging to the realm of nature, to the imperatives of technics.

So defined, modern technics constitutes the *Gestell* of nature and of humanity through calculation.

If modern technics nevertheless remains a mode of disclosure, it constitutes what is most properly to be thought. For it is through technics that the destiny of being unfolds, that is, technics is the history of being itself. As Heidegger remarks, *Gestell*,

an in-between stage, offers a double aspect, one might say, a Janus head. (Heidegger 1972, 53)

Hence Jacques Taminiaux can write:

It is being itself which, in its technical aspect, that is to say within the process of generalized technicization that now characterizes our world, and of which both Nietzsche and Marx, each in his own way, have correctly expressed the metaphysical essence . . . it is being itself which offers itself to us in withdrawal. But to say that, and to think what needs to be said here, this is what metaphysics cannot accomplish. (Taminiaux 1983, 275)

There is, of course, a Marxist offshoot to the above line of thinking: The thesis on technics presented by Herbert Marcuse, a student of Heidegger's, in *One Dimensional Man* (1964) determines, for example, Jürgen Habermas's position on modern technics, a position that is dependent in other respects on the thematics introduced in the Frankfurt School by Theodor Adorno and Max Horkheimer and that, in turn, furthers a dialogue already under way during the lifetime of Walter Benjamin.

In "Technics and Science as 'Ideology'" (Habermas 1987) Habermas puts in place the concept of communicative action that he opposes to technical activity and that will dominate all his later work. Marcuse's argument claims that, with modern technics, the meaning and direction of technical power is inverted: once liberating for humanity in his relation to nature, it has become a means of political domination. This thesis is sup-

ported by a critical reappropriation—influenced by Marx—of the concept of rationalization forged by Max Weber. Rationalization represents the phenomenon of an irresistible extension of the domains of society subject to the criteria of rational decision and the phenomenon of the correlative industrialization of work. It characterizes capitalism. Marcuse adds to this the idea that rationalization is in fact a hidden system of domination.

Habermas transforms and rebaptizes the concept: rationalization becomes the extension of "purposive-rational activity," linked to the institutionalization of scientific and technical progress. Habermas again takes up Marcuse's first thesis: in what Weber calls rationalization, it is not rationality that rules but rather, in the name of this rationality, a new form of political domination; one, however, which most importantly is no longer recognized *as* political domination since it finds itself legitimized by the progress of technoscientific rationality. This is an inversion of the meaning of *Aufklärung* in which the productive forces appeared as forces of demystification.

Marcuse's second thesis is that of the need to develop a new science that would be in dialogue with nature (this is the "Heideggerian inspiration," which is also an error of interpretation), free from technics as a force of domination. Referring to Arnold Gehlen, Habermas finds this project utopian. The history of technics represents that of a progressive but ineluctable objectification of purposive-rational action in technical systems. As is well known, Habermas proposes an alternative for which he coins a new concept, "symbolically mediated interaction," of which "communicative action" is an example, in opposition to work, which constitutes "purposive-rational action." Communicative action refers back to particular social norms that cannot be put on the same level as technical rules. The latter are empirically sanctioned, whereas social norms are grounded upon intersubjectivity alone. All human history can be analyzed, accordingly, as the history of the varying set of relations between communicative action on the one hand and purposive-rational action on the other. The difference between traditional societies and modern societies is characterized by the fact that, in the former, communicative action forms the basis of social authority (whether it be mythical, religious, or metaphysico-political), whereas in the latter, legitimation is dominated by technical and scientific rationality, which progressively spreads across all areas of life, including those so-called "communicative" aspects whose specificity is thereby denied. This only happens at the mo-

ment when the sciences and technics become indissociable—a marriage that makes “the sciences represent the most important productive force.”⁹

Technocracy is born out of this marriage. In the context, technocracy should be considered less as the power of technicians than as technicians in the service of power, power created by technics as efficiency and as source of legitimacy, since technics has become indissociable from the sciences in which efficiency and purpose merge. The technocratic state no longer has as its aim either the encouragement of communicative action or the achievement of a critical distance toward purposive-rational action. On the contrary, it manages the dysfunctions engendered by purposive-rational action so as to reduce them and to avoid “those tendencies liable to threaten the system” (Habermas 1987, 101). Its activity consists in finding solutions to questions of a technical nature, those that escape public discussion. This situation generates a “systemic closing,” in which “[social] interests define the social system so much as a whole that they coincide with the interest in maintaining the system” (105). Communicative action is progressively replaced by purposive-rational action, that is to say, by the scientific model of cybernetics as the technoscientification of language—a process that has led to the fact that “the industrially most advanced societies seem to approximate the model of behavioral control steered by external stimuli rather than guided by norms” (107). This constitutes a depoliticization of society and promotes a tendency toward the autonomization of purposive rational activities, an evolution that “does harm to language” (Jean-François Lyotard will take up this theme), that is, to socialization, to individuation, and to intersubjectivization. This tendency can go very far, being extended, for example, to “psychotechnical” manipulations (Herman Kahn).

The alternative to Marcuse’s thesis proposed by Habermas rests on the idea that two concepts of rationalization must be distinguished:

The process of development of the productive forces can be a potential for liberation if, and only if, it does not replace rationalization on another level. *Rationalization at the level of the institutional framework* can occur only in the medium of symbolic interaction itself, that is, through *removing restrictions on communication*. (Habermas 1987, 118)

The question is one of liberating communication from its technicization. It can be seen that the founding positions of philosophy still haunt these analyses.

Evidently Heidegger and Habermas are observing the same paradox concerning technical modernity. Technics, which appears to be a power in the service of humanity, becomes autonomous from the instance it empowers—technics ought to be an act on the part of humanity—as a result of which it does a disservice to active humanity, that is, insofar as humanity communicates, makes decisions, and assumes individual form. If Habermas and Heidegger are indeed interested in the same paradox, they do not analyze it in the same way, however. We must note a convergence as well as a divergence between their two approaches.

The convergence lies in the fact that both see the *technicization of language* as a denaturation—as if it were a question of one instance “proper to humanity” perverting another instance “proper to humanity.” What is considered perverse is the possible confusion of these “properties.”

The divergence resides in the fact that Habermas continues to analyze technics from the perspective of the category of “means,” a category considered by Heidegger to be a metaphysical determination. Now, if technics is not a means, it can no longer be a question of having simply a “debate” on technics—through a “liberated” form of communication—nor, therefore, of ensuring for oneself a “minimum of subjectivity (or ‘will and mastery’) . . . required for a democratic thought to fix limits” to technological expansion “through public decisions based themselves on public discussion and argumentation between subjects” (Ferry and Renaud 1988, 42–45). Much more radically, the preceding implies the need, today, to forge another relationship to technics, one that rethinks the bond originally formed by, and between, humanity, technics, and language.

Thus, if Habermas and Heidegger appear to agree in considering the technicization of language as a perversion, both remaining here in the oldest philosophical tradition, we can also detect from within Heidegger’s analysis the development of a completely different point of view. To give an indication: we would say that sophistic logography is also that of the *grammatist*, the ancient “tutor,” without whom citizenship, as Henri Marrou and Marcel Détienné have remarked,¹⁰ would never have been constructed in the first place. The stakes are, however, larger than the constitutive relationship between writing and citizenship.

What is more important is the relationship between technics and time. This is especially so if it is true that individuation and “intersubjectivization” are what is at stake in language. For what is given in speech is time,

which is, as Heidegger says, "the true principle of individuation." The only condition on which Heidegger can oppose speech to instrumental technics in the first place is that speech bears this originary temporality of time, which calculative and technical instrumentality obscures in an intratemporality which is always that of concern. The whole question is whether such an evaluative distribution—according to which technics remains only *on one side* (of an opposition), itself not *constitutive* of individuation—in fact remains "metaphysical."

Whereas, on the one hand, the understanding of technics is now, as it has been since the Industrial Revolution and the profound social changes that accompanied it, largely determined by the categories of end and means, on the other hand, technics has itself achieved a new opacity, which will be more and more difficult to explicate with the increasing breakdown of knowledge into separate domains. During the past few years—a period placed under the sign of "modernization" and of politico-economic deregulation, in immediate relation with technoscientific development—this difficulty has become perceptible in all social spheres. The critical question of the relationship between technics and time is assuming its place on the public stage, daily, superficially, but in a more and more evident way. Each day brings its technical novelty, as well as the demise of things obsolescent and out of date. Innovation is inevitably accompanied by the obsolescence of existing technologies that have been superseded and the out-of-dateness of social situations that these technologies made possible—men, domains of activity, professions, forms of knowledge, heritage of all kinds that must either adapt or disappear. What is true of the largest political and economic structures is true of our life-world as well. The "understanding that Dasein has of its being" finds itself profoundly—and dangerously—shaken. It is as if a divorce could now be pronounced between, on the one hand, the technosciences and, on the other, the culture that claimed to have produced them, engulfed by technology. To quote Jean Ladrière:

If, in certain respects, science, as a particular system of representation, and technology, as a particular system of action, are only subsidiary constituents of culture, in another sense, they have come to detach themselves from culture, instituting systems that are for the most part autonomous, in interaction with culture, but in opposition to it, as the universal is to the particular, the abstract to the concrete, the constructed to the given, and the sys-

tematic to the existential. This is why it has become an urgent matter to question the modalities of interaction between science and technics on the one hand and culture on the other, and more particularly to ask how science and technology affect the future of culture in general, whether it be in the sense of a progressive disintegration or in the sense of an elaboration of new cultural forms. (Ladrière 1977, 18)

That these eventualities are today envisaged in the widest spheres of the world community is made obvious by the weight of ecological concern in recent geopolitical events. The "Heidelberg appeal," propounded at the world summit in Rio de Janeiro, just as the "counter-appeal" that was given in response, testify to the increasing importance of these questions in the highest echelons of science, technics, industry, the economy, and diplomacy.

Bertrand Gille, who anticipated these difficulties in the conclusion to his "Prolegomena to a History of Technics" (Gille 1977), shows that industrial civilization rests on an ever more intense development of the process of *permanent innovation*. It results in a divorce, if not between culture and technics, at least between the rhythms of cultural evolution and the rhythms of technical evolution. Technics evolves *more quickly* than culture. More accurately put, the temporal relation between the two is a tension in which there is both advance and delay, a tension characteristic of the extending [*étirement*] that makes up any process of temporalization. It is as if time has leapt outside itself: not only because the process of decision making and anticipation (in the domain of what Heidegger refers to as "concern") has irresistibly moved over to the side of the "machine" or technical complex, but because, in a certain sense, and as Blanchot wrote recalling a title of Ernst Jünger, our age is in the process of breaking the "time barrier." Following the analogy with the breaking of the sound barrier, to break the time barrier would be to go faster than time. A supersonic device, quicker than its own sound, provokes at the breaking of the barrier a violent sonic boom, a sound shock. What would be the breaking of a time barrier if this meant going faster than time? What *shock* would be provoked by a device going quicker than its "own time"? Such a shock would in fact mean that speed is older than time. For either time, with space, determines speed, and there could be no question of breaking the time barrier in this sense, or else time, like space, is only thinkable in terms of speed (which remains unthought).

Clearly, it is not the development of technics in general that generates in this form the foregoing reflection. This reflection can only acquire meaning when certain effects of technical development are carefully examined: namely, those that in computing one calls "real time" and in the media "live"—effects that distort profoundly, if not radically, what could be called "event-ization" [*événementialisation*] as such, that is to say, the taking place of time as much as the taking place of space.¹¹ And if it is true that genetic manipulations constitute the possibility of a radical acceleration of the differentiation of life forms, but also and especially the threat of indifferenciation, then we meet again the question of speed.

The Heideggerian existential analytic inscribes temporal advance and delay within the originary horizon of existence, existence being temporal and factual. In other words, Dasein only comes into the world insofar as the world has always already preceded it in its facticity, is always already the "already-there." Dasein is always behind its "already-there"; and yet, simultaneously, because its temporality is grounded in the anticipation of its end, Dasein is also always already ahead of itself, caught, thereby, in an essential advance.

The following reading rests on a confrontation between the Heideggerian existential analytic and the myths of Prometheus and of Epimetheus in their most known versions (Hesiod, Aeschylus, Plato). In classical Greek culture a mythology of the origin of technics is to be found which is also a mythology of the origin of mortality, a thanatology, the absence of analysis of which in Heidegger's work strikes us as highly revealing. For, as Jean-Pierre Vernant has admirably demonstrated (1982), *ēpimētheia* and *promētheia* form, in their very inseparability, two figures of temporalization. What is of particular interest for us in this analysis is the fact that the Promethean advance and the Epimethean withdrawal (which is also the fault of Epimetheus as the one who *forgets*) bring together *promētheia* as foresight and *ēpimētheia* as both unconcerned distraction and after-thought [*méditation après coup*]. It is their inextricability which gives mortals *elpis*, both hope and fear, which compensates for their consciousness of irremediable mortality. But this counterbalance is only possible given the de-fault of origin [*le défaut d'origine*] in which Epimetheus's fault consists—namely, the originary *technicity*, from which *ēpimētheia*, idiocy as well as wisdom, ensues.¹²

The interpretation of the meaning of the fault of Epimetheus will be the main leitmotif of this work. Along with this leitmotif, the major

themes from the existential analytic will be interpreted and submitted to a critique that I sketched out above as much in respect to Habermas as to Heidegger.

With reference to Epimetheus's brother Prometheus, we will also be concerned, however, to draw out the possibilities for an analysis of technical dynamics that is reducible neither to mechanics nor to biology nor to anthropology. I shall show in the first part of this work how various contributions to a theory of technical evolution permit the hypothesis that between the inorganic beings of the physical sciences and the organized beings of biology, there does indeed exist a third genre of "being": "inorganic organized beings," or technical objects. These nonorganic organizations of matter have their own dynamic when compared with that of either physical or biological beings, a dynamic, moreover, that cannot be reduced to the "aggregate" or "product" of these beings.

There is today a conjunction between the question of technics and the question of time, one made evident by the speed of technical evolution, by the ruptures in temporalization (event-ization) that this evolution provokes, and by the processes of deterritorialization accompanying it. It is a conjunction that *calls for a new consideration of technicity*. The following work aims to establish that organized inorganic beings are originarily—and as marks of the de-fault of origin out of which there is [*es gibt*] time—*constitutive* (in the strict phenomenological sense) of temporality as well as spatiality, in quest of a speed "older" than time and space, which are the derivative decompositions of speed. Life is the conquest of mobility. As a "process of exteriorization," technics is the pursuit of life by means other than life. I will show through a critical reading of Heidegger here and of Husserl in the second volume that when life becomes technical it is also to be understood as "retentional finitude." This retention, insofar as it is finite, is caught in the dynamic that a technical tendency determines. It is what neither existential analytic nor phenomenology could think, although the latter at the end of its Husserlian versions confronts the problem under the name of "writing." Existential analytic, inheriting the opposition that Husserl sets up in his analysis of the temporal object between primary, secondary, and tertiary retention (we call tertiary retention what Husserl designates by "image-consciousness"), did not give to what *Being and Time* calls the world-historical [*weltgeschichtlich*] its constitutive dimension of temporality, prior to and beyond the opposition between authentic temporality and intratemporal-

ity. We shall see how Simondon, with his analysis of psychic and collective individuation, allows one to conceive through the concept of “transduction” an originally techno-logical constitutivity of temporality—without Simondon adopting such a conception himself. We shall thereby call in question Heidegger’s claim that “the essence of technics is nothing technical” (1977, 35).

The Invention of the Human

Introduction

Our attempt will be to conjugate the question of technics with the question of time. We will take up this conjugation in the first place as the question of technics *in* time, and this first section will treat the history of techniques from the point of view of this history's concepts. To work on the concepts of the history of techniques rather than on the factuality with which the concepts can be exhumed is to attempt the theorization of technical evolution.

Today, we need to understand the process of technical evolution given that we are experiencing the deep opacity of contemporary technics; we do not immediately understand what is being played out in technics, nor what is being profoundly transformed therein, even though we unceasingly have to make *decisions* regarding technics, the consequences of which are felt to escape us more and more. And in day to day technical reality, we cannot spontaneously distinguish the long-term processes of transformation from spectacular but fleeting technical innovations.

More profoundly, the question is to know if we can predict and, if possible, orient the evolution of technics, that is, of power (*puissance*). What power (*pouvoir*) do we have over power (*puissance*)? If this question is not new, it comes to us in an entirely original way in contemporary technics: the confidence that has ruled this question since Descartes, at least, no longer holds. This is also the case because the division originally made by philosophy between *tekhnē* and *ēpistēmē* has become problematic. If the conditions of a new relation—economic, social, and political—began with the Industrial Revolution, this novelty was actually declared a crisis only at the beginning of the twentieth century, with the First World War.

It constitutes the very grounds of contemporary philosophical debate, whose antagonistic figures are, in Europe, Heidegger and Habermas.

Confronted with this modernity, thinkers of technics as different as Simondon, Heidegger, and Gille express, each in his own idiom, a concern that they all share: that of envisaging a new relation between the human and technics.

Simondon thus calls for the development of a new knowledge: "technology" or "mechanology," founding a competence which is not spontaneously that of the engineer, the specialist of technical ensembles, or the worker, a specialist of technical elements. It is the competence of a specialist of technical individuals, who considers technics as a *process of concretization*, a competence manifestly made necessary by the new developments of technics.

Having characterized present-day culture as a defense mechanism against technics perceived as inhuman, having criticized this culture, which opposes technical reality and by that very fact opposes the human to the machine, having called for the development of a technical culture, for a new relation between culture and technics, Simondon wonders "what sort of human can achieve in itself the realization of technical reality and introduce that reality into culture" (1958, 12). This realization is not possible either for "the person attached to a sole machine by his or her work and to the fixity of daily objects (the relation of usage is not favorable to the realization)" or for the person directing "a firm using machines," who judges the machine "for its price and the results of its functioning rather than for itself." With regard to scientific knowledge, which "sees in the technical object the practical application of a theoretical law, it [knowledge] is not at the level of the technical domain either" (12).

Simondon would argue that culture has lost its "truly" general character when, with the appearance of the machine, it loses its "true" relation to the technical object. To become conscious of contemporary technical reality is to understand that the technical object cannot be a utensil (Simondon 1958, 13, 15), a fact that has become clear to us with the industrial-technical object, whose evolution, to the extent that it derives from what Simondon calls the process of concretization, excludes a simple end/means relation.¹

We will deal here with the evolution of technics considered in general as a system, and in particular as a system that leads to the contemporary technical system. If there is a need, in Simondon's terms, for a new

knowledge and a new competence, or in Gille's terms, for a new power, which, for Heidegger, is more profoundly the need for a thinking radically other than that predominant since the beginning of the West, the reason resides in the specificity of modern technics, that is, of the modern technical system, characterized precisely by the fact that it opens up a new epoch of technical systematicity. We will simply introduce here the question of this specificity (it will be dealt with in its own terms in the second volume of this study).

From this vantage, the specificity of modern technics resides, in essential part, in the speed of its evolution, which has led us to the conjugation of the question of technics with the question of time. Here the issue will be to understand the specificity of modern technics from the standpoint of a general history of technics, taken up in terms of a history of acceleration that, in the view of Ferdinand Braudel, also determines history itself.

Simondon characterizes modern technics as the appearance of technical individuals in the form of machines: hitherto, the human was a bearer of tools and was itself a technical individual. Today, machines are the tool bearers, and the human is no longer a technical individual; the human becomes either the machine's servant or its assembler [*assembliste*]: the human's relation to the technical object proves to have profoundly changed. Heidegger characterizes this "mutation" with the notion of *Gestell* (the systematization of the principle of reason). The semantics of *Gestell* is not foreign to that of system, and, in Gille's view, the concept of a technical system grounds a scientific history of techniques.

A "system" in ordinary language is "an apparatus formed by the assemblage of organs, of analogous elements."² "Apparatus" is a possible translation for the German term *Gestell*. As for the question of the organ, it will have a central place in our reflection; modern technics is dominated by cybernetics as the science of organization, in the largest sense, going back to the *organum* as instrumental to organization as characteristic of life. This is how Norbert Wiener's project (1950) for a cybernetic science is programmed, and it is also with the notion of cybernetic science that Heidegger characterizes modern technics (1972).

If it is true that systematicity informs the entire history of technics, in what respect, then, can modern technics be characterized as *Gestell*?

We have singled out from within Heidegger's analysis of modern technics that technics in general cannot be understood through the category

of "means." Modernity, in this view, makes this manifest: modern technics is concretized in the *Gestell* apparatus of all resources. Posing exoterically the stakes of such *Gestell*, we will ask whether the human is the master of such an apparatus, the master of human destiny, given that the human is a part of "all the resources" and that the evolution of such an apparatus is the evolution of the human world. For Heidegger, systematicity, in terms of that which "challenges," is what absolutely distinguishes modern technics from any other epoch. Technics commands (*kubernâd*, the *etymon* of cybernetics) nature. Before, nature commanded technics. Nature is consigned by technics in this sense: nature has become the assistant, the auxiliary; in similar fashion, it is exploited by technics, which has become the master. For nature to be thus exploited and consigned, it has to be considered as ground, reserve, available stock for the needs of the system that modern technics forms. To exploit and "consign" nature is to realize the project of making oneself "as its master and owner."

This reflexive—making oneself—designates us, us humans. Now, is technics a means through which we master nature, or rather does not technics, becoming the master of nature, master us as a part of nature? It is first of all in this sense that Heidegger, in "The Question Concerning Technology," argues that technics cannot be defined as a means. And yet, by saying that it is a "mode of unconcealment," he carries the question beyond this anthropological level.

Technics constitutes a system to the extent that it cannot be understood as a means—as in Saussure the evolution of language, which forms a system of extreme complexity, escapes the will of those who speak it. This is why Heidegger is opposed to Hegel's definition of the machine as an independent instrument (a definition close to Simondon's, as we will see):

When applied to the tools of the craftsman, his characterization is correct. Characterized in this way, however, the machine is not thought at all from out of the essence of technology with which it belongs. . . . {Seen in terms of the standing-reserve,} the machine is completely unautonomous, for it has its standing only from the ordering of the orderable. (Heidegger 1977, 17)

Like the machine, the human of the industrial age is dependent on the technical system, and serves it rather than making it serve itself; the human is the "assistant," the auxiliary, the helper, indeed the means of technics *qua* system.

It remains the case that the systematicity of technics, which excludes

its being a means, dates from before modern technics, and is constitutive of all technicity. How then are we to pinpoint and describe, from a historical point of view, the systematic functioning of modern technics as challenge? We find in Gille a concept that attempts to give a historical answer that reverts to the question of decision and anticipation, that is, of time: the concept of programming.

Gille exposes the necessity, demanded by modern technics, of a new social competence in technics, highlighting, in a sense close to that of Heidegger in "The Age of the World Picture," the planifying and programmed character ("calculated" rather than "projected") of modern technics. The programming of the development of technics *qua* planification effects a rupture in the conditions of technical evolution. But as programmed intervention on the technical system itself, techno-economic planification has noncalculated consequences on the other constitutive systems of society (the "social" and the "cultural" systems)—and this is what has not yet been adequately taken into account and "regulated" by planification (Gille 1977, 78). Hence the programming of technical evolution harbors the threat of a general disequilibrium.

Gille's hypothesis is that we are moving into a new technical system that requires adjustments to the other social systems. The question that evidently comes to mind is knowing whether the social and the cultural systems are themselves "adjustable" in the sense of "programmable." Above all, this hypothesis presupposes the installation of a stable novelty. Now, along the lines of our hypothesis on speed, is not the new technical system chronically unstable? In this case, what might be the conditions of such "adjustments"?

Leroi-Gourhan will enable us to broach the question of the adjustment between the technical and the social from an anthropological point of view. More precisely, with the unity of the social being named the *ethnic*, a relation between the *ethnic* and the *technical* is set forth as grounding all anthropology. Leroi-Gourhan's question is that of an essential, and thereby originary, characterization of the anthropological by the technological. In his first works, Leroi-Gourhan elaborates the project of a technology's grounding of an anthropology. He approaches the subject from the viewpoint of the diffusion of technical objects. Then, posing the concept of a technical tendency informing history and geography, independent of ethnic determinations, he strives to question the process of invention at the level of ethnic groupings.

The necessity of technics *qua* the science of technical evolution or technogenesis makes up the terms in which Marx carries out his critique of the traditional point of view on technical invention:

A critical history of technology would show how little any of the inventions of the eighteenth century are the work of a single individual. And yet such a book does not exist. Darwin has directed attention to the history of natural technology, that is, the formation of the organs of plants and animals, which serve as the instruments of production for sustaining their life. Does not the history of the productive organs of man in society, deserve equal attention? . . . Technology reveals the active relation of man to nature, the direct process of the production of his life, and thereby it also lays bare the process of the production of the social relations of his life, and of the mental conceptions that flow from these relations. (Marx 1976, 493 n. 4)

Gille and Simondon, as much as Leroi-Gourhan and Marx, essentially tie the scientificity of a technics to such a critique. We will deal here with the relation of technics and time as the question of invention. At bottom, the issue will be to understand the dynamic of the "technical system," to study the possibilities of a theory of technical evolution. We will see the question of a technical determinism arising in a permanent oscillation between the physical and biological modalities of this evolution, the technical object, an organized and nevertheless inorganic being, belonging neither to the mineral world nor simply to the animal. A central question will be that of the limits of application of the analogy between the theories of technical and biological evolution. This is equally the question of the traditional opposition between technical entities and entities deriving from *phusis*, an opposition whose line of demarcation is, as we saw with Aristotle, that of self-production, and which will need to be problematized.

We will first study what Gille calls the technical system, a notion existing in various forms in other authors' works which do not use it explicitly but which describe technics following the same idea. As for Gille, a technical system designates in the first instance a whole play of stable interdependencies at a given time or epoch. The history of techniques is essentially designed to account for the possibilities of passing from one technical system to another.

We will next see how Leroi-Gourhan deploys the concept of technical systematicity differently from Gille. The former develops the hypothesis

of a systematic evolution of technics, which he deals with through the notion of technical tendency. The question he thereby introduces regarding the relations between the ethnic and the technical is central to the specificity of modern technics, if it be true that the latter "uproots" peoples, blurring, even effacing, ethnic differentiations.

With Simondon, we will address the question of the contemporary technical system in its relation to the industrial technical object within the process of concretization. We will envisage the possibility of using the concept of concretization to describe the evolution of the technical system in general by considering the system itself as individual and object.

At the end of the first chapter, having come full circle in our investigation of technical evolution, that is, of technics in time, the possibility will arise that technics, far from being merely in time, properly constitutes time. This hypothesis will be opened through our study of the relations between technology, or technogenesis, and anthropology, or anthropogenesis, and particularly through a reading of Rousseau, whence we will return to Leroi-Gourhan's work in prehistory. The full scope of the hypothesis will not be fully envisaged, however, until, in the following section, the anthropological point of view has been abandoned and its consequences then set off against the thesis of temporality that comes out of the Heideggerian existential analytic.

§ I Theories of Technical Evolution

General History and the History of Techniques

The general concept of a technical system is elaborated by Bertrand Gille from the perspective of a historical science. Strictly speaking, in Gille's work there is no one technical system but a succession of technical systems. In the course of a historical period, a system is constituted as a stabilization of technical evolution around previous acquisitions and structural tendencies determined by a play of interdependencies and inventions complementing one another, in relation to other dimensions characteristic of a particular historical period.

This is a proposal in historical method not only for the history of techniques but for general history: it is a question of elaborating "a history bound, so to speak, by the material world" (Gille 1978, ix), a history that can account for the everyday material world throughout history, initiate a dialogue with the specialists of other systems (economic, linguistic, sociological, epistemological, educational, political, military, and so forth) on the question of the site of technics [*la technique*] in the global coherence of the "human system," and determine the periods of technical development.

Beyond this, what is in question is an apprehension of the possibilities of passage from one technical system to another. From the vantage of a synchronic principle, Gille proposes to describe and explain the diachrony of ruptures, mutations, revolutions, of what in general is called "progress" in the specifically technical sense of the term: "What may appear, in scientific progress, not so much simple as clear and rigorously ordered, appears infinitely less so in technical progress" (1978, x). How does

invention take place? Through a process unlike scientific progress: "if there is a certain logic to technical progress, this logic is not perfectly autonomous. Firstly, a certain coherence is necessary in that an isolated technique does not exist without reference to attendant techniques" (x): the logic of this progress for a particular technique is primarily determined by the technical system to which it belongs.

Lucien Febvre called attention to the necessity and the lack of an actual history of techniques within general history, to the necessity of a concept founding its method: the history of techniques is "one of these numerous disciplines that are entirely, or almost entirely, to be created" (Febvre 1935, 16). This necessity appeared notably in the thesis of Lefèbvre des Noëttes, which assigned to technical innovation—to the harnessing and saddling of the horse—a determining role in the disappearance of slavery, and highlighted the problem of the role of technics in human development and of a technical determinism in history.

The stakes are high. The incorporation of the history of techniques into general history is particularly difficult.

There is first of all the problem, intrinsic to the object "technics" [*la technique*], of not falling into a specialized, parceled history of techniques: *technics* is the object of a history of techniques, beyond techniques.¹ At present, history knows only techniques, because technics is essentially specialization. Technics is not a fact but a result. The history of techniques, then, needs this result to become organized into a history of technics.

There is on the other hand a problem in establishing the actual connections with other historical aspects; this places the preceding problem at a more general level. There are economic, political, demographic facts, and so forth. But it is the unity of the historical fact that gathers this diversity into a general history. Here again, the result must provide the unity of the operation from which the result results.

The concept of a technical system aims at the solution of these problems. Such a result returns after the event [*après coup*] as the possibility of a new, more stable beginning.

The Technical System

As in linguistics, here the point of view creates the object, and the concepts will have to order reality according to the static and dynamic as-

pects of the general system that reality forms. As in linguistics, here the system is the major concept.

Technical structures, ensembles, and channels are static combinations in which phenomena of retroaction appear: by using the steam engine, the steel industry produces better steel, allowing in turn for the production of more efficient machines. Here, then, the necessity of a concept of technical system becomes urgent. The various levels of combinations are statically and dynamically interdependent, and imply laws of operation and processes of transformation. Each level is integrated into a superior level dependent upon it, right up to the global coherence that the system forms.

A technical system constitutes a *temporal unity*. It is a stabilization of technical evolution around a point of equilibrium concretized by a particular technology: "The establishment of these connections can only take place, can only become efficient, once the common level of the ensemble of techniques is realized, even if, marginally, the level of some of the techniques, more independent than others, has remained below or above the general level" (Gille 1978, 19). A sort of technical mean is thus established around the point of equilibrium.

The evolution of technical systems moves toward the complexity and progressive solidarity of the combined elements. "The internal connections that assure the life of these technical systems are more and more numerous as we advance in time, as techniques become more and more complex." This globalization [*mondialisation*] of such dependencies—their universalization and, in this sense, the deterritorialization of technics—leads to what Heidegger calls *Gestell*: planetary industrial technics—the systematic and global exploitation of resources, which implies a worldwide economic, political, cultural, social, and military interdependence.

The Technical System in Its Relation to Economic and Social Systems

The question posed to history is that of the relation between the technical system and what we shall call the "other systems." In the first place, it is obvious that links exist between the technical and economic systems: there is no work without technics, no economic theory that is not a theory of work, of surplus profit, of means of production and investment.

There are two opposing points of view on what determines the rela-

tions between these systems: "Some have been led to think that the technical systems were, from the beginning, more astringent than the economic systems. Conversely, a technique must be incorporated into a system of prices, into an organization of production, failing which, it loses its economic interest—its proper finality" (Gille 1978, 24).

The economy may constitute a brake on the expansion of the technical system. Thus, the practice of preserving outlived techniques for economic reasons is commonplace—and only one example of the problem of adequacy between the evolutionary tendencies of technics and economic-political constraints. The aim of state interventionism is the regulation of their relation—for example, through a system of customs regulations, or through public investment.

The transformations of the technical system regularly bring in their wake upheavals of the social system, which can completely destabilize it when "the new technical system leads to the substitution of a dominant activity for an out-dated activity of a totally different nature" (Gille 1978, 26). Hence the very general question of technology transfer arises. What is of interest to us here is the ever-present necessity of solving this problem in the twentieth century, which is characterized, as we shall see, by economic activity based on ever more rapid technological innovation. The relation between the technical and social systems is thus treated as a problem of consumption, in which the economic system is the third component: the development of consumerism, accompanying constant innovation, aims at a greater flexibility in consumer attitudes, which adapt and must adapt ever more quickly, at a pace obviously not without effect on the specifically cultural sphere. The twentieth century thereby appears properly and massively uprooting—and this will always provide the theme, in terms of alienation and decline, of the great discourses on technics.

The Limits of the Technical System

The limits of a system order its dynamism. Structural limits can be detected "either in the problem of increasing quantities, or in the impossibility of reducing production costs, or in yet another impossibility, that of diversifying production" (Gille 1978, 26). Economic crises are due to these structural limits.

The report *A Halt to Growth*² characterized our age from 1970 as one

threatened by the limits of the development of technics in its relation to the terrestrial ecosystem. Gille criticized the report in its failure to apprehend technics *qua* system and its consequent inability to analyze correctly the complex nature of its limits: the limit, exhibiting a negative and a positive side, is the principle factor in the transformation of the technical system. Technical progress consists in successive displacements of its limits. The steam engine, as it becomes more powerful, becomes more cumbersome. Below 5,000 horsepower, it is not profitable, and "above a certain capacity, no gain is possible: dimensions, turnover, costs, all necessarily linked to one another, impose a limit that it would be unthinkable to surpass" (Gille 1978, 32–33). Such limits, which can "block a whole system, . . . can just as well . . . create disequilibriums inducing crises," engendering evolutions and decisions. "If . . . all techniques are interdependent, reaching a limit in a given sector may stymie the entire technical system, that is, stymie its general evolution. . . . Around 1850–1855, the replacement of the iron rails of railroads threatened to become a financial disaster if the weight and speed of the trains continued to increase" (34). One had to await the invention of the Bessemer smelting furnace, which allowed for the production of steel rails, before railroad transport would show a marked improvement. This is a case of an endogenous limit to the technical system. But there are also exogenous limits. This is, for example, the case with French techno-economic protectionism in the nineteenth century: it was because of the imposition of duties on the importation of English iron, that is, because of "customs protection, that a country like France . . . was unable to surpass certain limits"; in other words, protectionism stalled the evolution of the steel and iron industry and its global technical system. Conversely, dynamic analysis "highlights structural limits that induce invention and lead to mutations of the systems" (35). When a set of conditions is grouped into a system, a decision to evolve takes place. In other words, there is on the one hand progress *qua* the development of the consequences of a technological invention within a stable technical system, without obligatory crises, without brutal discontinuity—a development Gille calls "technological lines"—and on the other hand, progress as destabilization of the technical system, reconstitution around a new point of equilibrium, and the birth of a new technical system. New technical systems are born with the appearance of the limits of the preceding systems, owing to which progress is *essentially discontinuous*.

Rationality and Determinism in the Process of Invention

The question, in sum, is to know how an evolution of the system is decided: this is the problem of the logic of invention. The horizon of a mutation is a play of limits within a system, forming an evolutionary potential; the effectuation of the mutation is the technical invention itself, *qua* the catalyst of this potential, *qua* the act of evolutionary potentiality.

The explanation of this actualization is not to be found on the side of scientific discovery. Although technical and scientific progress may converge, and scientific discovery engender technical innovation, there are in each case two different processes of invention or discovery, possibly complementary but irreducible to one another. Technical discovery cannot be typified by the mere development and implementation of a scientific discovery. Such an "implementation," when it occurs, is itself autonomously inventive, following a logic that is not the logic of science.

There is, then, a singularity in the logic of technical invention. René Boirel speaks of a "diffuse rationality" (Boirel 1961). The term "rationality" is indeed apt, since technics, in functioning, enters into the causal chains of the principle of reason, is inscribed in the real while transforming it, thereby respecting its laws. But this rationality is nevertheless "diffuse" to the extent that the necessity it entails would be "looser" than that in scientific rationality. Technical invention, not being guided by a theoretical formalism preceding practical operation, remains empirical; however, the inventive operation cannot be said to be produced by chance, for an essential part of innovation is accomplished through transfer, whereby the functioning of a structure in a technical apparatus is analogically transposed into another domain. There is, then, a combinatory genius in technical invention. This also implies the cumulative nature of technical knowledge, although in another sense than in scientific knowledge. One should speak of technological lineages, of paths through the empirical realm [*empirie*], of tentative groundbreakings [*frayages*] in the development of the potential of a technique whereby invention deploys itself. The rationality of technical invention, "situated on a determined technological line," would then be diffuse "to the extent that choices may be made, various combinations set up. For the inventor, the whole question is knowing whether the road to follow is wide or narrow" (Gille 1978, 40).

As for this apparent possibility of *choice*, Gille speaks, with J. L. Maunoury, of "loose determinism." The difference of this from strict deter-

minism would consist in the impossibility of anticipating technical evolution a priori, although this evolution appears necessary a posteriori—and Maunoury speaks here of chance (in Gille 1978, 41). Everything comes about as if technical innovation accomplished randomly, but certainly, the fulfillment [*remplissement*] of a technical, or technological, "intention." We shall see this theme taken up in much more depth by Leroi-Gourhan and Simondon, when, once again, the hypothesis of a combinatory genius will arise, a hypothesis of such genius's random but ineluctable adjustment, an actual process of *selection of technical archetypes* recalling in singular fashion the play of chance and necessity in molecular biology.

Gille distinguishes between simple invention (for example, John Kay's flying shuttle), development (successive perfectings that improve a technique without modifying its fundamental principles), and invention as a mounting operation (for example, the internal combustion engine); it is not a matter of a unique technical lineage, but of a series of technical lines. In technical invention, other levels intervene above the technological lineage as such: scientific knowledge and interdependencies with other systems, along with external constraints in general, for example economic constraints (as was the case with the Bessemer smelting furnace), but above all, *technical systematicity itself*, that is, the play of constraints imposed by the interdependencies between technical elements and those intrinsic to the system. *The system's dynamic offers the possibility of invention, and this is what is essential to the concept of technical system: the choice of possibilities in which invention consists is made in a particular space and particular time according to the play of these constraints*, which are submitted in turn to external ones.

As a consequence, rationality "appears difficult to put into question to the extent that the number of usable combinations is not infinite, given that, basing itself on existing structures, it must follow quasi-obligatory paths." Determinism "is not less obvious. Technical determinism, scientific, economic, even social or political determinism" (Gille 1978, 47).

Throughout all this, Gille significantly restrains the role of genius in inventiveness: if there is rationality in the inventive operation and determinism of the system,

whatever the level chosen, whatever the epoch considered, the freedom of the inventor is severely bounded, severely limited by the demands that invention

must meet. Thus not only are choices imposed . . . but also the moments in which the invention arises, determined by scientific progress, by the parallel progress of all techniques, by economic necessities, etc. (Gille 1978, 48)

In other words, the logic of invention is not that of the inventor. One must speak of a techno-logic, of a logic literally driving technics itself. Must one speak of a technological reason? A proof of techno-logical universality would then be required, which Gille does not offer; the question as such does not arise. It is, however, the very object of reflection for Leroi-Gourhan, for whom a universal technical tendency exists, largely independent of cultural localities where it becomes concretized as technical fact, and where it can precisely enter into conflict with local cultures that accomplish it since it is universal while they are particular. We shall then see how Leroi-Gourhan transforms Gille's problem (in terms of an articulation between the technical system and others) into a veritable opposition between technics *qua* a universal tendency and what Leroi-Gourhan will name the ethnic *qua* a factor of diversifying diffraction from which the universal tendency will nevertheless profit.

Invention and Innovation

Two phases in the process of invention must be distinguished—the phase of adjustment and that of development—and a difference must be introduced (taken from François Perroux) between invention and innovation. Innovation accomplishes a transformation of the technical system while drawing the consequences for the other systems. In other words, the rules of innovation are wholly different from those of invention. The rules of innovation are those of socialization, as analyzed mainly by economists: “Innovation is mainly of an economic order” (Gille 1978, 52).

Innovation destabilizes established situations: it thereby creates resistance. The socialization in which innovation consists is work on the milieus it crosses through (social, economic, political, etc.). Beyond the fear of change, socialization also encounters the problem of technological investment and anticipation: there is always a possibility that an innovation will be made obsolete by another innovation arising to replace it. This is especially true in contemporary technics, given its speed of transformation and the decision-making problems this speed implies. This is all the more true since such anticipations suppose a vantage on the tech-

nical system as a whole, a system increasingly complex and interdependent.³ These questions are the object of difficult calculations, which evidently suppose modelings of the technical system in relation to economic models: it is a matter of calculations of the “production function,” which is a “series of technical relations in an industrial branch between the factors of the function and its products” (Gille 1978, 54).

One could say that the logic of innovation is constituted by the rules of adjustment between the technical system and the others. There is for each age a typology of the conditions of innovation that are possibilities of adequacy between the technical system and the other systems. Along these lines a French iron master, Rambourg, examined the reasons for resistance to the transfer of English iron and steel industrial technology to France,⁴ finding that the variables conditioning the process of innovation stem from the geographical system (physical and human geography), the technical system itself, and the educational system. Rambourg next introduced the question of capital, that is, the question of adequacy to the economic system.

A historical approach to these conditions and to tempos of distribution of an innovation would thus lead to the creation of a typology, “being simultaneously a typology with regard to purely technical elements, which would therefore mesh well with a typology of invention; a typology according to factors of production that are not of a technical nature; and finally a typology following a chronology to be determined” (Gille 1978, 60), which would account for rhythms of transformation, cycles of acceleration and deceleration of the evolution of the technical system.

Industrial Investment: A Joint Evolution of the Technical System, the Economic System, and the Apparatus of the State

The question of investment—that is, of the adjustment between the management of capital, the management of the existing means of production, and the development of the potentialities of the technical system—deserves particular attention, to the extent that the nineteenth-century industrial technical system imposed a profound reorganization of the economic system. From the point of view of relations between the industrial technical system and the economic one, the latter separates

into two subsystems, the banking system and the productive (or entrepreneurial) system as such. This essential question points to a supplementary characteristic of modern technics, inscribed in the framework of what Gille calls the canals of innovation, capable of operating at "individual, collective or national" levels (1978, 62).

Innovation cannot exist without investment, and investment implies available capital. To mobilize this capital, innovation must be sufficiently attractive; it must in the strongest sense of the term create credit for itself. This necessity, regularly born out during the expansion of the Industrial Revolution, became dominant with the thermodynamic revolution, which presupposed large-scale investment and required that the economic system readapt its financial subsystem to the newly created conditions of the technical system. This is the context in which the limited company and the stock-market system developed, with the aim of assuring the mobility of capital (what Max Weber calls the "rationalization of speculation" [1958, 10]). This recently finalized transformation of economic organization, in which the financial sector becomes autonomous with regard to production, is today undergoing developments that are disturbing for the theoretical economist as well as the manager and the speculator: the so-called "financial bubble" is becoming autonomous to such an extent that it is often cut off from productive realities, and functions according to a logic of belief (or of credit) *massively determined by the performances of telecommunication and computer-based systems* in the management of financial data. Capital exchanges have become a problem of informational management effected "in a nanosecond." These exchanges are data that are exchanged and processed, and no longer monetary masses. Decisions made "in a nanosecond" are calculations performed on series of indicators dealing primarily with the stock markets themselves and with macroeconomic decisions interfering with them, and not evaluations of the macroeconomic situations of particular enterprises.⁵

If in fact there seems to be a technological determinism in the evolution of the economic system, the birth of modern capitalism appearing required by the birth of industrial technics, then conversely it could be said that the possibility of the technical system of thermodynamics and, beyond that, of industrial technics in general is conditioned by a new organization of the economic system, which itself supposes an accumu-

lation of capital. In effect, there is a singular techno-economic conjugation whose consequence is the appearance of "technocracy" and "technoscience": the transformation of the economic system facilitates a convergence between the "propensity toward work of available capital" and the propensity of technical activity toward innovation and improvement. Favoring this convergence becomes an actual state politics (according to a tradition that would refer back to Colbert). The point is as much acculturation and national scientific and technical information as it is that of a form of intervention and investment on the most collective scale possible.

To understand the dynamic of innovation is to understand how cascading convergences operate. The innovative dynamic, which conditions all the others (and would tend to render the technological determinations preeminent), "is of a purely technical order. It is indeed necessary that, on the plane of production itself, innovation be incorporated into a balanced technical system" (Gille 1978, 64) and consequently, that a stabilization take place at the end of a process of transformations that first appears as a disturbance of the existing system: the logic of innovation is properly that of the evolution of the technical system itself. In question here is what is today referred to as *development*,⁶ understood as perpetual modernization or constant innovation. We have rapidly examined the question of the relation of these convergences "of a purely technical order" to the economic system. But the innovator must also include in his calculation—for it is indeed a matter of accomplishing the process by calculation—social, political, and institutional constraints, which can constitute in certain cases temporarily insurmountable obstacles. And if resistance to technics is not recent, it has nevertheless become a day-to-day, worldwide problem, inscribed in the program of governments and international organizations; in fact, development constantly intervenes to modify everyday life, a life in which industrial technics is omnipresent. This inevitably engenders a new consciousness of development's opacity, even of its "autonomy," and a more or less organized resistance. Gille's description of the accentuation of reactions through time, and the collective measures taken by states and "decision makers" to attenuate them, paints a clear picture of mounting discontent, as diversely interpreted as it may be, in which what will constitute modern technics as we know it today takes on form.

Constant Innovation: A New Relation Between *Tekhnē* and *Ēpistēmē*

Carrying certain hypotheses of the above viewpoint to their extreme limits, one might surmise that the French Revolution was perhaps less a realization of the exigency that the rights of the human be guaranteed, less a capture of power by the bourgeoisie, than an adaptation of the society to a new technical system through the full development of what Webér calls *free work*. All the analyses presented above, issuing in the formulation of such hypotheses, assign a considerable role to the engineer: to manage a technical system is to intervene in the social and economic transformations at a much more profound level than in what peoples, political organizations, and managers in the ordinary sense believe they decide. The intersection of technical and economic systems, today worldwide, issues in the techno-economic question of growth.

If we have been stressing, in order to analyze major characteristics of technical progress, the difference between scientific discovery and technical invention, we should now, nevertheless, underscore the tightening of the links between science and technics *qua* an essential aspect of contemporary technics—by which the conditions of scientific discovery itself are transformed. From the very beginning of modern technics, the transfer time of scientific discovery to technical invention and then to technical innovation has considerably shortened: “One hundred and two years elapsed between the discovery of the physical phenomenon applied to the photograph and photography itself (1727–1829)” whereas the transfer time was reduced to “fifty-six years for the telephone, thirty-five for radio, twelve for television, fourteen for radar, six for the uranium bomb, five for the transistor” (Gille 1978, 39). This reduction in delays is a result of what Weber, Marcuse, and Habermas call “rationalization.” Its price is a totally new relation between science and technics (and politics), established by way of the economy.

Four factors of technical evolution have appeared: technical progress as invention, technical progress as innovation, economic and social progress, and scientific progress. Starting from the Industrial Revolution—with Watt and Boulton—and preeminently with contemporary industrial technics, the economic process has been based on constant innovation, that is, on an ever more rapid and more radical transformation of the technical system and, as an indirect consequence, of the “other sys-

tems,” that is to say, of the world, resulting as well in a transformation of the relation between *tekhne* and *episteme*. Gille points out two combinations, characteristic of modern technics, involving scientific progress, technical progress as invention, technical progress as innovation, and economic and social progress: scientific progress—*invention—innovation*; and *invention—innovation—growth* (1978, 70).

The first combination would posit scientific discovery as pressure encountering a convergence on the side of innovation (in industry), with invention the middle term. Initiative is then on the side of science, valorized by industry. In the second combination, where innovation is the middle term, initiative becomes much more economic, research is incorporated into the enterprise, science is commanded by development: it seems that in this case, the pressure comes

above all from the necessities of growth, either in order to accelerate the installation of a new technical system, or to remedy distortions in technical progress as in the economic or social systems. In all domains, there is a passage to collective movements. The inventor has less importance than the entrepreneur who decides and establishes the junction between families of innovations. (Gille 1978, 72)

Here we see the beginning of what will become research and development in the modern sense, and which is the origin of what has been called technoscience. On the grounds of this new relation between science, technical system, and economic system, the state develops *qua* “technostructure” or “technocracy,” aiming at the regulation of the transfer processes within each system. This is the transformation analyzed in “The Age of the World Picture” (Heidegger 1977) from the vantage of the history of being. With contemporary technics, in which “scientific and technical progress are . . . increasingly linked,” in which “economic and scientific progress can no longer function separately” (Gille 1978, 73–74); *there is a reversal of meaning in the general scheme: no longer is innovation what results from invention; it is a global process aiming to incite invention, it programs the rise of invention*. “Before, invention, to be applied, had to wait until technical, economic, and social conditions and so forth had become favorable. Henceforth, the desire for innovation incites invention” (74). Research and development rest on this inversion, illustrated by the example of the creator of the Philips company, Doctor Holst, who inaugurates the time of actual industrial research, with his

own laboratories at his disposal: this is what can be called technoscience as such.

The reduction in transfer delays mentioned above as characteristic of contemporary technics literally leads to a confusion between technical invention and scientific discovery. Research orientations are then massively controlled by industrial finalities. Anticipation, at the most global level, is essentially commanded by investment calculation—collective decision-making, temporalization—in short, destiny is submitted to the techno-economic imperatives regulating this calculation. This is as well the domination of a certain understanding of time. An increasingly crucial question is nevertheless posed by this understanding: that of the adjustment with the “other systems” (referred to globally under the name “culture” in our introduction) of a technical system in which the relations between science, invention, and innovation have been transformed in such a way that technological evolution is accelerated on a scale incommensurable with the former technical systems. Even if Gille does not situate the difficulty of such an adequacy between systems in the speed of development, he considers that we have not yet seriously envisaged the question, and that it is necessary to bring about a new understanding of the relation of the human to the technical. “If we are heading today toward a new technical system . . . , it is a question of assuring not only its internal coherence but also its coherence with the other systems” (1978, 76). In his view, this necessity finds expression in an excerpt from the French Fifth Economic Plan, which in effect poses the question of planning the technological transformation of society. At a rhythm of constant innovation, unknown factors are no longer possible; the movement must be controlled at the risk of collapsing the global coherence whereby the systems operate complementarily: at stake is the organization of the future, that is, of time:

It is no longer a matter of undergoing uncertain technological progress in its realizations, . . . of accepting willy-nilly what occurs in the technical domain and of effecting after a fashion the necessary adaptations. In all domains, in the economic as well as the military domain, the future must be organized. (Gille 1978, 77)

The problem is one of organization *qua* the programming of technological progress, which implies that time must be included as calculation. Without calling into question such an implication, Gille deplures in his

conclusion the inadequate realization of the stakes at hand and hence the inadequacy in the reigning conception of development planning of all the constitutive systems of society (what Simondon will interpret as the necessity of a new technical culture):

When technical progress used random or apparently random channels, the adjustments of new technical systems to the other systems were carried out willy-nilly, by the play of a certain number of freely acting forces, with all the mistakes, all the retreats that this would imply before reaching a satisfactory equilibrium. If technical progress is henceforth to become something programmed, that is, ordered in fact, in space and time, the programming should spread to all the necessary compatibilities, in all domains—the economic domain, which is the one most often mentioned, but also the social, the cultural, and so forth. Without such research, it would undoubtedly be vain to seek to impose a technical progress falling short of the indispensable conditions of general equilibrium. (Gille 1978, 78)

Nevertheless, if, as we believe, the technical system has entered into an age of perpetual transformations and structural instability, one can surmise that the problem should be set out in other terms: those of the necessary reexamination of the originary relation between the human and the technical, *qua* a *phenomenon of temporality*.

Technical Universality

Should one speak of technological *reason*? The presence of a technological universality would then have to be proven, which Gille not only fails to do but does not even begin to do. André Leroi-Gourhan, on the other hand, starts from this very hypothesis. We have just seen the historian of technics taking up mainly two questions: firstly, that of a dynamism inherent in technics organized into a system, functioning according to its own at once rational and determinist logic; and secondly, that of a relation of such a dynamic system to the other systems, and hence of its incorporation into the global historical scheme. Leroi-Gourhan's viewpoint on these questions is no longer historical but ethnological. *Man and Matter* [*L'homme et la matière*, 1943] proposes the hypothesis of *universal, technical tendencies*, independent of the cultural localities that *ethnic* groupings compose, in which they become concrete [*se concrétisent*] as *technical facts*. Leroi-Gourhan thereby deals at once with

the immanent technological dynamic and with the relation of the technical system to other systems. The tendency, in its universality, enters into a complex relation with particular ethnic realities that produce technical facts, from which facts it must be distinguished, although they alone give it reality. In "crossing through" ethnic milieus, the tendency "diffracts" into an indefinite diversity of facts. This will lead, in a reading of Leroi-Gourhan's *Milieu and Techniques* [*Milieu et techniques*, 1945], to a study of the relation between the *technical*, whose essence lies in the universal tendency, and the *ethnic*, whose manifestation as a particular concretization envelops its universality. The question of invention will once again be approached under this heading. This set of hypotheses on technical evolution depends on an analogy with biology and zoology. The theme of the combinatory, already present in Gille's work, is here much more clearly akin to *a theory of the selection of the best technical forms* effected along combinatory possibilities.

The ethnologist observes facts, between which he looks for links. Then he attempts to explain the principle of the linkages. In the field of technology, where this principle is also the driving force of evolution, the ethnologist's error has generally been to attribute the principle of universality deriving from the links between facts not to the technical tendency as such but to the genius of a particular culture: Indo-European culture. The concept of technical tendency is opposed to this ethnocentric illusion, formalized in the so-called theory of "concentric circles." The agreement between the historian and the ethnologist is clear: there is no genius of invention, or at least, it plays only a minor role in technical evolution. Conversely there is a systematicity that here implements tendencies, realized in a coupling, which should be brought to light, of the human with matter.

The Coupling of the Human with Matter

Man and Matter sets down the principles of a "technomorphology based on raw materials," following an approach that studies the so-called primitive peoples spread over the globe, certain of whom have entered into practically no commerce with others, on whom we have only limited, unhistorical documentation (these are peoples "without writing systems"), and for whom technics is much less complex than it is in historical epochs.

The ethno-anthropology of Leroi-Gourhan is grounded in an interpretation of the technical phenomenon, which for him is the principle characteristic of the human, through which peoples distinguish themselves more essentially than through their racial and cultural characters in the spiritualist sense of the term. This interpretation has two objectives: to furnish a theory of *anthropogenesis* corresponding point by point, as we shall see, in its paleoanthropological dimension (which will be taken up in the third chapter), to a *technogenesis*; secondly, to allow on this basis for the comprehension of cultural differentiations between ethnic groups.

Through the introduction of the concept of tendency (inspired by a reading of Bergson, to whom he sometimes refers),⁷ Leroi-Gourhan interprets this technical phenomenon and legitimates his project for a technomorphology by comparing the task of the anthropologist to those of the botanist and zoologist between the seventeenth and nineteenth centuries: these two disciplines were able to elaborate their taxonomic principles—which have since proven definitive—while "the majority of species remained to be discovered" (1943, 13). Likewise, anthropology, for two thirds of a century, "has provided itself with classifications, it has divided races, techniques, and peoples, and experience has proven on the occasion of each new expedition the solidity of several old conceptions. In zoology or in ethnology, this is due to the permanent nature of the tendencies" (13). Leroi-Gourhan adds the following remark, which introduces the concept of the line—or of the *phylum*—close to the concept of technological lineage, along with the question of choice, that is, of determination, already found in Gille:

Everything seems to happen as if an ideal prototype of fish or of knapped flint developed along preconceivable lines from the fish to the amphibian, to the reptile, to the mammal, or to the bird, from form-undifferentiated flint to the polished knapped tool, to the brass knife, to the steel sword. This should not lead us into error: these lines render only an aspect of life, that of the inevitable and limited choice that the milieu proposes to living matter. (Leroi-Gourhan 1943, 13)

This comparison between *technological and zoological facts*, between the technical object and the living being, is crucial for the hypotheses that will follow. The explanation of the technical phenomenon will analyze as a particular case of zoology the relations established between the human

qua living matter and inert matter *qua* the "raw material" out of which technical forms appear. Leroi-Gourhan brings to bear a quasi-biological determinism that does not exist in Gille, but in which, here too, the "paths of invention are narrow": "For one must choose between water and air, between swimming, crawling or the race; the living being follows a limited number of large lines of evolution" (Leroi-Gourhan 1943, 13). The same limitation, the same principle of the molding and inscription of the living in conditions established by the inert matter of the milieu, will determine the form of tools. The texture of wood imposes forms on blades and hands and

technical determinism is as marked as that of zoology: like Cuvier discovering the jaw of an opossum in a hump of gypsum, and deciding to invite his unbelieving colleagues to pursue with him the uncovering of the skeleton and predicting for them the discovery of marsupial bones, ethnology may, up to a certain point, draw from the form of the blade of a tool provisions on that of the handle and on the use of the complete tool. (13-14)

Technical evolution results from a coupling of the human and matter, a coupling that must be elucidated: technical systematicity is here embedded in a "zootechnological" determinism. From the very fact of the zoological character of one of the terms of the relation, that is, the human, the phenomenon must be interpreted from the perspectives of the history of life, although the technical objects resulting from the coupling come from matter that must be called inorganic since this matter is inert, albeit organized. Hence we understand the need for a reflection on the meaning of the organization of matter in general in its relation to the organism, but also on what is called the organ, whether that be taken to indicate the part of the organism or the *organon qua* technical instrument. The investigation will proceed by analogy with the methods of zoology—the whole question being *up to what point* the analogy holds.

Tendency and Facts

The experience and organization of the coupling of the human and matter through universal technical tendencies, one analyzable in zoological terms up to a certain point, constitutes the founding axiom of Leroi-Gourhan's approach. A second view aims at giving an account of the factual diversity of technical evolution, for instance in the traces found in

ethnological and archaeological raw material. The question then becomes that of distinguishing the technical tendency within technical facts. The tendency is realized by the facts, and the examination of the links between facts affords us a view of the conditions for the realization of the tendency. A classification of the facts must be carried out, and the unity in the apparent diversity in which it presents itself discovered.

A problem arises here that implies a crucial choice, depending on the way the problem is solved, in the interpretation of technological development in general—a problem that Cuvier ran up against in his field because he had not firmly established the absolutely essential difference between determining tendency and material fact. "There are general tendencies that can give rise to identical techniques without being materially linked," that is, without contact between the peoples where they occur, "and [there are] the facts that, whatever degree of geographical proximity they may have, are individual and unique" (Leroi-Gourhan 1943, 14). The technical objects that the facts consist in are diverse, even though they may belong to the same tendency. One must therefore provide an account of the causes of this diversity, a fact closely linked to their belonging to a technical ecosystem, by placing oneself on another level than that of the tendency, which this causality can no longer explain. The question is to distinguish the determining universal tendency and its local appropriation, singularized by the "genius" of an ethnic group.

We see arising here the issue of the relation between the technical and the ethnic. "The custom of planting wood or bone ornaments in the lower lip is found . . . in the Eskimos of Alaska, the Indians of Brazil, and the Negroes of Africa. Here there indeed is technical identity, but hitherto no serious effort has succeeded in proving the common roots of these human groups" (Leroi-Gourhan 1943, 14). Everything seems to point to the presence of a determined tendency, a universal fact, but one inexplicable by the play of reciprocal cultural influences, given the absence of contacts between these civilizations. Inversely, "the Malaysian, Japanese, and Tibetan plows represent three related forms that were certainly in contact in the ancient history of the three peoples: each one, however, in the cultivated soil, in the details of its construction, in the details of its yoking, in the symbolic or social meaning attached to it, represents in fact something unique and categorically individualized" (14). In this case, the temptation will be, in bringing together these facts, to draw conclusions as to the conditions for the spread of the same arche-

type's situating itself in particular forms, oscillating between a purely determinist point of view, which gives no account of diversification, and a historico-culturalist point of view, which seeks to identify the original locus of invention and genius that influenced the other two loci through its proximity to them. From here, the more general thesis of the spread of a technical invention by concentric circles starting from several hubs of civilization will be easily taken up. Finally, "everything seems to be on the order of a 'plow' tendency realized at each point of time and space by a unique fact and indubitable historical relations on sometimes considerable scales of time and space" (14).

There are at one and the same time phenomena of diffusion, of reciprocal influences between cultures—which explain the presence and the diversification of a technical fact in a given space and time—and a causality of another nature, linked to a quasi-zoological determinism of the relation of the human to matter, the problem being their distinction. "The slightest slip has the specialist jumping from one to the other and surpassing the measure of reality" (Leroi-Gourhan 1943, 14–15). This reality is a combination [*mixte*] of two causalities that can be confused, that of cultural diffusion by borrowing—which is immediately evident—and that of the technical tendency, less directly discernible but more essential, constituting the very principle of the technical tendency from the point of view of the history of life in general.

Within this viewpoint's framework and limits, first of all the validity of the determinist viewpoint must be established, and *then* the unquestionable historical phenomena of diffusion be explained by cultural influence. The entire interpretation of the technical phenomenon is at stake. The "culturalist" point of view will give a miraculous, even magical (in any case ethnocentric) interpretation of this phenomenon. It will ascribe to one or several peoples a technical or civilizational genius in which the absolute origin of the technological lineage will be found. Leroi-Gourhan considers that such a point of view totally misunderstands the nature of the technical phenomenon, whose principle always remains the determining tendency. There is no "genius of peoples" at the origin of the phenomenon: there are facts that, inserting themselves into ethnic milieus, take on their concrete aspects as technical objects; but their emergence always results from a more profound determinism, beyond ethnic characteristics, which alone can account for the clear-cut cases of universal technical tendencies. There is a necessity proper to the technical phe-

nomenon, whose factual diversities are but the effects of its encounter with ethnic particularities. The technical event follows much more fundamentally from a zoologically rooted systematicity than from human genius. "Technological lineages" are a relation of the human to matter analogous to zoological lineages in which evolution has since Darwin been seen to consist.

The zootechnological relation of the human to matter is a particular case of the relation of the living to its milieu, the former passing through organized inert matter—the technical object. The singularity of the relation lies in the fact that the inert, although organized, matter *qua* the technical object itself evolves in its organization: it is therefore no longer merely inert matter, but neither is it living matter. *It is organized inorganic matter that transforms itself in time as living matter transforms itself in its interaction with the milieu.* In addition, it becomes the interface through which the human *qua* living matter enters into relation with the milieu.

The enigma of this matter goes back to that of *hylē qua dynamis*. Matter *qua* potentiality would be seen in its organization as the act of this potentiality. It would then be tempting to say that the organization of matter is its form, *qua* the act of this potentiality. But here the question cannot be that of a purely hylomorphic relation: matter organized technomorphologically is not passive; *the tendency does not simply derive from an organizing force—the human—it does not belong to a forming intention that would precede the frequentation of matter, and it does not come under the sway of some willful mastery: the tendency operates, down through time, by selecting forms in a relation of the human living being to the matter it organizes and by which it organizes itself, where none of the terms of the relation hold the secret of the other.* This technical phenomenon is the relation of the human to its milieu, and it is in this sense that it must be apprehended zoo-logically, without its elucidation being possible, for all that, in terms of the common laws of zoology.

Ethnic Differences and Technical Differentiation

"The Technical Structure of Human Societies" (Leroi-Gourhan 1943, 23) shows how the paleontological approach (that is, zoological), which must be followed "up to a certain point" in analyzing technical human realities, quickly reaches its limits, by the very fact of the absolutely sin-

gular character of the technicity of the human, singling it out in the world of living beings.

The desire of paleontology is apparently fulfilled in the case of the human, as compared to the cases of other species: "If the desire of researchers is to know as much about the hominid family as is known about the past of the Equidae and the Rhinoceros, that curiosity is already more than satisfied" (Leroi-Gourhan 1943, 22). However, this is only an illusion. The human is a technical being that cannot be characterized physiologically and specifically (in the zoological sense), for a diversity of human facts ruins the possibility of such scientific satisfaction related to the knowledge of the human *qua* human, and not only *qua* living being; and from this point of view, "the paths of paleontology cannot be traveled by the paleontologist *because human society would appear as a group of vertebrates who, in the course of centuries, would exchange, one, some wings for a shell, another, a trunk for a few extra vertebrae*" (22, my emphasis).

The problem arising here is that the evolution of this essentially technical being that the human is exceeds the biological, although this dimension is an essential part of the technical phenomenon itself, something like its enigma. The evolution of the "prosthesis," not itself living, by which the human is nonetheless defined as a living being, constitutes the reality of the human's evolution, as if, with it, the history of life were to continue by means other than life: this is the paradox of a living being characterized in its forms of life by the nonliving—or by the traces that its life leaves in the nonliving. There is consequently an evolutionary determinism that is not only biological but also, for reasons we have seen earlier, quasi-zoological.

The above remark about strange human exchanges, compared to unthinkable exchanges among animals, sheds unusual light on the question of the relations between cultures and provides an altogether different perspective on combinatory evolution and, in the case of human life, on combinatory genetics, which reveals according to statistical laws the necessity of natural selection: "While the possibilities of intersection between animal species are extremely limited, while felines pursue their evolution alongside bears for millennia without ever intersecting, all human races can be crossbred, all peoples are fusible, and all civilizations are unstable" (Leroi-Gourhan 1943, 24–25). For their evolution is technological, and this evolution is not submitted to the genetic isolations that guaran-

tee the unity and the stability of the animal species. This fact offers at the same time the limits of the zoological dimension of technical evolution and the dynamic principle of the latter, that is, the diversity of facts, by which it enriches and crosses through, while realizing, the other, more profound principle of the determining tendency. At this point, the question of the relation between the technical and the ethnic proves crucial. For technical differentiation itself will now proceed from ethnic differentiation cut across by the tendency's universality and hence the effective realization of the tendency, that is, the selection of the best technical forms for its realization. The history of life can thereby continue according to new laws: in interethnic relations, insofar as human groups do not behave as species in these relations, a diversity of technical facts opens out within which the universality of technical tendencies is concretized, progressively penetrating the totality of the biosphere.

The problem is then to know how these "cross-breedings" work. This is the whole question of diffusion, which occasions numerous problems owing notably to the parceled nature of ethnographic documentation.

Technical differentiation, silently propelled by the tendency, is effected *qua* fact at the ethnic level either by invention or by borrowing:

The tendency has an inevitable, predictable, rectilinear character. It drives the flint held in the hand to acquire the handle, the bundle hung on two poles to equip itself with wheels, the society founded on matriarchy to become patriarchal sooner or later. (Leroi-Gourhan 1943, 27)

This differentiation applies like a law cutting across the local technical ecosystems and guides the global process of their evolution and, hence, their exchanges. Whether this evolution operates by invention or by borrowing is of minor importance,⁸ since the facts of unilateral or reciprocal influences brought to light by the culturalist theory in no way contradict this systematic determinism in its essence. Here, technical expansion functions like an actual "fulfillment," and this is why there is no profound difference between borrowing and invention: what is essential is that an invention, borrowed from the exterior or produced locally, become acceptable and necessary in what Leroi-Gourhan calls the logical order with respect to "the state in which the affected people find themselves" (1943, 28).

The problem is to distinguish the logical from the chronological when they coincide and when the factual origin of evolution is not attested.

Whatever this origin may be, it is only possible in the field of the tendency that is the techno-logical condition of possibility of the fact:

The fact, contrary to the tendency, is unpredictable and whimsical. It is just as much the encounter of the tendency and the thousand coincidences of the milieu, that is, invention, as it is the pure and simple borrowing from another people. The fact is unique, inextensible, an unstable compromise established between the tendencies and the milieu. (Leroi-Gourhan 1943, 28)

As in Gille, the fact is a catalyst, the act of an evolving potentiality. It is the tendency's concretization, effected as a compromise, whereby various elements, determined not by the tendency but by the milieu *qua* both physical and cultural system, finally envelop its universality.

This envelopment of the universal tendency by the diversity that appropriates it is effected by layers setting up the degrees of the fact; the first degree—essentially technical—expresses the tendency itself without fully realizing it, while the other degrees—essentially ecologico-ethnic—constitute the layers wherein the first is embedded, in the local and diverse reality in which the fact is realized. In other words, the kernel of the fact is its technical essence; its flesh is an ethnic essence. The clarification of the relation between the technical and the ethnic, both technical and ethnic, can be observed here: it is less a question of an opposition than of a composition, as if the compromise between the universal tendency and the particular locality, being translated as fact, smothered the possibilities of a conflict while concealing and maintaining in reserve the universal essence of the tendency.

The first degree is the universal archetype expressing the tendency. The concretization of the tendency, its localization, its spatial inscription *qua* the effective process of technical evolution, stems from the following degrees, witnesses "the mechanism of progressive individualization of facts" (Leroi-Gourhan 1943, 32). The example of a hunting instrument, the "propulsor," shows that the second degree marks localization depending on the factors composing the technical ecosystem, which can account, "by means of the most diverse of elements (geo-physical milieu, game, graves, dwellings, stone carving, religion, etc.)," for factual convergences between different geographical centers, for example between the people of the Reindeer Age and the Eskimos. These localizations mesh with those of ethnic units. In turn, however, these units are decomposed into subgroups in which the technical fact is once again individualized, in a

third degree which thus is "that of the major breaks inside ethnic groups" (34). Lastly, the fourth degree "ends in a detailed description of the fact and of its fixation in a specific group; it can mark the trace of delicate relations between the facts of the third degree" (35).

The ethnic groups for which the layers envelop the kernel belong to the "steps" of technical evolution:

The fact is that there are not techniques but technical ensembles commanded by general mechanical, physical, or chemical knowledge. Having the principle of the wheel gives one that of the chariot, the potter's wheel, the spinning wheel, the lathe; knowing how to sew provides not only a piece of clothing of a particular form but also vases of sown bark, sown tents, sown dinghies; with the mastery of compressed air comes the blowpipe, the piston lighter, the piston bellows, the hypodermic needle" (Leroi-Gourhan 1943, 41)

Technical ensembles thereby determine the ages of technical evolution, the "technical states of peoples" that Leroi-Gourhan classes in five categories: the very rustic, the rustic, the semi-rustic, the semi-industrial, and the industrial.

Geography as Origin and Ethnic Genius as "Unifying Process"

The conditions of technical differentiation, invention, and diffusion, are examined in the last two chapters of *Milieu and Techniques* from the viewpoint of the ethnic group, defined, here again, in an original way, by its future rather than by its past. This inversion allows one to dismiss the question of the origin, or a traditional way of not really posing it, be it a matter of the origin of techniques or of the origin of peoples in which they develop.

These analyses are designed to shed light on an ensemble of facts through which geographical localizations of technical phenomena are established, and to support an argument opposed to the theory of technical centers of high civilizations (of ethnic geniuses) diffusing their skills in concentric circles of cultural influence: the determining factor is geographical rather than cultural. "At the beginning of historical times, the major techniques are the privilege of proportionately restrained geographical zones, arranged around an axis extending through temperate Eurasia." The question is then one of diffusion, on the subject of which it

must be remarked that "in the technical domain, the only transmittable traits through borrowing are those that mark an improvement of procedures. A less flexible language, a less developed religion can be borrowed, but the cart cannot be traded for the hoe" (Leroi-Gourhan 1945, 303-4). Just as there is no regression of the living, but an increase in negentropy through the ineluctable complexification of genetic combinations, so also there is only technical progress. There is a teleologism in technics linked to the principle of tendency. We have already met with this idea in Gille, where the technical system develops in ever-growing complication and integration; it will be found again in Simondon, in the domain of industrial technical objects, as the phenomenon of concretization, that is, of their tendential path [*acheminement*] toward perfection.

The major techniques are linked to geographical zones that favor their appearance. It is no less the case that the conditions of progress, that is, of invention and of borrowing, are ethnic as well as geographical (ethnic characteristics being themselves largely determined by the life conditions imposed on peoples by geography), and it is then a question of specifying the definition of the concept of ethnic group, given that invention and borrowing remain, *qua* procedures for the realization of the tendency, phenomena "intimately linked to the ethnic personality" (Leroi-Gourhan 1945, 306).

The point is to know what links are established between a general human phenomenon and the ethnic group—in what way the ethnic group is characterized through originally marking the phenomenon in question: how, for example, the phenomenon of language in general, specific to humanity in general, yields a particular language belonging to one particular ethnic group. "In linguistic matters, agreement has long since been reached: language corresponds only accidentally to anthropological realities" (Leroi-Gourhan 1945, 307), that is, to zoological characteristics of particular human groups, for example the Australians or the Chinese. On the other hand, one notices that languages, techniques, religions, and social institutions very often correspond to geographical centers—as for example in current-day China, a convergence that does not result from a zoological unity of the Chinese race, for "one grants that the 'Chinese race' is composed of disparate elements, and, on analysis of them, one finds such a diversity of dialects, of skulls, of homes, and of social laws that Chinese reality may be called into question" (307). What does the unity of an ethnic group consist in? by what processes? why these rather

than others? why does such and such a technical phenomenon develop there in such and such a manner?

The unity of the ethnic group is governed by the relation to time, more precisely, the relation to a collective future sketching in its effects the reality of a common becoming:

The ethnic group . . . is less a past than a becoming. The initial traits of the distant group that created political unity become indistinct if not completely effaced. Having become a people, the mass of disparate men tends to unite successively at the linguistic, social, technical, and anthropological levels. (Leroi-Gourhan 1945, 308)

Although expressed in a completely different register, this proposition is compatible with the Heideggerian conception of time that accords primacy to the future: we shall see up to what point.

Ethnic unity is essentially momentary and in perpetual becoming; it is never acquired, since it does not itself proceed from an origin that would be shared by the people composing the ethnic group: ethnic unity is conventional, without any other origin than a mythical one. Contrary to the theory of concentric circles, there is no ethnic genius of technics that would itself be the product of an originary race "more gifted" than others, disposing of more advanced zoological attributes and finding itself thereby favored by nature for cultural domination.

This is why the determinism that makes the logic of the development of technical tendencies understandable, stemming from the relation of the human to matter, is first of all geographical. As Gille shows for Egypt and Mesopotamia, the system of physical geography originally holds a privileged relation to the technical system, and, contrary to what the theory of concentric circles would suggest, "if one examines impartially the chart of the last three millennia, it is not the central-Asiatic hub that diffuses civilization; civilization materializes around an axis running from Great Britain to Japan, cutting across all those regions benefiting from a temperate or moderately cold or hot climate" (Leroi-Gourhan 1945, 311). When this system of physical geography is considered from the standpoint of ethnic reality, it can be seen as a system of human geography, which will be referred to further on by the name "milieu," a combination of geographical and historico-cultural determinations, itself divided into interior and exterior milieus. Under these geographical conditions, peoples appear as developers of technical tendencies, inventors or profiteers

of the inventions of other peoples, and as the principle vectors of technical evolution. They form strong ethnic units—that is, they are always empowered with a unifying ethnic becoming that is their “genius” (314).

Interior and Exterior Milieus in the Technological Dynamic

The fertile fields of the Eurasian axis are at the origin of the technical centers whose farmers and metalworkers emerged at the end of the Paleolithic era. Before the Neolithic revolution, there were two groups: the men of the reindeer, and the Paleolithics of the camel and ox. For the latter, this is the most favorable climate, enabling them to pass into the technical stage of farmer-cultivators and finally leading them into historical times. This is the moment when the thesis of a radical determination of the field of general history by technics appears, recalling the problem posed by Lefèbvre des Noëttes: if one can, in linguistics, in the history of art and religions, in sociology, disregard the difference between “savage” and “civilized,” “in comparative technology, we are obliged to recognize it, and since in the final analysis equipment solves political questions, we gain in the same stroke insight into the point of view of historians: general history is the history of peoples possessing good tools for laboring the land and forging swords” (Leroi-Gourhan 1945, 320).

Technological superiority is the profound reality of the “superiority” of historical peoples. By this very fact, “civilization” is a technical state, a relation of technical forces, rather than cultural in the limited sense of moral, religious, artistic, scientific, or even political. The following question remains: what are the causes of the appearance of this type of “technical state” *qua* factor of “civilization”?

Another categorization can be used, that of static and dynamic human groups. The Australians, hampered by a specific geography and undergoing its limitations, belong to the static group, as do the Chinese, whose technical system is found to be stymied by the cultural milieu.

In order to understand the conditions of technical immobilism or dynamism, the behavior of humans living in groups as technical animals should be analyzed under the double condition of their “interior milieu” and their “exterior milieu.” These concepts, once again, are taken from the field of biology; through them the ethnic group is apprehended as a living structure—and the metaphor becomes here an actual analogy:

The human group behaves in nature as a living organism . . . the human group assimilates its milieu through a curtain of objects (tools or instruments). It burns its wood with the adze, consumes its meat with the arrow, the knife, the cauldron, and the spoon. Within this interposed membrane, it nourishes and protects itself, rests, and moves. . . . The study of this artificial envelope is technology, the laws of its development belong in technical economy. (Leroi-Gourhan 1945, 322)

The point is to understand the human at the level of the group in its functioning as an organism. Because the technical object is inscribed in the technical system, technical evolution implies the comprehension of human groups rather than of individuals—individual genius explains nothing about invention. Thus technical economy will study the laws of technological development *qua* the “artificial envelope” of this quasi-living organism that is the human group, thereby explaining its very evolution according to quasi-zoological laws.

With this concept of *exterior milieu* “is first apprehended everything materially surrounding the human: the geographical, climactic, animal, and vegetable milieu. The definition must be . . . extended to the material signs and ideas which may come from other human groups” (Leroi-Gourhan 1945, 333). With the concept of *interior milieu* “is apprehended not what is proper to naked humans at birth, but, at each moment in time, in a (most often incomplete) circumscribed human mass, that which constitutes its intellectual capital, that is, an extremely complex pool of mental traditions” (334). The interior milieu is social memory, the shared past, that which is called “culture.” It is a nongenetic memory, which is exterior to the living organism *qua* individual, supported by the nonzoological collective organization of objects, but which functions and evolves as a *quasi*-biological milieu whose analysis reveals “used products, reserves, internal secretions, hormones issuing from other cells of the same organism, vitamins of external origin” (334). The exterior milieu is the natural, inert milieu, but also the one carrying “the objects and the ideas of different human groups.” As inert milieu, it “supplies merely consumable matter, and the technical envelope of a perfectly closed group will be the one allowing for the optimization of the ‘interior’ milieu’s aptitudes.” As for what comes from foreign groups, these influences “act as veritable vitamins, causing a precise assimilative reaction of the interior milieu” (334).

The problem to be elucidated is that of the conditions of transformation of the interior milieu by the exterior one, as a combination of geo-

graphical and cultural elements. How do crossovers and mutations take place? It must be asked what the conditions are for the group's receptivity to foreign cultural influence, analogous to the "plasticity of the interior milieu of the biological cell" (Leroi-Gourhan 1945, 334). There may be mutations without foreign influence, through the sole relation to the geographical exterior milieu. But knowing whether a technical innovation is borrowed or properly invented appears here as almost secondary, since the innovation's adoption can only take place in "an already favorable state of the interior milieu. The adoption can be considered an almost accessory trait, the important aspect being that the group is ready, in the absence of innovation, to invent or borrow" (335). The Gillean notion of technical system had the same consequences; the potentialities accumulating in the system, even in the form of limits, practically implied innovation. Here, the technical returns to the fore to the extent that, when favorable conditions are encountered, it organizes the potential receptivity of the group either to borrowing or to innovation proper. The point here is to understand how the play of the interior and exterior milieus, articulating themselves onto one another, determines the technical fact and "frees" the tendency's potential. Both are quite variable according to groups, and this is why the tendency presents itself never as such but only as a diversity of facts. The phenomenon of the tendency offers, more profoundly than ethnic singularity, an explanation of all possibility of evolution and reveals the essence of the relation between the two milieus. The techno-logical combinatory is finite, and the problems to which it responds, as well as the solutions resulting from possible combinations, forming the horizon of the tendency—but also of all facts—are limited in number.

The Two Aspects of the Tendency

In order to "distinguish this altogether special property of evolution making the consequences of 'exterior milieu / interior milieu action' predictable," Leroi-Gourhan adopts "the philosophical term 'tendency,'" which he sees as "*a movement, within the interior milieu, that gains progressive foothold in the exterior milieu.*" (1945, 336). This movement, this gaining foothold, which is close to what determines the morphogenesis of organisms in their milieus, excludes any possibility of a priori classification of tendencies: it appears only through facts, and the tendencies "only become explicit in their materialization, then cease to be tenden-

cies in the strict sense. This is why we have conflated the particular tendency and the fact in the first degree" (337). This also means that, as we shall see with Simondon, form does not precede matter, and the process of individuation (in which technical evolution *qua* differentiation consists) must be inscribed in another categorization. But with Simondon, the industrial technical object concretizes this dynamic in itself, without the intervention of an interior milieu, and thus tends toward techno-logical perfection by incorporating or overdetermining functions. This implies a new concept of milieu: the associated milieu. The interior milieu is absent because it is diluted into the interior milieu when the technical object becomes industrial. By the same movement, the milieu in general no longer constitutes an exteriority.

With Leroi-Gourhan, the tendency proceeds, on the contrary, from the encounter of two sources, respectively intentional and physical, coming from the interior and exterior milieus (this reasoning's limit being the apparent forgetting of the specificity of the Industrial Age). The encounter between the two milieus is the coupling of the human *qua* social being to matter *qua* geographical system, comparable to the structural coupling of the living and its ecosystem.⁹ The relation of the interior milieu to the exterior milieu, the expression of the coupling of the human to matter carried to the level of the group, is to be interpreted as the *selection* of the best possible solutions, a selection in which the tendency, its criterion as well as its driving force, is based "in one whole aspect," that of criteria, on the same laws of the universe. This aspect of the tendency yields the concept of technical convergence:

Each tool, each weapon, each object in general, from the basket to the house, responds to an architectural plan of equilibrium whose outlines give a purchase to the laws of geometry or rational mechanics. There is then a whole side to the technical tendency involving the construction of the universe itself, and it is as normal for the roofs to have a V-shaped slope, hatchets to have handles, and arrows to be balanced at a point the third of their length as it is normal for gastropods of all times to have a twisting shell. . . . Next to the biological convergence, there is a technical convergence, playing from the beginnings of ethnology a role in the refutation of the theories of contact. (Leroi-Gourhan 1945, 338)

The concept of associated milieu that we shall find in Simondon constitutes the complication of this hypothesis: there is a transformation of

the universe by the technical tendency. The ecological problems characteristic of our technical age can only acquire meaning from this point of view: a new milieu emerges, a technophysical and technocultural milieu, whose laws of equilibrium are no longer known. The convergence is creative of new reality and values—but it can also be imagined as engendering in the same movement unknown forms of divergence.

Here, the tendency is a double movement whereby the interior and exterior milieus *adhere*, under diverse conditions, subject for example to what Leroi-Gourhan calls the restrained tendency, or again, the tendency's obstacle: local phenomena whereby the tendency translates into diverse facts in which the singularity of localities can resist the universality of the tendency.

The other aspect of the tendency, its driving force, comes from the interior milieu: stones do not spontaneously rise up into a wall, and the clear determinism of the tendency is in no way a mechanism. Coming from an enigmatic *intention* of the interior milieu, the tendency diffracts into a diversity of facts, like a ray of light passing through an aqueous milieu when it is reflected by the exterior milieu, and in this sense its determinism remains "loose" and its rationality no less enigmatically "diffuse." There is a "technological intentionality" that "diffracts" through an opacity proper to a locality that is not only physical but human as well:

The tendency is proper to the interior milieu; there can be no tendency of the exterior milieu: the wind does not propose a determined roof to the house, the human gives to its roof the most favorable profile. . . . The exterior milieu behaves like an absolutely inert body into which the tendency collides: the material sign is found at its point of impact. . . . Empowered, thanks to its universal nature, with all the possibilities expressible in general laws, the tendency cuts across the interior milieu, which is suffused by the mental traditions of each human group. It acquires therein special properties, as a ray of light acquires diverse properties in crossing through different bodies, and encounters the exterior milieu, which offers to the acquired properties an irregular penetration; and at the point of impact between the interior and exterior milieus this membrane of objects constituting the furniture of humans materializes. (Leroi-Gourhan 1945, 339)

A subgroup of the interior milieu is constituted as the agent of intention and the corrector of diffraction: this is the technical milieu.

The Technical Milieu as Factor of Dilution of the Interior Milieu

The unity of groups must be conceived in the way in which they "face up to the future," relying on an ensemble of social coherencies, which themselves are synthesized into a global coherence, undergoing constant change, as in the case of the cell. In the ethnic group apprehended as an interior milieu, the technical milieu itself can be isolated, organized into "technical bodies" combining with other subgroups, equivalent to the Gillean "other systems," all of which are "given quite different rhythms," the ethnic group being the complex of a certain human mass considered over that period of time during which its constitutive elements do not lose all parallelism. The solidarity of the technical milieu, which itself comes in its concrete aspects from the universal technical tendency, with the other subgroups implies that the tendency is only realized as the diversity of technical facts, and that "each group possesses technical objects absolutely distinct from [those of] other groups" (Leroi-Gourhan 1945, 342). In order to discern the tendency in the technical milieu, the tendency must be abstracted from objects impregnated "by the traces left by the whole interior milieu" (342). The question is to know under what conditions the technical milieu is capable of dynamism, to know its "permeability": "Everything happens as though the technical milieu were constantly undergoing the effect of all technical possibilities, that is, as if the entire determining tendency directed onto itself the totality of its excitations at every moment" (342). And if "the permeability of the technical milieu is variable" (342), the irresistible negentropy in which technical dynamism consists implies its constant increase.

Anticipating a reading of Simondon, one could ask whether the permeability of the tendency would not also lead to an ever-greater dilution of the interior milieu into the exterior one and conversely, and would do so all the more with the increase of points of contact between the diverse interior milieus that tend to accentuate the general permeability of the technical tendency of all groups.

Just as the Gillean technical system consists in relations of interdependence of technical elements, so too the technical milieu is *continuous*. And once again as in Gillean, technical continuity excludes "pure invention, *ex nihilo*" (Leroi-Gourhan 1945, 344); the inventive genius is combinatory, close to a "logic of the living": evolution, indeed technical evolu-

tion, must be thought in terms of reproduction. This is also the meaning of continuity, which here is diachronic as well as synchronic, even though the effects of rupture manifest themselves on our scale as the most apparent phenomena of technical evolution. For the idea of continuity does not exclude that of mutation. A mutation is a catastrophic phenomenon on the inside of an essential continuity that, as a combinatory, makes it possible.

Just as a technical milieu detaches itself from within the interior milieu, so a technical subgroup is detached from within the ethnic group. And in the same way, "the ethnic group is the materialization of tendencies cutting across the technical milieu" (Leroi-Gourhan 1945, 347). Here again we can ask whether today the technical groups still belong to the ethnic group, or if they may not extend well beyond it, to the point of calling its unity into question: the phenomena of deterritorialization and acculturation are the telling marks. It is as if the technical groups tended to become autonomous with respect to the ethnic groups, owing to the very fact that techno-industrial units have become worldwide. Thus, "it is obvious that if the technical milieu is continuous, the technical group belongs to the exterior milieu," which is not only geographical but a vector for foreign influences, displaying "a large part of discontinuity" (347). This discontinuity affects in the first instance the technical milieu itself, but by reaction, it also affects the interior milieu as a whole. One may conclude that the technical group then gains an *advance* with respect to the ethnic group to the extent that, as is the case today—with technical evolution accelerating and becoming too fast for the possibilities of appropriation by the "other systems"—one must wonder if we might not be in the presence of a separation and progressive opposition between, on the one hand, cultures, or an ensemble of interior milieus, and on the other hand technologies, which are no longer only a subgroup of the technical milieu but the external milieu become worldwide technology: the dilution of the interior milieu into the exterior milieu has become essentially technical, firstly as an environment totally mediated by telecommunications, by modes of transportation as well as by television and radio, computer networks, and so on, whereby distances and delays are annulled, but secondly as a system of planet-scale industrial production. This is undoubtedly not Leroi-Gourhan's hypothesis here, but he makes it thinkable when he shows how the exterior milieu can perturb and reorganize the interior milieu through the intermediary of the technical

group, which is capable, at a given moment, of entering into conflict with it so as to facilitate the permeability of the tendency, that is, the realization of the consequences coming from the exterior milieu.

An analysis of the impact of the technical group on the interior milieu first requires the exclusive study of those cases in which the exterior milieu does not carry foreign influences, and in which there are therefore no borrowings: the result will be a decisive confirmation of the tendency's determinism. Having succeeded, for all intents and purposes, in definitively establishing the tendency thesis, the next step will be to understand the logic of borrowing and the outcomes to which it can lead.

The Permanence of Evolution

Within "groups of the same exterior milieu," "real borrowings" and "simple convergence" should be distinguished (Leroi-Gourhan 1945, 355). But to understand borrowing, the exterior milieu should nevertheless not be treated specifically: the influence of a foreign cultural factor carried by the exterior milieu is basically the same problem as the influence of the exterior milieu on the interior milieu in general. Thus, there is no fundamental difference between the fact of invention and the fact of borrowing. In both cases, the question is that of the plasticity of the technical milieu, and through it, of the availability of the interior milieu to evolution.

Given the correct understanding of this nondifference, there are, regarding the rhythm and the consequences of a given transformation, cases where it would seem that

the borrowed element is incorporated into the technical milieu without significantly changing it: it makes the milieu richer without giving the impression of a transformation. . . . The progressive accumulation of these discreet borrowed elements ends up in fact changing the interior milieu. . . . For convenience the other extreme can be apprehended; a borrowed element such as agriculture translates in a rather short period of time into a total mutation of a major part of the technical milieu. If fact . . . it is a question of scale rather than one of essence. (Leroi-Gourhan 1945, 364)

We meet here once again the continuity thesis, which distinctly recalls the Leibnizian motif of little perceptions, and *what is said here about borrowing could be said as well of invention*. There are indeed "catastrophic"

effects in the evolution of technical systems, which precisely concern the passage of one system into another (or, following Simondon, the passage from one stage of concretization to another). But this in no way contradicts the continuity hypothesis, which holds that the dynamic of evolution is systematic and *therefore permanent*, as thinking is for Leibniz, and that no transformation (by borrowing or invention) can take place without ulterior consequences that extend the effects, even if the moments during which these effects are concretized take place suddenly and provoke a brutal reorganization of the technical milieu and, by counterreaction, of the interior milieu. *Brutal* has never meant discontinuous, but here means only fast, and the question is once again that of speed.

The question of speed belongs to that of a logic of transformation, whereby the interior milieu and, within it, the technical milieu and the technical group allow for transformation. At bottom, the possibility of borrowing always comes in the first instance from the interior milieu itself, and it must be dealt with exactly as a phenomenon of counterreaction of the exterior milieu in general, as for example the presence of lithic material in a given geographical milieu; that is, borrowing must be dealt with not specifically as a cultural influence but as an event coming from the exterior milieu in which at a given time the interior milieu invests its technical tendencies, according to the permeability afforded it by the technical milieu. Just as stones will never rise up spontaneously into walls without their being invested by the interior milieu's tendency, so too cultural influence will never operate on a particular interior milieu without the latter having accomplished the work by which, "in hesitant steps" or at the height of a crisis, this influence may end up enriching a technical milieu or group. To consider borrowing as a phenomenon of invention and inversely, invention as borrowing, is tantamount to considering foreign influence and invention as ordinary phenomena of influence of the exterior milieu, composed of natural and technical elements issuing from the other group.

What becomes of the exterior milieu with the advent of modern techniques, when the equipment of ethnic groups, the "membrane" within which they form their unity, acquires performances such that each group finds itself in constant communication with the quasi-totality of the others without delay or limits in distance? What happens when there is no longer any exterior milieu as such, so-called "physical" geography being saturated with human penetrations, that is, technical ones, and the prin-

ciple relations of interior to exterior milieus being mediated by a technical system having no "natural" remainder in its wake? One wonders if the technical system, being now worldwide, does not form a realm in which the distinction between interior and exterior milieu, having totally altered their relations, has become highly problematic, and if the technical group does not find itself totally emancipated from the ethnic group, an archaic remnant.

Leroi-Gourhan answered this question in the negative in 1945 but changed his mind in 1965, when he spoke of a mega-ethnic group.

Influence does not necessarily have effects, and groups can resist the realization of technical tendencies and maintain differences between themselves. This is a promise and proof of diversity. However, if it is true that the phenomenon of foreign influence should be considered as a phenomenon of the exterior milieu in general, if it is true that they have the same possibilities of constraint on the interior milieu (as when a very cold winter in Alaska forces the Indians to develop snow techniques), if, finally, it is true that the technical system, becoming worldwide, incorporated, and overdetermined, puts more and more constraint on the interior milieus that are maintaining themselves therein, one must at least envisage the hypothesis that the conditions of possibility of differentiations between groups have radically changed—and notably, that the ethnic dimension of groups is waning. This Leroi-Gourhan refuses, because such a position seems to be necessarily inscribed in the ethnocentric teleologism of the theory of cultural technical centers progressively influencing their vicinities in concentric circles. However, the thesis of the tendency, reconsidered from the vantage of the process of concretization *qua* the dynamic of industrial technical objects, leads to the hypothesis that the ethnic structuring of groups is outdated, presupposing not a culturalist and ethnocentric logic of technical evolution, which would necessarily imply a phenomenon of uniformization and destruction of diversity, but new conditions of multiplication, reproduction, and diversification.

Industrial Technical Evolution Imposes the Renunciation of the Anthropological Hypothesis

In the explanation of technical evolution by the coupling of the human to matter, cut across by the technical tendency, an essential part of this tendency, coming from the ethnic interior milieu as intention, re-

mains *anthropologically determined*. Simondon has this interior milieu becoming diluted. The tendency no longer has an anthropological source. Technical evolution stems completely from its own technical object. The human is no longer the *intentional actor* in this dynamic. It is its *operator*.

This analysis concerns the industrial technical object, whose appearance, somewhere in the eighteenth century, transforms the conditions of technical evolution. *On the Mode of Existence of Technical Objects* [*Du mode d'existence des objets techniques*] aims to "create a new consciousness of the sense of technical objects" (Simondon 1958, 9), a consciousness that is necessary because, especially since the advent of the machine, "culture has made itself into a system of defense against technics, in which the defense is presented as a defense of humanity, supposing that technical objects do not contain human reality."¹⁰ "If there is such a thing as the alienation of humanity (or of culture) by technics, it is caused not by the machine but by the misunderstanding of its nature and essence." To know the essence of the machine, and *thereby* understanding the sense of technics in general, is also to know *the place of the human* in "technical ensembles." There is general agreement on the change in technics since the advent of the Industrial Revolution, insofar as it causes the appearance of machine apparatus of production that call into question the traditional relation of the human to the technical. A new form of knowledge, founding the competence of the "technologist," becomes necessary to confront this change, and first of all to determine its true nature.

To understand the machine, the point of view of its "idolaters" must be destroyed. They believe that "the degree of perfection of a machine is proportional to its degree of automatism. . . . Now, in fact, automatism is a rather low degree of technical perfection. To render a machine automatic, many possible uses must be sacrificed" (Simondon 1958, 11). The characterization of the machine by automatism misunderstands its virtue, its perfection as an industrial technical object, which is also its actual autonomy, that is, its indetermination. This renders the machine sensitive to the functioning of other machines, allowing in turn their incorporation into technical ensembles. The place of the human is among these technical ensembles, in the organization of the coordinated functioning of objects, and if the industrial technical object that the machine is achieves its perfection in the setting up of a margin of functional inde-

termination, its task, in industrial technics, is to determine this functioning within technical ensembles, in order to harmonize the undetermined technical objects.

The human here has less place in technogenesis than in Leroi-Gourhan's ethnotechnology. In the industrial age, the human is not the intentional origin of separate technical individuals *qua* machines. It rather executes a quasi-intentionality of which the technical object is itself the carrier.

Mechanology, the Science of the Process of Concretization of the Industrial Object

If there is a discrepancy between contemporary technics and culture, it is because the latter has not been able to incorporate a new dynamic of technical objects, a failure that engenders a disharmony between the "technical system" and the "other systems" in which it consists: "Present-day culture is ancient culture, incorporating as dynamic schemes the state of craft and agricultural techniques of past centuries" (Simondon 1958, 14).

Adjusting culture to technology means taking into account the "dynamic schemes" of present-day technics and casting aside those issuing from a reality that today has disappeared. It means, too, admitting that the technical dynamic *precedes* the social dynamic and imposes itself thereupon. The tasks of a knowledge allowing for the articulation of a relation between the human and the technical ensemble are those of an analysis of the new dynamic schemes and an understanding of the *necessity* of an *advance* of the industrial technical dynamic upon other social aspects. The issue is neither that of the traditional skill of the worker nor that of the engineer-contractor, whose relationships to machines are too intimate and too interested: at stake is *doing technology as one does sociology or psychology*. There is in technical objects a dynamic that stems neither from the soul nor from human societies, but that, like these, plays a determinant role in the movement of human becoming and must be studied for its own sake. The *dynamic of objects, qua industrial technology, is a science of machines*, and as such, it will be named *mechanology*.

"That which resides in machines" is certainly only "human reality, the human gesture set and crystallized into functioning structures" (Simondon 1958, 12). But the industrial technical object, although being realized

by humans, nevertheless results from an inventiveness that *comes from the technical object itself*. It is *in this sense*, resulting in the indetermination of the machine's functioning, and not under the category of autonomization, that one may refer to the *autonomy* of the machine—the autonomy of its *genesis*. This analysis goes further, in the affirmation of a technological dynamic, than does the thesis that the technical tendency overrides the will of individuals and groups, who are subject to rules of technical evolution proceeding both from laws of physics and from laws of a universal human intentionality that no longer has a purchase here. Accounting for the technical dynamic non-anthropologically, by means of the concept of “process,” means refusing to consider the technical object as a utensil, a means, but rather defining it “in itself.” A utensil is characterized by its inertia. But the inventiveness proper to the technical object is a *process of concretization* by functional overdetermination. This concretization is the history of the technical object; it gives the object “its consistency at the end of an evolution, proving that it cannot be considered as a mere utensil” (Simondon 1958, 15). The industrial technical object is not inert. It harbors a *genetic* logic that belongs to itself alone, and that is its “mode of existence.” It is not the result of human activity, nor is it a human disposition, only registering its lessons and executing them. The lessons of the machine are “inventions” in the ancient sense of the term: exhumations.

There are technical elements, individuals, and ensembles. The elements are the tools, the separated organs; the individuals implement the elements; the ensembles coordinate the individuals. Industrial technics is characterized by a transformation of technical individuals, which allows for the comprehension of the genesis and breaking down of the present-day relation of the human to the machine. The dramaturgy of modern technics begins in the eighteenth century with a phase of optimism. A crisis ensues with the advent of industrial technics exploiting the resources of the thermodynamic machine. The machine does not replace the human: the latter supplements, up to the Industrial Revolution, the absence of machines. The appearance of the tool-equipped machine, *qua* a new technical individual, however, strips the human of its role as technical individual as well as of its employment.¹¹ However, a new optimism is ushered in during the twentieth century with the cybernetic machine capable of producing negentropy. More profoundly than the relinquishment of the human's place as technical individual beside the machine, the

threat of entropy makes possible the anguish in which the human experiences technical evolution. Against this, optimism is justified through reference to a thought of life, because technical evolution appears as a process of differentiation, creation of order, struggle against death.

With the machine, a discrepancy between technics and culture begins because the human is no longer a “tool bearer.” For culture and technics to be reconciled, the meaning of “the machine bearer of tools” must be thought, what it means for itself, and what that means for the place of the human. Our age, which calls for the thought of this new relation, harbors the evidence of a positivity of technics insofar as technics becomes regulative, which is also the essence of culture. “Technical reality, having become regulative, will be able to be incorporated into culture, which is essentially regulative” (Simondon 1958, 16).

The Genetic of the Industrial Object as Functioning Matter

The machine *qua individual* has its own dynamic: technology as mechanology studies the machinic dynamic of industrial technical objects, that is, of objects that *function*. Objects that function accomplish functions by *synthesizing* them, in the double sense of *incorporating* them—which is the process of concretization by functional overdetermination—and in the sense of *reproducing* them to realize them in place of ... But reproduction, here as in life, produces a new, unique individual, maintaining a family resemblance with the ascending individual but remaining no less absolutely singular.

The concretization of the object, or the integration of its functions through overdetermination, is its history, having absolutely left its matter and, in the same move, become absolutely singular. Understanding the technical individual that the machine is means understanding its genesis. And understanding this genesis as the development of a coherence and an individuality is to observe the passage from an abstract phase to a concrete phase of the object. If, wanting to know what a concrete object is, one seeks to construct series of objects to establish a classification, “one only encounters the problem of defining technical objects under the heading of a species . . . for no set structure corresponds to a defined use” (Simondon 1958, 19). Indetermination, which is the virtue gained by the modern machine but which tendentially constitutes the essence of all

technical objects, bars a classification of technical objects on the basis of these exogenous criteria for the uses to which they are put. It is rather the procedures, implemented in the most diverse domains of use, and not the uses themselves, that constitute the families of technical objects. "The same result can obtain from quite different functionings and structures," and that is why "there is more real analogy between a spring engine and a bow than between the latter and a steam engine" (19). The series of objects that can be observed accomplishing the process of concretization, the very genesis of the concrete object, will find their rationales in procedures. Use is misleading in that the object is subject to an anthropological logic that remains absolutely foreign to it, "grouping heterogeneous structures and functionings under genus and species which derive their signification from the relation of this functioning to another, that of the human being in action" (19). At issue, then, is understanding the genesis of technical objects and their functions *independently* of human functionings that establish the use behaviors of technical objects.

Despite appearances, this indetermination does not contradict the determinism of the technical tendency. The technical tendency is moreover revealed as precisely the tendency to indetermination and adaptability by Leroi-Gourhan himself, when, in "Memory and Rhythms," he describes how the tendency to exteriorize memory became, in the twentieth century, concretized as machinic exteriorization of the nervous system—of which the programmable Jacquard machine was the harbinger. Moreover, what determines the tendency from the vantage of the interior milieu is not a use but a function, in the quasi-zoological sense of the term. The Simondonian dynamic of the industrial technical object is nevertheless found to be much more autonomous as regards the human dynamic itself than the analysis of the technical tendency in the human/matter relation would make it appear. One must here be able to dispense with the first term of this relation, in order to observe what derives exclusively from a dynamic of *matter that, to accomplish a function, functions*. The dynamic of organized inorganic matter, bearing tools, calls into play a force that is no longer of zoological (animal or human) origin, nor ecological (water and wind), but *industrial, that is, available independently of all territorial considerations*.

Technical functionings can be observed only at the level of technical *individuals*. These in turn can be understood only with reference to their *genesis*: the individuality of technical objects is modified in the course of

its genesis, it develops within that genesis—it is the history as well as the driving force of these modifications:

The individuality and the specificity of the technical object can be defined in terms of genetic criteria: the individual technical object is not this or that thing given *hic et nunc*, but that for which there is a genesis. The unity of the technical object, its individuality, [and] its specificity are the characters of consistency and convergence of its genesis. The genesis of the technical object is a part of its being. (Simondon 1958, 19–20)

There is a *historicity* to the technical object that makes its descriptions as a mere hump of inert matter impossible. This inorganic matter organizes *itself*. In organizing itself, it becomes indivisible and conquers a quasi-ipseity from which its dynamic proceeds absolutely: the history of this becoming-organic is not that of the humans who "made" the object. Just as the living being has a collective history in the sense of a genetic history informed and inscribed in a *phylum*—a phylogenesis—and an individual history—an epigenesis—regulated by its indetermination in confrontation with a singular milieu and regulating in turn its morphogenesis, the technical object calls into play laws of evolution that are immanent to it, even if, as in the case of the living being, they are effected only under the conditions of an environment, to wit, here, that of the human and the other technical objects. "As in a phylogenetic series, a defined stage of evolution contains within it structures and schemes that represent the principle of an evolution of forms. *The technical being evolves by convergence and adaptation to itself; it becomes unified interiorly according to a principle of internal resonance*" (Simondon 1958, 20). This is the process of concretization. Characteristic of the technical object *qua* individual, which can be apprehended in its essence only from the standpoint of its genesis, this process is here again a quasi-biological dynamic. It is, however, not a biological dynamic: whereas the living being *maintains* its unity, the technical object *tends* toward unity—just as does the ethnic group caught up in a unifying becoming operating from within a history crystallized into a "body of traditions."

The dynamic of concretization is a morphogenesis by adaptation to self, a convergence by functional overdetermination of organs that is always difficult to consider separately. These organs, in the becoming-organic that is the genesis of the object, function more and more as parts of a whole. This dynamic can be highlighted by a comparison between

the abstract phase and the concrete phase of a technical object such as the internal combustion engine: "In a current-day engine, each important component is so linked to the others by reciprocal exchanges of energy that it cannot be other than it is" (Simondon 1958, 21). There is a necessity to the form of components of the object that is immanent to it. The process of concretization is the realization of this necessity, its deployment, its coming into existence, its invention. The concretization of the technical object is its individuation, its becoming-individual, that is, its organization as a becoming-indivisible. This determinism calls upon, as in Leroi-Gourhan, the idea of a convergence that means here too that the number of technical solutions is limited. As the factor of a tendency, it carries a teleology that is not foreign to the "technical tendency." But, completely on the side of matter, of a matter that invents its form, in a process of transduction that will be analyzed in the second volume of this work, this tendency must do away with all anthropological provenance. Such a teleology is not a human process.

The Predominance of Technology in the Becoming of Industrial Societies

The concretization of technical objects, their unification, limits the number of their types: the concrete and convergent technical object is standardized. This tendency to standardization, to the production of more and more integrated types, makes industrialization possible, and not the converse: it is because there is one or another tendency in the process of technical evolution in general that industry can appear, and not because industry appears that there is standardization.¹² It is not an industrial invention that imparts form to them. "The handicraft technical object made to measure is contingent," a contingency interior to the technical object itself, but corresponding to an exterior contingency that determines the "measures" of the object. Since the technical object is not concrete, it is not determined in its uses, it must adapt itself to precise contexts that constrain it, in the absence of which it cannot function. In an apparent paradox, the more concrete the object, the less determined it is, the less "to measure." Intrinsically universal and necessary, it is adapted to itself, and not determined by what surrounds it, while the "technical object made to measure is in fact an object without intrinsic

measure," without *self-determining* measure. Industrialization is the affirmation of technological necessity. It is the sign of the immense power of the technical object over industrial society, of technical evolution in general over becoming in general, of the "technical system" over the "other systems." "At the industrial level, . . . the system of wants is less coherent than the system of the object; wants are formed around the industrial technical object, *which thereby takes on the power of modeling a civilization*" (Simondon 1958, 24, my emphasis).

The actual measure of the technical object is its concrete becoming, its genesis *qua* process of concretization, in which the limits play a dynamic role, as in the Gillean technical system. "The evolution of the technical object is accomplished by the passage from a separate analytical order to a unified synthetic order," and the causes of this evolution "reside in the imperfection of the abstract technical object."

Thus, in an internal combustion engine, the cooling could be arranged by an entirely autonomous subgroup; if this subgroup stops functioning, the engine may deteriorate; if, on the contrary, cooling is assured by an effect in solidarity with the functioning of the whole, the functioning implies cooling. (Simondon 1958, 25)

The relation of functional overdetermination is a relation of objective implication—coming from the object itself—through the solidarity of the constitutive elements of the object. This is not a logical implication: it is not imposed in the immanence of the experience. The evolution of technical objects thus does not stem from the nontechnical environment of "other systems." There is obviously a common dynamic to all systems: "there is a convergence of economic constraints (matter, labor, energy) and properly technical demands." But the technical system, and above all the technical object in its proper dynamic within the technical system, "prevails in evolution" (Simondon 1958, 26). The analyses by Gillean and Leroi-Gourhan of technical evolution must be radicalized. The technical system, the universal tendency that it carries, are no longer the partners of the "other systems"; the technical object lays down the law that is its own, it affirms an auto-nomy with regard to which, in the industrial age, the other layers of society must regulate themselves, with an actual possibility of negotiation. The indetermination of uses may well leave open possibilities for adjustments to the "system of objects,"

but at bottom the object bestows the horizon of all possibilities, essentially preceding the fixation of uses.

The Unpredictability of the Object's Becoming

The dynamic play of the limit implies a discontinuity at the heart of all evolution in the sense of concretization. Ruptures mark the successive epochs in which the technical object gains its autonomy. These epochs are the fruit of the self-conditioning of the object that, to pass from the abstract to the concrete phase, is "its own cause" (Simondon 1958, 27)—a self-conditioning that upsets the Aristotelian divide between physical and technical entities. The "successive systems of coherence" establish relations of reciprocal causality, which are equally characteristic of the living being wherein the part does not exist without the whole, implying through their sole effectuation in the functioning of the object the discovery of the object's limits, that is, of the system of coherence that it forms:

The incompatibilities born of the progressive saturation of the system of subgroups harbor a play of limits whose crossing constitutes a progress; but owing to its very nature, this crossing can only take place in a leap. (27, my emphasis)

This discontinuity is still lodged on a backdrop of continuity, of an individuation, of a history, outside of which it would lose all meaning: the relations of reciprocal causality are a co-implication of functions, a complication. Their incorporation is thus not a simplification, but a differentiation of the technical object that "allows the secondary effects which were once obstacles to be suppressed (through their incorporation into the functioning)"; such a differentiation is strictly speaking the reversal of a limit, the production of a new order through noise. This phenomenon is analyzed in the case of the electronic tube, in which one can see how the tetrode is invented by the internal necessities of the triode, then the pentode by the necessities of the tetrode.

As in the morphogenesis of the living, "specialization does not occur function by function, but synergy by synergy; the synergetic group of functions, and not the function alone, sets up the actual subgroup in the technical object" (Simondon 1958, 27) Functional overdetermination means that the part becomes what it is only through its insertion into the whole. The concrete being of the object, the essence of the "technical be-

ing," the acting tendency in morphogenesis, is the technical object "that no longer struggles with itself, in which no secondary effect hampers the functioning of the ensemble or is left outside of it" (27). What is proper to the industrial technical object is a tendency toward the unification of parts in a whole, which tendency is not due to the person making the object and thinking by functions, but to the synergetic necessity that most often is unplanned, and that is affirmed within the object in the course of its functioning, whereby the technical object invents itself independently of a "fabricating intention":

Each component in the concrete object is no longer one whose essence is to correspond to the accomplishment of a function intended by the constructor, but a part of a system in which a multitude of forces operates and produces effects independently of the fabricating intention. (Simondon 1958, 35)

Whereas the anthropological basis of the technical tendency conceived of by Leroi-Gourhan, even if the tendency only becomes concretized in passing through the laws of matter, affords impetus to the "fabricating intention," what engenders the industrial technical object in the tendency to concretization is the organized matter that the technical object itself is, the system of constraints that it forms and that, as a play of limits, of a combination of forces, frees ever-new possibilities—in this sense invents them. There is here an actual techno-logical *maieutic*. Certainly, what is invented, exhumed, brought to light, brought into the world by the object exists in the laws of physics. But in physics they exist only as possibilities. When they are freed, they are no longer possibilities but realities, irreversibly—pure possibilities that have become effects which must from that point on be taken into account. They become reality only through the technical object's potential of inventiveness, in the process of concretization characterized by the fact that the human has no longer the inventive role but that of an operator. If he or she keeps the inventor's role, it is *qua* an actor listening to cues from the object itself, reading from the text of matter. To draw further on the metaphor, the actor is not the author—and that is why existing technical objects are never thoroughly concrete; they are never consciously conceived and realized by the human from out of this "logic," which is strictly speaking empirical, experimental, and in a sense quasi-existential (it is the object's *mode of existence*), the sense, namely, that this logic is revealed only in its realization, in the experience of the object itself, or, as it were, on stage, and not at the time of

conception. In this move the logic of invention becomes in essence unpredictable, as in Maunoury; and this is why "the technical object is never totally known." For this very reason, it is never totally rational nor "ever totally concrete, except in the quite rare case of a fortuitous encounter" (Simondon 1958, 35). Thus does concretization call on technics to transform itself into technoscience and on technoscience to replace science. But this means that concretization calls for technoscientific *experimentation* to replace scientific *deduction*.

This dynamic, in which experience has the essential role, can be compared to what distinguishes organic matter from inert matter, to what makes biology a science irreducible to physicochemistry. If a mechanology is necessary, this is because the laws of physics, no more than those of sociology or psychology, or of all of these as a whole, cannot suffice to explain the phenomenon of the technical object *qua* the genesis of an individual and the production of an order. But on the other hand, biology cannot be the science of machines, since the organic beings it observes are always already individualized. The problem in distinguishing between inert matter, organized objects, and organic beings is on the scale of the problem of situating biology with regard to physicochemistry. But this is a problem *specific to a third order of phenomena* (neither organic nor inorganic).

The maieutic proper to the empiricism of what we are calling the *experience* of the technical object, which is its *functioning*, corresponds here as well to a *selection of combinations*. Operating on a backdrop of chance, the selection follows phyletic lines whose necessity is their horizon, dotted with mutations whose accidental effects become the new functional principles.¹³

Mutations, Lineages, and the Becoming-Natural of the Industrial Object

There are two types of perfectionings: major ones, which "modify the distribution of functions, significantly increase the synergy of the functioning," and minor ones, which "without modifying this distribution, diminish the harmful consequences of residual antagonisms" (Simondon 1958, 38). Now a diminishing of this sort is itself harmful insofar as it prevents the play of the technical object's limits from imposing a rupture. Things occur here as they do when an economic system artificially atten-

uates the weaknesses of a technical system by protectionist measures. The minor perfectionings, by concealing the discontinuity of technical evolution, cover over the profound meaning of the technical object's dynamic, just as, on a certain temporal scale, the apparent continuity of the genetic drift of living beings can conceal the fact that the mutation is the reality of this evolution (Jacob 1974, 244). The fact remains that these "mutations" operate from within lineages, on a backdrop of continuities. Concretization is effected in series of objects, of which the last term, never reached, is the perfectly concrete technical object. The question then is knowing "to which first term" one "can go back to reach the birth of a specific technical reality" (Simondon 1958, 40).

It is not only "the result of its functioning in exterior apparatus" that makes the technical object exist, but also the "fecundity" of "nonsaturated" phenomena that the object carries and that give it a "posterity." From then on, the first term of a series, the "primitive technical object," is defined as a "nonsaturated system," and the process of concretization is a progressive "saturation" of the complex of phenomena defining the object. In evolving, the technical object constitutes a series of objects, a lineage or a line, a "family" of which "the primitive technical object is the ancestor," and this generation is a "natural technical evolution." At the origin of the lineage is a "synthetic act of invention constitutive of a technical essence." The technical essence is the *identity* of the lineage, its family resemblance, the specificity of its patrimony, which is the secret of its singular becoming: "The technical essence is recognized in the fact that it remains stable through the evolutionary lineage, and not only stable, but productive as well of structures and functions by internal development and progressive saturation" (Simondon 1958, 43). If one can speak of a *natural* technical evolution, this is because the technical object, in becoming concretized, is in the process of *naturalization*: the concretization of the abstract technical object is its progress toward a naturalness that allows it as well to escape being known, its filiation improbably engendering its becoming beyond the "intellectual system" that gives birth to it. The difference between *physis* and *tekhne* thus fades, as if the industrial technical object had engendered a *third milieu* in which it "becomes more and more like a natural object. At its beginning this object was in need of a regulative exterior milieu, the laboratory or the workshop, sometimes the factory. Little by little, . . . it becomes capable of dispensing with the artificial milieu" (47). Just as the living being is more than

its physicochemical constituents, the technical object is *more* than the sum of the scientific principles that it implements; it witnesses "a certain mode of functioning and a compatibility that actually exists and that was fashioned *before being planned*: this compatibility was not contained in each of the separate scientific principles that served for the object's construction, it was discovered empirically" (48). From this point, like "natural objects spontaneously produced," technical beings must be submitted to an inductive study from within a "science of correlations and transformations that would be a general technology or mechanology" more akin to biology than to physics (47-48). Nevertheless, an "abusive assimilation of the technical object to the natural and especially the living object" must be avoided. "Mechanology" must not be cybernetics, for one must not "found a separate science that would study the mechanisms of regulation and command in automates built to be automates"; and contrary to Wiener, "it can only be said that technical objects tend toward concretization, whereas natural objects such as living beings are concrete from the start" (49). The organizing principle of the technical object is in this object *qua* tendency, aim, and end. As for the tendency's *driving* principle, it remains in the living, for "without finality, *driven and realized* by the living, physical causality could never alone produce a positive and efficient concretization" (49, my emphasis). Once again, then, the question of the relation between living matter and organized inorganic matter arises. The industrial technical object has brought us to the suppression of the intentional anthropological part of the techno-logical dynamic. But a part still remains, namely that the living, who no longer *commands, operates*. It is in returning to the theme of a third milieu undercutting the opposition of *phusis* and *tekhmē*, engendered by the object itself in the course of its "naturalization," that the nature of this operation will be brought to light.

Anticipation as the Condition of the Appearance of the Associated Milieu

By becoming naturalized and engendering its own milieu, the object avoids the phenomenon of hypertelia, which limits the object's indetermination by leaving it dependent upon an artificial milieu. Hypertelia is an "exaggerated specialization of the technical object which renders it un-

adaptable to change, however slight, taking place in the conditions of its use or fabrication" (Simondon 1958, 50).

The technical object is the point of encounter of two milieus, the technical and the geographical, and must be incorporated into them. It is a compromise between these two worlds. For example, the electrical power unit is doubly articulated: onto the electrical network, which transmits electric energy from the technical milieu that it transforms into mechanical energy; and onto the form of the landscape, a varied geographical milieu onto which the electrical network and the railroad bring mechanical energy to bear. Through the traction engine, the two worlds act upon one another. If we compare this traction engine to the electric engine of the factory, we find that the latter "functions almost entirely in the interior of the technical world," that it is not in need of adaptation to a non-technical milieu. Its conditions of functioning being highly determined, it may be specialized, but it may just as well not be concrete. On the contrary, "the necessity of exclusive adaptation not to a defined milieu but to the function placed in relation to two milieus both in evolution, limits the adaptation and specifies it in the sense of autonomy and of concretization" (Simondon 1958, 53). The technical object would tend to emancipate itself from all specialization just as the human being is susceptible of adapting itself to the most varied of milieus owing to the *removability* of its organs.

The case of the Guimbal turbine highlights the stakes of the problem, allowing for the delineation of the concept of associated milieu and indicating to what sort of ecology the process of concretization in general leads. "This turbine is immersed in a pressure pipeline and coupled directly to a quite small generator contained in a crankcase filled with pressurized oil" (Simondon 1958, 54). Its originality is that the water in which it is immersed, which "affords the energy" that starts it, is a natural milieu that becomes "plurifunctional" for the technical functioning itself, since it "evacuates the heat produced by the generator." But the oil, an element of the technical milieu, in its relation to the water, an element of the natural milieu, also becomes plurifunctional:

The oil lubricates the generator, isolates the coil, and brings the heat from the coil to the crankcase, where it is evacuated by the water; lastly, it prevents water from entering the crankcase. . . . This suppression is itself plurifunctional: it accomplished a greasing under the permanent pressure of the stages

at the same time as it prevents water from entering should the stages not be waterproof. Now . . . owing to this plurifunctionality, this concretization and this relational adaptation have been made possible. (54)

In other words, here the "natural" milieu itself is found to be incorporated and functionally overdetermined: the concretization is effected outside the object itself, which does not effect here a mere addition of a technical milieu to a geographical one—and the associated milieu is more that the sum of the two.

Adaptation-concretization is a process conditioning the birth of a milieu rather than being conditioned by an already given milieu. It is conditioned by a milieu that has only virtual existence before the invention. There is invention because a leap is accomplished and justified by the relation that the leap sets up on the inside of the milieu it creates: *the condition of possibility* of the turbo-generator couple is its realization. (Simondon 1958, 55, my emphasis)

The object self-conditions its functioning, bringing with it its conditions of functioning, thereby reducing the phenomenon of hypertelia. The technical object creator of a milieu "frames" nature. The natural aquatic element encounters the technical object: the natural element not only subjects itself to the technical object's functioning but favors it (the Guimbal turbine provides the profound sense of that dam on the Rhine to which Heidegger refers). The technical object submits its "natural milieu" to reason and naturalizes itself at one and the same time. It becomes concretized by closely conforming to this milieu, but in the same move radically transforms the milieu. This ecological phenomenon may be observed in the informational dimension of present-day technics, where it allows for the development of a generalized performativity (for example in the apparatuses of live transmission and of data processing in real time, with the fictive inversions engendered therein)—but it is then essentially the human milieu, that is, human geography, and not physical geography, that is found to be incorporated into a process of concretization that should no longer be thought on the scale of the object, but also not on the scale of the system.

To create one's own milieu is to build. This construction—which is ineluctable given that technics has become largely a matter of data processing and counts on the largest possible indetermination in the functioning of machines, presupposing a maximum decrease in hypertelia and in

the same stroke a generalization of associated milieus—is not a "humanization of nature," first of all because it is not a human construction. The ever more concretized object tends toward naturalness, and "this process might well appear as the naturalization of the human." However, Simondon adds a remark that opens the question at the heart of our treatise:

Between humanity and nature a technogeographical milieu is created which only becomes possible with the help of human intelligence: the self-conditioning of a scheme by the result of its functioning demands the use of an inventive function of anticipation found neither in nature nor in already constituted technical objects. (Simondon 1958, 57)

If there is, then, a dynamic proper to the technical object tending toward its concretization, it nevertheless supposes a possibility of anticipation on the part of the operator, of the driving force, the human *qua* efficient cause of the technical object.

We shall seek to show here that this capacity of anticipation *itself supposes the technical object*, and no more precedes it than does form matter.

PART II

The Fault of Epimetheus

Introduction

At the end of the first chapter, we ended with the following question: How is the techno-logical dynamic, agent of technical epochs and organizations, articulated with the operatorlike, anthropo-logical dynamic of anticipation? How, in other words, is technicity to be constituted in terms of technological phenomenology? At the end of the last chapter this question then became: How is temporality itself constituted in terms of technicity? How is the temporality of the *who* constituted in the actuality of the *what*? We ask the question taking the operative validity of the concept of "epiphylogenesis" to be established.

If there is a temporal arche-structure—constituted in the "already there" nature of the horizon of prostheses as anticipation of the end, in the movement of exteriorization, on "collapsed zones of genetic sequencing"—then on the basis of this collapse:

1. Nothing can be said of temporalization that does not relate to the ephiphylogenetic structure put in place each time, and each time in an original way, by the already-there, in other words by the memory supports that organize successive epochs of humanity: that is, technics—the supplement is elementary, or rather elementary supplementarity *is* (the relation to) time (différance).

2. This kind of analysis presupposes an elucidation of the possibility of anticipation (of the possibility of possibility). Such an elucidation is the very object of existential analytic, which should accordingly be *interpreted in terms of the question of prostheticity*.

The above step could not be taken by jumping abruptly from anthropology to phenomenology; the initial questions are quite different from

this sort of approach. We will first read various occurrences of the myth of Prometheus and Epimetheus, where an originary bond is presented that is formed between prostheticity (Prometheus, god of technics); anticipation (Prometheus, god of foresight); mortality (Prometheus, giver to mortals of *elpis*—both worry concerning the end and ignorance of the end); forgetting (the fault of Epimetheus); and reflexivity, or the “comprehension of being,” as delay and deferred reaction [*après-coup*] (*ēpimētheia*, or knowledge that arises from the accumulation of experience through the mediation of past faults). From the perspective of this myth, “exteriorization” will immediately call forth socialization, considered as the relation to death or as anticipation.

§ I Prometheus's Liver

“What then?” I exclaimed with curiosity.

“*Who then?* you should ask!” Thus spoke Dionysus.

—Nietzsche

Any being is a *who* (existence) or a *what* (presence-at-hand in the broadest sense). {What is} the connection between these two modes of the characters of being?

—Heidegger

The Forgetting of the Forgetful

In the Greek mythology of technics, two ideas, *promētheia* and *ēpimētheia*, which stem from the name of gods, are handed down to everyday language. These ideas are organized into elements of what one might call a quasi-“existential analytic,” which would have coherence in an essentially tragic, pre-Platonic, prephilosophical and premetaphysical domain—that is, in a domain where the tragic is still experienced in terms of (the astonishment at the fact that there is) technicity. This mythology falls into contradiction with metaphysics. We have seen this type of contradiction at work in Leroi-Gourhan, where he is forced to resort to the coup of a second origin and separate the moments of exteriorization and society in order to save spirit (from technical animality), all the while tying these moments back together again when distinguishing specific difference and ethnic difference. Leroi-Gourhan appears to say that exteriorization precedes socialization, but then he proceeds to identify them. In the same move, he remains ambiguous concerning the relation between language and technics, both maintaining that the one implies the other and returning to a metaphysical position with the hypothesis that true (spiritual) language can become free of (the) morticity (of technicity).

If one holds to the first hypothesis, according to which language and technics are bound to each other as two aspects of one and the same human attribute, this anthropology confronts metaphysics head-on, since metaphysics is constituted through the very formation of an opposition

between *logos* and *tekhne*, *phusis* and *nomos*, the intelligible and the sensible, asters and disasters, haps and mishaps. Thus, for metaphysics: (1) *tekhne*, the field of artifacts, is the possibility of the arbitrary and of the worst *hubris*, of the violence of man against *phusis* when he considers himself a god; and (2) the *logos*, the site of *alētheia*, is also the *metron*, in the attention that it brings to the “as such” of a being (to its *phusis*).

The tragic Greek understanding of technics is, however, quite different. It does not oppose two worlds. It composes *topoi* that are constitutive of mortality, being at mortality’s limits: on the one hand, immortal, on the other hand, living without knowledge of death (animality); in the gap between these two there is technical life—that is, dying. Tragic *anthropogony* is thus a *thanatology* that is configured in two moves [*coups*], the doubling-up of Prometheus by Epimetheus.

Epimetheus is not simply the forgetful one, the figure of essential witlessness that makes up all experience (since what happens, what has passed, must, as past, be ruminated); he is also the one who is forgotten. The forgotten of metaphysics. The forgotten of thought. And the forgotten of forgetting when thought thinks itself *as* forgetting. Whenever Prometheus is spoken of, this figure of forgetting is forgotten, which, like the truth of forgetting, always arrives too late: Epimetheus. It is astounding that this figure of deferred reaction, of the *après-coup*, of return through the failure of experience, of *ēpimētheia*, giving its name to thought as such, not only is *not* at the center of the phenomenological thinking of finitude but is starkly excluded from it.

The figure of Prometheus (to be found, for example, in Heidegger’s Rectorate Discourse [Heidegger 1985]) *makes no sense by itself*. It is only consistent through its doubling by Epimetheus, who in turn doubles up on himself—first, in committing the fault of forgetting, which amounts to witlessness, distractedness, imbecility, and idiocy, and ... second, in reflecting upon it, in a re-turn that is always too late. This is the very quality of reflectivity, knowledge, wisdom, and of the quite different figure of remembering, that of experience. Everyday Greek language roots reflective knowledge in *ēpimētheia*, namely, in the essential technicity that makes up (the condition of) finitude. The absence of these figures in the existential analytic of Heidegger is both striking and rigorously necessary. For, on the one hand, the intertwining of the two figures of *promētheia* and *ēpimētheia* yields the major elements of the structure of temporality, described as being-toward-the-end, while, on the other hand, the origi-

nary, irreducible rooting of this relation in technicity, which the two figures *taken together* signify, undermines any possibility of placing in opposition authentic time and the time of calculation and concern.

Thanatology: Nothing Present-at-Hand

The question we have so far been pursuing now takes a decisive tack: any residual hint of the anthropological is abandoned in the fact that techno-logy becomes properly speaking a thanato-logy. In the Platonic dialogue of his name, Protagoras narrates the myth of Prometheus and Epimetheus in the following terms:

Once upon a time, there existed gods but no mortal creatures. When the appointed time came for these also to be born, the gods formed them within the earth out of a mixture of earth and fire and the substances which are compounded from earth and fire. And when they were ready to bring them to the light, they charged Prometheus and Epimetheus with the task of equipping them and allotting suitable powers {*dunameis*} to each kind. Now Epimetheus begged Prometheus to allow him to do the distribution himself—“and when I have done it,” he said, “you can review it.” So he persuaded him and set to work. In his allotment he gave to some creatures strength without speed, and equipped the weaker kinds with speed. Some he armed with weapons, while to the unarmed he gave some other faculty and so contrived means for their preservation. To those that he endowed with smallness, he granted winged flight or a dwelling underground; to those which he increased in stature, their size itself was a protection. *Thus he made his whole distribution on a principle of compensation, being careful by these devices that no species should be destroyed.* . . . Now Epimetheus was not a particularly clever person, and before he realized it he had used up all the available powers on the brute beasts, and being left with the human race {*non-aloga*} on his hands unprovided for, did not know what to do with them. While he was puzzling about this, Prometheus came to inspect the work, and found the other animals well off for everything, but man naked, unshod, unbedded, and unarmed, and already the appointed day had come, when man too was to emerge from within the earth into the daylight. Prometheus therefore, being at a loss to provide any means of salvation for man, stole from Hephaestus and Athena the gift of skill in the arts {*ten enteknen sophian*}, together with fire—for without fire there was no means {*amekhanon*} for anyone to possess or use this skill—and bestowed it on man. In this way man acquired sufficient resources to keep himself alive, but he had no political wisdom {*sophia*}. This art was in the keeping of Zeus. . . . Through this gift man had the means of life, but

Prometheus, so the story says, thanks to Epimetheus, had later on to stand his trial for theft.

Since, then, man had a share in the portion of the gods, in the first place because of his divine kinship he alone among living creatures believed in gods, and set to work to erect altars, and images of them. Secondly, by the art which they possessed, men soon discovered articulate speech {*phonen*} and names {*onomata*}, and invented houses and clothes and shoes and bedding and got food from the earth. (Plato 1961, *Protagoras*, 320d–322a, my emphasis)

It is immediately by deviating from the equilibrium of animals, from tranquillity—a departure engendered by the fault of Epimetheus—that mortals occur. Before the deviation, there is nothing. Then the accidental event happens, the fault of Epimetheus: to have forgotten humans. Humans are the forgotten ones. Humans only occur through their being forgotten; they only appear in disappearing.

Fruit of a double fault—an act of forgetting, then of theft—they are naked like small, premature animals, without fur and means of defense, in advance of themselves, *as* advance, and also as delay (no qualities are left, everything has already been distributed). They do not yet possess the art of the political, which will be made necessary by their prematureness, directly ensuing from the technical. But this “not yet” does not imply that there will be two steps to their emergence, a time of a full origin, followed by a fall: there will have been nothing at the origin but the fault, a fault that is nothing but the de-fault of origin or the origin as de-fault [*le défaut d'origine ou l'origine comme défaut*]. There will have been no appearance except through disappearance. Everything will have taken place at the same time, in the same step.

By referring first to Jean-Pierre Vernant's reading of the poems of Hesiod, the *Theogony* and *Works and Days*, we shall have the means to interpret this first part of the Protagorean version of the myth, since the versions of Hesiod continue to inspire Protagoras's account. If the myth in the *Theogony* evokes a golden age in which humans banquered next to the gods, this means that humans had not yet occurred, since nothing had yet occurred, the golden age lying prior to the time in which something could occur.

{The golden age} does not oppose a state of nature to a civilized state; it erases all differences between them, presenting civilized foods as the spontaneous product of nature bestowed upon men without their having to lift a

finger, the food already cultivated, harvested, stored, cooked, and ready to be consumed. (Vernant 1979, 70)

Thus the deviation, if there is one, is not in relation to nature but in relation to the divine. Again this means that the real issue here concerns *the relation of mortals to immortality*, that *this anthropogony is in the first instance a thanatology*. Anthropogony only acquires meaning in theogony, the conflict between the Olympians and the Titans, which continues, in an underhanded way, with the struggle between Zeus and Prometheus. It is in this sense that humans participate in the divine, on the basis of the double fault, particularly that of the theft of fire, erecting altars to the gods *qua* those who are immortal. It is a religion entirely made up of trepidation at the condition of technicity (its power, implying equally the powerlessness of mortals). Before the fault, nothing had happened. The fault takes place, and everything disappears: humans, in their condition of mortality, issue from a deceitful lot given by Prometheus, to the detriment of Zeus and to the apparent benefit of humanity, whose sacrificial practices in the Greek city recall the consequences. Mortals come to be through their very disappearance, a disappearance inherent to their condition, that of dying. It is here that all divine gifts collapse upon themselves, turning into their opposite:

The good lot that mortals congratulate themselves on (just as they congratulate themselves on the “beautiful bane” granted them by Zeus in the form of Woman) turns out in fact to be a bad lot. The trap, set by the Titan to fool Zeus, turning back against Prometheus, ends up closing upon mankind; the fire itself, the fire stolen by Prometheus, is not, despite its advantages, a gift less ambiguous than the first female creature, also attributed with powers of dangerous seduction. (41)

The narrative procedure that consists in setting up a Zeus who is totally foreseeing, then showing him on two occasions surprised and fooled until his victorious counterattack, aims to unveil progressively to the reader during the course of a story in dramatic form the deceptive character of the Promethean gifts, whose ambiguous benefits turn finally against their beneficiaries. (70)

It is the theogonic dispute that lends its meaning to anthropogony, itself nothing other than a thanatology: theogony both defines im-mortals and characterizes, in antithesis, mortality.

As food rite, the sacrifice “revives the memory of the former compan-

ionship at table when, intermingled, men and gods made merry day after day at common table" (Vernant 1979, 43). This golden age, as we have seen, is not, however, an origin. It is a limit, irremediably lost, a condition both forgotten and unforgettable, since it is re-evoked and recalled antithetically by the counterimage of the Immortals, always present in their distance, a proximity nevertheless forever withdrawn, and thus, for mortals, an infinite regret in which the eternal melancholy of the *genos anthropos* is configured:

In and through the ritual of sacrifice the distance separating mortal from immortal is opened up and perpetuated: . . . the unchanging youth of the Olympians . . . and the ephemeral form of existence that humans must henceforth assume in order to become themselves. (47)

Through sacrifice mortals are put in their place: *between* the beasts and the gods, in this in-between (between appearing and disappearing) resulting from a deviation. It is not a matter of recalling a state of nature, nor of claiming what "human nature" ought to have been; there was no fall, but a fault, no hap nor mishap, but mortality.

For Hesiod, bringing to light the condition of humanity consists not in defining a "human nature" of which he has no idea, but in unveiling, through the narrative of the founding of the sacrifice, all the implications, immediate or distant, of this cult that regards the very status of humans, that is, the place assigned to them. (81)

The Hesiodic myth allows us to understand how the question of the community—which becomes the question of politics (ending up, in the Protagorean version, with the sending of Hermes)—is indissociable from the cult of sacrifice: the political community is solely constituted in the memory of the original sacrifice, that is, *indissociable from the Promethean fault*. It can also be seen in this context that religion and the *polis* are indissociably understood in ancient Greece in terms of mortality *qua* the originary departure from all origins, that is, *qua* technicity—an ambiguous, stolen, all too human reflection of power/potential [*puissance*]. Humans,

like all mortal creatures, like beasts, . . . are on a different level to the gods, standing to one side, strangers to the divine sphere. Singular, however, among mortal creatures, and unlike the beasts, their mode of existence implies a con-

stant reference to, a particular relation with the supernatural Powers. There is no city, no human life that does not set up a relation to the divine world through an organized cult, establishing thereby something like a community with it. It is this ambiguity concerning the human condition, both separate from and close to the divine, outside it and in relation to it, that Prometheus assumes in his own manner within the divine sphere itself. (49)

In other words, the duplicity of power/potential derives from the sphere of Immortals itself. And when it is carried out—an act that constitutes the fault of Prometheus, failing to stem Olympian omnipotence—it means a fall [*une déchéance*] (quite similar to the one that Heidegger's existential analytic will attempt to think) which the sacrifice recalls and whose acceptance of the fact mortals affirm in the practice of the cult. The failure of Prometheus

does not simply turn the sacrificial rite into an act that symbolizes the complete segregation of the two races (mortal and immortal); it confers upon this separation the character of an irremediable and justified fall, one whose validity, each time by sacrificing in Promethean mode they engage in communication with the superior powers, mortals must recognize. (50)

This fall, dying, is the origin of *ēris* ("spirit of competition, jealousy, quarrelsomeness"), which takes root in the divine world itself and eternally brings to bear upon mortals the threat of dispersion, of ever-imminent war, of *stasis*. It is the political necessity for a community that always remains ready to conquer. It is the property of *ēris* which ties the condition of mortals to the genesis of Immortals; it is through *ēris* that Vernant makes the link between the *Theogony* and the pseudo-anthropology that is the thanatology narrated in *Works and Days*.

The drama of *ēris*, which in the *Theogony* through the intervention of the gods is directed toward and touches human beings, is matched in the *Works* by something played out directly on Boeotian soil between Hesiod and his brother Perses. (Vernant 1979, 54)

While, however, divine *ēris* is clear, unequivocal, its outcome brooking no doubt—Zeus will vanquish Prometheus, who will suffer punishment (the meaning of which we must analyze in a moment)—human *ēris* is ambiguous, like every characteristic particular to mortality, these quasi-"existenciales" proceeding from the fault of Prometheus. Complexity and

duplicity will also come to form the irreducible characteristics of politics, in which conflict *qua competition* forms the dynamic factor of the community: emulation as much as the imminence of destruction, which speech will defer.

It is in these terms that *promētheia* can be seen to determine mortality, giving to ancient Greek religion and politics, as well to the tragic, their entire meaning. Mortality is *promētheia*, and ever since Zeus realized that he was being duped by Prometheus, "human existence [has been] how we see it: entirely prey to the twofold struggle, unceasingly torn between," on the one hand, the good *ēris*, which is made up of competitive emulation at work, and, on the other, fratricidal war (between Perses and Hesiod, between members of the same city, between cities) (Vernant 1979, 57). In this respect, it is somewhat astonishing to note the total neglect and forgetting of this Promethean origin, which has almost come to form the core of modern and contemporary philosophical analyses of Greek politics and religion, when Vernant has shown with utter clarity that "if the life of human beings, contrary to that of the gods, cannot shirk *ēris*, it is because *the mortal condition finds its origin and its raison d'être in the ēris that set Prometheus against Zeus*" (57, my emphasis).

Prometheus attempted to mislead Zeus, as a result of which there emerged the human condition. But the truth of the appearance of humanity is to be found in its disappearing: such is the vengeance of Zeus. The golden age is succeeded by a period of ills in which humans no longer dispose of anything ready to hand, no longer have anything, that is, to put in their mouth, now irremediably bent to the yoke of *ponos*, the labor that must be spent in payment for the lack of origin, for corn to appear. For, from now on, *bios* remains hidden in the belly of the earth, disappearing yet again and forever, like mortals themselves, while the obligation to work, to *handle instruments*, will reappear over and over again for these same mortals, until, grown old through *care*, they at last pass away.¹

Outside Itself

We can now return to the first moment of the Protagorean version of the myth. There was the first fault, Epimetheus's forgetting, then the second fault, Prometheus's theft, as a result of which appeared the disappearing nudity of mortals, the advance of their prematureness that is their eternal delay. If they do not yet possess the art of the political, called for

by their de-fault of origin, and arising from their technicity, it is because their condition must take root, firstly, in the memory of the Titanic conflict in Olympia, a memory in the sacrifice *out of which* they come to *speech*. Speech, and later politics, proceed from this memorial participation in the divine, and thus from this theft. From out of this memory, in this speech, they come to *invent*.

Religion, speech, politics, invention—each is but an effect of the de-fault of origin. The essential is the accident, the absence of quality. The political question, the question of the community, only makes sense if one starts from the community of a de-fault or of the imminent de-fault of community. Religion, sacrifice, the altar only make sense with *this* political question, which originates in Prometheus's stamp. Speech will only make sense in terms of the meaning that *this* sacrifice saves.

Man invents, discovers, finds (*eurisko*), imagines (*mēkhanē*), and realizes what he imagines: prostheses, expedients. A prosthesis is what is placed in front, that is, what is outside, outside what it is placed in front of. However, if what is outside constitutes the very being of what it lies outside of, then this being is *outside itself*. The being of humankind is to be outside itself. In order to make up for the fault of Epimetheus, Prometheus gives humans the present of putting them outside themselves.

Humankind, we might say, puts into effect what it imagines because it is endowed with reason, with *logos*—that is, also with language. Or should we rather say that it is because it realizes what it imagines—as we said a moment ago, because it lies outside itself—that humanity is endowed with reason, that is, with language? Is it *tekhne* that arises from *logos*, or the reverse? Or rather, is it not that *logos* and *tekhne* are modalities of the same being-outside-oneself?

Discovery, insight, invention, imagination are all, according to the narrative of the myth, characteristic of a *de-fault*. Animals are already marked by a de-fault (in relation to being as it is and as it endures through change, and in relation to the gods): they perish. One must understand "de-fault" here *in relation to what is*, that is, a flaw in being. And yet, whereas animals are positively endowed with qualities, it is *tekhne* that forms the lot of humans, and *tekhne* is prosthetic; that is, it is entirely artificial. The qualities of animals make up a sort of nature, in any case a positive gift of the gods: a predestination. The gift made to humanity is not positive: it is there to compensate. Humanity is without qualities, without predestination: it must invent, realize, produce qualities, and

nothing indicates that, once produced, these qualities will bring about humanity, that they will become *its* qualities; for they may rather become those of technics.

Prometheus robs Hephaestus and Athena. By pursuing Athena, Hephaestus becomes the father of the Athenians. Here arms, tools, and instruments of war play a large role: Athena rose from the head of Zeus clad in arms, delivered by the patron god of handicraft with an axe. Athena is in turn pursued by Hephaestus when she orders arms from him: in this manner the craftsman's sperm is spilt on the earth, constituting the myth of Athenian autochthony, a myth that will be important to us later.² Origin, war, politics: with each it is a matter of instruments. From these gods who handle instruments is stolen the "creative genius of the arts" (which translates *ten entekhnēn sophian*: it is, again, a matter of *sophia* and *tekhne*).

Sophia and *tekhne* are nothing without fire, with all that this connotes of *duplicity*, given that it concerns the fire stolen by Prometheus. Fire, in the hands of mortals, is a power of divine origin through whose mediation, in sacrifice, the mortals put themselves in the place of the gods. Fire is not, however, the power of mortals, it is not their property; it is much more a domestic power that, when escaping the technical mastery of this domesticity, reveals its wild violence, disclosing the powerlessness of mortals, only appearing in their hands, yet again, through disappearing.³

The role that fire plays here must be given a temporal sense: anticipation, care, conservation, and so on, in a succession of mistakes set in play by the originary double fault. The duplicity of fire, symbol of the duplicity of mortal "power," is nothing but the effect of an originary doubling-up: Prometheus's fault, origin of the de-fault in being for mortals of the human species, is the doubling-up of a fault: the fault of Epimetheus is compensated for by another fault, which inevitably engenders the de-fault.

In this duplicity, mediating through sacrifice, "voices" (*phonen*) and "parts of discourses" (*onomata*) are heard. Language, the *logos* as language, occurs (it too in disappearing, it too two-faced, always capable of meaning the opposite of what is intended) through technics, through the theft of fire and the "arts" (*tekhnai*). The *logos*, *qua* religion, *qua* politics, is (on the basis of the fault) wholly technical, fruit of an originary incompleteness of technical being. This technicity and incompleteness of technical being stem from the gods themselves, who are expert in technics. This consti-

tutes the incompleteness of theogony, characterized first by Epimetheus, "whose wisdom was incomplete": a god who is not exactly wise, not truly wise, or rather, wise without being wise—wise after the event.

Animals are perishable; humanity is mortal. There is a difference, and this difference is marked in the text by the reference to the cult of the gods. Humanity, *qua* mortal, "has a share in the portion of the gods" (Plato 1961, *Protagoras*, 322a). Its mortality appears through its relation to immortals for whom it erects temples and fashions images. It is only then (*epeita*) on the basis of this partaking that it acquires "the art of emitting sounds and swiftly articulating nouns" (322a). Once this difference with beings deprived of reason or *logos*, *aloga* (unable to mimic immortals because not partaking of their lot) is made, the unqualifiable race will have become *logoin*, logical, endowed (but through default) with *logos*. To partake of the lot of immortals means to endure one's mortality by the fact of being in (privative) relation with immortality. The unqualifiable race speaks from out of its "disqualification," from out of its mortality; it only speaks its mortality, its disappearance, for the divine defines itself in relation to death, and not death in relation to the divine. It is true that one says "the gods, *oi theoi*," but what bestows content upon this notion of "god" is the immortality of god; it is death that defines the divide between those who are divine and those who only partake of the divine, a divide that relates and separates them at one and the same time.

In the *Theogony*, it is Prometheus who commits the first fault, trying to deceive Zeus about the sacrificial beast, and giving him bones while keeping the meat back for humans, for which Zeus will take revenge by depriving humans of fire. Prometheus also commits the second fault, proceeding to steal the fire of which Zeus deprived mortals in order to take his revenge, and from there, Zeus will again take his revenge by sending humans Pandora. There are two faults, then, and there are two acts of vengeance. As for Epimetheus, his fault will be to accept the gift from Zeus, the beautiful bane in the form of Pandora. Zeus's second act of vengeance is the mark of *sexual difference*, the very mark that in Rousseau produces discord, the speaking of many tongues and inequality. The sending of difference is the sending of a being covered in artifice and resplendent, deceptive finery, what is also called *kosmos*, still spoken of and seen in cosmetics, a decorous set of ornaments worked on by the handicapped god Hephaestus. This difference, more than any other, places the *andres* in a calamitous state, outside themselves, left exhausted.

Birth and Uncertainty

The originary duplicity, the doubling-up of the first act, inside this act, in one act—for there were never two origins, there is no origin at all, there is only the duplicity of an originary flaw—this act, then, of doubling-up also constitutes the duplicity of a “contractuality” that will forever fall short, of a compromise pregnant with all possible betrayals, of a promise never kept:

What has become of the difference [between Prometheus and Zeus] from which humans draw their status? It is . . . the result neither of crude violence nor of a reciprocal agreement. It is not imposed by force, although it is not decided in common either. . . . The open war that divides Titans and Olympians is replaced by a muffled conflict, a test of duplicity and scheming. . . . *This uncertain and oblique procedure responds to the equivocal character of the status of humans in the relations that both unite them to the gods and separate them therefrom.* (Vernant 1979, 47–49, my emphasis)

The duplicity is evident on a daily basis in the very existence of the *anthropoi* who, through Pandora, figuring the arrival of birth as the mirror of death, become *andres*, forever associated with women, “destined to the double fatality of begetting and death.” And this is the fault, again, of Epimetheus. Labor—that is, technics—and generation in sexual difference are stamped with the same mark: that of the vengeance of Zeus, disappearance.⁴

The “ultimate meaning” of what occurs with Pandora is the jar, and the meaning of the jar is *elpis*: anticipation, time. In other words, *temporality is thought here not only in terms of mortality but also in terms of birth qua sexual differentiation.*

The theme of *elpis*, expectation, takes us to the profoundest part in Hesiod of the theme of prosthetic mortality, an analysis of which was made at the end of our reading of Leroi-Gourhan. There the theme was considered in terms of a new modality of programming—exteriorization—and as the staking-out, if not of the unprogrammable, at least of the improbable or of the open and undetermined, which is the future thought in terms of anticipation without predestination, or deferred difference—themes we will come across again in our further reading of the myth of Protagoras. It should be stressed that it is precisely here that Epimetheus, absent from Hesiod’s version, enters the picture.

Elpis designates firstly expectation, conjecture, presumption, and fore-

sight. The noun thus implies as much hope as its opposite, fear. *Elpis* is shut up in Pandora’s jar together with the ills that Zeus has stored up for mortals. It is consequently most often also considered as an ill. Vernant, whom we must quote at length here, questions this reading:

Elpis, as long as it is not specified as fear or as trust, is neutral: it can refer to a good or an ill. A question thus arises: if, by placing *Elpis* in the jar (of Pandora) in company with all ills, Hesiod completely assimilated it, making it into the anxious expectation of ill in order to avoid ambiguity, ought he not to have named it *Phobos* in preference to *Elpis*? But there is something more serious going on here. As soon as one turns *Elpis* into the expectation of ill, it is seen as the “ultimate ill,” “the worst among them”: more awful than misfortune itself is the anticipation of misfortune, its presence in the mind of man even before it is assailed by it (a phenomenon undoubtedly symbolized by Prometheus’s consumed liver). In our understanding, *Elpis* portrays a radical dimension of uncertainty; whether it be expectation of good or of ill, its meaning is never stable, never definite. It does not carry the value of *pronoia*, of prescience; being of the order of conjecture, always implying credulity, it oscillates between the dreams of the presumptuous and the terrors of the timorous. Returning to the Hesiodic context, we would say that *Elpis* is not less foreign to *promētheia*, foresight, than to *ēpimētheia*, comprehension after the event (or rather, that it is the tension between the two, their *stricture*). Through his *mētis*, Prometheus represents, in the misfortunes that strike him, the hero of prescience: “I know in advance all events to come. For me no misfortune happens unexpectedly.” This complete certainty the Titan has of the sufferings that are marked for him constitutes in a certain sense the opposite of the uncertain *Elpis* that humans share. . . . In a passage of *Prometheus Bound* . . . , the Titan enumerates the qualities he has bestowed on man: “I stopped mortals from foreseeing death.” “What cure did you discover for that ill?,” the chorus asks. “I sowed in them blind hopes,” Prometheus replies. It is not the foreseeing of ill, the foreknowledge of death, which carries the name here of *elpis*; on the contrary, *elpis*, housed among humans, as is Pandora, constitutes through her very blindness the antidote to foresight. She is not a cure for death, which has none, since, whatever one does, death is inscribed in the course of human life. Finding her place within the very seat of mortal life, *elpis* can balance out the consciousness of death with lack of knowledge of the moment when and the manner in which death will come and take this life. (Vernant 1979, 125–26)

Thus, in the anticipation, always already hidden, of their end—the knot that binds together *promētheia* and *ēpimētheia*⁵—the temporality of

mortals is set up. As in the Heideggerian existential analytic, this knowledge of the end, which is also a nonknowing, forms the primordial situation out of which each person conducts himself or herself. *Elpis* could be seen as (the relation) to the indeterminate,⁶ that is (the anticipation of) the future, and as such, "the essential phenomenon of time."

Epimetheus: The Idiot

To endure the fault of Epimetheus, doubled up by that of Prometheus, is to descend into a primordial knowledge of death unknown to *aloga*. It is true that at the beginning of the story Protagoras designates by the expression *thnēta gēnē* not only those whom we are here calling mortals but also those who perish, animals that are *aloga*. And yet, the *non-aloga* will become, after the event, *nonimmortals*, and not simply those who are engendered, a trait that they share with animals. *Between* god and beast, neither beast nor god, neither immortal nor prone to perish, sacrificial beings, mortals are also and for the same reasons nascent, bestowing meaning, and "active." In *elpis*, which is being-toward-death, in *elpis* alone, but there necessarily from the moment that *bios* and all properties have been hidden while the ills have been scattered, a technical *activity* that characterizes all humanity as such, that is, all mortality, can plunge out of control. To be active can mean nothing but to be mortal. Activity is to be thought in terms of (the *différance* of) absolute inactivity. This being-toward-death, ecstasis, being-outside-oneself, in expectation, hope or fear, configures a particular mode of being of mortals *among themselves*, a being-together that does not come into existence before Epimetheus's act of forgetting (beings that are *aloga*, simply engendered without birth, are not "together"). Technics, art, facticity can harbor madness: the prosthesis is a danger, that of artifacts, and artifacts can destroy what gathers within an effective and active being-together. Being-together is constantly threatened by its own activity. Animals are in essence not in danger, unless with mortals: if they perish individually, their species do not destroy themselves. Mortals, because they are prosthetic in their very being, are self-destructive.

Hence prostheses, when visible, frighten or fascinate, as *marks* of mortality: the knife that the *mageiros*, butcher and sacrificial killer, is reluctant to use and that he flings from himself as soon as the animal has been killed (Détienne 1979), the wooden leg, the nineteenth-century steam en-

gine, the set of dentures at the bottom of a glass, the television hallucinating intimacy, the robot on the automated factory floor, the computer chess-champion, translating machines ... There is nothing but prostheses: my glasses, my shoes, the pen, the diary, or the money in my pocket; and because they are frightening, their visibility is reduced. There are all kinds of strategies—blind ones, moreover—to do so. And yet, from the beginning there is a constitutive blindness and forgetting that is the mark of Epimetheus—that is, of *différance* in the fact of being technical, as doubling-up (deferred *différance*). *Ēpimētheia* constitutes this carelessness, this primordial idiocy, source of finite singularity and freedom, as a result of which it is possible to act and possible for something to occur, to take place. To have a past is to be fallible: nothing can happen to the infallible; no difference can affect it. *Ēpimētheia* is also the carefulness that comes too late to reflect upon its passive mode, this very reflexivity lingering in the empirical, that is strewn with accumulated errors. The horizon of this careless care is the facticity that is always already there, having always already preceded the mortal who, whatever he or she does, arrives too late, inheriting all the faults of his or her ancestry, starting with the originary de-fault of origin.

Facticity is felt in the life of the group, in its *coming together as one* [*faire corps*] through default (atomization) or through excess (herding), both as its origin and as its threat: a political question emerges here. And this is where Protagoras resumes his story of the myth at the point where we left off. It is where the question of prostheses arises in the most basic terms for a "race" that is not predestined to be what it is, that is "unqualifiable" because "without qualities," and the question is that of a hermeneutic and Promethean condition, the condition of mortals. Who are mortals? They are those who do not come together as one immediately, who have to be brought together, who have to be, and who are less predatory than bellicose. In the same sense, in *Being and Time*, Dasein is marked by facticity, in which Da-sein is there not in the sense that being is given to it but in the sense of its having to be, which means: Dasein is time. All that it is given is a feeling of having-to-be, of a de-fault of being where at one and the same time a having-to-be and a failing-to-be are affirmed. In Heidegger, especially toward the end of his work, this question becomes that of technics. Indeed, Heidegger's question, put from the very beginning in terms of a hermeneutic, moves toward, and is already moving within, the Promethean question. And yet, the existential ana-

lytic and the Heideggerian question of time ignore the primordial sense of the Promethean/Epimethean figure that Vernant's reading has brought to light.

"The community of those who have no community"

The Protagorean version of the myth is articulated in a horizon that is novel when compared to that of Hesiod. The political question has since assumed the *form* of a question. The duplicity of language has here revealed itself, in the eyes of philosophy, in the form of writing, which not only concerns but constitutes as such all properly political practices, as Marcel Détienné (1981) has decisively shown. It is within this new horizon that the appearance of Hermes in the myth makes sense and that the *polis* tries to interpret citizenship as such—citizenship that is—according to the problematic at the end of the last part, when interrogating the articulation, after the "removal of ethnic memory from zoological species," between the "socio-ethnic" and "individual" levels recognized by Leroi-Gourhan⁷—a singular situation of idiomatic individuation and time: its *historical* site. The sending of Hermes also forms the (techno-logical) opening to the book of History.

After being "provided for" by Epimetheus,

they lived at first in scattered groups (*sporadēs*); there were no cities. Consequently they were devoured by wild beasts, since they were in every respect the weaker, and their technical skill, though a sufficient aid to their nurture, did not extend to making war on the beasts, for they had not the art (*tekhne*) of politics, of which the art of war (*polēmikē*) is a part. They sought therefore to save themselves by coming together and founding fortified cities, but when they gathered in communities they injured one another for want of political skill (*ten politikhen tekhnēn*), and so scattered again and continued to be devoured. Zeus therefore, fearing the total destruction of our race, sent Hermes to impart to men the qualities of respect for others (*aido*: modesty, respect, shame; perhaps today one might say the feeling of finitude) and a sense of justice (*dikē*), so as to bring order into our cities (*poleon kosmoi*) and create a bond of friendship and union (*philiās sunagōgōi*). Hermes asked Zeus in what manner he was to bestow these gifts on men. "Shall I distribute these *tekhnai* as the arts were distributed—that is, on the principle that one trained doctor suffices for many laymen, and so with the other experts (*demiourgai*)? Shall I distribute justice and respect for their fellows (*aido*) in this way, or to

all alike?" "To all," said Zeus; "let all have their share. There could never be cities if only a few men (*oligoi*) shared in these virtues, as in the arts (*tekhnai*). Moreover, you must lay it down as my law that if anyone is incapable of acquiring his share of *aido* and *dikē* he shall be put to death as a plague to the city." (Plato 1961, *Protagoras*, 322b–d)

Thus the bad side of *ēris* makes its appearance. To contain it, another *tekhne* is required, a *tekhne* that will not be like the others because shared by all alike, just as writing, when the practice of it spreads throughout ancient Greece, forms a *tekhne* that is no longer paradoxically (in principle if not in reality) the privilege of specialists. It is not the philosopher, the sophist says, who will lead the city, but the city itself through its coming-together. What brings this togetherness about is found in the feeling of shame, that is, of finitude, *aido*, such as it stems from the fault(s) of Prometheus/Epimetheus (Vernant 1979, 80). Politics is an art, a technics, imprinted in every mortal as the originary feeling of the divine coup of technicity itself—this, in the widest understanding of the term, that is, as the necessity of a *différance*, deferral as the imminence of the end of "the community of those who have no community"⁸ but an art that presupposes a *praxis* of the letter. It is *in effects* (generating differences) the *feeling* of the de-fault of origin.

Hermes, the messenger-god of the gods, the god of sacrifice and hiding, of enigma and aporia, of interpretation and translation, Hermes the herald, brings *dikē* and *aido*, feelings that are also forms of knowledge [*savoirs*]⁹—they are feelings and/or *hermeneutical* forms of knowledge. *Dikē* as well as *aido* must be *interpreted* and *translated*, beyond and through the disparity intrinsic to a race that lacks quality, like marks of this race's community given on the basis of its very de-fault of community. The meaning of *dikē* and *aido* is not given, is lacking—because the community of mortals is "the community of those who have no community," no essence, no quality. To have to partake of or share in *dikē* or *aido*, in knowledge of the de-fault, is not an "ought" and can only have meaning for those for whom one has to [*il faut*] decide, immersed as they are in activity. Each time, in every situation of decision, in every position of necessity [*falloir*] that opens up at the same time a flaw [*faillie*], one has to invent their meaning in *hermēneia*—which is made up unquestionably of *promētheia* and *ēpimētheia*. *Hermēneia* signifies, in common language, expression and elocution, translation and interpretation.

Promētheia is the anticipation of the future, that is, of danger, foresight, prudence, and an essential disquiet: somebody who is *promethēs* is somebody who is worried in advance. *Ēpimētheia* equally means prudence, being-sensible, a sort of wisdom, whereas Epimetheus himself is "the one who is not particularly sensible," the forgetful one, the bemused, the idiot, the unthinking one: this ambiguity forms the hollow of the gap [*le creux de l'écart*] in which thought alone can take place; and it comes to mind *after the event*, in delay, because preceded by a past that could never be anything but a failure and an act of forgetting. Prometheus and Epimetheus, inseparable, form together the reflection particular to mortals that partake of the divine lot: it is a reflection *qua* ecstasis, "in" time, that is, in mortality, which is anticipation and *différance*; it is reflection *as* time and time *as* reflection: in advance from the Promethean side as well as in delay from the side of Epimetheus—never at peace, which is the exclusive privilege of immortal beings.

In other words, *aidō* and *dikē*, feelings that guarantee the safety of the gathering of mortals, are the very feelings of mortality that alone mortal beings have in common from default of quality, mortality itself ensuing from this de-fault, from their technicity. This gathering, which means here for Plato the city (*polis*), implies decision, and decision implies anticipation: *promētheia*, advance, whose truth is the return after the event, the delay, *ēpimētheia*; and insofar as it constitutes in one stroke (*ēris*) the possibility of the city and the possibility of its destruction (its impossibility), *promētheia* as advance *presupposes* hermeneutics (related itself to the technics of writing), which lies at the very basis of temporality.

The Liver

This is the meaning of Prometheus, chained to the rock, his liver consumed by the eagle sent from Zeus. Through this act of Olympian revenge, a primordial melancholy, vehicle of every phantasm, of every hypochondria, of every bilious misanthropy, will pre-cede as its possibility the hermeneutic community.

With the fire that he put in their hands, Prometheus determined the type of food proper to mortal beings. . . . Like the immortal liver of the Titan, the hunger of men who perish is postponed from one day to the next, constant and recurrent, requiring food to be procured without end to maintain them

in the form of a precarious and short-lived life that is henceforth their lot. (Vernant 1979, 90)

Like hunger, the cold, labor, and basic cares return each day, never more than deferred. Just as the future is as inevitable as it is implacably undetermined, so Prometheus's liver, consumed by day and restored by night, is the Titan's *clock*⁹—become feast of the sacrifice, as much as his torment. It is the ceaseless process of *différance* in which time is constituted with that one coup of technicity that is the mark of mortality. "Why the liver?" It is an organic *mirror* in which divinatory hermeneutics is practiced, in which, during the sacrifice, divine messages are interpreted. And it is Hermes who, in Aeschylus, announces to Prometheus his punishment. Organ of all *humors*, of feelings of all situations, because it is the seat of the "feeling of situation," the liver is also, as a mirror of ceaseless mortality—which never *occurs*—of the body and the heart, the mirage of the spirit (*Gemüt*). A clock, its vesicle conceals those stones [*calculs*] that secrete black bile, *melas kholie*.

§ 2 Already There

The connections between historical numeration, world time as calculated astronomically, and the temporality and historicity of Dasein need a more extensive investigation.

—Heidegger

The Instrumental Condition

To determine *dikē* and *aidō* within *hermēneia* does not imply of course arbitrarily determining their meaning; rather, it implies experiencing the question of their meaning. Mortals are immersed from the start, elementarily as it were, in a problem. To be is to be in the question of destiny *qua* nonpredestination, to be, that is, a *who*.

The *who* and the *what*, in their very conjunction, are the concern both of the present chapter and, especially, of the next. In the course of the lecture "The Concept of Time" (1924),¹ Heidegger, elaborating a phenomenological hermeneutics of Dasein *qua* a being that has to be, that is, a historical being immersed in *hermēneia*, sets up the articulation between the *who* and the *what* through the thematic of the clock. Despite this early articulation, the later existential analytic ends up discarding this possible conjunction, thereby ignoring the Epimethean (Promethean) meaning of any hermeneutics and leaving shrouded in ambiguity the question of the already-there, expressly set up in other respects *as* constitutive of Dasein: the facticity of Dasein ensues from its being *already there*, from the precedence of its past (the past of Dasein has always already preceded it). The analytic ends up dissolving the stones [*calculi*] of the liver: the prosthetic facticity of the already-there will have had no constitutive character, will never have taken part in the originarity of the phenomenon of time, indeed, and on the contrary, will have only figured as a destitution of the origin. At the same time, writing, as the mark of this technics, will be removed from the inauguration of the history of be-

ing, an inauguration that also forms the opening of the book of History in which the rights and duties of citizenship are laid down.²

We want to show that there is a techno-logical constitution (earlier than "chthonian") to epochal reflexivity. Plato only quotes Protagoras in order to oppose him. Opposition to the Sophists is constitutive of philosophy; the opposition turns around the question of technics, such as it finds specification in writing. Writing is already something like a language machine, producing a language of synthesis. But it is also in writing, insofar as writing opens up the space particular to political "publicity" and historical "temporality," that the *logos* becomes a question and acquires, strictly speaking, definition, distinguishing itself as reason from what is not yet rational. Now, writing is a technics. And we have seen in the story of Protagoras how *tekhnē* gives rise to the *polis*.

Whatever the shifts in Heidegger's successive accounts of this question—to begin with *Being and Time*, one major consequence of which is the highlighting of the ontological singularity of beings that are "ready-to-hand," tools, that is, the *what* (and the sign is itself a tool)—Heidegger's thought is fundamentally still inscribed in the traditional opposition between *tekhnē* and the *logos*. If he denounced, well after *Being and Time*, and in another vocabulary, analyses of technics that are conducted in terms of the categories "end" and "means," it was in order to uncover an *instrumental* conception of technics, an analysis in which he does not appear to put in question the determination itself of an instrument *as* a means. The metaphysical illusion from Plato onward that turns language into a means through which humans express themselves, rather than its being located as the site of their very constitution, is abundantly criticized by Heidegger. Yet it is the same error that induces consideration of an instrument as a means. Heidegger criticizes the instrumentalization of language, its "cybernetization" in terms of the elimination of idiomatic difference, as what "transforms language into an exchange of news[, with] the arts becoming regulated-regulating instruments of information" (Heidegger 1969a, 376), a theme that is taken up again and developed in *The Language of Tradition and Technical Language* [*Überlieferte Sprache und technische Sprache*, 1989]. But if the instrumentalization of language is possible, this is because its instrumentality is inherent to it. The question is consequently one of knowing how an instrument should be understood, that is, as a being-ready-to-hand, as the *what*. It is a question not of struggling against the instrumentalization of language but of resisting

the very reduction of an instrument to the rank of means. There is no point in looking to isolate a noninstrumental aspect to language; nothing of the kind exists. The issue is rather that of addressing the modalities of instrumentality as such, modalities that harbor the condition of idiomatic instrumentality as much as that of the condition of massive indifferenciation, together with all the multiple dimensions of what we might call, here, *the instrumental condition*.

Ēpimathēsis: Tradition

Through the recurrent themes of the *heritage* of tradition, on the one hand, and modern technics and calculation, on the other, the question of the idiom, as well as the opposition between *logos* and *tekhne* articulating the terms of the question, prevails in the work of Heidegger, from *The Concept of Time* to "Time and Being."

Now, the fatality of heritage provides the profoundest meaning to the figure of Epimetheus. As the accumulation of faults and forgettings, as legacy and transmission, in the form of a knowing that is both reflexive and forgetful, *ēpimētheia* gives also the very meaning of tradition.

We have characterized this accumulation of individual experiences in forgetful error with the concept "epiphylogenesis." Without doubt, it is not by pure chance that the first three letters of the name of Epimetheus are to be found in the prefix of this neologism. What could the etymology of this name be? First is to be understood the etymology of the root found in *pro-mētheia*. "*Mētheia*" comes from *manthano*, which means to learn, to study, to teach oneself, to notice something or remark, to understand. The verb is also to be found in the term *mathēsis*, of which Heidegger says in *What Is a Thing?*:

The mathematical is a fundamental position towards things, one in which our apprehension *pro-poses* things with regard to the way in which they are *already* given to us and must be so given. The mathematical constitutes therefore the fundamental presupposition of the knowledge of things. (Heidegger 1967b, 63)

So, what does the prefix *ēpi* stuck to the root *mētheia* mean? *Ēpi* carries the character of the accidentality and artificial factuality of something happening, arriving, a primordial "passibility" [*passibilité*]. With *matheia*, or *mathēsis*, we are dealing with something happening, that is from the

first passed on, shared: knowledge *is* primordially. *Ēpimētheia* means heritage. Heritage is always *ēpimathēsis*.

Ēpimētheia would also mean then tradition-originating in a fault that is always *already there* and that is nothing but technicity. This understanding of the term is faithful to traditional historicity, which forms an existential trait of Dasein: Dasein, as "being-thrown," inherits the already-there that is its past, always having preceded it and from out of which it "is" this particular "who," child and grandchild of so and so, and so on—*its* past, which is not properly speaking *its* past since it did not "live" it. The temporal mode of being of Dasein is historicity, which "designates the constitution of the historicizing-being of Dasein as such," and the meaning of this historicizing is itself facticity. "In its factual being, any Dasein is as it already was, and it is 'what' it already was. It *is* its past, whether explicitly or not" (Heidegger 1967a, 20). One can understand the (awesome) sense of the adverb "already" here. If the mode of being (of Dasein's past) historicizes "from the future,"

Dasein has grown up both *into* and *in* a traditional way of interpreting itself: in terms of this it understands itself proximally and, within a certain range, constantly. By this understanding, the possibilities of its being are disclosed and regulated. Its own past—and this always means the past of its "generation"—is not something which *follows along after* Dasein, but something which already goes ahead of it. (20)

This past of *mine* is only inherited insofar as it is not *my* past: it has to come "to be so." It will only be so after the event, *après coup* (in the after event of the "resolution").

If the Epimethean character of tradition originates in technicity, what, then, of tradition in the today of technological deterritorialization (what Heidegger would call "uprooting")? Does ethnic difference co-originate with technical difference, or does it only form a *modality* of an idiomatic difference that is essentially deterritorializable? This type of question haunts the whole of Heidegger's thinking, forms its ghost, most particularly with regard to his "political adventure." The reference to Prometheus in the Rectorate Discourse is the bitter index. The absence of the same figure in *An Introduction to Metaphysics*, where Antigone, that is, her father, Oedipus, is foregrounded, is a further mark of this forgetting—while the theme of uprooting informs all of *Being and Time's* reflections.³

This way of introducing our reading of Heidegger could encourage one to think that Heidegger's political "fault" or "mistake," together with the metaphysical shortcomings of his thought in general, consisting in a "forgetful" understanding of the fault as such, and this despite the major theme of *Schuldigsein* (being-at-fault or in-debt), take place owing to a traditional metaphysical position toward technics. This would be wholly wrong, and we would wish to contribute to dissipating a misunderstanding that predominates in most interpretations of Heidegger: that, for example, of Jacques Rolland, who considers that for Heidegger the question is one of "escaping the hold of technics" (Rolland 1986, 170); that also of Marlène Zarader, who organizes her interpretation of the meaning of *Ereignis* on the basis of the question of modern technics and calculation.⁴ In this interpretation Zarader simply confuses two concerns (technics and calculation), a confusion that leads her to write:

The essence of man is circumscribed by Heidegger . . . like a homeland to be gained. It is only when man, concerned with such a conquest, will have reached or at least approached this proximity, which is his without him having ever inhabited it, that what *Sein und Zeit* calls "falling" will have been surmounted. (Zarader 1976, 124)

As if falling were "surmountable." This so-called reading of Heidegger has quite simply never read Heidegger, if we take the warning of paragraph 38 in the least seriously:

We would . . . misunderstand the ontologico-existential structure of falling if we were to ascribe to it the sense of a bad and deplorable ontical property of which, perhaps, more advanced stages of human culture might be able to rid themselves. (Heidegger 1967a, 176)

The impertinence of Zarader's reading is patent. Dasein is "thrown," and this is what grounds its "mobility": it "exists factually." If Dasein has the possibility of understanding, this is because it has the possibility of falling. This existential structure is very close to a being-in-de-fault, to a being-through-de-fault—of the Promethean-Epimethean "structure."

Hence Hubert Dreyfus is more correct than he believes to see in the philosophy of *Being and Time* a "technical phenomenology," even if Heidegger remains fundamentally ambiguous on this point and fails to carry this reflection to a conclusion:

Opposing the Cartesian subject/object distinction in terms of an account of Dasein as a user of equipment becomes an ambiguous form of opposition, for it is no longer clear whether such an analysis offers a critique of technology in the form of a transcendental account of the pre-technological everyday understanding of equipment, or whether, under the guise of a transcendental account of everyday activity, such an analysis reflects a transition in the history of the way equipment *is* which prepares the way for technology. In other words, it is not clear whether *Being and Time* opposes technology or promotes it. (Dreyfus 1992, 175)

The allusion made here to "The End of Philosophy and the Task of Thinking" shows that Dreyfus misinterprets Heidegger in the same way that Rolland does. For it is never a question of such an alternative; it is not "the task of thinking" (Heidegger 1969a, 392) to "confront" technics—nor of course to promote it—but to "open oneself to it" (390–92). Heideggerian reflection on technics does not remain any the less ambiguous, an ambiguity found in concentrated form in the Epimethean question of the already-there. For us the question of technics was discussed under the thematic first of invention (Gille, Leroi-Gourhan), then of operative temporality (Simondon), then of being-within-reach (Rousseau), and finally of the prosthetic already-there in mortality (with the myth of Prometheus)—themes that all inform the work of Heidegger unremittingly, while the question of the already-there leads to and governs the theme of the historicity of Dasein, which "is *its* past," a structure that, after the "turning," is recast as that of the history of being. Now, if Epimetheus is a figure simultaneously of knowledge and of forgetting, then historicity, when it becomes the history of being, is itself the dehiscence of an originary knowledge that forgets itself: knowledge of the ontological difference forgetting itself in the *différance* that is the history of being.

These thematics are, if not all present, certainly imminent from the time of the lecture delivered by Heidegger in 1924, "The Concept of Time." In this chapter we will read the lecture in the light of the amendments made at the beginning of the second division of the first part of *Being and Time* ("Dasein and Temporality"), which expounds the thematic of being-toward-the-end. In the following chapter we will return in greater detail to the analytic of everydayness (first division) in order to expound the conditions in which the thematic of the already-there is taken up and set out, as well as to the theme of being-at-fault or in-debt.

[*Schuldigsein*] developed in the beginning sections of the second division. We will finally read the last two sections, which elaborate the constitution of historicity.

Our interpretation aims at repercussions up to and including the last texts that might allow one to reopen the oldest philosophical questions as Heidegger's thought has bequeathed them to us, starting from his acts of forgetting and his mistakes in his very meditation upon forgetting and being-at-fault. We always understand the history of philosophy *qua* the most radical form of the *knowledge of the de-fault as a history of mistakes, awkwardnesses, distortions, and sinister failings that had to be, or that will have had to be* [*qu'il faut—ou qu'il aura fallu*]. Which is the meaning of every tradition that one inherits, willingly or not, but that one cannot efface.

The Unity of Knowledge and the Weight of the *What* Ready-to-Hand

"The following reflections are concerned with time," Heidegger writes at the beginning of *The Concept of Time*. In a reading of this text we are not simply concerned with the question of *phenomenological* time, such as it is to be distinguished from *cosmic* or physical time, but with the hypothesis of a *technological time* (the time of *what*), constitutive of the temporality of the *who*.

This question of time must be taken through the question of knowledge that issues directly from our "Epimethean" or "epiphylogenetic" problematic. The question of knowledge is omnipresent in Heidegger's work: it is the knowledge of the ontological difference that constitutes the privilege of Dasein. Tradition is one name for knowledge. In *The Concept of Time* Dasein has knowledge of a nonknowledge: that of the imminence of its radically indeterminate end. Tradition raises the question of the *transmission* of knowledge. Our hypothesis is that this transmission is determined by the explicitly technological forms recording forms of knowledge, by the conditions of *access* they provide—this is also true for the very inventor of a domain of knowledge.⁵ We raise this question at a moment when, in the perspective of contemporary technics, the technologies of the elaboration, conservation, and transmission of forms of knowledge are undergoing radical transformation, profoundly affect-

ing the order of knowledge itself. But what is knowledge as such [*le savoir*] if it is transformable in this way? Can one say that it has a "unity"?

Such a question on the state of "knowledge today" might appear a little too obvious, entering, indeed, into the immediacy of the present, in short as a truly topical question, one that informs many current debates. What form(s) of knowledge, however, are being spoken about? It is here that, perhaps, the topicality, the actuality or the *Gegenwart* must be put on reserve, deferred, made inactual or untimely. If one wishes to speak of knowledge [*le savoir*] from a reading of the "well-known" Heidegger, then it can only be a question of a knowing of the ontological difference. Knowledge, in any case, of a difference and, as we will say later, knowledge *as* difference, with Epimetheus, attached to the feet of Prometheus, figuring the return after the event that confuses foresight. Now, this difference in *The Concept of Time* is precisely not yet the ontological difference. In 1924 the question of time passes necessarily through such knowledge, such knowledge of a difference. But it is not yet a question of the ontological difference. Between what and what does this difference pass, or rather, between *what* and *whom*? We wish to privilege this text insofar, precisely, as it expounds the constitutive difference of knowledge, in an exemplary examination of the question, as the articulation and differentiation between a *who* and a *what*. The *who* is Dasein, named here still "now"; the *what* is the clock. The question of time is that of the relation between a *who* and a *what* such that it appears to be the knowledge of a difference. The question of the *what* could be said then to be constitutive of the initial Heideggerian reflection on temporality and will explicitly reappear in the conclusion to the first and only finished part of *Being and Time*. In paragraph 83, Heidegger asks why the understanding of being always ends up in a form of reification. He ends by leading us back to the question of the *weight* of the *what*—of a *what* that, as we shall see, could never have been the *what* that is at issue for us in these pages; but, it must be stressed, Heidegger opens up the possibility of thinking this latter *what* when he insists, in this last paragraph of his major work, on the difference between the present-at-hand and the ready-to-hand:

Why does being get "conceived" "proximally" in terms of the present-at-hand and not in terms of the ready-to-hand, which lies *closer* to us? (Heidegger 1967a, 437)

In short, what we are aiming at under the “name” of *what* is called in Heidegger the “ready-to-hand.”

The Durable Fixing of the Now

The being in proximity to the *who* who interrogates time, this *what* that is always already at its hand, is the clock. To think time in terms of time is to think it *first* in terms of the clock. “If we achieve clarity about what a clock is, then the kind of apprehension thriving in physics thereby becomes alive, and so does the manner in which time gets the opportunity to show itself” (Heidegger 1992, 2E).

The clock measures time (or change) by comparing the duration of an event “to identical sequences on the clock[,] and [it] can thereby be numerically determined,” which it can only do as “a physical system in which an identical temporal sequence is constantly repeated” (Heidegger 1992, 4E). At the end of 24 hours, it is the first hour that returns. How could a clock mark anything beyond its 24 hours? Because it only functions for *Dasein*, a *who*, who collects or re-marks the return of the cycle. This marking only forms, however, the putting into play of another system, of which the clock forms one element. For what is important here is the installation of calendar inscriptions in general as well as the structure of datability that they presuppose. This structure includes the various installations for conserving traces, the entire setup of mnemotechnics,⁶ and, finally, that of the “transmission of forms of knowledge.” The calendar system itself is inscribed in the movement of the planets, within which lies the system of seasons, and where the name for climatic time finds its justification. An entire “programmable” is set up—from starlight to what appears later in the text as *mortality*.

“What primarily the clock does in each case is not to indicate the how-long or how-much of time in its present flowing, but to determine the *durable fixing* of the now. . . . What is the now?” (Heidegger 1992, 5E, my emphasis). This, then, is the true question of time: the now—here the now in its ability *to be fixed*, to be inscribed, to be considered in its “as such.” The question, in its form, reiterates the question in terms of which Hegel also found a system of durable fixing, writing. It is Augustine, however, to whom Heidegger directs his comments:

What is this now, the time now as I look at my watch? . . . Am I the now? Is

every other person the now? Then time would indeed be myself, and every other person would be time. (5E)

Does the fixing of the now give to the *who* a singular possibility of accessibility to self *as* now? And if the “now” that I *can* be is indeed invented in the now, in the clock, in the *what*, is not the *what* truly constitutive of this *who* in its possibility of now *as* now? Or rather does the clock only give the occasion for access to a *who* constituted elsewhere *as* now, before all clocks, before any determined *what*, in the very gap of the *what*? Heidegger’s response is indeed the latter; it is, we are arguing, too quick:

What is involved in the fact that human existence has already procured a clock prior to all pocket-watches and sundials? . . . Do I mean by the now myself? (5E)

As for “the natural clock of the alternation of day and night,” what relation does the *who* entertain with it? Is this alternation, like the clock, a *what*? If so, should it not be considered as a *cosmological program*, one covered over today by the products of “program industries” (if we accept that present technological time, characterized by Paul Virilio as “false light” [*faux jour*], covers over the time of natural (day)light)? Paragraph 80 of *Being and Time* will analyze this covering-over as having always already taken place. The proxying [*pro-curation*] of a clock is the *hepatic* mark of *promētheia*, the liver consumed by day but restored by night. There is, then, something like the proxying of a clock *before* all historico-natural programmatic systems (from the day and the seasons to the real-time installations of global capitalist industry). This proxying would have always already called forth a *historial programmability*. It is something like the minimum program or the program from de-fault *qua* the programmatic, improbable, and impossible absence of any program. Its manifestation, however, articulated always upon a “datability,” on a *what*, can be nothing but programmatic, can only be programmatic in all senses of this word. These are issues emerging for us in an “epoch” of the absence of epoch, or the epoch of program industries. And this, in a certain sense, is what the 1924 lecture brings to light.

“Am I the now?” Heidegger asks, and, in so saying, he makes the first step toward the lecture’s true aim: the thesis that *time is Dasein*. And yet it is through the clock, in its stases, at its pace so to speak, that the lec-

ture sets its course toward this aim. So, in what relation with programs, that is, with technics, is Dasein time? The rest of Heidegger's analysis concerns this originary relation, understood as withdrawal if not forgetting, as falling, the falling of Dasein who is time, that is *ipseity*.

Programs and the Improbable

The clock *sent us back* to Dasein. In a gesture that anticipates everything in *Being and Time*, it is a question of deciphering, starting from Dasein, not what being is but what time is—for being temporal is “the fundamental assertion of Dasein relative to its being” (Heidegger 1992, 7E). Dasein is being-in-the-world; being-with-one-another; being-together in the world in speaking as *I am*, *mineness*; mineness that always loses itself in the One; concern and care; everydayness; foreunderstanding of being-there by itself *in terms of* and *through* tradition, in other words, *concealing* of being. As for this last characteristic, it could be said that tradition is here program: it marks the explicitly pro-grammatic character of Dasein.

The difficulty of apprehending Dasein “is grounded not in the limitation of . . . our cognitive faculty” (Heidegger 1992, 10E) but rather in the fact that

Dasein is determined by its perpetuity (*die Jeweiligkeit*); in so far as it is what it can be, it is perpetually mine. . . . Yet how is this entity to be apprehended in its being before it has reached its end? After all, I am still underway with my Dasein. It is still something that is not yet at an end. (10E)⁷

Mineness is being in perpetuity, that is, in mortality: finitude is the infinitude of the finite, or rather of the radical end as what comes to fulfillment in *not* fulfilling itself, in deferring itself. *Being and Time* will say that Dasein, as long as it exists, is not yet something. It cannot be grasped in its totality: it exceeds itself, and its end belongs to this excess—death. It finds itself in “perpetual incompleteness.” Ceasing to exceed itself, it is no longer there. This makes Dasein incomparable with a *what* and gives it a privileged and exemplary status among beings by its having access to being. Dasein is a being whose possibility is a “character of being” that cannot be understood under categories of reality that apply to the present-at-hand and the ready-to-hand, but is rather to be considered from out of the phenomenon of care, itself grounding “dying” and thereby the

temporality whose essential phenomenon is the future. The vulgar understanding of time in terms of the now must therefore be criticized. The lecture does not yet explicitly engage in such a critique.

Since Dasein can never be deferring, that is, “toward its end,” Dasein is improbable, which is to say, unprogrammable. This would seem to contradict the possibility of a constitution of the *who* (improbable) by the *what* (pro-grammatic). Perpetual mineness is the radical mark of an originary befalling, as the *improbability* of Dasein—of what it in the end is: namely, death, mortality. We will determine later the improbability of mineness as idiomaticity: *incalculability*, *unprogrammability*, *untranslatability*. But we will do so to show that the improbable is entirely programmatically destined, that the elementary *is* the supplementary, in the same strictly improbable way that says: fulfillment is only accomplished by not being accomplished. This, of course, is the very structure of delay, or of the *après-coup*, though not in terms of the successivity that would precede them and from which they would depart “afterward,” but on the contrary as the origin of this successivity that covers over the structure that bears it and of which Epimetheus and everything that *ēpimētheia* stands for, in contradistinction to Prometheus, are the trace. This constitutive delay will bring to light in *Being and Time* why time cannot be thought in terms of now; and, perhaps more obviously than in *Being and Time*, the delay can be seen to emerge from the lecture as *différance*.

The sense of perpetuity as end without end, that is, as a limit that delimits nothing but weaves away, is mortality. It is in terms of mortality alone, and of mortality as a *knowing*, that mineness, or idiomaticity, is formulated:

I never *am* the other. The less one is in a hurry to steal away unnoticed from this perplexity, the longer one endures it, the more clearly one sees that in whatever creates this difficulty for Dasein, Dasein shows itself in its most extreme possibility. The end of my Dasein, my death, is not some point at which a sequence of events suddenly breaks off, but a possibility which Dasein knows of in this or that way. (Heidegger 1992, 11E)

Neither the passage of my death nor that of the death of the other, since death is always mine, are experiencable (there is no “there,” site of all experience). Since it is always mine and, therefore, unrepresentable, as *Being and Time* will say—thereby reformulating “I never am the Other”—

my death is improbable and yet certain: which explains at the same time the improbability of Dasein itself, its indeterminacy, that is, its absolute *différance*. This unrepresentability is the very ground of the principle of individuation, of differentiation. The structure Heidegger describes is indeed that of *différance*: because there is *deferment*, there is *differentiation*.

This structure only makes sense as *ēpimētheia*: just as *différance* is articulated upon a (pro)gram, the not-yet that is the excess is symmetrical with an already that is itself *prosthetic*. This prostheticity also means nonaccomplishment, lack of being, that is, being-in-de-fault.

Dasein is becoming: it is to be its not-yet. The structure is not that of life: the maturing fruit comes to completion, while Dasein is always in incompleteness. Being by existing, Dasein is *already* its end, already its not-yet (such is the existential sense of the already-there of what has been), and “the ending designated by death does not mean Dasein’s being-at-an-end but its being-for-the-end.” The end pre-cedes Dasein as its possibility—its extreme possibility, that is, its own. As unsurpassable possibility, it is also the impossibility of Dasein. Improbable, it is impossible: its possibility is *only* differing and deferring.

Knowledge and Withdrawal

The knowledge of this *possibility* is the knowledge from which proceed all other forms of knowledge. How does it come about, how does it come to light, this knowledge that is the how (the *wie*) of Dasein?

The end is an (originary) certainty, a certainty, however, that is totally undetermined,⁸ certainty as the very indeterminacy of the being that it certifies as being what it is. “The most extreme possibility of being has the character of a standing-before in certainty, and this certainty for its part is characterized by an utter indeterminacy” (Heidegger 1992, 11E). “How does this concern our question of what time is, and especially the following question of what Dasein is in time?” (11E).

This knowledge is the knowledge of a nonknowing (completion as knowledge of an essential incompleteness); it is the improbable knowledge of the improbable, for the limit that, undetermined, neither delimits nor determines anything is radically improbable, a knowledge, always already lost and covered over, of what is never reached or of what when reached is extinguished. And this knowledge is endless; it is endlessness itself—or necessity. It is knowledge as such, *as* time, that is, as anticipation, given

that “the fundamental phenomenon of time is the future” (Heidegger 1992, 14E):

Dasein, as always perpetually mine, knows of its death and does so even when it wants to know nothing of it. What is it to have one’s own death in each case? It is Dasein’s *running ahead* [*Vorlaufen*, anticipation] to its past, to an extreme possibility of itself that stands before it in certainty and utter indeterminacy. (12E, my emphasis)

It is a different certainty from that of the *ego sum* which here appears as the ground of Dasein. This certainty, an originary *fact*, is just as much an originary disturbance or opacity, an originary uncertainty: it does not ground any calculation; in fact it grounds nothing, it constitutes incalculability, and yet, this incalculability merges into calculation, is tempered and forged in it. It is here rather than elsewhere that Descartes is overturned, that the ground is made groundless. Obviously, this reversal is neither a sublation nor a negation. The overturning of the *I am* results in the structure of *différance* that articulates anticipation. It is the being-possible that marks Dasein, and this possibility is always such that it “knows of death.” But the I “knows of death in the manner of a knowing that shrinks back” (Heidegger 1992, 12E). In 1924 the *withdrawal* is already being thought—in terms not of being *qua* the withdrawal of being but of time itself considered from the perspective of mortality as the *knowledge* of death. It is the forgetful character of mortality with which the theme of *elpis*, articulated in its duplicity (hope and fear), between *ēpimētheia* and *promētheia*, has already made us familiar. It is the certain knowledge of an uncertain difference, difference that “shrinks back” and that in this very withdrawal is this *différance* in the Derridean sense: temporalization and spacing, datability and significability, falling and publicness⁹—but also *putting into reserve for the possibility of a singular return*.

Improbability forms the destiny of Dasein: destiny is the nonpredestination that being-mine, or having to be, expresses. Having to be (for Dasein, potentiality-for-being what it has to be) lies in the withdrawal of Dasein; it constantly conceals itself, *disappears*, as a result of which Dasein is improbable, susceptible to falling, to a not-being-there or a being-there by de-fault (for which it is precisely im-probable). *Being and Time* will say that “if Dasein exists, it has already been *thrown* into this possibility” (Heidegger 1967a, 251); in other words, Dasein is thrown forward to its end *as* it is thrown into the already-there of the factual world. If this is

so, the essentially factual dying of Dasein is “more often” falling into a concern programmed by public and determinable discourse and time. To think of a possibility that is not secondary and derived, but is originary, and for which, precisely, being is a potentiality: it is on the basis of an originary *programmability* that there is an originary improbable; this improbable is not the contrary of this programmability but forms its truth.

The mark of Dasein’s improbability is its loneliness (which befalls it), the lot of mineness. “This being-past, as the ‘how,’ brings Dasein harshly into its sole possibility of itself, allows it to stand entirely alone with respect to itself” (Heidegger 1992, 13E). This unique rest is an ipseity or an idiocy [*une idiotité*], a “freedom” or an “autonomy” only as *Unheimlichkeit*, uncanniness, not-being-at-home. The strange if not fatal *Eigentlichkeit* of idiocy always already—or always still—idiomaticity and being-in-the-world, not having, rigorously speaking, its origin in itself, only being *its* past, which is nevertheless not its own (being-thrown is also a projection):

Dasein is authentically alongside itself, it is truly existent, whenever it maintains itself in this running ahead. *This running ahead* is nothing other than *the authentic and singular future of one’s own Dasein*. In running ahead Dasein is its future, in such a way that in this being futural it comes back to its past and present. (Heidegger 1992, 13E)

It is in terms of anticipation, “running ahead,” that *Eigentlichkeit*, idiomatic idiocy and the improbable are thought. The originary improbability can only link onto the already-there of a past after the event, onto what has already happened, onto the inherited passive stock of the effects of failure. Dasein is futural: it is the originary phenomenon of the future. Furthermore,

anticipation of one’s uttermost and ownmost possibility is coming back understandingly to one’s ownmost “been.” Only so far as it is futural can Dasein *be* authentically as having been. The character of “having been” arises, in a certain way, from the future. (Heidegger 1967a, 326)

This granted, must not the originary improbability that makes up *Eigentlichkeit* ground itself, in a manner just as originary, in the actual, concrete, and historico-technical possibility of a *repetition* of the past that provides the possibility of an access to this having been forming the already-there?

Real-Time Clocks of the Blank “*Geschlecht*”

Does not repetition in which the past projects itself forward as the opening of the originary possible being-past *take* like a culinary sauce or a graft; does it not *rush* headlong into the entirely technological grammatics of active programs in which being-in-the-world and the worlding of the world are from the first deployed? The question of repetition includes here that of “reproducibility,” which should be analyzed, reading Benjamin and Blanchot, as the very condition of producibility before any other determination. The question of repetition immediately connotes the question of *tekhne*; indeed it is this question. The mythical and sacrificial source of the notion of *ēpimētheia*, the very meaning of which is to repeat the fault, and then ruminate it after the event, brings out strongly this condition of repetition.

Concern-ful from the moment Zeus has hidden the *bios*, *disappearing* in the same facticity that also provides the ground for its potentiality-for-being, humanity invents and produces expedients that compensate for its de-fault of qualities. The stamp that marks it is the prosthesis, this *what* that constitutes the very being of the outside of the *who*—movement outside of the self [*mise hors de soi*], that is, the ecstatic and temporal transcendence of Dasein. The *unheimlich* character of all prostheses is, besides, what Dasein, with its eye “on the simple fact of existing as such,” cannot endure while being from the start supported by it. “Such a look” is “nothing less in essence than the fact of staring at its own mortality” (Heidegger 1982, 21). To compensate for the fault of Epimetheus—and we can now understand this—Prometheus doubles up on the act of forgetting, bestowing upon mortals the “gift” of technicity constitutive of mortality. Anticipation, as source or support of *Eigentlichkeit*, that is, of the handicapped, failing, unequal, different, idiomatic, idiotic nature of improbability, amounts to an immersion in the knowledge of nonknowing, which is nothing other than prostheticity from which *there is* being-outside-one-self, ec-stasis, mortality, and time. Time itself both deploys prostheticity in its concrete effectivity and deploys itself within it. The concrete effectivity of the prosthetic play of traces, of the referrals and recalls that make up repetition, return to the past and to the present (to the gift of the de-fault). Prior to the metaphysical forgetting of its tragic meaning, this process of anticipation, return, and withdrawal in return—which is nothing but a detour—bears the name of *ēpimētheia*, knowledge after the event.

A consequence is to be drawn from the preceding—one we will appropriately return to in the second volume—which concerns an important criterion by which contemporary technics can be specified: the precipitate nature of anticipation *qua epimētheia* is an essentially deferred time. Thus, if the “futural character” of Dasein is constituted in the “authentic” repetition of “having-been,” if this deferred repetition, after the event, of what has been, is also what grants Dasein’s difference, its idiomatic selfhood, the consistency of its *who*, then the question must emerge: what would be the effects of a dynamic of the *what* that short-circuits the work of *différance*?

The Dasein that comes to be in anticipation—in *différance*—is not given its being through the clock; rather, it loses itself in the clock. Its temporality is its future. The generation of today’s “time,” our *Geschlecht*, says flatly: *no future*. What is affirmed here at the same time as it is refused? Does this slogan mean that there is no *différance* or no longer any *différance* in the extrapolation of the present as *Gegenwart*—that in “real time,” which is nothing but this extrapolation, *there can be no future*?

If such a question invited a response, indeed an affirmative one, it would not mean simply saying that *tekhne* conveys the power that propels the *who* to its falling, and that such is the weight of the *what* in its ability to drag the future down into its fall, and this, precisely because it is *tekhne* that *gives différence*, that *gives time*. With this hypothesis we embark properly upon our critique of the Heideggerian analytic, in other words, the effects of his forgetting of the meaning of *epimētheia*. This critique will become more sharp with our reading of *Being and Time*, despite the fact that the work is so closely engaged with the themes we are at present introducing.

We have seen why the understanding “of time starting from time” had to start in turn from a clock. The referral to the *who* as a now had been made possible and necessary by the fact that now is “fixed” durably by the clock. Now, what does “fix” mean here? And what does fix “durably” mean? What does “to fix” mean when the “object” of this fixing forms one of the three modalities of the temporal ecstasis? What would to fix the “past” mean—to record or register [*enregistrer*]: what does to register what has passed mean? What is to rule [*régir*]; what are a register, a registrar, a control room?

The whole of Heidegger’s analysis of the *what’s* referral to the *who* consists in showing that whereas the now can be fixed, a fixing of the past,

and *a fortiori* of the future, is inconceivable. In *Being and Time* Heidegger goes on to draw the consequence that Dasein is ultimately not the now, and that the analysis of time that starts from the now is exactly what encloses metaphysics within a vulgar comprehension of time. “The clock shows us the now, but no clock ever shows the future or has ever shown the past” (Heidegger 1992, 17E). As for this last affirmation, which seeks to ground the privileging of the *who* over the *what*, the question is to know what one means by a clock. Even if we provisionally accept that a clock tells us nothing about the future, is not being-futural one of a clock’s modalities, not only in a technico-temporal sense (for example, following what Evans Pritchard says of the Nuer tribe, for whom “the cattle clock determines the time” [1950, 103]) but in a much more technological and historico-technical sense (which the rest of the quotation from Evans Pritchard also suggests: “The Nuer have no expression equivalent to ‘time’ [in our language], and they cannot, therefore, as we can, speak of the time as though it were something actual, which passes, can be wasted, can be saved, and so forth” [103])? The understanding of time that always makes up time, *qua* a relation to the future and to the past, and that Heidegger will show being expressed as language (Heidegger 1967a, §§32–35), is *constituted* for the Nuer tribe by the clock-cattle.

Everything today would seem to confirm with still-unsurpassable strength the direction of Heidegger’s analysis. And yet, the *no future* remains to be thought (as “real time” in the sense of the nondeferred): it reveals a techno-logico-instrumental condition in which *time is the technological synthesis of, and in, mortality*. Does the time without time of *no future* translate the error of technics, or does it translate, more profoundly, *the techno-logical fate [Geschick, errancy] of Dasein itself*? And why does this fate also take the name of “the end of history,” declaring itself to be an end, that is, the fulfillment of metaphysics? Is not “to think being without beings” to acknowledge this absence of time, of this disappearance of time in time itself? Does not this “time without time” or “this absence of time” require that the thought of being, of time and the *Zeit-raum*, starts from technics? Is it not the revelation of the withdrawal for a Blank Generation, itself nothing but the name of the being that is given and, in the same gesture, withdrawn by Prometheus, that is, a mortal? Blank Generation—or Blank “*Geschlecht*”—is the name that the Punk movement gave itself, “no future” being its antislogan. “Blank” is to be understood here as “dumb” as much as “empty”: without qualities,

left *without voice*, if not without *logos*, indeed without “conscience” (of the being-at-fault-or-in-debt taken to its most extreme possibility), for this *aphony* is no longer that of the Heideggerian “voice of conscience” (*Gewissen*).

From 1924 onward, Heidegger aimed in a sense at what we are here calling “real time”—which remains to be thought both in *and* outside his terms. It is the question of the *Gegenwart*, of the present, or rather, following the French translation of *The Concept of Time* by Michel Haar and Marc B. de Launay (1983, 33–54), of “present actuality,” which designates, in what we sense of this translation, as much the present as a moment of temporal ecstasis as the present as news or information, actuality in the sense of news.

Fixing and Determination

To fix does not mean to determine but to establish. The tool of what is established is the vice that fixes the object of work, that makes *possible* both a determination and, through articulating the *who* with the very possibility of a *what* and inversely, the *indetermination* of the multiplicity of possible determinations. If the *what* of the clock is considered pejoratively by Heidegger in the preparatory understanding of time regarding the analytic of *Dasein* and the question of being, it is because Heidegger simply identifies fixing and determination.

“The fundamental phenomenon of time is the future. . . . It is manifest that the original way of dealing with time is not a measuring” (Heidegger 1992, 14E), for to want to measure time is to want to determine the indeterminate, that is, to take flight *before the end* and *in concern*. *Dasein* is thrown to its end as it is thrown into the already-there of the factual world. As a result, the fundamentally factual dying of *Dasein* is most often falling into concern. Concern “evades [this daily being-for-death] by conferring determinateness upon it” (Heidegger 1967a, 258), through measure. Measure, the loss of (originary) time, is secured in the clock, which determines the understanding of time.

Yet is measure the *only* meaning of a clock, and, more generally, of fixing? Is not a measure, on the contrary, the possibility of an effacement, a forgetting, a veiling, and a vulgarization of a time that would not originate elsewhere than outside, otherwise than as outside, but that would be

constituted, precisely, by the *grammē* as such and in general, that of grammar as well as that of the kilogram or photogram, initial condition of any temporalization? The measure of the clock is anticipated in the calendar, the names of saints, or holy dates in which common temporality is inscribed. Writing in general (in the current sense of the term) was firstly a site of measuring, as Wittfogel (1977) and the archaeologists of Babylon have shown concerning the rhythms of flooding. Consequently, should one not say that *writing is a clock*, thus echoing what the Egyptian attributes to Solon in the *Timaeus*? There, we recall, the clock that allows for the calculation of possible floods in the Nile valley, through their being fixed in a durable record, *also* says something of the past and the future:

O Solon, Solon, you Hellenes are never anything but children, and there is not an old man among you. Solon in return asked him what he meant. I mean to say, he replied, that in mind you are all young; there is no old opinion handed down among you by ancient tradition, nor any science which is hoary with age. And I will tell you why. There have been, and will be again, many destructions of mankind arising out of many causes; the greatest have been brought about by the agencies of fire and water, and other lesser ones by innumerable other causes. There is the story which even you have preserved, that once upon a time Phaethon, the son of Helios, having yoked the steeds in his father's chariot, because he was not able to drive them in the path of his father, burned up all that was upon the earth, and was himself destroyed by a thunderbolt. Now this has the form of a myth, but really signifies a declination of the bodies moving in the heavens around the earth, and a great conflagration of things upon the earth which recurs after long intervals; at such times those who live upon the mountains and in dry and lofty places are more liable to destruction than those who dwell by rivers on the seashore. And from this calamity we are preserved by the liberation of the Nile, who is our never-failing savior. When, on the other hand, the gods purge the earth with a deluge of water, the survivors in your country are herdsmen and shepherds who dwell on the mountains, but those who, like you, live in cities are carried by the rivers in to the sea. Whereas in this land, neither then nor at any other time, does the water come down from above on the fields, having always a tendency to come up from below, for which reason the traditions preserved here are the most ancient. The fact is that wherever the extremity of winter frost or of summer sun does not prevent, mankind exist, sometimes in greater, sometimes in lesser numbers. And whatever happened either in your country or in ours, or in any other region of which we are informed—if there were any actions noble or great or in any other way remarkable, they have all been

written down by all of old and are preserved in our temples. Whereas just when you and other nations are beginning to be provided with letters and the other requisites of civilized life, after the usual interval, the stream from heaven, like a pestilence, comes pouring down and leaves only those of you who are destitute of letters and education, and so you have to begin all over again like children, and know nothing of what *happened* in ancient times, either among us or among yourselves. . . . The survivors of that destruction died, leaving no written word. (Plato 1961, *Timaeus*, 22b–23c, my emphasis)

Does not Galen also speak of such a general horological possibility of recording and measuring? One that, if general, is nevertheless here singularized as Greek? Of course it is important to know here what one means by “Greek.” For as far as *we* are concerned, we have aged: we are no longer Egyptian nor Greek. Writing is no longer, for us, of “recent constitution.” And we must know what that means.

The “clockness” of the *grammē*, or rather the *grammē* or programness of the clock, also forms the meaning of the Augustinian question of time. This, in a passage (which Heidegger does not quote) in which the now and the *extensio* are thought in terms not of a sandglass or a water clock but of a poem—that is, of a pro-gramme (Augustine, *Confessions*, bk. II, par. xxvii). Husserl in *The Origin of Geometry* makes a similar gesture, one to which we will return.

What, then, is Heidegger aiming at in the clock and its measure, which would concern the *grammē* in general, such that the *letter* and the *number* would from now on always have to be thought together?

“Running ahead to” collapses if it is understood as a question of the “when” and “how much longer” of the past, because inquiries about the past in the sense of “how much longer” and “when” are not at all alongside the past in the possibility we have characterized; they cling precisely to that which is not yet past and busy themselves with what may possibly remain for me. This questioning does not seize the indeterminacy of the certainty of the past, but precisely wishes to determine indeterminate time. (Heidegger 1992, 14E)

Here, improbability, that is, temporality, is concealed in what constitutes it—namely, the possibility of fixing durably the now (whatever the apparatus of inscription); but that also of recording the past and of constituting thereby all that *Being and Time* will call later the “world-historical,” and of entering into its consideration, that is, in the event, of experiencing the *as such* of nondurability, or of *revolution*, which is being-on-the-

way toward the end. The possibility of access to the *as-such* is at the same time the loss of the *as-such*, its forgetting, its disappearance. Possibility, then, as much as impossibility. The concealment lies in the wish to calculate the incalculable and to prove the improbable rather than experience it—to take flight from experience. We call *ēpimētheia* this experience, an empiricity before the empirical-transcendental divide or the *indeterminate* opening of what has happened.

To calculate means to eliminate *différance*—the delay. “Real time” is that: it looks for synchronization, which is what all calculating anticipation amounts to. But is it the clock as such that is the problem here? If, firstly, it is argued that writing is a kind of clockwork, of objective memory (and the issue of memory is inevitable when one addresses the question of the past, present, and future of anticipation), and if, secondly, it is shown that writing forms the (entirely techno-logical) dehiscence of *différance* in its *historical* “as such” (and as the inception of “the history of being”) and, thereby, a condition (of the impossibility) of the very opening of the historical—if both these arguments make sense, then the Heideggerian themes of *Eigentlichkeit* and falling can only become coherent from the perspective of an understanding of technics that is not metaphysical, one that is never escaped completely either by Heidegger or by all those who, perhaps imagining that they precede him, actually follow in his wake.

Self-Individuation

In 1987, a contraption was set up in front of the Georges Pompidou Center in Paris that could be considered the monument of the century—a monument of disappearance, of nothing-at-hand, apocalyptic. Given the name “Gentitron,” it is an electronic chronometer that counts down the seconds to the year 2000. One might say that the contraption calculates improbable death; it presents time by fleeing it and flees it by presenting it. It calculates for nothing or *almost* nothing; sponsored by the firm Cointreau, for ten francs it hands you a card indicating the number of seconds separating you from the end . . . of the century.

Time authentically has no time to calculate time. . . . Yet we become acquainted with *Dasein*, which itself is supposed to be time, as reckoning with time, indeed even measuring it with the clock. *Dasein* is there with the clock,

albeit only the most proximate, everyday clock of day and night. Dasein reckons with and asks after the "how much" of time, and is therefore never alongside time in its authenticity. (Heidegger 1992, 15E)

While making explicit this fundamental loss of time, *the originary absence of time in which only time presents itself*, Heidegger describes the flight before being-past in terms of *Gegenwart*, present actuality. In this context, various political groups and people in France are demanding that the principle of the people's referendum be widened, while the French television program *L'heure de vérité* in fact prefigures and already satisfies, through opinion polls in real time, the wish of the watchmakers: direct democracy, nondeferred, "in real time."¹⁰ It is in what one calls "direct," or "live," which is nothing but the most immediately and dramatically perceptible effect of the *speed* governing the contemporary world, reconstituting the synthetic "living present" (but we will attempt to show that every synthetic living present is constituted in the death of such a synthesis), that the true stake lies, rather than in the question of calculation as such. For it is also calculation, insofar as it is implied by any clock, by any process of making discrete,¹¹ by any dissemination, and finally by any writing, that gives the possibility of *fixing durably*, that opens up the "as such," difference, deferred time.

Calculation, aimed at in the expression that characterizes technics as modern, grounded in the *ego sum*, could be said, then, to be itself directed at something else than calculation, and this would be *real time*. To say this, however, also means that the concept of calculation does not exhaust the richness of the effects engendered by fixing.

The question of the "when" of the indeterminate past, and in general of the "how much" of time, is the question of what still remains for me, still remains as present. To bring time into the "how much" means to take it as the now of present. To ask after the "how much" of time means to become absorbed in concern with some "what" that is present. Dasein flees in the face of the "how" and clings to the specific "what" that is present. . . . It thus encounters the time itself that Dasein in each case is, but is as present. (Heidegger 1992, 15E–16E)

This possibility of calculation does not arise all of a sudden; it is not specifically trapped in technical measuring instruments. It forms *the tradition itself* for which the above instruments open up a publicity, a data-

bility, a significability, and in the everyday that lives with the clock as with the daily newspaper, with, that is, the printing of the day [*L'impression du jour*] (mobilizing today so many printing techniques, the whole tabloid press, everything from marble to pixels):

Dasein, determined as being-with-one-another, simultaneously means being led by the dominant interpretation that Dasein gives of itself; by whatever *one* says, by fashion, by trends, by what is going on: the trend that no one is, whatever is the fashion: nobody. In everydayness Dasein is not that being that I am. Rather the everydayness of Dasein is that being that *one* is. And Dasein, accordingly, is the time in which *one* is with one another: "one's" time. (Heidegger 1992, 17E)

This "one" is also the tradition in general; it is therefore part of the whole question being opened up:

The current interpretation of Dasein is most often dominated by everydayness, by what one traditionally thinks of existence and human life: it is dominated by the "one," by tradition. (Heidegger 1992, 17E)

It is clear that what Heidegger aims at in the "one" of present actuality and of *his* present actuality (the very one that was to produce that great exploiter of the radio, Hitler—and *we are doing nothing here but asking ourselves why the analytic of everydayness did not protect Heidegger from the effects of this present*) is found as a singular modality in what is called today the *media*, or *program industries*.¹² And it is just as clear that this must be analyzed in its own terms, as a failure of tradition, although proceeding from it enigmatically. This industrial "one" proceeds from the watch: "The clock that *one* has, every clock, shows the time of being-with-one-another-in-the-world" (Heidegger 1992, 17E).

It is *historiality* that is in question here—as well as history—harboring the question of *individuation*, which is itself constituted in *repetition*:

The past remains closed off from any present so long as such a present, Dasein, is not itself historial. Dasein, however, is in itself historial in so far as it is its possibility. In being futural Dasein is its past; it comes back to it in the "how." The manner of its coming back is, among other things, conscience {*Gewissen*}. Only the "how" can be repeated. The past—experienced as authentic historiality—is anything but what is past. It is something to which I can return again and again. (Heidegger 1992, 19E)

The issue is that of the already-there, which announces itself as being-at-fault-and-in-need through the aphonic voice of conscience (*Gewissen*).¹³ This essential possibility of a *return* is itself threatened by the dominant understanding of the present:

The present generation thinks it is . . . overburdened with history. . . . *Something is called history which is not history at all.* According to the present, because everything is dissolved into history, one must attain the supra-historical again. (Heidegger 1992, 20E, my emphasis)

It remains to be known what makes this nonrepetition, this nonreturn, possible *today*, and firstly what makes the deferring and differing repetition of the how *actually* possible. "Our" present generation no longer believes that it belongs to anything; in its eyes, no longer is anything wanting: the default has become general [*ça fait défaut*]. The Blank "*Geschlecht*" is the generation of de-fault. The "present generation" that Heidegger has in view anticipates this *Geschlecht*. And the stake is history—the *différance* of deferred time, the time of repetition returning not to the same but to the other, to difference, proceeding from the how, from mortality as originary improbability as much as from mortality as pro-grammability—and this programmability is precisely what the how of the improbable Blank "*Geschlecht*" cannot not feel as such. The time of the present generation is the time of the present [*l'actualité présente*] in the sense that one speaks of televised news [*actualités télévisées*]. But its scope is much wider than this, embracing what is called "real time," the system of industrial production that covers televised news as much as the numerical databanks working in "real time" and the type of information particular to the world financial-military-industrial complex.

"The past as authentic history is repeatable," but not repeatable in just any old manner: "repeatable *in the how*." In the repetition of the past "as true history" within the what, what reemerges is being-mine as "the possibility of access to history {that} is grounded in the possibility according to which any specific present *understands* how to be futural" (Heidegger 1992, 20E, my emphasis). However, is this possibility, in its de-hiscence, not in turn grounded in the pro-grammability of this being-mine, of the being idiomatic of idiocy or selfness? Is there not, furthermore, a historial, techno-logical characterization (which would be what the "world-historical" profoundly means) of this *idios*?

Idiocy and idiomaticity are what Heidegger talks about under the name of individuation, under the name of time in that time is always *individuated* (which ensues from the affirmation that time is Dasein, Dasein being alone, split [*déshérent*], and *différant* in its perpetuity or its being-toward-the-end, that is, its improbability). There follows a long passage, one of fundamental import, which carries four theses.

1. The being of temporality means nonidentical actuality—deferred and thereby differentiated:

Time is Dasein. Dasein is my perpetuity, and this can be perpetuity in what is futural by running ahead to the certain yet indeterminate past. Dasein always is in a manner of its possible temporal being. Dasein is time, time is temporal. Dasein is not time, but temporality. The fundamental assertion that time is temporal is therefore the most authentic determination—and it is not a tautology, because the being of temporality signifies non-identical actuality. (Heidegger 1992, 21E)

2. In the sense that time is Dasein, which is itself nothing but its already-there, it can be said that time is the *principium individuationis*.

Dasein is its past, it is its possibility in running ahead to this past. In this running ahead I am authentically time, I have time. In so far as time is in each case mine, there are many times. *Time itself* is meaningless; time is temporal. If time is understood in this way as Dasein, then it indeed becomes clear what the traditional assertion about time means when it says that time is the proper *principium individuationis*. (21E)

3. Dasein is time insofar as it is being-futural: anticipation, improbability, *différance*—both deferring in time (anticipating) and being different, affirming a difference *qua* a "unique time," a singularity:

To what extent is time, as authentic, the principle of individuation, i.e., that starting from which Dasein is in its perpetuity? In being futural, in running ahead, the Dasein that on average is becomes itself; in running ahead it becomes visible as this one singular uniqueness of its singular fate in the possibility of its singular past. (21E)

4. This individuation belongs, however, and in the same movement, to a community: that of mortals. *Différance* is affirmed by being felt as identity—in the improbable that is not the improbable Dasein but that differs from every other Dasein, being its end:

This individuation . . . strikes down all becoming-exceptional. It individuates in such a way that it makes everyone equal. In being together with death everyone is brought into the "how" that each can be in equal measure; into a possibility with respect to which no one is distinguished, into the "how" in which all "what" dissolves into dust.¹⁴

This "individual" is less a subject than an instantiated idiomatic difference—seized, of course, in a *logos*, that is, firstly, in a *relation* (which means also an idiom), which is necessarily common, not different relative to those it gathers into their *différance*, and which should be understood in terms of *the community of a de-fault*. This need is being-toward-the-end *qua* facticity. One could have equally said that it is *ēpimētheia* in prostheticity (in *promētheia*) as it appeals to the figure of *Hermes*, referring back to *Hestia*, where *aidō* and *dikē* spring from technics and double it up. This is idiomatic difference (hermetic and babelesque), eventually instantiated in what we would call a "subject," which we would, however, prefer here to call a "citizen." Citizenship consists in belonging to an *isonomy* in and through which an *autonomy* is affirmed. This is dated, datable, as the opening of history itself; not of historicity, which belongs to Dasein at all times, but of the epoch of historicity called "history"—which is the history of being and the suspension of one form of historicity by another. By what other? How can this epoch of historicity, the history of being, open up?

We would knowingly affirm here, in plain and somewhat brutal terms, that it is a form of writing, linear and phonological, that *gives* this opening. Such writing constitutes the first case of what we will define later as what stems from the *principle of a deferring and differing identity*. This first case is achieved by what we will call, to designate the completed form of alphabetic writing (phonological writing), *literal synthesis*. A temporality that is deferred belongs in principle to literal synthesis. In the second volume of this work we will develop the notions of *analogical* and *numerical synthesis*, which dominate contemporary technology, oriented, inversely, by an asymptotic tendency toward real, live temporality, temporality without detour, that is, toward *a particular atemporality*—one that does not exclude the work of *différance* but conceals it in an essential manner. In tracing these distinctions our project of apprehending temporal synthesis—that is, synthesis as such—in terms of *tekhne qua* synthesis becomes more sharply delineated.

The Deferred Time of the History of Being

Dasein is the being who differs and defers (*l'étant qui diffère*). A being who differs and defers should be understood in a twofold sense: the one who always puts off until later, who is essentially projected in deferral, and the one who, for the same reason, finds itself originarily different, indeterminate, improbable. The being who defers by putting off till later anticipates: to anticipate always means to defer. Dasein has to be: it is not simply—it *is only* what *it will be*; it *is* time. Anticipation means being-for-the-end. Dasein knows its end. Yet it will *never* have knowledge of it. Its end is that toward which it is, in relation to which it is; yet its end is what will never be *for* Dasein. Dasein *is for* the end, but its end *is not for* it. Although it knows its end absolutely, it will always be that in relation to which it will never know anything; the knowledge of the end always withdraws, is concealed in being deferred. The end of Dasein is the indeterminate. It knows this. What Dasein knows, and knows radically, is the indeterminate, what cannot be calculated, and what, for Dasein, cannot essentially be proved. Of course it has the experience of the end of others, of those that it is not itself. But its end is, precisely, what can only be its own insofar as it remains essentially in concealment from it. This never-being-finished constitutes the mark of Dasein's finitude, the infinitude of the finite, that is, of the radical end as what can only be completed in being deferred [*en se différant*]. This deferral and this difference that I am as being-mine, this *différance* is anticipation. As the infinite finitude of Dasein, anticipation is the mark of indeterminacy *qua* originary knowledge of being-there. Being for its end, Dasein projects this end. It can only project it *authentically* as *its* end: im-probably, in solitude, from out of its lack of predestination, its having-to-be. It can only be in deferring and differing [*en différant*], both in the sense of putting off until later, of a putting into reserve and of an essential reserve, of a deferral, and in the sense of a *differentiation*: time as Dasein is the true principle of differentiation.

Because of this double and insoluble articulation of the two meanings of *différer*, time is essentially a deferred time. Being-toward-the-end is to have to be. It is to be *not yet*. But having-to-be *also* means to be-in-facticity, or, as we prefer to say following the myth of Prometheus, to be-in-prostheticity. Dasein is essentially in-the-world; this means that the world is already there for Dasein. Now, this being-already-there of the world is

constituted notably as a being with others, the tradition and traditional foreunderstanding of one's being, or the One. Therefore, in this being-already-there the knowledge of having-to-be is transmitted and concealed at one and the same time. What is concealed is being-mine, the having-to-be-toward-the-end. Most often, Dasein is "programmatically," it is constituted, that is, according to modes of being particular to facticity in its banality. So, anticipation always takes place, but in the mode of calculation, in concern, a mode that wants to determine the indeterminate, thereby concealing individuation and the improbability of the end. "Anticipation of collapses" (Heidegger 1992, 14E) when it is understood as *calculation*. Questioning in a calculating manner "does not grasp the indeterminacy of the certitude of the past, but precisely wishes to *determine indeterminate time*" (14E), to calculate the incalculable, to program the unprogrammable, to prove the improbable. Possibility is most often understood in this way. This average possibility belongs to the extreme possibility that is the end. For Dasein, having-to-be is always *being-in-facticity*.

Hence, if, following Heidegger, anticipation is always for Dasein *return* to its past and to its present, this return to its past and its present can only be the return to a past that is not *its* past—which means for us, in terms of *ēpimētheia*, that it can only be a pros-thetic return. The past of Dasein and for Dasein is its facticity because it cannot be *stricto sensu*, as such, *its* past. This past is transmitted to it: it is its own only insofar as Dasein *is* its past, that is, it anticipates from it. The past of Dasein is necessarily outside of it. And yet Dasein is *only* this past that it is *not*. It can only be it by deferring and differing it, by being-in-ownness from out of what it is not, or rather, from out of what it is "programmatically," *not yet*. It can only be what it has to be by anticipating it, by being improbably what it still only is programmatically: it must *double up* on its pro-gram—*just as (the fault of) Prometheus doubles up on (the fault of) Epimetheus*.

"To have to be" means, then, two things: firstly, Dasein is already what it is; secondly, what it already is it only is in facticity, only is as what is not its own: it is in the mode of what is not proper to it. Yet it is nothing else but that.

In short, "Dasein," the *who*, is in de-fault of being. Heidegger says: it is at fault; Dasein is being-at-fault [*Schuldigsein*]. It is in these terms that the analytic of being-toward-the-end, starting from "moral consciousness," is conducted in the second part of *Being and Time*. The outcome of

everything above is that the structure of anticipation and of deferral that Dasein is for itself is also the structure that carries and is carried by its past, including the past that exceeds it. This is why the fault is never only my fault, and why it is nevertheless always my fault. This is what leads Heidegger to the question of the history of being, the history of a forgetting, one begun in *Being and Time* and returning in "Time and Being" as the question of time within the horizon of modern technics. The "history of being" is the past "of" Dasein that is not *its* past and that, as past, anticipates and defers. Here also in two ways: authentically (as the transmission of the question of being) and in being concealed (as the metaphysical transmission, as the Epimethean forgetting of being). This past forms the *historiality* of Dasein. When this historiality has been disclosed as such to Dasein, Dasein has entered properly into the history of being.

And yet, what is this disclosure due to? What is an epoch of being; what is the epochal? Epochality is always an epochal Epimethean doubling-up (of the fault of Prometheus, which is itself doubling up the originary fault of Epimetheus).

Consequently it is no longer simply "the being that we ourselves are" that is deferring and differing; it is the history of being itself. This history is transmitted to Dasein, as tradition, firstly as concealment, that is, as *forgetting* and as *uprooting*:

[Not only is] Dasein . . . inclined to fall back upon its world (the world in which it is) and to interpret itself in terms of that world by its reflected light, but also . . . Dasein simultaneously falls prey to the tradition of which it has more or less explicitly taken hold. This tradition keeps it from providing its own guidance, whether in inquiring or in choosing. This holds true—and by no means least—for that understanding which is rooted in Dasein's ownmost Being, and for the possibility of developing it—namely, for ontological understanding.

When tradition thus becomes master, it does so in such a way that what it "transmits" is made so inaccessible, proximally and for the most part, that it rather becomes concealed. Tradition takes what has come down to us and delivers it over to self-evidence; it blocks our access to those primordial "sources." . . . Indeed it makes us forget that they have had such an origin. . . . Dasein has had its historiality . . . thoroughly uprooted by tradition. (Heidegger 1967a, 21)

But how is the tradition, which at the same time conceals and holds in reserve what it conceals, *transmitted* to Dasein? As far as the history of

being is concerned, it can only be transmitted as the *historio-graphy* that Dasein has to interpret: it is in the presence of a "historical consciousness," and in it alone, that there is a history of *being*. An epoch without historiography is historical, but it is not yet historical as the history of being. That said, a question, which does not seem to be of concern to Heidegger, necessarily arises: given that it is through the "durable fixing of the now" that a clock can bring us to recognize time in Dasein, who is outside the now, *then what can the durable fixing of the past teach us in turn?* And in what does such a fixing of the past in its concrete actuality—pro-grammatic from the perspective of the elaboration of time as anticipation—consist? How does Dasein, on the basis of its essential temporality, gain access to its historicity? How is this historicity essential to its temporality, if not through a durable, necessarily prosthetic fixing of the past, or rather of the "before" as what has happened [*comme ce qui s'est passé*]? "Ce qui s'est passé": what does the impersonality of this reflexivity, caught by the French idiom, imply?¹⁵

Dasein is outside itself, in ec-stasis, temporal: its past lies outside it, yet it is nothing but this past, in the form of *not yet*. By being actually its past, it can do nothing but put itself outside itself, "ek-sist." But *how* does Dasein exist in this way? Prosthetically, through pro-posing and pro-jecting itself outside itself, in front of itself. And this means that *it can only test its improbability pro-grammatically*.

1. Dasein, essentially factual, is prosthetic. It is nothing either outside *what* is outside of it or *what it is* outside itself, since it is only through the prosthetic that it experiences, without ever proving so, its mortality, only through the prosthetic that it anticipates.

2. Dasein's access to its past, and its anticipation as such, is prosthetic. In accordance with this condition, it accedes or does not accede to this past as it has been, or not been, durably fixed, and to which, at the same time, Dasein is to be found, or not found, durably fixed.

The *différance* that Dasein is can only be disclosed to it through a prostheticity that, if it most often conceals *différance* as calculation, measure, or determination, also puts it into actual play: this prostheticity effects and concretizes the endurance of the deferred and differing time that it is. The history of being is a recorded, delegated, impersonal history: it is the history of that impersonal knowing of which Blanchot talks, which can only be written, however, in the form of personal pronouns—a knowledge of mortality that can only be lived personally. As far as the his-

tory of being is concerned, it is this recording that realizes the paradox of what we are calling deferring and differing identity [*l'identité différante*], in which identity and difference are posited at one and the same time.

Linear and phonological writing is a programmatic *ēpōkhē*. It suspends the forms of a tradition that is itself programmatic, but that does not appear *as such*. In this suspension, it programs another, a new endurance of the past, of anticipation and of the present, primordially as presence, *ousia*—in the now, the now become historical. This endurance can only be that of Dasein, of the now as it dissolves into its future returning to its already-there: it is *as such*, that is, *as citizenship*, the doubling-up of the technological or prosthetic *ēpōkhē*. This endurance proceeds as an experience of the *différance* of the text that is read, which is also that of the reader-text (and its pre-text), the one putting in play and being put in play by the other—textualities that are realized together, just as in Aristotle the act of the sensible and the act of sense absolutely coincide. This forms a paradox because it is by identifying the text read letter for letter, unequivocally, without hesitation, with exactitude because *ortho-graphically*, that the reader is produced as *différance*, that is, as a reading that is always different, unceasingly to be resumed and deferred as the unceasing itself. Through its being identified, what the text discloses is the *elementary contextuality* of its reading, its integrity from being in a here and a now that are nothing but the ex-position of the anticipatory finitude of the reader in its *there*. Writing ex-poses *différance*—at the same time concealing it. Anticipation is prostheticity (ex-position, temporalization as spacing), that is, *promētheia* and *ēpimētheia*. It is fulfilled according to the actual conditions of the pro-thesis, of this techno-logical pro-position that comes from the past to anticipation and goes from the person who anticipates to what he or she anticipates (the past, that is prostheticity itself). Anticipation cannot be anything else than prosthetic; improbability cannot be anything other than programmatic—but only as *doubling-up*. Our question comes together, then, in that of the meaning of such a doubling-up: the advent of linear writing does *not explain* the inaugurality of history.

Pro-thesis means "placed-there-in-front." Prostheticity is the being-already-there of the world, and also, consequently, the being-already-there of the past. *Pro-thesis* can be literally translated as pro-position. A prosthesis is what is proposed, placed in front, in advance; technics is what is placed before us [*la technique est ce qui nous est pro-posé*] (in an originary knowledge, a *mathēsis* that "pro-poses" us things). Knowledge

of mortality is knowledge of pro-position, but through these kinds of knowledge that are *tekhnai*; in a profound and diverse manner, it is the knowledge of a "primordial" de-fault: the de-fault of quality, of having-to-be, destiny as predestination. The pro-position or technicity summons time. In the Protagorean myth, Hermes and *hermēneia* proceed from Prometheus. It is also political knowledge, the hermeneutic and hermetic knowledge of *aidō* and *dikē*, "shame" or "honor" and "justice" or "law" [*droit*], a knowledge that is common to all, unlike the specialized forms of knowledge of the *tekhnai*: knowledge of a de-fault that in this context is *not* moral conscience *but* the politicalness of the citizen.

Promētheia and *ēpimētheia* thread the couple that constitutes the proposed and techno-logical form of knowing made up by temporalization in the anticipation of the indeterminate. *Ēpimētheia* is what designates thought *qua* meditation after the event ... of the pro-position. Prometheus and Epimetheus constitute anticipatory reflection, which is particular to mortals since it proceeds from *tekhne qua* a deferred, differing, differentiated pro-position, that is a pro-position that is *doubled-up*. Epimetheus doubles up Prometheus just as Dasein doubles up its past. And yet, the *conditions* (of impossibility) of this doubling-up are techno-logical. *Tekhnē*, *logos* and *hermēneia* form together the horizon of all anticipation, time as mortality, *care*.

"Time is Dasein" (Heidegger 1992, 21E) means: time is the relation to time. But this relation is always already determined by its techno-logical, historical conditions, *effects* of an originary techno-logical condition. Time is each time the singularity of a relation to the end that is woven techno-logically. Every epoch is characterized by the technical conditions of actual access to the already-there that constitute it as an epoch, as both suspension and continuation, and that harbor its particular possibilities of "differantiation" and individuation. Political citizenship, which is contemporaneous with the opening of the history of being, belonging itself to the history of *différance*, is a case in point.

This is why we could write: "Nothing can be said of temporalization that does not relate to the epiphylogenetic structure put in place each time, and each time in an original way, by the already-there, in other words by the memory supports that organize the successive epochs of humanity: that is, technics."¹⁶ But the prior elucidation of the possibility of anticipation (of the possibility of possibility), as the existential analytic reinterpreted in terms of our understanding of *ēpimētheia*, has shown us

that time is deferred. There is time only as this deferral that generates difference(s). This *différance* is a referral, a reflection of the *who* in the *what* and reciprocally. The analysis of the techno-logical possibilities of the already-there particular to each epoch will, consequently, be that of the conditions of reflexivity—of mirroring—of a *who* in a *what*.

Neglecting the tragic meaning of the figure of forgetting, Heidegger maintains that the principle of individuation is constituted outside the publicity of the One. But the truth is quite the opposite. The gift of *différance* is technological because the individual constitutes itself from out of the possibilities of the One, from the relation with one another each time allowed for by the particular technological set-up. One is individuated *sooner* than when the individual à la Heidegger falls into the publicity and chitchat of the One; "authentic temporality" always comes too late (it is always already "inauthentic," factual): this is *ēpimētheia*. No mortality is originally absolutely alone: it is only alone *with* others. When Heidegger says that the clock is the time of the with-one-another, he means that technological time is public time. Now, it is in this common, public time, according to its possibilities, which are each time unique, that a time is constituted that is not "private" but *deferring and differing* [*différant*]. The calculation of time is thus not a falling away from primordial time, because calculation, *qua* the letter-number, also *actually* gives access in the history of being to any *différance*.

The Price of Being

In the following chapter this entire question will turn around the "meaning of being" that *Being and Time* grants to the world-historical, that is to say, the trace of past *whos*.

With the existence of historical being-in-the-world, what is ready-to-hand and what is present-at-hand have already, in every case, been incorporated into the history of the world. Equipment and work—for instance, books—have their "fates"; buildings and institutions have their history. . . . These beings within the world are historical as such, and their history does not signify something "external" which merely accompanies the "inner" history of the "soul." We call such beings "the world-historical." (Heidegger 1967a, 388)

The world-historical (*weltgeschichtlich*) is not simply the result of what falls behind the temporalizing *who* in the form of traces. Rather, it constitutes

the *who* in its proper temporality, one that is always properly epochal, in other words, im-proper or insufficiently proper (to come). Orthographic writing, as the *grammē* that makes calculation possible, is the recording of what has happened, and thereby makes possible for the *who* a particular type of access to itself through the mirror of a *what*. Through this mirror the *who* gains access to a form of "tality," of as-ness (Heidegger 1967a, §§32–33), which is not simply the thesis of the apophantic statement of theoretical knowledge but the work of difference as *différance*.

Textualized ortho-graphically when the book of history (the book of Herodotus) opens, what happened, far from ending up more determined for the one whose past it is, is on the contrary more *indeterminate*, although, like the end, more *certain*. The contextualization (dissemination) of the exact text, far from turning the having been into one voice, opens up possibilities of indefinite variation. In the following volume, we shall show that any exact, *ortho-thetic* memorization thereby engenders a dis-orientation in which the straight is always becoming crooked, and that this is the price (to pay, but also to cash in) for epochal doubling-up.

§ 3 The Disengagement of the *What*

Dasein accedes to its deferring and differing individuation by being-at-fault, or being-guilty, *Gewissen*.¹ We shall interpret this *existential* once we have commented upon the analytic of everydayness that forms the first section of *Being and Time*. The "voice" that is heard in being-at-fault is what leads Dasein to the anticipatory doubling-up of its having-been. This chapter makes an analysis of this doubling-up in terms of (i) the analysis of everydayness with regard to its "disengagement" of the *what*; (ii) the structure of being-at-fault as "engagement" in the *what*; and (iii) the question of the historical constitution of historicity as a new configuration of the *what*.

The Analysis of Everydayness *qua* Disengagement of the *What*

The Différance of the 'Who' and the 'What'

That it is impossible to question the meaning of being without having a prior understanding of it, mediated and delivered by the everydayness of Dasein (Heidegger 1967a, §2), is nothing but a resurgence of the question of Meno. Being only gives itself in the delay of an *après-coup*: we meet again the question of Epimetheus. The thematic common to the figures of Meno, Epimetheus, and Dasein is that of a form of knowing that is originarily forgetting. One "Epimethean" consequence of this fore-knowing, always assumed in an "average understanding," is that "evident"