CHAPTER 1

FROM MODERN SCIENCE TO POSTMODERN KNOWLEDGE

I. BACK TO SIMPLE QUESTIONS

Piaget says that epistemology thrives in periods of crisis.[1] The way the crisis is identified conditions the direction of the epistemological turn. But since the knowledge used to construct a given definition of the crisis tends to be viewed as part of the crisis from the standpoint of an alternative definition of the latter, the exteriority of knowledge to the conditions it analyzes is but provisional, momentarily suspended between one, past or prereflexive interiority, and another, future or postreflexive interiority. Knowledge, particularly critical knowledge, moves thus between ontology (the reading of crisis) and epistemology (the crisis of reading), and in the end it is not up to it to decide which of the two statuses will prevail and for how long. What then should thrive in periods of crisis is not epistemology itself but rather the critical hermeneutics of rival epistemologies. This chapter is an attempt to develop one possible critical hermeneutics of dominant epistemology.

In my view, what most strongly characterizes the sociocultural condition of the end of our century is the collapse of the pillar of emancipation into the pillar of regulation, as a result of the reconstructive management of the excesses and deficits of modernity which have been entrusted to modern science and, as a second best, to modern law. The gradual colonization of the different rationalities of modern emancipation by the cognitive-instrumental rationality of science led to the concentration of the emancipatory energies and capabilities of modernity in science and technology. Not surprisingly, the social and political theory that explored the emancipatory potential of modernity in the most systematic way—that is, Marxism—saw such potential in the technological development of productive forces, and used the cognitive, instrumental rationality to legitimate both itself (Marxism as a science), and the model of society envisaged by it (scientific socialism). Eventually surprising is the fact that this is equally true of utopian socialism. Its most sweeping and consequent version, Fourierism, relied heavily on the scientific rationality and ethos, as is tellingly illustrated in Fourier's mathematical calculations of the exact size of the phalansteries and of their constitutive elements.[2] The hyperscientificization of the pillar of emancipation allowed for brilliant and ambitious promises. However, as the time went by, it became clear

not only that many such promises remained unfulfilled but also that modern science, far from eliminating the excesses and deficits, contributed to recreate them in ever-new molds and, indeed, to aggravate at least some of them.

The promise of the domination of nature and of its use for the common benefit of humankind led to an excessive and reckless exploitation of natural resources, the ecological catastrophe, the nuclear threat, the destruction of the ozone layer, and to the emergence of biotechnology, of genetic engineering and the consequent conversion of the human body into the ultimate comodity. The promise of a perpetual peace based on commerce and the scientific rationalization of decision-making processes and institutions led to the technological development of war and the unprecedented increase of its destructive power. According to the figures mentioned by Giddens, in the eighteenth century, 4.4 million people died in 68 wars; in the nineteenth century, 8.3 million people died in 205 wars; in the twentieth century 98.8 million people have already died in 237 wars (and the counting has not yet closed). Between the eighteenth and the twentieth centuries, the world population increased 3.6 times while the number of war casualties increased 22.4 times.[3] The promise of a more just and freer society made possible by the plenty resulting from the conversion of science into a productive force has led to the pillage of the so-called Third World and to the ever-widening gap between the North and the South. In the twentieth century, more people died of hunger than in any of the preceding centuries,[4] and even in the developed countries the percentage of the socially excluded, those living below the poverty line (the "interior Third World"), continues to rise.

In order to grasp the full impact of the unbalanced, hyperscientificized development of the pillar of emancipation, it is necessary to bear in mind the concomitant and equally unbalanced development of the pillar of regulation in the last two hundred years. Rather than a harmonious development of the three principles of regulation—the state, the market and the community—we have, in general, witnessed the overdevelopment of the principle of the market to the detriment of both the principle of the state and the principle of the community.[5] From the first wave of industrialization, with the expansion of commercial cities and the rise of new industrial cities in the period of liberal capitalism, to the dramatic growth of the world markets with the emergence of worldwide systems of production, the industrialization of the Third World and the rise of a world ideology of consumerism in the current period of "disorganized capitalism," the pillar of regulation has undergone an unbalanced, market-oriented development.

The reduction of modern emancipation to the cognitive-instrumental rationality of science and the reduction of modern regulation to the principle of the market, fueled by the conversion of science into the primordial productive force, are the determinant conditions of the historical process by which modern emancipation has collapsed into modern regulation. Rather than being dissolved in the pillar of regulation, the pillar of emancipation has continued to glow, but with a light that no longer comes from the original dialectical tension between regulation and emancipation—which can still be seen, though already in the twilight, in the nineteenth-century positivist motto of "order and progress"—but rather from the different mirrors in which regulation gets reflected. In this process, emancipation has ceased to be the other of regulation to become the double of regulation.

Hence, the syndrome of exhaustion and of global blockage: the proliferation of the mirrors of regulation allows for ever-more contingent and conventional social practices, but such contingency and conventionality coexist with an ever-higher degree of rigidity and inflexibility at the global level. Everything seems possible in art and in science, in religion and in ethics, but, on the other hand, nothing new seems to be possible at the level of the society as a whole.[6]

The collapse of emancipation into regulation brought about by the hyperscientificization of emancipation combined with the hypermarketization of regulation, while effectively neutralizing the fears that were once associated with the prospectus of fundamental social transformation and alternative futures, has produced a new sense of insecurity stemming from the fear of uncontrollable developments likely to occur here and now, precisely as a result of the generalized contingency and conventionality of sectorial social practices. Regulation itself becomes ideologically discredited as a pillar of modernity, not, as in the past, because of its contradiction with emancipation, but rather because of its internal contradictions. In other words, global contingency and conventionality undermine regulation without promoting emancipation. The former becomes impossible as the latter becomes unthinkable. At a deeper level, this sense of insecurity lies in the growing asymmetry between the capacity to act and the capacity to predict. Science and technology have expanded our capacity to act without precedent, and with it the spatial-temporal dimension of our actions. While in the past social actions and their consequences shared the same spatial-temporal dimension, today the technological action may prolong its consequences, both in time and in space, far beyond the dimension of the action itself and through causality chains that are ever-more complex and opaque.

The expansion of the capacity to act has not been accompanied by a comparable expansion of the capacity to predict, and as a result the prediction of the consequences of the scientific action are necessarily less scientific than the action itself. This asymmetry may be read as either an excess or a deficit: the capacity to act is excessive in relation to the capacity to predict the consequences of the action or, inversely, the capacity to predict consequences is deficient in relation to the capacity to produce them. The two readings are not interchangeable because they focus on different processes and emphasize different concerns. The first reading leads to questioning the concept of scientific progress, while the latter limits itself to asking for more scientific progress. The second reading (deficit of science) has indeed so far prevailed, and is anchored in what Hans Jonas has called the automatic utopianism of technology: the future as "clonic" repetition of the present.[7] The first reading (science as an excess) is still a marginal reading, but the concern it leads to is gaining more and more credibility: how is it that modern science, rather than eradicating the risks, the opacities, the violences and the ignorances which were once associated with premodernity, is indeed recreating them in a hypermodern form? The risk is now the risk of mass destruction through war or ecological disaster; the opacity is now the opacity of the chains of causality between actions and their consequences; the violence continues to be the old violence of war, hunger and injustice, now coupled with the neoviolence of industrial hubris over the ecological systems and the symbolic violence of globally networked mass communications over captive audiences. Finally, the ignorance is

now the ignorance about a necessity (the automatic utopia of technology) that manifests itself as the culmination of free will voluntarism (the opportunity to create potentially infinite choices).

To opt between these two readings of the current condition of modern science is no easy task. The symptoms are fundamentally ambiguous and lead to discrepant diagnoses. If some seem to argue convincingly that modern science is the solution for our problems, others seem to argue with equal persuasion that modern science is itself part of our problems. If we think of the synergy theory of Herman Haken,[8] we may say that ours is a most unstable visual system, the least fluctuation of our visual perception causing ruptures into the symmetries of what we see. Looking at one and the same figure, we now see a white Grecian urn upon a black background, now two black profiles facing each other upon a white background. Which one is the true image? Both and neither. Such is the ambiguity and complexity of our time.

As in other transition periods that are difficult to understand and experience, we must go back to simple things and ask simple questions. Einstein used to say that there are questions that only children can ask, but that, once asked, shed a new light on our perplexities. My favorite child lived over two centuries ago, and asked a few simple questions on the sciences and the scientists. He asked them at the beginning of a cycle of scientific production which many of us believe is now coming to its close. This child's name is Jean-Jacques Rousseau. In his famous *Discours sur les sciences et les arts* (1750),[9] Rousseau raises many questions as he replies to the question that he himself had been asked by the Dijon Academy. The latter question, itself rather childlike, went like this: Does the progress of the sciences and the arts contribute to the purity or to the corruption of manners? This is an elementary question, at once profound and easy to understand. In order to answer it—eloquently enough to win first prize and not a few enemies—Rousseau in turn asked the following equally elementary questions: Is there a relationship between science and virtue? Is there any serious reason to replace the commonsense knowledge we have of nature and of life, and which we share with the other men and women of our society, by the scientific knowledge produced by a few and unavailable to the majority of the people? Does science contribute to bridging the widening gap in our society between what one is and what one seems to be, between knowing how to say and knowing how to do, between theory and practice? To these simple questions Rousseau gives an equally simple reply: a resounding "no."

It was then the middle of the eighteenth century. Modern science, which had emerged in the sixteenth century out of the scientific revolutions of Copernicus, Galileo and Newton, was abandoning the esoteric speculations of its founders to become the ferment of an unprecedented social and technological transformation. It was an amazing period of transition that perplexed the more alert minds, and made them reflect on the very foundations of their society and on the impact wrought upon it by the transformations of the emerging scientific order. Today, two hundred years later, all of us are the products of that new order, the protagonists and the living witnesses of the changes it brought about. But we are again perplexed; we have lost our epistemological confidence. We are overwhelmed by a sense of irremediable loss, all the stranger for our uncertainty about what it is

that we are losing. We may even wonder at times if this sense of loss is perhaps just the fear that always precedes the latest gains in scientific progress. However, there is always confusion about what is there to be gained at all.

Hence the ambiguity and complexity of our present time. Hence, also, the idea, shared by many, that we live in a period of transition. Hence, finally, the urgent need to give answers to simple, elementary, intelligible questions. An elementary question is a question that reaches, with the technical transparency of a bicycle, the deepest magma of our individual and collective perplexity. Such were the questions asked by Rousseau; such must ours be. As a matter of fact, two hundred years later, our questions are still the same as Rousseau's. We are once again faced with the need to ask about the relationship between science and virtue.

Indeed, we must once again ask about the value of the so-called commonsense knowledge, the knowledge which we, as individual or as collective subjects, create and use to give meaning to our practices, but which science insists on considering irrelevant, illusory and false. And, finally, we must ask the extent to which all this accumulated scientific knowledge has enriched or, rather, impoverished our lives; in other words, we must ask if science has contributed positively or negatively to our happiness. Our difference from Rousseau is that, even if our questions may be equally simple, our answers must be far less so. Rousseau lived at the beginning of the cycle of hegemony of a given scientific order whose probable end we are now confronting. The epistemic conditions of our questions are inscribed in the converse of the concepts we use to give them answers. Since the paradigmatic questioning of modern science is not in itself a scientific question, it may be easily transformed into a false question or, at the most, into the object of another scientific (sociology of science) question: Why has the paradigmatic question been raised at all?

We have thus to be far more Rousseauian in our asking than in our answering. In a period of almost undisputed ideological hegemony of modern science, the answer to the question of the sociocultural meaning of the crisis of modern science, that is, the critical hermeneutic *démarche*, cannot be obtained without first questioning the epistemological claims of modern science. To this I now turn.

II. THE DOMINANT PARADIGM

The prevailing model of rationality of modern science came out of the scientific revolution of the sixteenth century, and was developed primarily in the domain of the natural sciences during the following centuries. Although in the eighteenth century there were already some signs in that direction, the model would be adopted by the emerging social sciences only in the nineteenth century. From then on, it is appropriate to speak of a global (that is, Western) model of scientific rationality, with some internal variation, to be sure, but one which ostensibly discriminates against two nonscientific (hence, potentially disturbing) forms of knowledge: common sense, and the so-called humanities (the latter including, among others, history, philology, legal doctrine, literary studies, philosophy and theology).

The new scientific rationality, being a global model, is also a totalitarian model, inasmuch as it denies rationality to all forms of knowledge that do not abide by its own epistemological principles and its own methodological rules. Such is the main feature of the new paradigm, the feature that best symbolizes its break with the preceding scientific paradigms. It is clearly defined in Copernicus' heliocentric theory of the movement of the planets, in Kepler's laws on the planets' orbits, in Galileo's laws on the gravity of bodies, in Newton's great cosmic synthesis, and lastly, in the philosophical consciousness that Bacon and Descartes confer upon the findings of the previous scientists. The idea of being witness to a fundamental break with the past and to a new and exclusive form of true knowledge is evident in the protagonists' attitudes. They marvel at their own findings, while at the same time displaying a serene, haughty arrogance vis-à-vis their contemporaries.

In his book, *World Harmony*, published in 1619, Kepler writes, regarding the natural harmonies he had discovered in the celestial motions: "Forgive me, but I am happy; if you are angry, I shall persevere; . . . My book may have to wait a long time for its readers. But then, even God had to wait for six thousand years to have his work beheld."[10] On the other hand, in that astonishing spiritual autobiography titled *The Discourse on Method*, Descartes writes, concerning his new method:

> Now I always try to lean towards diffidence rather than presumption in the judgments I make about myself; and when I cast a philosophical eye upon the various activities and undertakings of mankind, there are almost none which I do not consider vain and useless. Nevertheless, I have already reaped such fruit from this method that I cannot but feel extremely satisfied with the progress I think I have already made in the search for truth, and I cannot but entertain such hopes for the future as to venture the opinion that if any purely human occupation has solid worth and importance, it is the one I have chosen.[11]

To understand this epistemological confidence, we have to describe, at least briefly, the main features of the new scientific paradigm. Realizing that what separates them from the still-dominant Aristotelian and medieval knowledge was not so much a better observation of facts but rather a new outlook on the world and on life; the protagonists of the new paradigm engaged in a passionate struggle against all forms of dogmatism and authority. We have only to think of Galileo's exemplary story, or of Descartes' assertion of intellectual independence: "I was . . . unable to choose anyone whose opinions struck me as preferable to those of all others and I found myself, as it were, forced to become my own guide."[12] This new way of looking at the world and at life leads on to two basic distinctions: between scientific knowledge and common sense, on the one hand, and between nature and human beings, on the other.

Unlike Aristotelian science, modern science distrusts the evidence of our immediate experience. Such evidence, which is at the root of commonsense knowledge, was alleged to be illusory. As Einstein emphasized in his preface to

the *Dialogue Concerning the Two Chief World Systems*, Galileo had boldly sought to argue that his hypothesis about the earth's rotation and translation movements was not refuted by our inability to observe the mechanical effects of those movements, that is to say, by the fact that the earth does seem to be motionless.[13] On the other hand, in modern science the separation between nature and human beings is total. Nature is mere extension and movement; it is passive, eternal and reversible; it is a mechanism whose elements can be disassembled and then put together again in the form of laws; it possesses no quality or dignity which impedes us from unveiling its mysteries; such unveiling, furthermore, is not contemplative, but quite active, since it aims at knowing nature in order to dominate and control it. In Bacon's words, science will make of humanity "the master and owner of nature."[14]

Such are the assumptions on which scientific knowledge advances by observing natural phenomena in a free, disinterested and systematic way, and with as much rigor as possible. Bacon's *Novum Organum* contrasts the uncertainty of unassisted reason to the certainty of ordered experiments.[15] Contrary to what Bacon thought, experiments do not preclude previous theorizing, deductive thinking, or even speculation, but require them not to omit empirical observation as part of the final demonstration. Galileo refutes Aristotle's deductions only to the degree that he finds them untenable; Einstein,[16] in his turn, calls our attention to the fact that Galileo's experimental methods were so inadequate that only by means of daring speculation could he fill in the gaps in his empirical data (we need only remember that time could not be measured in that era in units smaller than seconds). As for Descartes, he proceeds unmistakably from ideas to things and not the other way around, and gives priority to metaphysics as the ultimate basis of science.

The ideas that govern observation and experimentation are those simple, clear ideas from which it is possible to arrive at a more profound and accurate knowledge of nature; namely, mathematical ideas. Mathematics provides modern science not only with its privileged analytical tool, but also with the logic of investigation, as well as a model of representing the structure of matter itself. According to Galileo, the book of nature is inscribed in geometric characters,[17] and Einstein did not think otherwise.[18] Two consequences derive from the centrality of mathematics in modern science. First, to know means to quantify. Scientific rigor is gauged by the rigor of measurements. The intrinsic qualities of the object, so to speak, do not count, and are replaced by the quantities into which they can be translated. Whatever is not quantifiable is scientifically irrelevant. Secondly, the scientific method is based on the reduction of complexity. The world is complex and the human mind cannot grasp it entirely. To know means to break down and classify in order to establish systematic relations among these parts. Already, in Descartes, one of the rules of the *Method* was precisely to "divide each of the difficulties . . . into as many parts as possible and as may be required in order to resolve them better."[19] The primordial distinction is between "initial conditions" and the "laws of nature." The initial conditions are the realm of complexity and contingency, where it is necessary to select those conditions that are relevant for the facts being observed; the laws of nature are the realm of simplicity and regularity, where it is possible to observe and measure with accuracy. This

distinction between initial conditions and the laws of nature was, of course, far from "natural." It was, indeed, totally arbitrary, as Eugene Wigner has noted.[20] Nonetheless, it is the very basis of modern science.

The theoretical nature of scientific knowledge derives from the epistemological presuppositions and from the methodological rules already mentioned. It is a causal knowledge which aims at formulating laws in the light of observed regularities and with a view to foreseeing the future behavior of phenomena. The discovery of the laws of nature, then, rests on the assumption, on the one hand, that the relevant initial conditions can be identified (for example, in the case of falling bodies, the initial position and the velocity); on the other hand, that the outcome will be independent of the place and time of the initial conditions. In other words, the discovery of the laws of nature is based on the principle that absolute position and absolute time are never relevant initial conditions. This is, according to Wigner, the most important theorem of invariance in classical physics.[21]

The laws, insofar as they are categories of intelligibility, depend upon a concept of causality, chosen (but not arbitrarily) among those of Aristotelian physics. Aristotle distinguished four kinds of causes: the material cause, the formal cause, the efficient cause and the final cause. The laws of modern science are a kind of formal cause that gives priority to *how-it-works* as against *who-is-the-agent* or *what-is-the-purpose* of things. Thus, scientific knowledge breaks with commonsense knowledge. Indeed, whereas in common sense (and hence in the practical knowledge it produces), cause and intention coexist comfortably, in science, assessing the formal cause means ignoring intention. It is this type of formal cause that makes possible the prediction of reality, hence interference with it, and which ultimately allows modern science to answer the question about the foundation of its claims to accuracy and truth by pointing to its successes in manipulating and transforming reality.

Knowledge that is based on the formulation of laws has as its metatheoretical presupposition the idea of order and stability in the world, the idea that the past repeats itself in the future. In Newtonian mechanics, the world of matter is a machine whose operations can be precisely determined by means of physical and mathematical laws—an eternal and static world hovering in an empty space, a world which Cartesian rationalism makes knowable by dividing it into its constituent parts. This idea of a machinelike world was so strong that it became the great universal hypothesis of the modern era. It may be surprising, even paradoxical, that such a way of knowing could become one of the pillars of the idea of progress that has pervaded European thought since the eighteenth century, and that it is the intellectual sign of the rise of the bourgeoisie.[22] The truth is, however, that the order and stability in the world are the precondition for the technological transformation of reality. Mechanistic determinism provides a clear horizon for a form of knowing that was meant to be utilitarian and functional, acknowledged less for its capacity to understand reality at the deepest level than for its capacity to control and transform it. At the social level, this was also the cognitive horizon most consonant with the interests of the rising bourgeoisie, who considered the society they were beginning to control as the final stage in the evolution of mankind (Comte's positive state; Spencer's industrial society; Durkheim's organic solidarity). Hence, Newton's prestige and the simple laws to which he reduced all the complexities of the cosmic order readily turned modern science into the hegemonic model of rationality that then spilled over from the study of nature into the study of society: as it had been possible to discover the laws of nature, so would it be possible to discover the laws of society.

Bacon, Vico and Montesquieu were the great precursors. Bacon[23] affirmed the plasticity of human nature, hence, its perfectibility—given appropriate political, legal and social conditions, which can be accurately known. Vico suggested that there are laws that govern the evolution of societies deterministically and that allow for the prediction of the outcome of collective actions. With remarkable premonition, Vico[24] identified and solved the contradiction between the freedom and unpredictability of individual human action and the determinism and predictability of collective action. Montesquieu[25] may be considered a precursor of the sociology of law, when he established a relationship between the man-made laws of the legal system and the inescapable laws of nature.

In the eighteenth century, these preliminary efforts are expanded and deepened into that intellectual ferment—the Enlightenment—which will create the conditions for the emergence of the social sciences in the nineteenth century. The philosophic understanding of modern science, first formulated in Cartesian rationalism and Baconian empiricism, evolved into nineteenth century positivism. Since, for positivism, there are only two forms of scientific knowledge—the formal disciplines of logic and mathematics, and the empirical sciences following the mechanistic model of the natural sciences—the social sciences could not but be empirical. The way in which the mechanistic model was followed varied, however. It is common to distinguish two main tendencies: the dominant one consisted in applying to the study of society, to the degree possible, all the epistemological and methodological principles that had dominated the study of nature since the sixteenth century; the other one, long a marginal tendency but with an increasing number of followers, consisted in claiming for the social sciences its own distinct epistemological and methodological status, based upon the specificity of the human being radically different from nature. These two conceptions have usually been taken to be antagonistic, the former being subject to the positivistic yoke, the latter free from it, both claiming the monopoly of social-scientific knowledge. I shall offer a different interpretation, once I have briefly characterized them.

The first conception—whose epistemological commitment is clearly symbolized in the name of "social physics," which the scientific study of society was initially called—takes for granted that the natural sciences are the concrete application of a model of knowledge that is universally valid, and indeed the only valid one. Therefore, no matter how large the differences between natural and social phenomena, it is always possible to study the latter as if they were the former. Admittedly, such differences work against social phenomena, or rather, they make the methodological canon harder to accomplish and the knowledge arrived at less accurate; but there are no qualitative differences between the scientific procedure in the social sciences and in the natural sciences. In order to study the social phenomena as if they were natural phenomena, that is, in order to conceive of social facts as things—as envisioned by Durkheim,[26] the founder of academic sociology—it is necessary to reduce social facts to their external, observable, mea-

surable dimensions. The causes of the rise in the rate of suicide in Europe at the turn of the century are not to be looked for in the motives invoked by those committing suicide in their letters, as had been the custom, but rather by checking the regularities in such conditions as the sex and marital status of those committing suicide, whether or not they had children, their religion, and so on.[27]

Because such reductionism is not always easy and not always possible without grossly distorting the facts or even reducing them to near irrelevance, the social sciences have a long way to go before they can be made compatible with the criteria of scientificity of the natural sciences. The obstacles are enormous but not insurmountable. *The Structure of Science* by Ernest Nagel is a good example of the efforts made in this field to identify the obstacles and the ways of overcoming them. Some of the obstacles in question he identified as follows: there are no explanatory theories in the social sciences that would allow them to abstract from reality in such a way as to be able to search for adequate proof in that reality in a methodologically controlled way; the social sciences cannot establish universal laws because social phenomena are historically conditioned and culturally determined; the social sciences cannot make reliable predictions because human beings change their behavior according to how much is known about it; social phenomena are naturally subjective and as such they cannot be understood as objective behavior; the social sciences are not objective because the social scientist cannot free his observations from the values that underlie his general practice, and hence also his practice as a scientist.[28]

For each of these obstacles, Nagel tried to demonstrate that the opposition between the social and the natural sciences is not as linear as commonly thought and that, whatever differences there may be, they are either surmountable or negligible. He does recognize, however, that overcoming obstacles is not always easy, and that accounts for the backwardness of the social sciences vis-à-vis the natural sciences. The idea of the backwardness of the social sciences is central to this kind of methodological reasoning, as is the idea that, with time and money, this backwardness may be reduced or even eliminated.

In Thomas Kuhn's theory of scientific revolutions, the backwardness of the social sciences is explained by their preparadigmatic nature, as opposed to the paradigmatic nature of the natural sciences. The development of knowledge in the natural sciences has allowed for the formulation of a set of principles and theories about the structure of matter which are unquestionably accepted by the entire scientific community. This acceptance is what we mean by a paradigm. But in the social sciences there is no paradigmatic consensus, which is why the debate tends to engage every kind of acquired knowledge. The strain and the waste this involves are both cause and effect of the backwardness of the social sciences.

The second conception claims an independent methodological status for the social sciences. According to this view, the obstacles identified above are insurmountable. Some reject the very notion of a science of society; others argue that it is a different kind of science. The main argument is that human action is radically subjective. Unlike natural phenomena, human behavior cannot be described, let alone explained, on the basis of its external, objectifiable characteristics, since the same external act may have multiple interpretations. The social sciences will always be a subjective science, not an objective science like the natural sciences.

The social sciences must understand the social phenomena in terms of the attitudes and the meanings that the agents ascribe to their actions. That requires research methods and epistemological criteria different from those used in the natural sciences (qualitative rather than quantitative methods) in order to arrive at intersubjective, descriptive and empathetic knowledge, as opposed to objective, explanatory and nomothetic knowledge.

The latter conception of the social sciences acknowledges being antipositivist. Its philosophic tradition is phenomenology in its many varieties, from a more moderate version—as in Max Weber[29]—to a more radical one—as in Peter Winch.[30] However, close inspection reveals that this view, as it has been elaborated, is more dependent on the model of rationality of the natural sciences than it as first seems. It shares the nature/human beings distinction, which amounts to a mechanistic view of nature, to which it contrasts, as one might expect, the specificity of human beings. This distinction, which was crucial for the scientific revolution of the sixteenth century, led in turn to others, such as those between nature and culture and between humans and animals, culminating in the eighteenth century in the celebration of the unique character of humanity. The line thus drawn between the study of humanity and the study of nature remains a prisoner of the cognitive priority assigned to the natural sciences, since on the one hand, a biological determinism of human behavior is denied, and on the other hand, biological arguments are used to determine the specificity of the human being.

The inescapable conclusion, then, is that both these conceptions of science belong to the paradigm of modern science, even if the second conception points to a crisis in the paradigm, and already contains some elements of transition towards a new scientific paradigm.

III. THE CURRENT EPISTEMOLOGICAL QUESTIONING OF THE DOMINANT PARADIGM

There are many clear signs today that the model of scientific rationality I have outlined above is going through a profound crisis. In this section I shall argue, first, that the crisis is not only profound but also irreversible; secondly, that we are living in a time of scientific revolution that began with Einstein and quantum physics, and that it is not yet clear when it will end; thirdly, that although the signs in question allow for nothing more than mere speculation about the paradigm that will emerge out of this revolutionary time, we may already assert with certainty that the basic distinctions underlying the dominant paradigm described above will collapse.

The crisis of the dominant paradigm is the result of a series of interacting conditions. I make a distinction between social and theoretical conditions. I shall pay more attention to theoretical conditions, and I begin with them. My first remark, which is perhaps not as trivial as it sounds, is that the identification of the limits and structural shortcomings of the modern scientific paradigm is the outcome of the great advance in knowledge it made possible. The deepening of knowledge revealed the fragility of the pillars on which it rested.

Einstein was responsible for the first rupture in the paradigm of modern science; indeed, a wider rupture than he himself would ever have been able personally to admit. One of Einstein's profoundest insights was the relativity of simultaneity. Einstein distinguished between the simultaneity of events happening in the same place, and the simultaneity of distant events, particularly events separated by astronomical distances. As far as the latter are concerned, the logical problem is the following: How can the observer establish the temporal order of events in space? To be sure, by measuring the velocity of light, assuming, as Einstein's theory does, that in nature there is no velocity that is greater. However, upon measuring velocity in one direction (from *A* to *B*), Einstein was confronted with a vicious circle: in order to determine the simultaneity of distant events, the velocity must be known; in order to measure velocity, the simultaneity of events must be known. In a flash of genius, Einstein broke this circle by demonstrating that the simultaneity of distant events cannot be verified, but merely defined. It is, therefore, arbitrary, and thus, as Reichenbach[31] points out, when we measure, the results cannot be contradictory insofar as they give us back the simultaneity that we have introduced in the measuring system by definition.

This theory has revolutionized our conceptions of time and space. Since there is no universal simultaneity, Newton's absolute time and space do not exist. Two events that are simultaneous in one system of reference are not simultaneous in another. The laws of physics and geometry are based on local measurements. "The instruments for measuring, be they clocks or yardsticks, have no independent magnitude; rather, they adjust themselves to the metric field of space, the structure of which manifests itself most clearly in the rays of light."[32]

Considering the local character of measurements, and hence of the accuracy of the knowledge thus obtained, leads to the second theoretical condition of the crisis of the dominant paradigm, namely quantum physics. If Einstein relativized the accuracy of Newton's law in the field of astrophysics, quantum physics did the same in the field of microphysics. Heisenberg and Bohr demonstrated that it is not possible to observe or measure our object without interfering with it, without actually changing it in such a way that, after being measured, the object is no longer the same as it was before. As Wigner points out, "the measurement of the curvature of space caused by a single particle could hardly be carried out without creating new fields which are many billion times greater than the field under investigation."[33] The idea that we know nothing about the real but what we ourselves bring to it, that is to say, that we know nothing of the real except our intervention in it, is well expressed in Heisenberg's Uncertainty Principle: we cannot simultaneously reduce the errors of the measurement of velocity and of the position of particles; whatever we do to reduce the error of the one will increase the error of the other.[34] This principle, and therefore the demonstration of the subject's structural interference in the observed object, is of great consequence. On the one hand, since our knowledge is structurally limited, we can aspire only to approximate results, which make the laws of physics merely probabilistic. On the other hand, the hypothesis of mechanistic determinism is no longer viable, since the whole of reality is not reducible to the sum of the parts into which we divide it in order to observe and measure it. Finally, the subject/object distinction is far more complex than it may seem at first. It loses its dichotomous contours to assume the form of a continuum.

The accuracy of measurement that quantum physics puts into question will be even more deeply shaken if we question the accuracy of the formal vehicle used to express the measurements: mathematical rigor. This is what happens in the work of Gödel, which, for that reason, I consider the third condition of the crisis. The theorem of incompleteness or the theorems about the impossibility, in certain circumstances, of finding within a given formal system the proof of its consistency demonstrate that, even if the rules of mathematical logic are strictly followed, it is possible to formulate undecidable propositions which can be neither demonstrated nor refuted, one of the propositions being precisely the one that postulates the noncontradictory character of the system.[35] If the laws of nature base their rigor on the rigor of the mathematical formalizations in which they are expressed, then Gödel's findings demonstrate that the rigor of mathematics is itself in need of grounding. After this, it is possible not only to question the accuracy of mathematics, but also to redefine it as being a form of accuracy that contrasts with alternative forms of rigor; in other words, it is a form of rigor whose conditions of success in modern science can no longer be taken for granted as obvious and natural. The philosophy of mathematics itself has engaged in the creative problematization of these themes, and today it is recognized that mathematical accuracy, like any form of rigor, is based on a criterion of selectivity, thus having a constructive and a destructive side.

The fourth theoretical condition of the crisis of the Newtonian paradigm derives from the advances of knowledge in the fields of microphysics, chemistry and biology over the past twenty years. Ilya Prigogine's dissipative structures and his principle of "order through fluctuations," for example, establish that, in open systems, that is, in systems that function on the margins of equilibrium, evolution is explained by fluctuations of energy which, at certain, not entirely predictable moments, spontaneously generate reactions, which, in turn, by means of nonlinear mechanisms, pressure the system beyond its utmost limit of disequilibrium, and drive it into a new macroscopic stage. This irreversible, thermodynamic transformation is the result of the interaction of microscopic processes according to a logic of self-organization in a situation of disequilibrium. The situation of bifurcation, that is to say, the critical point at which the slightest fluctuation may lead to a new stage, represents the potentiality of the system to be attracted to a new stage of lesser entropy. Thus, the irreversibility of open systems means that they are the product of their history.[36] The importance of this theory rests on the new conception of matter and of nature, which is hard to reconcile with the one we inherited from classical physics. In place of eternity, we now have history; in place of determinism, unpredictability; in place of mechanicism, interpenetration, spontaneity, irreversibility and evolution; in place of order, disorder; in place of necessity, creativity and contingency. Prigogine's theory revives even such Aristotelian concepts as potentiality and virtuality, which the sixteenth-century scientific revolution appeared to have definitively cast into the dust bin of history.

But the greatest importance of this theory is that it is not an isolated phenomenon. It is, rather, part of a converging movement which has gained strength mainly since the 1970s, and which traverses the various natural sciences and even the social sciences. It has, indeed, a transdisciplinary vocation that Jantsch[37] calls 'the self-organization paradigm' and which is developed, among others, by Pri-

gogine's theory, Haken's synergetics,[38] Eigen's concept of hypercycle and his theory on the origin of life,[39] Maturana and Varela's concept of autopoiesis,[40] Thom's catastrophe theory,[41] Jantsch's evolutionary theory,[42] David Bohm's theory of the "implicate order,"[43] and Geoffrey Chew's S-matrix theory and its underlying "bootstrap" philosophy.[44] This scientific movement, along with the theoretical innovations that I have defined above as so many theoretical conditions of the crisis of the dominant paradigm, have precipitated a profound epistemological reflection on scientific knowledge. This is such a rich and varied reflection that, better than anything else, it exemplifies the intellectual situation of our time.

There are two important sociological facets to this reflection. Firstly, it is predominantly carried out by the scientists themselves, those who have mastered the necessary philosophical competence and concern to problematize their own scientific practice. We can safely state that there have never been so many philosopher-scientists as today, a trend that is not intellectually accidental. After the nineteenth-century scientist euphoria and the concomitant aversion to philosophical reflection, epitomized by positivism, we have, at the end of the twentieth century, been seized by the near-desperate desire to complement our knowledge of things with our knowledge of our knowledge of things—in other words, with knowledge of ourselves. The second facet of this reflection is that it deals with questions previously left to sociologists. The analysis of the social conditions, of the cultural contexts, of the organizational models of scientific research, which previously had been the separate realm of the sociology of science, has now come to play an important role in epistemological reflection.[45]

Let me now give a few examples of the main themes of this reflection. First, the concept of law and the related concept of causality are put into question. The formulation of the laws of nature is based on the idea that the observed phenomena are independent of all but a fairly small number of conditions—the initial conditions—whose interference is observed and measured. This idea, it is now recognized, necessarily creates broad distinctions between phenomena, distinctions which, furthermore, are always provisional and precarious, since the verification of the noninterference of certain factors is always the result of imperfect knowledge. The laws are thus probabilistic, approximate and provisional, as is clearly laid out in Popper's Falsifiability Principle. But above all, the simplicity of laws constitutes an arbitrary simplification of reality that confines us to a minimal horizon, beyond which lie other kinds of knowledge about nature, probably richer and of far greater human interest.

In biology, where interactions among phenomena and forms of self-organization in nonmechanical totalities are more visible, but also in the other sciences, the notion of law has been partially replaced by the notions of system, structure, pattern, and finally by the notion of process. The decline of the hegemony of laws is parallel to the decline of the hegemony of causality. The questioning of causality in modern times has a long tradition, going back at least to David Hume and logical positivism. Critical reflection has addressed both the ontological problem of causality (What are the characteristics of the causal nexus? Does such a nexus exist in reality?), and the methodological problem of causality (What are the criteria of causality? How can a causal nexus be identified or a causal hypothesis tested?). Today, the relativization of the concept of cause stems mainly from the acknowledgment that the central place it has occupied in modern science has its explanation less in ontological or methodological than in pragmatic reasons. The concept of causality is well suited to a science that aims at intervening in reality and that measures its success by the scope of its intervention. After all, a cause is something that can be acted upon. Even advocates of causality, such as Mario Bunge,[46] recognize that it is merely one of the forms of determinism, and that it therefore plays a limited, though irreplaceable, role in scientific knowledge.[47] The truth is that, under the aegis of biology and even of microphysics, "causalism" as a category for the intelligibility of the real is now giving way to finalism.

The second great theme of epistemological reflection deals with the content rather than with the form of scientific knowledge. Since it is a minimal knowledge that closes the door to many other ways of knowing the world, modern scientific knowledge is a sad and disenchanted knowledge that turns nature into an automaton or, as Prigogine says, into an awfully stupid interlocutor.[48] This vilification of nature ends up vilifying the scientist himself, inasmuch as it reduces the alleged experimental dialogue to an act of prepotency over nature. Scientific rigor, because it is based on mathematical rigor, quantifies, and because it quantifies, it disqualifies. It is a rigor that, by objectifying the phenomena, objectualizes and degrades them; in characterizing the phenomena, it caricatures them. In sum, scientific rigor is a form of rigor which, in asserting the scientist's personality, destroys the personality of nature. In this way, knowledge gains in rigor what it loses in richness. The vaunted successes of technology obscure the limits of our understanding of the world and suppress the question of the human value of a scientific endeavor thus conceived. This question is, however, inscribed in the subject/object relation presiding over modern science, a relationship that internalizes the subject at the cost of externalizing the object, thus making both of them self-enclosed and unable to communicate with each other.

The limits of this kind of knowledge are thus qualitative, and cannot be overcome by more research or more precise instruments. Indeed, the qualitative precision of knowledge is itself structurally limited. For example, as far as information theories are concerned, Brillouin's theorem demonstrates that information is not without cost.[49] Any observation performed on a physical system increases the system's entropy in the laboratory. The gain of a given experiment has therefore to be defined by the relation between the information obtained and the concomitant increase of entropy. But, according to Brillouin, the gain is always less than one and only rarely even close to it. In this view, a rigorous experiment is impossible, for it would require an infinite expenditure of human activities. Finally, precision is limited because, if it is true that knowledge advances only by the progressive subdivision of the object—as is attested by increasing scientific specialization—this also proves the irreducibility of wholes, whether organic or inorganic, to their constituent parts. Thus, the knowledge gained from observing the parts is necessarily distorted. The observed facts are beginning to break out of the solitary confinement to which science has subjected them. The frontiers of objects are less and less clear; the objects themselves are like rings interlocked in such complex chains that they end up being less real than the relations between them.

Under the theoretical conditions just mentioned, the crisis of the paradigm of modern science does not constitute some gloomy quagmire of skepticism or irrationalism. Rather, we find ourselves observing the portrait of an intellectual family that is large and unstable, but also creative and fascinating. It captures the moment of the family's rather sad farewell to conceptual points of reference, both theoretical and epistemological, ancestral and intimate, that are no longer persuasive and reassuring. The family is about to start a search for a better life in the surroundings where optimism is better founded and rationality more plural, and where at last knowledge will once again become an enchanted adventure. The characterization of the crisis of the dominant paradigm brings with it the profile of the emergent paradigm. It is that profile that I shall now attempt to draw.

IV. THE EMERGENT PARADIGM

We can only speculate about the precise configuration of the dawning paradigm. Such speculation is, of course, based on the signals emitted by the crisis of the present paradigm, though they do not determine the outcome. Indeed, as René Poirier has said, and as was noted by Hegel and Heidegger before him, "we can know the global coherence of our physical and metaphysical truth only retrospectively."[50] So, when we speak of the future that we feel we are already living, what we say about it is always the product of a personal synthesis steeped in imagination—in my own case, the sociological imagination. No wonder, then, that, though they sometimes converge, the syntheses presented up to now are so different. Ilya Prigogine,[51] for example, speaks of the new alliance and the metamorphosis of science; Fritjof Capra[52] speaks of the new physics and the Tao of physics; Eugene Wigner,[53] of shifts of the second type; Erich Jantsch,[54] of the self-organization paradigm.

As for myself, I shall speak of the *paradigm of a prudent knowledge for a decent life*. By this phrasing I wish to signify that the scientific revolution we are undergoing today is structurally different from the sixteenth-century revolution. Because it is a scientific revolution occurring in a society that has already undergone a scientific revolution, its emergent paradigm cannot be merely a scientific paradigm (the paradigm of a prudent knowledge), but must also be a social paradigm (the paradigm of a decent life).

The Unfinished Representations of Modernity

The inquiry into the emergent scientific paradigm must avoid falling into the facile solutions of reactionary pessimism and of inconsequential voluntarism. Following an old piece of advice by Merleau-Ponty, I believe that the difficult yet possible solution consists in trying to identify the representations that in our time are more open, incomplete or unfinished.[55] What this means, first of all, is that only from the standpoint of modernity can modernity be transcended. Although it is true that modernity cannot provide the solution for the excesses and deficits it has led to, the fact remains that only modernity can make us long for a solution. It is indeed possible to ground on modernity all that is needed to formulate a solution—all, except the solution itself.

The representations which, to my mind, modernity has left more unfinished and open are, in the pillar of regulation, the principle of the community and, in the pillar of emancipation, the aesthetic-expressive rationality. Among the three principles of regulation (market, state and community), the principle of the community has been the most neglected for the past two hundred years, so much so that it almost ended up being absorbed by the principles of the market and of the state. But, for that reason also, it is the principle that has remained less encumbered by determinations and in a better position to engage in a positive dialectic with the pillar of emancipation.

Because it is an open and unfinished representation, the community is itself, if not unrepresentable, only vaguely representable. The elements that constitute it, themselves open and unfinished, evade exhaustive enumeration. They do have, however, a common characteristic: they have all resisted the full technicoscientific specialization and differentiation through which the cognitive-instrumental rationality of modern science colonized the other two principles of modern regulation—as: the market and the state. Unlike the state and the market, the community resisted being fully co-opted by the automatic utopianism of science. For that, it paid the heavy price of being marginalized and neglected. But to the extent that it remained outside, the community also remained different, open to new contexts in which it might make a difference.

In order to assess the epistemological virtualities of the principle of the community, I shall single out three of its elements: participation, solidarity and pleasure. Only very partially have these elements been colonized by modern science. The colonization of participation occurred largely in the context of what liberal political theory has rather strictly defined as the political sphere (citizenship and representative democracy). Beyond that, in many other spheres of social life, participation remained a nonspecialized, undifferentiated competence of the community. The colonization of solidarity occurred, in advanced capitalist societies, through the social policies of the welfare state, though also here in an incomplete form; moreover, in the overwhelming majority of the nation-states, the nonspecialized solidarity of the community—what I call the welfare society—still remains the predominant form of solidarity. The colonization of pleasure occurred through the industrialization of leisure and free time and through the infinite craving for commodities. But, beyond their reach, there remained the irreducible, intersubjective selfhood of *homo ludens*, capable of what Barthes called the "*jouissance*," the pleasure that resists closure and extends play among human beings.

As regards the pillar of emancipation, although, as I have mentioned before, both the moral-practical and aesthetic-expressive rationalities were permeated by the cognitive-instrumental, performative-utilitarian rationality of science, the aesthetic-expressive rationality has, in my view, resisted full co-optation with greater success. Many factors account for this. In general, the aesthetic-expressive rationality is, by "essence," as open-textured and unfinished as the artwork itself, and so it cannot be captured in the rubber cage of technicoscientific automatism. The specific nature of aesthetic-expressive rationality has been one of the core debates in aesthetic theory. In a very influential paper, Norris Weitz has forcefully argued that art is not susceptible to definition, which is why artists and aestheticians have so far failed to define art successfully. According to Weitz, art has no essence,

since no property is both necessary and sufficient for something to be an artwork. If we "look and see," we will observe that there is no property common to all works of art and only to works of art.[56] The debate that Weitz's argument sparked cannot be pursued here. It echoes the debate on the nature of aesthetic beauty that goes back, at least, to Aristotle, though it incorporates new dimensions, partly due to the increased social visibility of art in the current period of "disorganized capitalism," as the debate on postmodernism clearly shows.

In my view, the unfinished character of the aesthetic-expressive rationality lies in the concepts of authorship and discursive artifactuality. The concept of the author—along with all the concepts associated with it, such as initiative, autonomy, creativity, authority, authenticity and originality—is the organizing concept of the artistic and literary field in modernity. It is related to the equally modern concept of the individual subject. Both these concepts signify the discontinuity between the medieval world and the new world of the Renaissance and its discoveries, the inadequacy of reducing the new knowledge to its similarities or analogies with the unchanged typologies established by the old knowledge; in sum, they signify the end of the *auctoritas* of the past.[57] However, the concept of the autonomous subject was mainly developed in the pillar of regulation as both the citizen and the agent of the market, and, in both cases, as the micro-unit in the ordinary, everyday creation of the new order of things. On the contrary, the concept of authorship was mainly developed in the artistic and literary field, particularly since Romanticism; the author was formulated as "the other" of ordinary, everyday life, the autonomous creator capable of inventing new cultural worlds unencumbered by the surrounding material context. While the autonomy of the subject is premised upon the performance of normatively regulated actions within the contexts, the constraints and the possibilities created by the repetition of similar previous actions, the autonomy of the author is premised upon the irreducible difference between action and the conditions of its performance. Both types of autonomy are precarious, but for different reasons: the autonomy of the subject runs the risk of becoming indistinguishable from the conditions that make it possible (alienation); the autonomy of the author runs the risk of becoming irrelevant once separated from the conditions that make it possible (marginalization).

Because of the transcending character of difference and discontinuity, the author has remained an unfinished representation of modernity, and thus more resistant to colonization. The death of the author announced by structuralism and poststructuralism has a grain of truth, in that it uncovers the hidden repetition lying behind seemingly irrepeatable discourses: the author as the effect, rather than the cause, of institutionalized, recurrently repeated and normatively regulated ways of writing or painting. But this is not the whole truth, since each individual author cannot be an effect without ever being a cause (the cause of artistic or literary production itself).[58] The artistic and literary field is thus a field in which the parts are more than the whole. Besides, given the fact that deconstruction itself is infinite and therefore irrepeatable and unfinished, poststructuralism cannot declare the death of the author without, in the same process, announcing the birth of another author: the deconstructing philosopher or literary critic.

The other organizing concept of the artistic and literary field is discursive artifactuality. All works of art must be made or done. They are the product of a specific intention and of a specific constructive act. The nature, the quality, the relevance and the appropriateness of such an intention and construction are established through argumentative discourse for a relevant audience (the people and institutions that comprise the artistic and literary field). Because the argumentation is potentially endless, the moments of closure (the canon, the aesthetic tradition, the institutions of consecration and the prizes) are always precarious because the arguments that sustain them cannot sustain their own rhetorical power for very long. Conceived in this way, the aesthetic-expressive rationality unifies what scientific rationality separates (cause and intention) and establishes quality and relevance (instead of truth) through a form of knowledge that modern science has despised and sought to dump in the dust bin of history: I mean rhetorical knowledge.

The principle of the community and the aesthetic-expressive rationality are thus the most unfinished representations of modernity. Priority must, then, be given to the inquiry into their epistemological virtualities, in order to restore the emancipatory energies that modernity has allowed to be transvestized into regulatory hubris. However, after two hundred years of excesses of regulation to the detriment of emancipation, the solution sought for is not a new equilibrium between regulation and emancipation. This would still be the modern solution whose intellectual bankruptcy is evident today. We must, rather, conceive of a dynamic imbalance tilting toward emancipation, an asymmetry in favor of emancipation over regulation. Postmodernity means precisely, if anything, this dynamic imbalance or asymmetry in favor of emancipation, accomplished with the epistemological complicity of both the principle of the community and the aesthetic-expressive rationality.

From Knowledge-as-Regulation to Knowledge-as-Emancipation

Any form of knowledge implies a trajectory or progress from point *A*, designated as ignorance, to point *B*, designated as knowing. Forms of knowledge are distinguished by the way they characterize both the two points and the trajectory that connects them. There is, therefore, neither ignorance in general nor knowing in general. Each form of knowledge recognizes itself in a certain kind of knowing to which it opposes a certain kind of ignorance, which in its turn is recognized as such only in contrast with that kind of knowing. All knowing is knowing of a certain ignorance, as all ignorance is ignorance of a certain knowing.

The paradigm of modernity comprises two main forms of knowledge: knowledge-as-emancipation and knowledge-as-regulation. Knowledge-as-emancipation entails a trajectory between a state of ignorance that I call *colonialism* and a state of knowing that I call *solidarity*. Knowledge-as-regulation entails a trajectory between a state of ignorance that I call *chaos* and a state of knowing that I call *order*. While the former form of knowledge progresses from colonialism toward solidarity, the latter progresses from chaos toward order. In the terms of the paradigm, the mutual binding between the pillar of regulation and the pillar of emancipation implies that these two forms of knowledge balance each other in a dynamic way. What this means is that the knowing power of order feeds the knowing power of solidarity, and vice versa. The fulfillment of this dynamic equi-

librium was entrusted to the three forms of rationality mentioned above: the moral-practical rationality, the aesthetic-expressive rationality and the cognitive-instrumental rationality. In the last two hundred years, I have been arguing, the cognitive-instrumental rationality of science and technology overcame the other two forms of rationality. In this process, knowledge-as-regulation won primacy over knowledge-as-emancipation: order became the hegemonic way of knowing and chaos became the hegemonic form of ignorance. Such an imbalance in favor of knowledge-as-regulation allowed the latter to recodify knowledge-as-emancipation in its own terms. Thus knowing in knowledge-as-emancipation became ignorance in knowledge-as-regulation (solidarity was recodified as chaos), and, conversely, ignorance in knowledge-as-emancipation became knowing in knowledge-as-regulation (colonialism was recodified as order).

This is the predicament we are in now, and must get out of. And there is no other way but to reassess knowledge-as-emancipation, and grant it primacy over knowledge-as-regulation. This implies, on the one hand, that solidarity be turned into the hegemonic form of knowing, and, on the other, that a certain degree of chaos be taken in as a consequence of the relative negligence of knowledge-as-regulation. This entails two significant epistemological commitments. The first one consists in the reassessment of chaos as a form of knowledge rather than ignorance. This transition can be observed within modern science itself in the theories of chaos. Rather than transcending chaos, order coexists with it in a more or less tense relation. In my view, this reassessment of chaos contributes positively to reducing the above-mentioned discrepancy, engendered by modern science, between the capacity to act and the capacity to predict. Chaos invites us to a praxis that insists on immediate effects, and warns against distant effects, a style of action that privileges a transparent, localized connection between action and its consequences. That is, chaos invites us to a prudent knowledge. Prudence has some family resemblances with pragmatism. To be pragmatic is to approach reality from W. James' "last things,"[59] that is, from consequences, and the shorter the distance between acts and consequences, the greater the accuracy of the judgment on validity. The near is to be privileged as the most decisive form of the real.

As an epistemological stance, prudence is difficult to achieve because we only truly know what is at stake when it is at stake. After two centuries of automatic utopianism of science and technology, such difficulty cannot but increase. However, as I have also indicated, there is no alternative but to confront it. The stance of prudence makes a twofold demand on us. On the one hand, it demands that, given the limits of our foresight in relation to the extreme power and complexity of the technological praxis, we privilege the latter's negative consequences rather than the positive ones. Such a stance must not be seen as pessimistic, let alone reactionary. One of the major consequences of technological utopianism is that today we know far better what we do not want than what we do want. If our foresight is clearer concerning the negative consequences than the positive ones, it would be wise to concentrate emancipatory knowledge upon the negative consequences. This implies—and herein lies the second demand—a certain "hermeneutics of suspicion," as Ricoeur would call it:[60] doubtful, yet possible, negative consequences must be deemed certain. This assessment of chaos and prudence must not be understood as a negative vision of the future. It involves an emphasis

on the knowledge of the negative, but such negativity aims at securing what in the future there is of future. Technological automatic utopianism implies a moral psychology that consists in conceiving, as an act of courage, to accept the risk of producing negative consequences, and, as an act of fear, to reject such risk. A personality is hereby constructed that impairs the capacity to assess risk, thus turning technological automatism into a supreme manifestation of will. This moral psychology must be radically critiqued. Instead of fighting our deficit of foresight, it feeds on it, thus making us less capable of foreseeing the negative consequences. When the survival of humankind as we know it is at risk, not to be afraid is the most conservative stance. What is needed, then, is to construct a theory of personality based on the courage to be afraid.

To accept and reassess chaos—and the prudence it calls for—is, therefore, one of the two epistemological strategies capable of tilting knowledge toward emancipation. The other strategy consists, as I have mentioned, in reassessing solidarity as a form of knowing. These two strategies are connected in such a way that neither of them will succeed without the other. Solidarity is a specific form of knowing that has won over colonialism. Colonialism consists in the ignorance of reciprocity, in the incapacity to conceive of the other as other than an object. Solidarity is the knowing obtained in the ever-unfinished process of one's becoming capable of reciprocity through the construction and recognition of intersubjectivity. The emphasis on solidarity converts community into the privileged sphere of emancipatory knowledge. After two centuries of deterritorialization of social relations, the community cannot limit itself to being the territoriality of the contiguous space (the local), and the temporality of the small time (the immediate). We live in an era of opaque, local-global, immediate-final nexus. The neocommunity is a symbolic sphere whose productivity does not require a fixed *genius loci*. It is a *hic et nunc*, a local and an immediate, that can potentially encompass the planet and the most distant future. The neocommunity transforms the local in a way of seeing the global, and the immediate in a way of seeing the future. It is the symbolic sphere, in which the specific territorialities and temporalities are developed, which allows us to conceive of the other in an intersubjective web of reciprocities. Since the new subjectivity does not depend on self-identity but, rather, on reciprocity, it is free of androcentrism: the other may be nature, or may be the beast of which Saint Francis of Assisi considers himself a brother.

Once the epistemological strategies toward an emancipatory knowledge have been outlined, we must proceed to indicate some of the processes through which they will be carried out. This is no easy task. Given the hegemony of knowledge-as-regulation, solidarity, we have seen, is today conceived as a form of chaos, and colonialism, as a form of order. Thus, we cannot proceed but through critical negation.

The Subject and the Object: All Knowledge Is Self-Knowledge

Modern science consecrated man as epistemic subject but expelled him as empirical subject. Such duplicity is graphically shown by the motto of Kant's *Critique of Pure Reason*: *de nobis sibi silemus*. That is, in the most eloquent treatise on

subjectivity produced by modernity, nothing will be said about ourselves as living, concrete, empirical, human beings. The accurate and objective knowledge cannot tolerate the interference of human particularities and value perceptions. Hence the dichotomy between subject and object.

The epistemological investment of modern science in the distinction between subject and object is one of its most genuine characteristics. This distinction guarantees the strict separation between conditions of knowledge and object of knowledge. This separation, however crucial for modern science, contains some contradictions that are somehow hidden behind its apparent linearity. The conditions of scientific knowledge, I have argued, are more or less arbitrary, based on conventions which, among many other possible conditions, select those that guarantee the efficient unfolding of the research routines. The object of the research is, after all, no more than the set of the conditions left out. If, hypothetically, it were possible to complete the enumeration of the conditions of knowledge, there would be no object left out to be known. In other words, a scientific knowledge without conditions is as impossible as a knowledge fully aware of all the conditions that make it possible. Modern science exists in a delicate balance between the relative ignorance of the object of knowledge and the relative ignorance of the conditions of the knowledge that can be obtained about it.

The separation between subject and object is thus made of unacknowledged complicities. This explains why, in the social sciences, the epistemological distinction between subject and object had to be methodologically articulated with the empirical distance between the subject and the object. This is quite obvious if we compare the methodological strategies of cultural and social anthropology, on the one hand, and of sociology, on the other. In anthropology, the empirical distance between subject and object was enormous. The subject was the "civilized" anthropologist; the object was the "primitive," or "savage" people. In this case, the empirical and the epistemological distinction between subject and object was so blatant that the distance between the two had to be narrowed down by means of methodologies that called for a closer intimacy with the object, namely by the ethnographic fieldwork and participant observation. In sociology, on the other hand, the empirical distance between subject and object was short, or even nonexistent: "civilized" scientists did research on their peers. In this case, the epistemological distinction called for a widening of the distance by means of methodologies of detachment: for example, the quantitative methodologies, the sociological survey by questionnaire, the documentary analysis and the structured interview.[61]

This helps us to re-examine the distinction between subject and object, which further distinguishes between the human and the nonhuman. The epistemological nonhuman may be either nature or society. This is exactly what Durkheim wished to stress as the basis of sociology when he said that social facts are things, and must be analyzed as such.[62] Such a dehumanization of the object was crucial to consolidate an instrumental regulatory conception of knowledge whose form of knowing was order conquering chaos. From the point of view of emancipatory knowledge, the distinction between subject and object is a starting point, never a point of arrival. It corresponds to the moment of ignorance, or colonialism, which is no less than the incapacity to relate to the other but by transforming the other into an object. Knowing-as-solidarity aims at replacing the object-for-the-subject

with the reciprocity between subjects. This radical revision of the distinction between subject and object is indeed facilitated by the development of modern science and of technology-based consumption society. On the one hand, in the natural-physical sciences, the return of the subject had already been announced by quantum mechanics when it demonstrated that the act of knowledge and the product of knowledge were inseparable. As I have indicated above, the developments in microphysics, astrophysics and biology during the last decades have returned to nature the humanlike properties that modern science had stolen from it. The knowledge conducted according to a materialist matrix finally emerged as an idealistic knowledge. On the other hand, the potentially infinite production of objects in consumption society filled the subjects with objects, but at the same time, as Baudrillard and others have noted, it endowed the objects with subjectivity so as to increase its consumption efficacy. Today, in this phase of post-mass consumption characterized by the personalization and clientization of objects, this process is more evident than ever. It is, of course, a false subjectification, since the objects are subjectified so as to increase their competence as objects (seduction, salability); but it nevertheless points to the limits of the subject-object distinction.

We can assert today, to paraphrase Clausewitz, that the object is the continuation of the subject by other means. Therefore, all emancipatory knowledge is self-knowledge; it does not discover, rather it creates. Metaphysical presuppositions, systems of belief, value judgments do not come before or after the knowledge of nature or society; they are part and parcel of it. Modern science is not the only possible explanation of reality. There is nothing scientific whatsoever about the reason why today we privilege a form of knowledge based on the prediction and control of phenomena. It is indeed a value judgment. The scientific explanation of phenomena is the self-justification of science as a central phenomenon of our contemporaneity. Thus, science is autobiographical.

The consecration of modern science in the course of the past four hundred years has naturalized the explanation of reality to the extent that we cannot conceive of the real except in ways that science offers us.[63] The process of naturalization was, however, slow; the protagonists of the scientific revolution were at first aware that the innermost proof of their personal convictions preceded and gave coherence to the external proofs they developed. Descartes reveals, better than anyone else, the autobiographical character of science. He writes in his *Discourse on Method*: "I shall be glad . . . to reveal in this discourse what paths I have followed, and to present my life in it as in a picture, so that everyone may judge it for himself; and thus, learning from public response the opinions held of it, I shall add a new means of self-instruction to those I am accustomed to using."[64] Today we know, or suspect, that our personal and collective life trajectories within our scientific community, as well as the values, the beliefs and the prejudices they carry, are the innermost proof of our knowledge, without which our laboratory or library research, our calculations or our fieldwork, would be no more than a tangle of meaningless efforts. Nonetheless, such knowledge of our life trajectories and values, of which we may or may not be aware, flows in subterranean, clandestine ways, in the unspoken presumptions of our current scientific discourse.

In the emergent paradigm, the autobiographical character of emancipatory knowledge is fully claimed: an understanding, intimate knowledge that does not

separate us from, but, rather, connects us personally with whatever we study. This has nothing to do with the medieval wonderment before a hostile reality haunted by the divine spirit; it is, rather, a sense of prudence before a world which, even though it be apparently tamed, reveals to us each day the precarious meaning of our life, however stable it may be at the level of survival.

Nature and Culture: All Nature Is Culture

While the distinction "subject-object" is an epistemological distinction supposed to have ontic (real, this-world) consequences, the distinction between nature and culture/society is presumably an ontic distinction supposed to have epistemological consequences. From the nineteenth century on, the most important of these consequences is the distinction between natural sciences and social sciences. The trajectories of the epistemological and ontic distinctions between nature and culture in the past hundred years are, however, quite different. While the epistemological distinction seemed to strengthen with the development of both natural and social sciences, the ontological distinction became increasingly weaker as technological development gradually transformed nature into a planetary artifact. Culture ceased to be an artifactual enclave in a world of nature, only to become the expression of the total artifactualization of nature.

Given the original symmetry between the ontological and the epistemological distinction, the ontological changes in the pair, nature/culture, are bound to produce epistemological consequences: gradually all sciences will be (conceived of as) social sciences. Today the nature/culture distinction is already the mere result of inertia. As such, it is, of course, a relatively autonomous concept, capable of surviving for some time the conditions of its formation; but the insight that the nature/culture distinction is a cultural rather than a natural distinction enables us to visualize the social and political processes that governed its formation and development. It is then possible to see that modern science, besides being modern, is also Western, capitalist and sexist.

A Western Capitalist Science

The sociology of the nature/culture dualism is particularly obvious in the so-called sciences of life. I select, among others, two examples: Darwin's theory of evolution, and primatology.

It is becoming commonly accepted today that Darwin's evolutionist ideas are quite in tune with the historical and social views of his time and that his synthesis, undoubtedly brilliant, drew much inspiration from political and social conceptions then widely current. Indeed, Darwin himself acknowledged that he formulated his theory of natural selection while reading Malthus's *Essay on the Principles of Population*.[65] The struggle for life and its implications—scarcity and competition—explained why favorable variations tended to be preserved and unfavorable ones to disappear. The struggle for life led to what Herbert Spencer has called the "survival of the fittest."[66] In Ruth Hubbard's view, the wide acceptance of Darwin's theory has to do, on the one hand, with the fact that it is a historical and materialist theory, congruent with the intellectual milieu of the time; on the other hand, with the fact that it is an intrinsically optimistic theory, well attuned to the individualistic and meritocratic ideology encouraged by the successes of English mercantilism, industrial capitalism and imperialism.[67] Natural selection is, indeed, a history of progress, expansion, invasion and colonization; it is, in short, like a natural history of capitalism or like a history of natural capitalism. Writing to Engels, three years after the publication of *The Origin of Species*, Marx observed how remarkable it was that Darwin had recognized among animals and plants his English society with its division of labor, competition, new markets, inventions and the Malthusian struggle for life.[68] But if Darwin incorporated the ideology of liberalism into his theory, the fact is that his theory was also appropriated by social theoreticians and politicians to prove that such an ideology was natural, and therefore inevitable. This shows the circularity of the nature/culture dualism inside the evolutionist paradigm.

Concerning primatology, the science that studies monkeys and apes, in a recent groundbreaking book, Donna Haraway has eloquently demonstrated how themes pertaining to race, gender, nation, family and class have been inscribed by the sciences of life in the body of nature since the eighteenth century.[69] In the West, monkeys and apes have a privileged position in the nature/culture distinction precisely because they inhabit a frontier zone between the two poles. Monkeys and apes are thus part of the raw material out of which Western man constructs an image of himself as a natural being separated from nature. Primatology is therefore a set of metaphors or stories on the origin and the nature of man, a Western discourse on social order. The best approach to verifying all this is comparative primatology. It reveals to what extent different social, political, religious and philosophical traditions and conditions create different scripts for different primatological narratives. This is the approach chosen by Haraway, who, in her study, compares Western with Japanese primatology. The broad conclusion she draws is that, after World War II, the Japanese created an independent primatology, whose characteristics are part and parcel of predominant cultural narratives of Japanese society. Just as the tropical primates mirror the Western man, the Japanese primates mirror the Japanese man. While Western primatology holds the distinction between man and nature to be a crucial one, Japanese primatology presupposes a continuum and an essential unity between humans and animals. In the light of the Confucian tradition, this continuum and unity are not inconsistent with the idea of hierarchy. On the contrary, this idea is reflected in a concern with issues of status, personality, social change, stability and leadership that is far greater in Japanese than in Western studies. On the other hand, while, in Western primatology, the "good" (noble) nature is the untouched, wild nature, in Japanese primatology, nature is a work of art to be enriched by human interaction. Consider, for example, the domestication of apes in captivity, a practice that is strongly encouraged in Japan and yet penalized in the West. Haraway supplements her study with other comparisons between Western and African or Indian primatology. The general conclusion to be drawn is that primatology is a multicultural field influenced by a biopolitics that, in different cultures, establishes different webs of signification between humans and primates and between culture and nature, which amount to cultural-specific ways for the humans' understanding of their own subjectivity.

A Sexist Science

Besides being Western and capitalist, modern science is also sexist. The culture-nature dyad is but one of a family of dualisms, such as: abstract-concrete, spirit-body, subject-object, ideal-real. All these dualisms are sexist in that the first element in each one of them is considered dominant and at the same time associated with the masculine. This is an old association that has its most sophisticated version in Aristotle, whose biology, politics and ethics were premised upon woman's inferiority. Modern science, in its turn, makes these dualisms more efficient, since the false (but nonetheless hegemonic) universalism of its cognitive-instrumental rationality is particularly good at turning dominant experiences (the experiences of a dominant class, gender, race or ethnicity) into universal experiences (objective truths). If the organism is the technoscientific form of the body, the female organism is the technoscientific form for locating the woman in the dominated pole of any of the above-mentioned dualisms (nature, the concrete, the body, the object, the real). Thus is the male transformed into a universal abstraction, outside nature, whereas the female becomes a mere point of view, loaded with particularisms and naturalistic linkages.[70]

The Western ethnocentrism we detected above, in Darwin's theory of evolution, turns into androcentrism in its conceptions of gender relations. The animal kingdom is filled with fiercely promiscuous males chasing languidly passive and expectant females who will pick the strongest and the handsomest. This kind of sexism is today prominent in sociobiology, particularly concerning its explanations of asymmetries between sexes. According to Ruth Bleier:

> Of central importance in sociobiological theory, in keeping with the biological determinist tradition, are its efforts to explain in terms of *biology* the origins of gender-differentiated roles and positions held by women and by men in modern as well as past civilizations. In so doing, sociobiologists attempt to assign *natural* causes to phenomena of social origins.[71]

Feminist scholarship of the last two decades shows that, according to the dominant conceptions of the different sciences, nature is a male world organized after socially constructed, Western, male principles such as war, individualism, competition, aggressiveness and discontinuity vis-à-vis the environment. Such a world is either incapable or unwilling to accept the greater explanatory potential of alternative conceptions. For example, once confronted with a case of unequivocal absence of competitive behavior, the androcentric scientist's "natural" solution is to understand that absence as escape from competition, rather than as co-operative behavior.

This type of sexism is notorious in many other disciplines. Concerning philosophy, for instance, Janice Moulton argues that there is sexism in the "adversarial method" as a paradigm of philosophic reasoning.[72] According to this method, philosophical progress is based on the debate among adversaries. A strong, successful adversary must subject the rival views to the most aggressive critique. Now, according to Moulton, aggressiveness is precisely one of the features of behavior that is supposed to be good in males and bad in females. Before suggesting some alternatives, Moulton then identifies other limitations of this method: it is deductive and relies on counter-examples; it isolates the arguments and prevents problematization in the broader contexts of dominant systems of ideas and ideologies in a given period. We do not have to subscribe fully to Moulton's argument to recognize that, both in modern science and in philosophy, sexism basically lies in the false universality of "transcending generalizations," a point that is particularly well argued by Nancy Fraser and Linda Nicholson. Actually, their ideas have many Wittgensteinian "family resemblances" with the notion of postmodern emancipatory knowledge that I am arguing for in this chapter.[73]

All Sciences Are Social Sciences

The transformation of nature into a global artifact through reckless technological production-destruction, coupled with the epistemological critique of ethnocentrism and androcentrism in modern science, have converged to the conclusion that nature is the second "nature" of society and that, conversely, there is no human nature, since all nature is human. There are as many natures as there are cultures. This being the case, all natural-scientific knowledge is social-scientific. This epistemological step is one of the most decisive steps in the paradigmatic transition we are traversing. It is a very difficult step.

The latest developments in physics and biology I have mentioned above seem to point in this direction, even though they see themselves, in general, as having very little to do with the feminist or the postmodern critique of modern science. The newest findings in these scientific fields question the distinction between the organic and the inorganic, between living beings and inert matter, and even between the human and the nonhuman. The characteristics of self-organization, of metabolism and of self-reproduction, which were previously thought to be specific to living beings, are nowadays ascribed to the precellular systems of molecules. Furthermore, they are ascribed proprieties and behaviors earlier believed to be specific to human beings and to social relations. All the recent scientific theories I have mentioned ascribe to matter the concepts of historicity and progress, freedom and self-determination—and even consciousness, which men and women had previously held to be inalienably their own. I have alluded to Prigogine's dissipative structures, Haken's synergetics, David Bohm's "implicate order," Geoffrey Chew's S-matrix and its underlying "bootstrap" theory, as well as Fritjof Capra's synthesis of contemporary physics and Eastern mysticism.[74]

All these theories have a decisive, nondualistic vocation, and some are even intended to resolve the inconsistencies between quantum physics and Einstein's relativity. It is as if we had set out in search of the most distant and alien objects, and then had discovered ourselves as though we were being reflected in a mirror. At the beginning of the sixties, extrapolating from quantum mechanics, Eugene Wigner maintained that the "inanimate" is not a different quality, but only an extreme case, that the distinction between body and soul has long ceased to have meaning, and that physics and psychology would eventually merge into one and the same science.[75] Today it is possible to go far beyond quantum mechanics. If quantum mechanics made consciousness part of the knowing act, we now have to make it part of the object of knowledge itself. Even if we do not subscribe to some

of the most radical positions of recent years, in which Leibniz's panpsychism seems to be at work once more,[76] it is undeniable that knowledge according to the emergent paradigm tends to be nondualistic. Rather, it is a knowledge based on the supersession of all the familiar and obvious distinctions that, until very recently, were taken for granted: subject/object; nature/culture; natural/artificial; living/inanimate; mind/matter; observer/observed; subjective/objective; animal/person.[77]

However, it is not enough to stress the tendency to supersede the distinction between the natural and the social sciences; we must understand the meaning and content of this supersession. Once again, in terms of physics, the question is whether the "parameter of order" (Haken) or "attractor" (Prigogine) of this supersession will be the natural or the social sciences. Precisely because we are living in a state of epistemological turbulence, the vibrations of the new paradigm rebound unequally in the various regions of the dominant paradigm, and so the signs of the future are ambiguous. Some interpret them as the emergence of a new naturalism privileging the biological presuppositions of human behavior. This is the argument of Konrad Lorenz or of sociobiology. For them, the supersession of the dichotomy, natural/social sciences, is occurring under the aegis of the natural sciences. Against this view, it might be said that its conception of the future is the same conception with which the natural sciences have justified, within the dominant paradigm, their current scientific, social and political prestige. It therefore sees in the future only that which will repeat the present. If, on the other hand, we consider more deeply the theoretical content of those sciences that are more advanced in their knowledge of matter, we shall realize that the emergent intelligibility of nature is infused with concepts, theories, metaphors and analogies from the social sciences. We need only think of Prigogine's "dissipative structures" and Haken's "synergetics." Both theories explain the behavior of particles by such concepts as social revolutions, violence, slavery, domination, nuclear democracy—all of which are borrowed from the social sciences (sociology, political science, history and so forth). The same applies to Capra's theories on the relation between physics and psychoanalysis, in which the patterns of matter and the patterns of mind are seen to reflect each other. Even though these theories blur the borderlines between the objects of physics and the objects of biology, the latter has no doubt absorbed the explanatory models of the social sciences more deeply in recent decades. The concepts of teleomorphism, autopoeisis, self-organization, organized potentiality, originality, individuality, historicity do indeed ascribe human behavior to nature.[78]

That the explanatory models of the social sciences have been behind the development of the natural sciences for the past decades is further indicated by the fact that, once they have been formulated in their specific domain, the natural-physical sciences are easily applied to the social domain. Thus, for example, Peter Allen, one of Prigogine's collaborators, has applied the theory of dissipative structures to economic processes and to the evolution of cities and regions.[79] Haken, in turn, has stressed the potentialities of synergetics to explain revolutionary situations in society.[80] It is as if Durkheim's motto had been reversed. Rather than studying social phenomena as if they were natural phenomena, scientists now study natural phenomena as if they were social phenomena.

The fact that the supersession of the dichotomy between natural and social sciences is being carried out under the aegis of the social sciences, however, is not enough to characterize the model of knowledge in the emergent paradigm, that is, the model of a postmodern emancipatory knowledge. Since, as mentioned above, the social sciences themselves were formed in the nineteenth century according to the models of rationality of the classical natural sciences, to speak of the aegis of the social sciences may turn out to be misleading. I did say, nonetheless, that the social sciences were constituted according to two different tendencies: one of them closely linked with the positivist epistemology and methodology of the natural sciences; the other, of an antipositivist vocation, molded in a complex philosophical tradition of phenomenology, interactionism, myth-symbolism, hermeneutics, existentialism, and pragmatism. The latter claim the specificity of the study of society, while at the same time assuming a mechanistic conception of nature. The power of the latter trend in recent decades indicates that it is a model of social sciences which, in a time of scientific revolution, carries within itself the postmodern sign of the emergent paradigm. It is indeed a transitional model, for it defines the specificity of the human in opposition to a conception of nature that the natural sciences today consider superseded; but it is a model less strongly attached to the past than to the future. In sum, to the degree that the natural sciences are getting closer to the social sciences, the social sciences are getting closer to what has been traditionally called "the humanities." The revaluation of humanistic studies goes hand in hand with the revaluation of the aesthetic-expressive rationality of the arts and literature, which is, along with the principle of the community, an unfinished representation of modernity. The aesthetic dimension of science has been acknowledged by scientists and philosophers of science, from Poincaré to Kuhn, from Polanyi to Popper.[81] But, in the paradigmatic transition, the claim is much stronger: the creation of knowledge in the emergent paradigm claims to be close to literary or artistic creation; as a consequence, scientific discourse will get increasingly closer to artistic and literary discourse.

As we saw earlier, the two organizing concepts of aesthetic-expressive rationality are authorship and discursive artifactuality. The concept of authorship resists the distinction between subject and object without renouncing the active dimension of the subject. The author is the originator, no matter how questionable or derivative his or her originality may be. By the same token, literary criticism presages the subversion of the subject/object relation, which the emergent paradigm seeks to effect. In literary criticism, the object of study, as we would call it in modern scientific language, has always been, in effect, a supersubject (a poet, a novelist, a dramatist) in relation to whom the critic is no more than a secondary subject or secondary author. It is true that, in recent times, the critic has been tempted to outdo the writer under scrutiny, to the point that we might even speak of a struggle for supremacy.[82] But precisely because it is a struggle, it involves two subjects, rather than a subject and an object. Each is the other's translation, both are creators of texts; their texts are written in different languages, but both languages are necessary to learn how to love the words and the world.

On the other hand, the concept of discursive artifactuality, though seemingly based on the distinction nature-culture, in fact subverts it: since there are no limits to artistic artifactualization, nature is, from the beginning, culture in the making.

The open-ended discursivity of art and literature guarantees its artifactuality against the automatic utopianism of technology. Art and literature are but what the relevant community has good reasons for designating as such. The need to give reasons implies a new kind of relationship between contemplation and transformation, which subordinates the latter to the former, just like the active transformation of nature by the sculptor chiseling a stone block is somehow subordinated to the contemplation of the artifact—the finished sculpture.

The supersession of the natural sciences/social sciences dichotomy tends, therefore, to revalue "humanistic studies." But for this revaluation of the so-called humanistic studies of art and literature to take place, such studies need to be profoundly changed themselves. What they carry of the future is that they have resisted the separation between subject and object, between nature and culture, and that they have preferred the understanding of the world to the manipulation of the world. Its genuine core, however, has often been trapped in mystifying concerns (dreamy esotericism and empty erudition) and reactionary politics. The ghetto to which "the humanities" chose to retire was partly a strategic defense against the assault of the social sciences, triumphantly wielding the scientistic ethos. But it was also the result of a sense of emptiness, once their space was taken over by the scientistic model. That is what happened in historical studies with exclusive reliance on quantitative methods, in legal studies with the pure theory of law and legal dogmatics, in literary studies with formalist approaches like "new criticism," and in linguistic studies with structuralism. Moreover, whether resisting or surrendering to the scientistic model, the humanistic studies have chosen, in general, to ignore the social relations and the social processes that account for the "self"-selection of people for authorship, for the criteria of inclusion in the interpretive community, for the adjudication of rhetorical power among the arguments, in sum, for the social distribution of the good reasons.

The genuine core of the humanities must be recovered and put to the service of a global reflection about the world. The text, which has always been philology's concern, is one of the grounding analogies upon which the knowledge about nature and society will be built in the emergent paradigm. As the catalyst of the gradual blending together of natural and social science, the neohumanities help us to look for global categories of intelligibility, warm concepts capable of melting the frontiers with which modern science has divided and enclosed reality.

Postmodern science is admittedly an analogical science that knows what it knows less well through what it knows better. I have already invoked the textual analogy. Other important seminal categories of the emergent paradigm are, to my mind, the ludic, the dramatic and the biographical analogies. The world is today either natural or social; tomorrow it will be both, and shall be looked at as if it were a text or a play, a stage or an autobiography.[83] Each one of these analogies unveils a corner of the world. Total nakedness, which will always be the nakedness of those who see themselves in what they see, will emerge out of the configurations of analogies we may be capable of imagining. After all, the play presupposes a stage, the stage wants a text, the text is its author's autobiography. Once these intertextualities become self-reflective and aware that they constitute "congealed" social relations and social processes by which some people or social groups are denied the play, the stage, the text, or are silenced by force, then they can become emancipatory local projects of postmodern, undivided knowledge.

V. ARGUMENTATION, RELATIVISM AND ETHNOCENTRISM

The preceding discussion of the ethnocentrism and androcentrism of modern science allows us to conclude, in the terms of the conceptual framework of modernity presented here, that the modern book of nature—to paraphrase Galileo—is written according to the principle of the market and the principle of the state, and in the language of the cognitive-instrumental rationality. It is certainly not written according to the principle of the community and its founding concepts of solidarity, participation and pleasure, and not in the language of either the moral-practical or the aesthetic-expressive rationality. Reading this book, we are only capable of knowing by going from chaos to order, the order that we then impose on the objects of our study, be they human human (social sciences) or human nonhuman (natural sciences). The modern book of nature is thus a book of knowledge-as-regulation. In order to reconstruct emancipatory knowledge as a new form of knowing, we have to start from the unfinished representations of modernity, that is, from the principle of the community and from the aesthetic-expressive rationality:[84] emancipatory knowledge is a local knowledge created and disseminated through argumentative discourse; its two characteristics (localness and argumentativeness) belong together, since argumentative discourse can only take place inside interpretive communities, which are the relevant audiences of rhetoric.

Modern science found itself fighting one single major enemy: the monopolies of interpretation, be they religion, the state, the family or the party. This fight has been conducted with great success, and the positive results derived from it are indispensable for the construction of a postmodern emancipatory knowledge. The end of the monopolies of interpretation is an unqualified human good. However, since modern science colonized the other forms of rationality, thus causing the loss of the dynamic balance between regulation and emancipation to the detriment of the latter, the successes of the struggles against the monopolies of interpretation ended up giving rise to a new enemy, as fierce as the old one, and one which modern science could not but ignore: the renunciation of interpretation that is paradigmatically evident in the automatic utopianism of technology and in the ideology and practice of consumerism.

This explains why postmodern emancipatory knowledge has to face two enemies from the start, both equally fierce: the monopolies of interpretation and the renunciation of interpretation. The struggle against both is based on the same strategy: the proliferation of interpretive communities. This strategy, though guided by local, theoretical knowledge, is not a cognitive artifact: interpretive communities are political communities. They are what I have called neocommunities, local-global territorialities and immediate-final temporalities that encompass both knowledge and life, interaction and work, consensus and conflict, intersubjectivity and domination, and whose emancipatory unfolding consists of an endless trajectory from colonialism to solidarity guided by and constitutive of

emancipatory knowledge. Unlike the end of the monopolies of interpretation, the community is not an unqualified human good. Rather, it is qualifiable according to the depth and breadth of the emancipatory knowledge that it manages to put to work, that is to say, according to the extent that it eliminates colonialism and builds up solidarity. Moreover, since the creation of community often involves the destruction of community, the colonialism-solidarity complex tends to be different in intercommunitarian relations and in intracommunitarian relations. The "communitarians" tend to concentrate on intracommunitarian relations and to focus on solidarity-oriented interaction, ignoring both intercommunitarian relations and the colonialism-oriented interaction that, more often than not, rules them.

The trajectory from colonialism to solidarity has to take place both at the level of intracommunity and of intercommunity relations. For that reason, the neocommunity is seen as having an important and irreducible dimension of translocalism (local-global) and transtemporalism (immediate-final), so that a nonfoundational conception of social emancipation may be envisaged and carried out. This dimension is the energy behind the permanent reinvention of the community along the trajectory from colonialism to solidarity. I am speaking of very concrete social processes very often occurring before our eyes, which are also very often too blind to see them. Consider, for example, the remarkable reinvention of community life that has been carried out throughout Latin America for the last two decades by means of innovative research-and-action, popular movements, human rights struggles, liberation sociology and communitarian popular culture. Such a broad political cultural practice, in the words of one of its major intellectual inspirations, Orlando Fals Borda,[85] aims at reinventing the community by resorting to an emancipatory knowledge that capacitates its members for resisting colonialism and building solidarity through the exercise of new social competences, which will lead to new and richer forms of individual and collective citizenship.

Because it is created by the interpretive communities of which it is also the creator, postmodern emancipatory knowledge is rhetorical. Herein lies its closeness to aesthetic-expressive rationality. While modern science aims at the naturalization of knowledge through objective truths, descriptions and regularities, postmodern emancipatory knowledge assumes its discursive artifactuality. For postmodern emancipatory knowledge, truth is rhetorical, a mythic moment of rest in a continuous and endless argumentative struggle among different discourses of truth; it is the ever-provisional result of a negotiation of meaning within a given relevant audience, which in the modern era has consisted of the scientific community, or rather, of a plurality of scientific communities. On the other hand, descriptions, for postmodern emancipatory knowledge, are both prescriptions and proscriptions, whose prescribed or proscribed content is widely accepted as a matter of fact. Regularities are precarious enclaves of latent chaos in areas in which there is a great consensus as to what counts as either abnormal or irrelevant.

Rhetoric, as the art of persuasion by argumentation, is one of the most deeply rooted traditions in Western thought. Like any other great tradition, rhetoric has gone through periods of great flourishing and periods of virtual disappearance. It has always competed for primacy in erudite knowledge with another great tradition, the tradition of scientific demonstration by irrefutable proof and apodictic logic. The scientific revolution of the sixteenth and seventeenth centuries marks the beginning of a long period in which the dispute is decided against rhetoric. The marginalization of rhetoric can be precisely located in the *Discourse on Method*, when Descartes declares, as one of the main rules of the new method, that what is only probable must be considered false. From his "clear and simple ideas" and Bacon's "reason by experimentation," on to the various kinds of early twentieth-century positivism, rhetoric is firmly pushed out of the new territory of scientific rationality.

The intellectual or historical trajectory of rhetoric most clearly illustrates the colonization of the moral-practical rationality of the law by the hegemonic scientific rationality, to which I alluded in the Introduction to Part One. Indeed, law has always been one of the favorite fields of rhetoric. In the Middle Ages, the students of rhetoric exercised their skills by arguing in favor of opposing parties in simulated legal disputes.[86] But the broad cultural trends sparked by Cartesian rationality gradually made their way into the legal culture and praxis. The codification movement of the nineteenth century, and the legal positivism that accompanied it, led to a total rejection of legal rhetoric in favor of legal science, the so-called legal dogmatics. I will return to this in the next chapter.

Our century has thus been the century of the diaspora of rhetoric. For a while, probable knowledge emerging from reasonable argumentation seemed irreversibly superseded by exact knowledge produced by scientific proof. Since the 1960s, however, the triumphalism of scientific rationality has been cast in doubt as premature or even as misconceived *ab ovo*. The re-emergence of rhetoric is, in my view, part and parcel of the paradigmatic crisis of modern science. The debate between rhetorical (nonfoundational) and apodictic (foundational) knowledge is probably the only foundational debate in Western tradition, and as such it tends to explode in periods of paradigmatic transition.[87] Indeed, the question about the existence and nature of a paradigmatic transition is itself a rhetorical question. Are the signs of the crisis of modern science I have identified sufficient to indicate the emergence of a paradigmatic transition leading to a new scientific paradigm? The "truth content" of both a negative and a positive answer to this question are probably the same. If I have good reasons to believe that the positive answer is the most reasonable one, there is no truth strategy that can convince me of the opposite. In a period of paradigmatic transition, we cannot but be reminded of Koyré's analysis of the scientific revolution of the sixteenth century, from which T. Kuhn received so much inspiration.[88] According to Koyré, in such periods the question about the nature of the transition cannot be answered in terms of truth claims, precisely because the criteria that ground such claims are themselves under question. What is at stake is not a decision over the validity of new findings but, rather, the emergence or not of a new perception of reality. Thus, the question will ultimately be decided in terms of the relative strength of the arguments of the groups within the relevant community, which will favor a particular global perception.

The centrality of rhetoric in the current period of paradigmatic transition is twofold. On the one hand, modern science, though it claims to be apodictic knowledge, is in fact rhetorical knowledge. This assertion may have two versions, a weak version and strong version. The weak version says that the public presentation or discourse of science is saturated with rhetorical devices (rhetoric in sci-

ence); the strong version says that scientific knowledge itself is rhetorical (science as rhetoric). On the other hand, the centrality of rhetoric derives from the idea that in the new, emerging paradigm, knowledge will be unabashedly rhetorical, and that its rhetoric will be radically different from the one that characterizes modern science. In what follows, I will elaborate on these two aspects of the centrality of rhetoric in our time.

The Rhetoric of Modern Science

The rhetorical nature of modern scientific knowledge emerges from three different but convergent intellectual developments. First, the critique of modernist, foundationalist epistemology from Nietzsche and Heidegger to Gadamer, Foucault, Feyerabend, Morin and Rorty; second, the repercussions of James' and Dewey's pragmatism on some of the preceding authors, and also on Habermas; third, the renewed interest in Greek and medieval rhetoric, which can be dated back to 1958, the date of publication of Perelman's *New Rhetoric*, to my mind, the most useful guide for the inquiry into the rhetoric of science, and indeed into the rhetoric of law as well. Perelman starts from Aristotle, who deals with argumentative discourse in a systematic way in the *Topic* and, with reference to contexts of application, in the *Rhetoric*. This is not the place to give a full account of Perelman's or Aristotle's rhetoric. In Chapter Three, the most important features of this rhetoric will be applied to the analysis of the Law of Pasargada. Here it will suffice to say that rhetoric is a form of knowledge that proceeds from probable premises to probable conclusions through various types of arguments, some of which may be presented in syllogistic form, though they are not syllogisms (they are *enthymemes*, "quasi-logical arguments presented in syllogistic form").[89] Arguments are of an immense variety, but in order for them to be activated in a concrete process of argumentation, two conditions must be fulfilled: there must be some premises that are generally accepted and function as starting points of the argumentation; there must be a relevant audience to be persuaded or convinced.[90] Among the premises, two types are of utmost importance: facts and truths, on the one hand, and *topoi*, on the other.

As I have already mentioned, from a rhetorical point of view, facts and truths are objects of sufficiently intense agreement as not to necessitate further intensification through argumentation. No statement enjoys this status indefinitely, and when the level of intensity of agreement decreases, facts and truths cease to be so and become arguments themselves. According to Perelman, there are two ways in which this can occur:

> Either doubts may have been raised within the audience to which it was presented, or the audience may have been expanded through the addition of new members who are recognized as having the ability to judge the event and who will not grant that a fact is involved.[91]

Topoi, or *loci*, are "common places," widely accepted points of view with very open, unfinished or flexible content easily adaptable to the different contexts of argumentation. As Walter Ong writes, "in all its senses, the term (*topos*) has to do, in one way or another, with exploitation of what is already known, and indeed often of what is exceedingly well known."[92] For H. Lausberg, *topoi* "are infinite thoughts that are applied as arguments in dealing with a finite *Quaestio*."[93] And, finally, for Perelman, *topoi* "form an indispensable arsenal on which a person wishing to persuade another will have to draw, whether he likes it or not."[94] Perelman echoes here Cicero, for whom *topoi* were "storehouses of arguments."

Aristotle makes the distinction between *topoi* that belong to a particular realm of knowledge (such as the *topos* of the just and the unjust, which can be used in politics, ethics and law, but not in physics) and *topoi* that can be used indiscriminately in any realm of knowledge (such as the *topoi* of quantity, which can be used in politics, in physics and so on). Though this distinction was abandoned in subsequent treatises of rhetoric,[95] Perelman recuperates and articulates it with the other necessary condition of argumentation: the relevant audience.

For an argumentation to take place, "an effective community of minds must be realized at a given moment," there must be a "contact of minds," in other words, an audience, which Perelman defines as "the ensemble of those whom the speaker wishes to influence by his argumentation."[96] In rhetorical terms, the community at any given moment is the relevant audience of those engaged in argumentation, that is, the ensemble of those they want to influence through persuasion or conviction. In order to be successful in influencing the audience, the "speakers" must adapt to the audience; and in order to be successful in their adaptation, they must know the audience. This is one of the basic tenets of rhetoric, and Perelman expresses it better than anyone else:

> Knowledge of an audience cannot be conceived independently of the knowledge of how to influence it . . . knowledge of an audience is also knowledge of how to bring about its conditioning, as well as of the amount of conditioning achieved at any given moment of the discourse.[97]

There are different kinds of audiences. There are particular audiences composed of a bigger or smaller number of people to be influenced through argumentation. There is also the singular audience: a given person may constitute an audience for himself or herself when he or she deliberates or gives reasons for his or her actions. Perelman distinguishes a third type of audience, the universal audience, which is of particular interest for the rhetoric of modern science. The universal audience is potentially the whole of humankind, it is a construction of the speaker whenever he or she wants to convince the audience that the reasons adduced are of compelling character, that they are self-evident and possess an absolute and timeless validity, regardless of local or historical contingencies. According to Perelman, we can characterize each speaker:

> by the image he himself holds of the universal audience that he is trying to win over to his view. Everyone constitutes the universal audience from what he knows of his fellow men, in such a way as to transcend the few oppositions he is aware of. Each individual, each culture, has thus its own conception of the universal audience. The

> study of those variations would be very instructive, as we would learn from it what men, at different times in history, have regarded as *real*, true and *objectively valid*.[98]

Those who want to address a universal audience are thus likely to resort most frequently to general *topoi* in the Aristotelian sense. Moreover, a maximally efficacious rhetoric, in the case of a universal audience, is a rhetoric employing nothing but logical proof.

Once the audience and the premises are defined, the argumentation takes place according to a plan whose objective is to obtain the persuasion or the conviction of the audience. This plan involves the choice of arguments, the sequence and the technique of their presentation. The argumentative potential of any given argument cannot be established in isolation; it depends on its specific articulation in a chain or network of different arguments.[99]

The determination of the relations between science and rhetoric is a work in progress; it is much less advanced than that on the relations between law and rhetoric.[100] Here I shall present some of the main lines of research in the field of science and rhetoric. First, since the scientists, in general, see their scientific community as a universal audience, scientific rhetoric is characterized by the use of general *topoi*, of facts and truths as the most important premises of argumentation and of arguments based on the structure of reality. In general, scientific rhetoric aims at the sole use of logical proof; for that reason, its most striking characteristic is to negate itself as rhetoric.

Secondly, scientific methods are arguments; it is up to each scientist to choose them and their sequence and technique of presentation. Scientific knowledge is thus intrinsically personal. One of the first thinkers to draw our attention to this fact was Michael Polanyi in *Personal Knowledge*, and one of the most recent ones is Paul Feyerabend in *Against Method*.[101] According to Polanyi, scientific methods, as defined by the philosophy of science, are a dry and misleading summary of the concrete use of methods by concrete scientists. Methods are ambiguous, and their use is accepted only on the basis of many premises of agreement in the scientific community, the "tacit component" of knowledge. It follows, then, that scientific truth is a "fiduciary truth" based on the assessment of the reliability of the scientists and of the genuineness of their motives. There are no other, "more objective" guarantees than this *fiducia*.

Thirdly, the research on general *topoi* is particularly crucial. In any given culture, *topoi* tend to exist in oppositional pairs (the *topos* of quantity versus the *topos* of quality, or the classical *topos* of the superiority of the eternal versus the romantic *topos* of the superiority of the ephemeral). The ensemble of the predominant *topoi* in the different pairs at a given time and place constitutes the hegemonic intellectual constellation of the period. It thus penetrates, in different ways, all the areas of knowledge. Subordinate *topoi* are not suppressed. They are used in marginal argumentative discourses or are presented in core discourses disguised as the opposite *topoi*. An illustration that is particularly relevant to establishing the rhetorical foundation of modern science is the historical struggle between the *topos* of quantity and the *topos* of quality. According to the *topos* of quantity, it is desirable to determine the number of something; as Aristotle says, a greater number of

good things is more desirable than a smaller number. This *topos* has by far dominated modern scientific rhetoric. It has pushed the topos of quality (the superiority of what is valuable in itself, and, in the extreme case, the superiority of the unique) to the margins, to circulation in disqualified discourses, that is to say, discourses that are very often disqualified precisely for their incapacity to adapt to the *topos* of quantity. This was one of the processes by which the cognitive-instrumental rationality of modern science colonized the other forms of rationality, which were able to avert disqualification only by maximizing the use of the *topos* of quantity to the detriment of the *topos* of quality. When and where such use was not possible, the cost was marginalization, unfinishedness. Today, however, the hegemony of the *topos* of quantity has been cast in doubt at the very heart of modern science. All the trends analyzed above, as indicative of the crisis of the dominant scientific paradigm, can be seen as different expressions of the return of the *topos* of quality. In the moral-practical rationality and, above all, in the aesthetic-expressive rationality, the *topos* of quality managed to survive, even if oftentimes by resorting to quantitative disguises. That is another reason why, in the current period of paradigmatic transition, we must resort to these two forms of rationality in search of the unfinished that will allow us to open up a new way forward.[102]

The final line of research on scientific rhetoric has to do with the audience. Modern science presents itself as a set of arguments that address the universal audience. Ultimately, this is what allows it to present itself as nonrhetorical. To dig into the rhetorical layers of modern science means to question the universal audience as the only relevant audience. In my view, though the universal audience remains as the overall frame for the technical presentation of scientific arguments, it is much less important for the concrete scientist than two other particular audiences: the audience of scientists whom the concrete scientists want to influence (the empirical scientific community), and the audience constituted by the concrete scientists themselves in the process of giving reasons that will convince them of what they are saying or doing (the singular or internal community). The concrete scientific praxis takes place both in these two audiences or communities and in the trajectories or pendular movements between one and the other. The distance between the two communities cannot be postulated in the abstract. It may be narrower or wider, it may differ according to time and place and according to the specific realm of science. But there is always a certain distance, because the internal community is in general less subjected to the hegemonic premises of the scientific argumentation; it may thus more easily integrate premises or arguments derived from the moral-practical rationality or from the aesthetic-expressive rationality. Since such premises or arguments are not acceptable for the empirical scientific community, they must be discarded in the symbolic emigration from the internal community to the external community; that confirms the scientist as a scientist; or else they must be hidden or disguised here as clandestine, migrant arguments and premises. This means that the concrete scientists are always torn between the arguments-as-they-convince-themselves (the arguments as symbolic use-value), and the arguments-as-they-convince-the-empirical-scientific-community (the arguments as symbolic exchange-value). This division is the source of a duplicity which Einstein used to call "methodological opportunism"; sometimes it may also be the source of a scandal, as the one provoked by the publication of Malinowski's diaries.

The *New* New Rhetoric and Postmodern Knowledge

The rhetorical analysis of modern science, both in its strong version (science as rhetoric) and in its weak version (rhetoric in science), is decisive in the current period of paradigmatic transition for the purpose of relativizing the cognitive claims of cognitive-instrumental rationality. The relativizing of its cognitive claims entails the relativizing of its instrumental claims. This is where rhetoric and pragmatism intersect. The recognition of the limits of knowledge compels us to approach reality from James' "last things," from consequences, from the impact on the life-world and on our personal and collective life in the world.

But the rhetorical analysis of modern science does not say much about postmodern knowledge, and it says even less about the kind of postmodern knowledge I am arguing for in this book: postmodern emancipatory knowledge. Except, of course, the fact that the latter fully assumes its rhetorical nature: a prudent knowledge for a decent life. Moreover, before it can be part of a postmodern emancipatory knowledge, the new rhetoric must be radically reconstructed. Perelman's rhetoric is technical (for instance, it does not adjudicate between two forms of influencing: persuasion and conviction); it assumes the audience, and hence the community, as a given, and therefore fails to account for the social processes of inclusion in and exclusion from audiences or communities and the social processes of creation and destruction of communities; finally, it is manipulative, since the "speakers" aim solely at influencing the audience, and do not see themselves as being influenced by it beyond the extent to which they must adapt to the audience in order to influence it successfully. In sum, Perelman's rhetoric, I would argue, is too modern to account for postmodern knowledge without profound transformation. The radical critique of the new rhetoric must thus lead the way to the new new rhetoric.

Reasons and Actions

Rhetoric is a process of arguing by means of reasonable reasons, either to account for results already produced or to seek adherence to the production of results in the future. This is the irreducible, active dimension of rhetoric. But this dimension may be more or less prominent, according to the type of adherence that is aimed at: persuasion or conviction. Persuasion is an adherence based on the motivation to act; the argumentation geared to it tends to intensify such motivation by the use of emotional arguments, the psychagogic element of rhetoric prominently advanced in Book II of Aristotle's *Rhetoric*. Conviction, on the other hand, is a type of adherence based on the evaluation of the reasons to act; it therefore creates a chaotic field within which the action may or may not occur. In *Emile*, Rousseau considers that it is useless to convince a child if you cannot also persuade him. If, then, there is a strong emphasis on results, the argumentative discourse tends to lean toward an adherence by persuasion and, conversely, if there is a strong emphasis on giving reasons for possible results, the argumentative discourse tends to lean toward an adherence by conviction.

In my view, the new new rhetoric must favor conviction to the detriment of persuasion, must emphasize good reasons to the detriment of the production of results. Indeed, persuasion is a form of adherence that goes along with the automatic utopianism of modern technology, which is the ideal-typical expression of the subordination of reasons to results. If one of the major features of postmodern emancipatory knowledge is to offer a radical critique of such utopianism, it cannot do it through an argumentative discourse that will systematically undermine its purpose and, indeed, render it unconvincing vis-à-vis modern scientific knowledge. On the contrary, a rhetoric based on conviction-building will tend to contribute to a different balance between contemplation and action, and to a greater indetermination of action: two preconditions of a prudent knowledge for a decent life in a period of paradigmatic transition.

A Dialogic Rhetoric

The new rhetoric is based on the polarity, speaker-audience, and on the almost exclusive focus on the speaker. Surely, this polarity implies a certain dialogue between the speaker and the audience, in that the argumentation presupposes "a contact of minds," and in that, in order to be effective, it must start from the knowledge of the audience to be influenced by it. However, the dialogic dimension is kept at a minimum, and, indeed, it is accepted only to the extent that it is required to influence the audience. In other words, the relation, speaker-audience, has some family resemblances with the relation, subject-object. I would argue that the new new rhetoric must intensify the interstitial dialogic dimension of the new rhetoric and convert it into the regulative principle of argumentative practice. Ideally, the polarity, speaker-audience, will lose its fixity to become a dynamic sequence of reciprocal and interchangeable speaker positions and audience positions whereby the outcome of the argumentative exchange is truly unfinished: whoever starts as a speaker may well end as an audience and the direction of conviction is reversible. The "knowledge of the audience," which, as we saw, is a prerequisite of a successful argumentation, is multidirectional, and in the end it is the sum total of the knowledge of the different speakers. Through dialogic rhetoric, knowledge indeed becomes self-knowledge.

Under such conditions, the premises of argumentation (the starting points of agreement), be they *topoi*, facts or truths, are likely to be scrutinized and questioned more thoroughly than is assumed by the new rhetoric. New rhetoric implies that the premises of argumentation remain rather stable and durable. Not so for the new new rhetoric. *Topoi* must be confronted with opposite *topoi*, facts with counterfacts, truths with alternative truths. Particularly in the case of *topoi*, the polarity of the pairs of *topoi* must be made dialectical: *topos* played against *topos* as an argumentative device to invent new *topoi*, new arenas of shared knowledge and, potentially, of new argumentative struggles.

The Audience in Dialogic Rhetoric

The audience is the community seen from the point of view of the argumentative knowledge. The community envisaged by the new new rhetoric is the neocommunity mentioned above. New rhetoric assumes the audience, or the interpretive community, as a given. On the contrary, for the new new rhetoric, the audience is

permanently in the making. Rather than the 'other' of the speaker (the fixed point that makes the argumentative movement possible), the audience is the central source of movement, the constantly movable speaker-audience polarity. Rather than a fixed entity or a stable state of affairs, the audience is a social process, and the same is true of the relations and networks among audiences. For this reason, the new new rhetoric pays great attention to the processes by which audiences emerge, develop and die. It starts from a twofold assumption: that, in the capitalist world system, social reality cannot be reduced to argumentation and discourse, and that rhetoric is not inherently liberating.

Besides argumentation and discourse, there are also work and production, silence and silencing, violence and destruction. Without accounting for the dialectics between argumentative and nonargumentative moments, it is impossible to understand the social construction and destruction of audiences and communities.[103] Moreover, in the capitalist world system, audiences and communities are endowed with a translocal dimension through which worldwide consensus and conflicts interpenetrate with local consensus and conflicts. At the level of argumentative discourse, this takes place through constant position shifts in the speaker-audience polarity, and through constant questioning of the premises of argumentation. On the other hand, the emancipatory potential of rhetoric is premised upon the development of mechanisms to scrutinize the reasons why, under given circumstances, some reasons become better reasons than others, some arguments become more powerful than others. In sum, the new new rhetoric entails, as one of its constitutive elements, a sociology of rhetoric. With other concerns in mind, Gadamer advises us to analyze the interpenetration between the "universals" of rhetoric, sociology and hermeneutics.[104] In my view, the emergent paradigm of postmodern emancipatory knowledge calls for an undivided knowledge in which the three "universals" are combined.

VI. A TOPIC FOR EMANCIPATION: TOWARD A NEW COMMON SENSE

Modern science built itself against common sense, which it deemed superficial, illusory and false. The distinction between science and common sense was made possible by what I call the first epistemological break.[105] It distinguishes between two forms of knowledge: truthful knowledge and false knowledge. However opposed, these two epistemic entities entail each other, since one does not exist without the other. They are indeed part of the same cultural constellation that in our time gives signs of closure and exhaustion. In sum, common sense is as modern as modern science itself.[106] The distinction between science and common sense is thus made both by science and by common sense, but it has different meanings in each case. When made by science, it signifies the distinction between objective knowledge and mere opinion or prejudice. When made by common sense, it signifies the distinction between an incomprehensible and prodigious knowledge and an obvious and obviously useful knowledge. It is then far from being a symmetrical distinction. Besides, when made from the point of view of science, the distinction has a power that is excessive in relation to the knowledge that makes it possible. Like all specialized and institutionalized knowledge, science has the power to define situations beyond what it knows about them. That is why science can impose, as an absence of prejudice, the prejudice of pretending to have no prejudices.

I propose the concept of a *double epistemological break* as a way out of this stalemate. By the *double epistemological break* I mean that, once the first epistemological break is accomplished (thus allowing modern science to distinguish itself from common sense), there is another important epistemological act to perform, and that is to break with the first epistemological break so as to transform scientific knowledge into a new common sense. In other words, postmodern knowledge must break with the mystified and mystifying conservative common sense, not in order to create a separate, isolated form of superior knowledge, but rather to transform itself into a new, emancipatory common sense. Knowledge-as-emancipation ought to become an emancipatory common sense itself: beyond the conservative prejudice and the incomprehensible prodigy, a prudent knowledge for a decent life. Postmodern knowledge tries to rehabilitate common sense, for it recognizes in this form of knowledge some capacity to enrich our relationship with the world. Commonsense knowledge, it is true, tends to be a mystified and mystifying knowledge, but in spite of that, and in spite of its conservative quality, it does have a utopian and liberating dimension that may be enhanced by its dialogue with postmodern knowledge. This utopian, liberating quality may be seen to flourish in many different characteristics of our commonsense knowledge.

Common sense collapses cause and intention; it rests on a worldview based on action and on the principle of individual creativity and responsibility. Common sense is practical and pragmatic. It reproduces knowledge drawn from the life trajectories and experiences of a given social group, and asserts that this link to group experience renders it reliable and reassuring. Common sense is self-evident and transparent. It mistrusts the opacity of technological objectives and the esoteric nature of knowledge, arguing the principle of equal access to discourse, to cognitive and linguistic competence. Common sense is superficial, because it disdains structures that cannot be consciously apprehended, but, for the same reason, it is expert at capturing the horizontal complexity of conscious relations, both among people and between people and things. Commonsense knowledge is nondisciplinary and nonmethodical. It is not the product of a practice expressly devised to create it; it reproduces itself spontaneously in the daily happenings of life. Common sense favors actions that do not provoke significant ruptures in reality. Common sense is rhetorical and metaphorical; it does not teach, it persuades or convinces. Finally, common sense, in Dewey's words, fuses use with enjoyment, the emotional with the intellectual and the practical.[107]

These characteristics of common sense hold the virtue of foreknowledge. Left to itself, common sense is conservative. However, once transformed by postmodern emancipatory knowledge, it may be the source of a new rationality—a rationality comprised of multiple rationalities. For this configuration of knowledge to occur, it is necessary to duplicate the epistemological break. In modern science, the epistemological break symbolizes the qualitative leap from commonsense knowledge to scientific knowledge; in postmodern knowledge, the most important leap is that from scientific knowledge to commonsense knowledge. Modern

science taught us how to depart from existing conservative common sense. This is inherently positive but insufficient. Postmodern knowledge will teach us how to build up a new, emancipatory, common sense. Postmodern knowledge fulfills itself only insofar as it becomes common sense. Only thus will it be a clear knowledge that fulfills Wittgenstein's dictum: "whatever allows itself to be said, allows itself to be said clearly."[108] Only thus will it be a transparent science that does justice to Nietzsche's desire that "all commerce among men aims at letting each one read upon the other's soul, common language being the sound expression of that common soul."[109] By becoming common sense, postmodern knowledge does not shun the knowledge that produces technology, but does believe that, as knowledge must translate into self-knowledge, so technological development must translate into life-wisdom. Wisdom points out the markers of prudence to our scientific adventure, prudence being the acknowledgment and control of insecurity. Just as Descartes, at the threshold of modern science, acknowledged doubt rather than suffered it, we too, at the threshold of postmodern knowledge, should acknowledge insecurity rather than suffer it.

The emancipatory common sense is a discriminating common sense (or unequally common, if you like), constructed so as to be appropriated in a privileged way by the oppressed, marginalized or excluded social groups, and actually strengthened by their emancipatory practice. The neocommunity and neoaudience are not a mishmash of undifferentiated consensus and dialogues. They are a sociohistorical process which starts out with the minimal, immediate-local agreement on the premises of an argumentative discourse aimed at identifying colonialism as a specific form of ignorance. The construction of neocommunitarian emancipation advances as argumentation leads to ever-wider exercises of solidarity. This micro-utopian construction must rely on the strength of the arguments that further it, or rather, on the argumentative strength of the individuals or groups that want to bring it about. Moreover, it depends on the congeniality of the premises of the argumentation. This is particularly crucial in the case of *topoi*.

At a given point in time in any given rhetorical community, *topoi* express widely shared points of view. I have already submitted that, in the new new rhetoric, the stability and durability of *topoi* remain an open question, and the relations within the different pairs of *topoi* must be made dialectical. Moreover, because it entails a sociology of rhetoric, the new new rhetoric is concerned with the fact that the *topoi* reflect and constitute the dominant social relations in any given community or audience. The ensemble of *topoi*—the topic field—that at a given moment makes possible the argumentative discourse in a given community is thus conceived as a social field. In the new new rhetoric, the topic is a social topic.[110] This means, among other things, that the notion of common sense itself must be radically revised. Potentially, there are as many common senses as there are topic fields. Indeed, the topic field tends to be the commonsense core of a given rhetorical community. Of course, in any given culture or society, the different communities do not exist in isolation. Rather, they are networks of communities; the general *topoi* express what is common among them (shared points of view). Each community constitutes a topic field; the *topoi* of this field that are shared by other communities in the same network are the general *topoi*.

Because communities are social relations, and audiences are the argumentative setting in which such relations are constituted, neither communities nor audiences exist at random in any given social formation. Furthermore, the networks that they are likely to integrate are not completely indeterminate. In Part Three, I will suggest that capitalist social formations are shaped by six structural clusters of social relations which constitute the basic networks of communities existing in society. Such clusters or "places" are: the householdplace, the workplace, the marketplace, the communityplace, the citizenplace and the worldplace. The analysis of these structural places will be done in Part Three. Here it will suffice to say that, in capitalist social formations, there are six basic topic fields, six basic common senses, corresponding to the six structural clusters of social relations. Postmodern emancipatory knowledge starts from the assumption that emancipation will occur to the extent that, in these basic topic fields and in all the others they are connected with, the *topoi* that express dominant social relations are replaced by *topoi* that point to more free, equitable and liberating social relations. Emancipation cannot occur without a topic for emancipation. It presupposes, in the householdplace, the replacement of a patriarchal topic by a women's liberation topic; in the workplace, the replacement of a capitalist topic by an ecological-socialist topic; in the marketplace, the replacement of a topic of fetishistic consumption by a topic of radical needs and genuine satisfiers; in the communityplace, the replacement of a chauvinistic topic by a cosmopolitan topic; in the citizenplace, the replacement of a weak democratic topic by a strong democratic topic; in the worldplace, the replacement of a North topic by a South topic. Postmodern emancipatory knowledge is thus committed to developing a topic for emancipation in the different communities and their networks. It becomes common sense to the extent that emancipatory *topoi*, developed in a postmodern community, spill over to other communities and become general *topoi* in a given topic field. This will be the case, for instance, when the women's liberation topic, developed within the feminist movement, is accepted in communities networked around the householdplace, the workplace, the marketplace, the citizenplace, the communityplace or the worldplace. And the same can be said of all the other structural emancipatory topics. The wider the topic field influenced by emancipatory *topoi*, the greater the emancipatory common sense.

To focus on the need for an emancipatory topic implies that emancipation can only occur through shared meanings, through the convincing invention of new emancipatory *topoi*. It is inherent to argumentative discourse that such invention is never complete and never reaches a threshold beyond which it would be irreversible. Moreover, the transformation of reality to which it points must take place in the immediate relevant audience or community. In order to be successful, its micro-utopia or microfantasy must not lose sight either of those who will transform reality in that community or of the path they will follow to bring about transformation.[111] The general orientation for the creation of an emancipatory topic must be derived from the nature of the postmodern knowledge that underlies it. Postmodern knowledge aims at knowing colonialism as a form of ignorance, and solidarity as a form of knowledge. Solidarity is one of the basic concepts of the principle of community in the paradigm of modernity. The other two are participation and pleasure. The unfinished character of the principle of

community enables us to think of an emancipatory common sense based upon it. All of its three concepts must be called to the task.

Toward a New Ethical Common Sense: A Solidary Common Sense

I have already indicated how the liberal micro-ethics has become the dominant conception in the moral, practical rationality of modernity. It is an anthropocentric, individualistic ethics based on a very narrow conception of subjectivity. Confined to contiguous space and immediate time, the liberal ethics operates through a linear sequence: one subject, one action, one consequence. In our time, this ethics has become a disarming strategy in that it amply provides us with ethical criteria for minor acts, but denies us the ethical criteria for the major acts that result from the enormous capacity for action made possible by technology. Postmodern knowledge cannot build solidarity in the technological age except by developing a new ethics, an ethics not colonized by science and technology, like liberal ethics, but, rather, based on a new principle. In my view, this new principle is the principle of responsibility as developed by Hans Jonas in *Das Prinzip der Verantwortung*.[112] Since we live in a time when it is more and more difficult to determine who are the agents, the actions and the consequences, the principle of responsibility must not reside in linear sequences. This is one of the reasons why the neocommunity must be defined in a local-global and immediate-final link. The risks to exercise solidarity appear thus on a new scale; but so do the opportunities. The new principle of responsibility resides in the *Sorge*, the caring that puts us at the center of all that happens, and renders us responsible for the other, whether human beings and social groups, or objects, animals, nature and so on; the other may even be our own contemporaneity, but, increasingly, it will be the future, whose possibility we must guarantee in the present. The new ethics is neither anthropocentric nor individualistic; nor is it solely concerned with responsibility for immediate consequences. It is a responsibility for the future.

It is hard to develop an argumentative discourse around and in favor of such an ethics. Not only because it is counterhegemonic, but also because it is centered on solidarity with the future. Once the future is conceived outside the automatic utopianism of technology, it is very difficult to provide credible representations of it. The notion of progress, which is twin to the notion of the automatic utopianism of technology, is still so consensual that it functions as a *topos* in the argumentative discourse on the future. Rather than being an object of argumentation, it is a premise of argumentation. It is up to the new new rhetoric to transform progress from a *topos* into an argument among others, and to confront it with the argument of an alternative vision of the future based on a prudent knowledge for a decent life. The objective of emancipatory rhetoric is to intensify the argumentative strength of this alternative vision, and hopefully to convert it into a *topos* of a new and more solidary argumentative discourse. If the representation of the future thus conceived is difficult, the representation of the responsibility for such representation is even more difficult. As Jonas says, the fundamental responsibility is to create the possibility of responsibility.[113]

The new ethics must also put an end to the principle of restricted reciprocity upon which liberal micro-ethics is founded. According to this principle, rights can only be granted to those from whom we can demand corresponding duties. On the contrary, according to the postmodern principle of responsibility, both nature and the future have rights over us without corresponding duties.[114] Both the conception of the future as automatic technological progress and the mechanistic conception of nature are still prevalent *topoi*. The task of postmodern rhetoric in making credible the ethics of a prudent knowledge for a decent life is thus twice as difficult. These difficulties concern the problems of defining the subject of responsibility in nonindividualistic terms. If the individual seems too Lilliputian to be made accountable for collective consequences, present and future, the collectivity, taken as an undifferentiated whole, seems to be too abstract an entity to be able to "locate" responsibility. All responsibility is co-responsibility, but the problem is how to determine the correspondence between the amount of shared responsibility and the amount of consequences to be shared. The two amounts rarely match. The individual and the collectivity should be considered poles in a continuum, and criteria should be defined for sharing responsibility among the different social groups along the spectrum. Obviously the major difficulty concerns precisely the definition of these criteria.

Toward a New Political Common Sense: A Participative Common Sense

Forced as we are to venture into postmodern knowledge using, as a starting point, concepts and distinctions produced by modern knowledge (for example, economics/politics/culture/ethics), we might say that, in the same way that the solidarity dimension of the new common sense focuses on the latter's ethics, the participation dimension focuses on its politics. Though I will analyze this dimension in greater detail in Parts Three and Four, here I would like to outline the argument to be later developed. One of the processes by which the equilibrium between regulation and emancipation was tilted in favor of regulation consisted in the reduction of politics to a specialized, sectorial, social practice and in the strict regulation of the citizens' participation in such practice. As a consequence, large areas of social practice remained outside the citizens' participative intervention; on the other hand, the overdetailed regulation of authorized participation ended up turning the latter into the citizens' participation in their own regulation. Some myopic postmodernisms, by pseudoradically proclaiming the end of politics, are accomplishing no more than pushing to its utmost the process of depoliticization already at work in modernity. On the contrary, postmodern emancipatory knowledge aims at the global repoliticization of the collective life. Two guiding ideas are here at work. First, the hyperpoliticization of the state accomplished by modernity is the other side of the depoliticization of the so-called civil society. Confined to a specific sector of social action—the public sphere—the democratic ideal of modern politics has been neutralized or strongly limited in its emancipatory potential. Second, freedom is not a natural human good that has to be preserved against politics, as liberal political theory claims.[115] On the contrary, the broader the political

realm, the greater the freedom. The end of politics will always mean, in one way or another, the end of freedom.

Based on these two ideas, postmodern knowledge presupposes, along with Foucault, that there is politics whenever there are power relations. But against Foucault, it does not give up the task of structuring and grading power-forms and power relations. If power is everywhere, it is nowhere. The global repoliticization of collective life is not an undifferentiated whole. In Part Three, I will identify six major forms of power corresponding to the six topic fields mentioned above. Only one of them—domination, corresponding to the citizenplace—has been deemed political by modernity. The new political common sense demands that all the other forms of power be considered political.

This is, to my mind, the only way to bring the monopolies of interpretation to an end, and, at the same time, to ensure that the renunciation of interpretation will not necessarily follow. The new new rhetoric is also here confronted with a difficult task. The idea that politics is restricted to the citizenplace is one of the central *topoi* of modern political discourse. Modern social sciences and their applications in public policies and scientific popularization have contributed to consolidate this *topos* as a central premise in modern political common sense. The emancipatory rhetoric must start by questioning this premise, and by challenging the idea of restrictive politics, until the critical threshold is reached, beyond which the idea is forced out of the premises of argumentation and into the objects of argumentation. In my view, this is, of all the tasks of the new new rhetoric, the most problematic one, because the forces that argue for the renunciation of interpretation have, in this field, a particular argumentative strength sustained by conventional politics, mass media and mass consumption.

Toward a New Aesthetic Common Sense: A Re-enchanted Common Sense

Pleasure is the constitutive element of the aesthetic dimension of the new common sense. Modern science is a form of knowledge that claims to be disenchanted and unimpassioned. Distance-keeping methodologies—cold concepts, nonrhetorical rhetoric, literalization of metaphors, antipsychagogic postures, suppression of biography—are among the main argumentative strategies behind the disenchantment that supposedly guarantees the reproduction of the dualism, subject-object. Pleasure, passion, emotion, rhetoric, literary style, biography—are all likely to upset such dualism and, for that reason, they must be rejected. Even in Polanyi, for whom the "intellectual passions" are a tacit component of science, the passions provide the energy for scientific discovery without, however, contaminating the latter's results.[116] Pleasure has thus been expelled from scientific knowledge, and confined to two apparently incompatible spheres: mass consumption and the ideology of consumerism, on the one hand; and the autonomous work of art, on the other. Concerning the latter, it is important to stress, following Peter Bürger, that the autonomy of art, as it has been conceived since the eighteenth century, plays a compensatory, critical function in bourgeois society: its goal is to retrieve the totality and harmony of the human personality in a society dominated by the social division of labor, cognitive-instrumental rationality and utilitarian interaction. In order to be allowed to be an advocate for humanity in a society in which humanity cannot be fulfilled, art is "institutionalized" as autonomous. What happens is that this opposition to the utilitarian real world, which is the very condition for the critical function of art, at the same time prevents critique from producing real effects in the real world.

It is my contention that this isolationist and self-defeating autonomy of modern art shows the extent to which the subject-object dualism prevails not only in modern science, where it is most prominent, but also in modern art and in modern ethics (in the latter two partially as a result of their colonization by modern science). Modern rationality in general is based on a peculiar representation of the other that is indeed a creation and isolation of the other, called object, which the self, called subject, then describes as being what it is without any creative intervention by the self. Representation thus creates a distance; the greater the distance, the more objective the knowledge. In a recent analysis of seventeenth-century Dutch painting, Susan Sontag emphasizes the way the artist combines "the atmospherics of remoteness with accuracy of depiction, depiction of a real church from a real viewpoint, though never from a near one."[117] As a matter of fact, the real and the near have always been antagonistic in modern knowledge. Dewey is acutely aware of this when he says that "science is *about* in the sense in which 'about' is *away* from, which is *of* in the sense in which 'of' is *off* from."[118] Postmodern knowledge favors the near as a way of conceiving and seizing the real, even if the real is the global or the future. Only the embeddedness in the near, even if it is a new, unfamiliar near, can accomplish the re-enchantment of the world.

In a recent paper, Ernst Gellner declares himself, even if with some misgivings, disenchanted with the disenchantment thesis. This thesis states that the modern world's "Faustian purchase" of cognitive, technological and administrative power forces us to exchange our previous, meaningful and humanly responsive world for "a more predictable, more amenable, but coldly indifferent and uncosy world."[119] This is the well-known iron cage to which Weber has condemned us. Gellner, however, argues that the iron cage applied only to the emergence of industrial society. Today, as the working week shrinks and leisure expands, and as the activities requiring Cartesian thought diminish, we are, he says, leaving the iron cage and entering a rubber cage.

In my view, under the conditions of the current worldwide restructuring of capitalism, it is highly questionable that the working time has shrunk and the leisure time expanded.[120] Moreover, the rubber cage is still a cage. And a cage it will remain, as long as the dualisms, subject-object and culture-nature, maintain as conditions of knowledge. Such dualisms will boycott, more or less surreptitiously, the antifunctionalism and the anti-instrumentalism that are expected of an emancipatory knowledge. A new aesthetic experience must be offered against them. This experience cannot be reached through the easy way of aestheticizing the brutality of the present, such as it exists, but rather through the difficult way of re-enchanting all that in the world can be known, to prevent it from collapsing into the "clonic" future that the automatic utopianism of technology has in store for it; in sum, by re-enchanting all the local-global, immediate-final social practices that may be reasonably considered as partial trajectories from colonialism to solidarity.

The argumentative credibility of this experience will be difficult to achieve, particularly within the scientific community, where the *topos* of detachment and disenchantment is hegemonic, and where not even the intellectual passions of Polanyi are openly acknowledged. Here, postmodern knowledge may, as a transitional strategy, innovate by quotation, by recuperating and recycling degraded forms of modernity. For instance, we have been taught to consider Saint-Simon as the father of the theory of modernization and of the idea of converting science and technology into the great engine of progress, thereby gradually replacing politics by the administration of things. However, if we look at the way he conceived the new political system in 1819 to 1820, it becomes clear that, for him, the useful and the beautiful were inseparable. According to his vision, the first chamber of the House of Commons, called the Chamber of Invention, would consist of three hundred members, among whom there would be two hundred civil engineers, fifty poets and other literary inventors, twenty-five painters, fifteen sculptors and architects and ten musicians. This chamber would be in charge of formulating public projects, the most important of which would be what we would today call physical infrastructures. But he adds that "the roads and canals to be built should not be conceived only as a means of facilitating transport; their construction should be planned so as to make them as pleasant as possible for travellers."[121] As if fearing that this might not be totally clear or deemed important, he adds in a footnote:

> Fifty thousand acres of land (more, if it is thought right) will be chosen from the most picturesque sites crossed by roads or canals. This ground will be authorized for use as resting-places for travellers and holiday resorts for the inhabitants of the neighbourhood. Each of these gardens will contain a museum of both natural and industrial products of the surrounding districts. They will also include dwellings for artists who want to stop there, and a certain number of musicians will always be maintained there to inspire the inhabitants of the canton with that passion whose development is necessary for the greatest good of the nation.[122]

CONCLUSION

In this chapter I have analyzed modern science as undergoing a deep and final crisis. At the same time, I have presented a vision of a paradigmatic transition toward a new form of knowledge, which I have called postmodern emancipatory knowledge. My contention is that, just as modernity became a sociocultural paradigm before full-blown capitalism, a new sociocultural paradigm is now in the making, in spite of the fact that no transition beyond capitalism is identifiable for the time being. With the gradual transformation of modern science into knowledge-as-regulation, modernity has given up on taking the idea of progress beyond capitalism. Left to itself, capitalism, as a hegemonic mode of production, does not undergo transition toward anything else except toward more capitalism. The social invention of a new emancipatory knowledge is, to my mind, one of the preconditions to break with capitalist self-reproduction. Such an invention, I argue, is a long social process that is already under way. Its most visible marks lie in the radical epistemological critique and self-critique of modern science, which I have dealt with at some length in this chapter. Such a critique helps us to understand why modern science, previously the pansolution for all the problems of modern Western societies, gradually became a problem itself. The gradual transformation of science into a force of production neutralized its emancipatory potential and subjected it to the automatic utopianism of technology.

Once science found itself at the root of our social problems, our social problems assumed an epistemological dimension. They did not thereby become epistemological problems in themselves, but they became unsolvable because unthinkable by modern science. Hence the need for a critique of hegemonic epistemology and for credible inventions of new forms of knowledge. To this task I dedicated the rest of this chapter, identifying some traits of the emergent paradigm and of a new emancipatory common sense. Excavating into the unfinished and suppressed representations of modernity, we were able to come up with some adumbrations of unfinished emancipatory, postmodern possibilities. Indeed, nothing more can be expected from an insurgent epistemology. The means by which problems become thinkable as problems-with-possible-solutions have only remote family resemblances to the struggles needed to make such solutions possible.