

THE REGIME OF CASTES IN
POPULATIONS OF IDEAS

Nothing has yet been done, and, here, in the middle of the twentieth century, it is fast becoming too late to draw up a suitable catalogue of the works of human wisdom. We are forced to project for the future the complete realization of our desires. This future will no doubt discover a conscious and effective organization of thought and action—a constant good fortune in the pursuit of legitimate satisfactions through a total mastery of natural forces—in a word, a perfect and reciprocal adaptation between man and that part of the universe in which he lives. All this, or most of it, still remains to be done; but much has already been said in the five thousand years that men have been writing. An intelligent observer arriving from Sirius would doubtless be especially struck by the extraordinary gap separating here on earth what is so well said from what is so badly carried out. Or rather he would wonder how it is that beings as highly gifted as men, judging from the knowledge and wisdom they have accumulated, still make such ineffective and even harmful use of the means at their disposal. The most indulgent hypothesis would be to see in this the result of a

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temporary misunderstanding owing to the great speed with which human thought evolves. Our observer would resume his journey then, resolved to return after a hundred years or two, sure that he would then find that man had bridged the gap and become as great in what he does as in what he knows.

We, who do not yet possess Langevin's relativity fuse, cannot do likewise, and we have no choice but to attempt right now an analysis of the misunderstanding with a view toward placing ourselves in a position to propose solutions which may have a more rapid effect. We offer here some of the elements of such an analysis, limited to its first stage, that of thought itself. If, in fact, this thought could be organized or oriented in such a way as to make possible the reciprocal adaptation of man and his universe, there is no doubt that the adaptation would soon be realized. Man would consciously and with daring effectiveness take his destiny into his own hands instead of allowing himself to be ruled by phantoms inherited from the past or summoned up in dreams or in madness. The era of history, of tribes, of nations, and of cultures would come to an end; that of the exploits of man would begin.

Faced with the rich and luxuriant growth of human thought, we can perhaps attempt to follow the example of some of those great pioneers who cleared the way for science, such as Lavoisier, Linnaeus, or Rydberg. But note that, in citing these names, we are already making a hypothesis: Lavoisier recognized, classified, and conceptualized chemical species; Linnaeus worked with living species, and Rydberg with the rays of the spectrum. But, if they succeeded in this, it is because the objects to which they addressed themselves were governed by quantic laws, discontinuous laws, their reciprocal situations therefore being definable by fixed sizes, simple numbers, and precise words. This is also why it was possible later to give synthetic interpretations of the laws thus discovered through the application of a few great universal principles. Thus these treasures of measurement and observation amassed by the pioneers of research on the forms of matter, life, and light could be made intelligible. For us to hope, then, to make even the slightest approach toward success it would be necessary for the thoughts of man—the object of our study—to be themselves in more or less hidden fashion but nonetheless fundamentally governed by discontinuous laws.

Although we cannot demonstrate that this is indeed so, let us indicate at the outset several facts which would be incompatible with a contrary hypothesis. Thus speech and writing, faithfully symbolizing thought, form

discontinuous wholes. The mathematical entities most accessible are whole numbers, and the entire arsenal of concepts created by the almost diabolical power of abstraction of modern scholars is expressed in words, letters, and numbers. Moreover, the study of the functioning of the nervous system by physiologists has led to the discovery of multiple discontinuities: at the level of the fiber, the cell, of the nervous impulse itself, all of which result in quite similar shocks occurring more or less together in time. Our eye sees the infinity of forms and colors through the intermediary of discrete elements—music, to reach us, must pass through a finite number of resonators—even the texture of the most cobwebby of silks resolves itself into a rhythm. The continuity which apparently reigns in our perceptions of movement, time, qualities, finally in our consciousness itself, may well be but an illusion, like the one imposed upon us in the projection of a movie film.

Let us then accept this fundamental discontinuity. Let us treat concepts, perceptions, the memories and passions of the soul as defined beings, whose succession in more or less close groups constitutes the very movement of our thought; to simplify—and at the risk of causing some confusions, not serious ones—we shall include them all under the general heading of “ideas.” We shall admit that each state of consciousness allows of a certain number of ideas, each composed of a finite number of final elements, as a molecule is composed of atoms. We shall not actually attempt to perform this decomposition; it suffices for us that it is possible, since this automatically gives us the right to perceive in ourselves a population of ideas (as astronomers see populations of stars in galaxies), to classify the individuals composing this population according to their characteristic properties and to study the laws of their appearance, their disappearance, or their transmutations.

There is no lack of objections to such a hypothesis, principally, perhaps, that it is founded on the psychology of deaf-mutes. The absence of speech and of the crystallization of concepts called forth by words may, if it is too prolonged, give to the thoughts of those deprived a fluid and undefined character. They live in states of total consciousness within which they distinguish constant elements only with great difficulty. The case is often cited of the blind deaf-mute who, discovering after so long and thanks to the patience of her companion that “things had names” or rather symbols, entered only then into the world of human thought. Do the molecules and atoms which we referred to above result then from an artificial structure, imposed on our thought by the structure of speech? Let us reverse the

argument: Is our speech not a product of human thought and consequently adapted to its structure? It is, then, merely a matter of the degree to which the analysis is pushed. The molecules of thought, for the deprived or primitives considered, are very large and are not resolved into functions, characteristic groupings, or even atoms. They are nonetheless "objects" discontinuous though composite, as is shown by the use of "holophrases"¹ by certain peoples who show little evidence of evolution.

We shall examine farther on how one may conceive the evolution of human thought throughout its prehistory and its history. But, first, let us try rather to define and to delimit some categories as precise as possible in the multiple fauna in motion within us as we live several instants of conscious life. To permit such a "categorization," however, a principle of discontinuity is not sufficient; a principle of permanence must also be applied. One must be able to find, at various moments, the same individuals or at least their exact counterparts. Thus atoms and molecules endure and may be decomposed and reconstituted—plants reproduce and their heredity is preserved—spectral rays reappear in just a certain way whenever the necessary conditions are met. This is indeed what happens with ideas, though through a different process. The human brain may be represented as forming a terrain on which ideas may be imprinted and stored and without which they do not exist, since it constitutes their necessary support, the substance of which they are the form. Ideas pass from one to another of these brains by means of the communication of symbol gestures—speech or writing—and one may then consider the ensemble of the same ideas present in various human brains at a given moment as constituting a definite species, whose duration is as assured, but no more so, as that of a bacterial species like the *Staphylococcus*. Each man harbors in this way a population of ideas in which are found more or less numerous species and which are for the most part the result of communications come from other men. His brain is a Noah's Ark bearing the flora and the fauna characteristic of his ethnic and social group, his culture, able to pour out its contents upon the virgin soil which is youth. Not all members of the population are present together in the consciousness; they appear there according to the call of circumstances, from the memory in which they lie dormant. New ideas which are not of external origin may be the result of an operation of

1. Multisyllabic words designating precisely a very complex situation but entirely *sui generis* and not resolvable; that is, containing neither roots nor affixes used elsewhere. The best known example is "mamihlapinatapai," which, in Tierra del Fuego, designates the situation in which two persons look at each other, each hoping to see the other undertake an action which both wish for without being disposed to take the initiative.

mutation or hybridization deriving from other pre-existing ideas which do not, for all that, disappear from the population. If they are fecund, that is to say, communicable, these new ideas may engender, through contacts with other men, a swarming posterity. If new ideas appear, others disappear, but only when all their carriers have disappeared or else through total forgetting during conscious life—a very rare occurrence, like a pathogenous microbe which can disappear only when all carriers are cured or dead.² If man is not ordinarily cured of an idea—even though he rejects it for powerful reasons—he may still cast it out from his habitual thought and put it in hiding in those watertight compartments so ably perceived by Freud.

A precise hierarchy reigns within this population; orders of precedence appear and disappear as in royal courts or in society. Groups are constituted which assemble ideas presenting certain analogous characteristics, like families or ramifications among vegetables and animals, like castes among certain peoples. I propose to base this analysis on the distinction, among ideas, of four categories or great castes—as in ancient India, which separated priests from warriors, merchants from peasants. To symbolize them, we shall place them under the respective signs of Gods, Heroes, Men, and Beasts.

We shall begin—honor to whom honor is due—with the class of ideas which may be gathered under the general title of “faith,” a far-spreading class, since we shall place in it the ideas resulting from sentimental thought and artistic imagination as well as from a categorical imperative of traditional value, the intervention of an authority. Their essential characteristic lies in their immortality, and this is what leads us to their symbolical representation as “Gods.” These ideas are immortal because they are inaccessible to rational criticism and admit of no contrary proof. Once introduced into a brain, by that sort of inoculation which allows a man—through strength or ruse but with no chance of retreat—to gain entry into the mind of his neighbor (thanks to the spoken word or the written message), they can disappear only with the very disappearance of the men who carry them, whether they die physically or whether they become “other men” in their minds, adoring what they have consumed and vice versa. An idea

2. The objection will be raised that certain microbes may sometimes persist a long time outside carriers, for instance, in the spore state; but ideas, too, when they are written, subsist in total lethargy and resume their normal existence only through inoculation into a living brain.

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belonging to this superior caste is responsible to no tribunal, internal or external to him who bears it; it is sufficient that it impose itself on the mind and provide that feeling of certitude which is in fact “a truth”—and not “the truth”—and which transcends all argumentation.

If the ideas we have just studied have the characteristics of Gods, we may call the caste of Princes or Heroes that of philosophic ideas—abstract ideas forming part of rational theories be they metaphysical or ethical—in short, of those constituting systems of the world. Here the superb independence of the Gods no longer reigns. To maintain themselves, even to be accepted within the caste, these ideas must justify themselves before a severe tribunal, but a purely interior one, that of coherence and logic. Their development must be harmonious and satisfying, but all sully contact with matter, with the external world, is spared them. Of purely spiritual nature, they are not subject to experimental proof. Having satisfied the exigencies of the mind, these ideas in their turn become immortal. Only the oblivion of being forgotten, which is often the fate of the Gods, too, can get the better of them.

Let us pass for a moment to the other end of the scale of castes, where we find purely technical notions, those which are transmitted by tradition and apprenticeship and which are not at all based on a profound comprehension of the phenomena and natural laws they utilize. A “way of doing” may attain a high degree of precision and effectiveness and pass the repeated trial of experiment with flying colors, but its acquisition and its being put into final form will require innumerable attempts among which multiple failures pay for eventual success. This process of empirical selection is analogous to that guiding the constitution of living species; so we shall take as our symbol the Beasts. Their survival depends on the material success attached to them, and the tribunal judging them is external in nature.

Here, then, are an inaccessible superior caste, a noble caste which must justify itself before the mind, a manual caste which must prove its utility. But these two last conditions are not contradictory, and one may conceive of certain ideas as obliged to pass successively and victoriously before both judicial benches. These ideas which in the same symbolizing spirit we shall call Men, are then none other than scientific ideas. This time, in fact, the tribunal before which ideas and notions must find grace is a double one, combining the powers of interior criticism and those of the external test, whereas these two criteria are applied separately to philosophic ideas, on the one hand, and to technical procedures, on the other. A thought may

not be called “scientific” unless it accepts the task of satisfying both and of withdrawing in case of failure.

To take into account the rigidity of the four categories, it is sufficient to imagine that a sacrilegious revolution obliges the Gods to make material proof of their power over the external world, that is, to perform miracles on demand and under observable conditions, daily and usefully. They would also have to be required to lend themselves to the application of the principles of identity, of non-contradiction, of excluded middle, of sufficient reason, and then what would become of myths and mysteries? To make the test complete, it would even be necessary to place several Gods in competition. No, all this is unthinkable: the Gods must be left incorruptible to return intact to their Olympus or their Valhalla, there to remain forever—sometimes until they are finally and completely forgotten. We must also accept the fact that works of art lie outside all logical regulation and not try to impose upon them classifications, scales of value, or methods of measurement. The only test for faith, for feeling, and for art is subjective and direct; it asks the intervention of neither interior systematic analysis nor exterior world.

The same impression of impropriety would accompany any attempt to submit to experimental proof the beautiful spiritual constructions of philosophy—impropriety and utter waste of effort—as if one were to confront Hercules with a problem involving spherical mirrors. Faith justified even the absurd; internal evidence can justify the unverifiable. But the unverifiable must be content to remain so, under penalty of derogation and consequent mortality. Such are principles like the celebrated “Nature abhors a vacuum” or those which led the Greeks to describe, in project form, perfect curves, circles permitting the application of rational processes of our thought to concepts widely varied in nature, and to draw conclusions which lack often neither elegance nor formal solidity. One has but to re-read the Socratic dialogues to be convinced of this. But these thoughts must be carefully shut up in the interior world to which their very self condemns them. Any attempt to escape would deprive them of their heroic nature and expose them brutally to a test like the ordeal by fire or poison. It has been known to happen that utterly abstract logical constructions have suddenly found themselves chosen for this martyrdom and come out of it victorious: witness the case of non-Euclidean geometries. But what a terrible hecatomb would result if the whole population of beautiful “de luxe” ideas were forced to leave the Garden of Eden in which they

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promenade in embroidered robes and go to work for a living under pain of starvation!

Will you ask the blacksmith to expound the theory of cohesion of solids and to explain why two pieces of hot iron become fused together under the blows of his hammer? For centuries the farmer has been able to apply certain rules in the cycle of his labors, and, even if he has sometimes been known to attribute their effectiveness to the moon or the fairies, the rules have been no less suited to his use: the inner coherence of his thought has not been a matter of discussion. This is what brings the extremes of Gods and Beasts together in the species of arts and crafts. We ask the artist not to verify in his works the principle of non-contradiction but to create successfully around us objects corresponding to our own interior world, taking possession of this world and helping it to a self-expression which will enrich it and plumb the depths of its own meaning. We ask the crafts to create for us a world both obedient and sure; we expect them to be effective in their action on natural forces and substances.

The rigorous segregation of castes of ideas may constitute the foundation of a stable equilibrium on condition that the distribution be the same among all members of the human population in ideological contact with each other, a situation that exists only in a period of slow evolution. Each person then learns through tradition to which respective castes all the notions belong; he learns all the concepts contained in the tradition itself and, consequently, the most suitable way to handle each of them. Just as an endogamic (“isola”) group may be defined through its matrimonial traditions, so within a human population ideological groups may be defined through their characteristic distribution of ideas, for example, the “spiritist” group in modern societies, the “positivist” or the “determinist” groups. The encounter between two members of different groups on the level of the exchange of ideas leads to conflict and most often to the exchange of bullets—but to no lasting result. The Gods do not accept combat, or they show themselves invulnerable; the Heroes come out of combat justified by their admirable conduct, contemptuous of whatever blame they may have received. As for the Men, their conquests are not made during these unsuccessful skirmishes; they impose themselves by themselves, slowly, but once and for all. Let us give two examples. A fervent spiritualist organizes séances during which a medium causes flowers to materialize. These fall from the ceiling in little bouquets into the laps of those present. Alas, when picked up and examined, one bouquet carries the address of the florist, left there by mistake. Without batting an eye the

director of the séance explains that the medium is sometimes obliged to rely on the help of purchased flowers in order to save her strength, which is sorely tried by materializations. A God turns aside javelins by a mere flick of the wrist. A Hero scarcely interested in the outcome of an unfortunate combat has given his all for honor, and this permits him to conserve both his life and his caste. Thus when determinism, taken as ideological doctrine, was thrown out of the saddle by Heisenberg's relations of uncertainty, it found itself imprisoned in the atomic dungeon. Far from dying in his captivity, it has been able to institute for itself a realm in which it reigns unchallenged so long as it makes no attempt to extend its boundaries; it would presently find contact with external experience fatal.

Seeing what facilities are offered to the Gods—and to a lesser degree to Heroes and even to Beasts—one might be tempted to pity the poor scientific ideas, permanently subject to both interior and exterior tribunals. But it is precisely within these very tests that science finds its strength. The rigorous selection of concepts, theories, and principles has led to the constitution of a whole body of doctrines and a framework of laws embracing all parts of the universe, from the smallest to the largest, from the most fugitive to the most stable. The great innovation brought by the man of science is just this conjunction of two systems of screening, summing up the qualities of Beasts, effectively dealing with facts, and of Heroes, sublime in the realm of thought. That such a coupling is possible, without the criteria of one of the selections opposing itself in an irreducible way to those of the other, is the greatest marvel of this world.

It may be asked how the establishment of a basically restrictive arrangement can result in such a flight of new creations. First of all, as far as the interior tribunal is concerned and in all spheres of mental activity, too much freedom of imagination may result in sterility: the healthy role of limiting principles in the arts has been demonstrated many times over.

We must distinguish, however, the general interior principles governing the ideas which we have called Heroes and Men—that code of honor to which the Gods are not subject—from the narrower criteria stimulating successive waves of artistic creation, begun ever anew like those of the sea. For the principle of coherence figures among these general principles. On the other hand, new Gods always combat the old, even when they pretend to be making a synthesis among hereditary enemies like those political alignments which call themselves "Unity parties."

The new scientific theories have themselves sometimes seemed to com-

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bat their elders; but this is an illusion, and it is due to the fact that certain scholars, their minds led astray, thought that they discerned Gods in the new theories. There is no combat because the theories based on ensembles of fact die of themselves—somewhat voluntarily like the Samurai—when contradictions with new observations occur. If some of these theories still subsist it is only under an auxiliary title and because they permit (if I may so express it) a more simple administration of certain limited ensembles of facts.

No doubt the situation described here was established progressively, and the different modes of thought have appeared at various stages in the progress of civilizations. So it is probable that the earliest races to appear in the evolution of man employed scarcely any but technical thought, all their effort being directed to the most effective use, for hunting and fishing, of the raw materials offered in nature. The increase through successive steps of the potentialities of the central nervous tissue might then have led slowly developing humanity to build myths, if only through the projection of the affective and sentimental elements of family and tribal life on the external world of natural forces, of animals, and of plants. The earliest manifestations of artistic activity may have been more or less linked to these myths.³ No logical rigor was introduced in systematic fashion into the assemblages of thoughts, and the correspondence between phenomena observed and interpretations within, although very real and the object of considerable efforts, remained entirely symbolic and based on vague and superficial analogies. Since direct evidence brought forth an inner conviction that was total—faith or aesthetic satisfaction—no attempt at verification could even be envisaged. In the language of the present essay it may be said that the Gods and the Beasts, being the only ones in the presence of each other, reacted upon each other according to chance of circumstance and without any reciprocal integration.

We may wonder whether this stage is not the one which is in fact attained by superior animal forms. Who would dare to state that the dog and the monkey do not develop personal myths as they acquire technical skills during their lifetime? But the great, perhaps the unique, difference

3. We have seen that the Gods, who are not subject to systematic proofs, could make no progress. They appear, more or less powerful, and disappear in an almost unpredictable fashion. This is also true of schools of art, the oldest of which, the Paleolithic, offers us at the outset works which sustain any critical comparison we may wish to make. The same thing happens in our modern world, where it is possible to form with certainty a generation of technicians and scientific types, while the most meritorious and sustained efforts often fail to strike the spark of artistic creation.

separating them irreducibly from the most primitive of men is lack of communication—more precisely, communication of ideas through the exchange of symbols. This absence of fecundity in the ideas of animals, ideas which they can elaborate only individually, condemns them to remain rudimentary and in a way embryonic. The rich populations of ideas which we have called Gods and Beasts could appear, maintain themselves, and evolve only through the extension of their vital space from the individual to the family and then to the tribe, which conferred upon them an indefinite duration.

For many thousands of years the two modes of thought continued to evolve. The Gods—by which we mean primarily moral beliefs and values and art—in brilliant and erratic fashion, sometimes raised themselves to great heights, only to fall into depths of darkness. The Beasts—that is, the techniques determining the standard of living—rose slowly and unpredictably, but each time higher like a tide, in small successive waves. And suddenly, in the course of a few centuries, we see that a first revolution of the mind gave birth to rational thought, to logic, to inner discipline. It was at the time of “the Greek miracle” that the transformation appeared most clearly, which justifies the symbolism we have chosen, making the new kingdom that of the Heroes and the Demigods.

It would take the height of temerity to attempt an explanation. Let us be content to state that what happened was a revelation of possibilities, pre-existing but unused, rather than an invention—and we shall find this character in the second revolution as well. The logical steps of thought were not absent before the miracle, nor are they today among peoples primitive enough and distant enough to have missed the influence of classical rationalism. But what is new is the constitution of a coherent system of thought followed by the sudden proliferation of a new and vigorous race in the universe of ideas. Rational methods, too, were applied to all sorts of conceptual materials, with varying results. Certain of these materials were found in the domain of the Gods, to which the Heroes succeeded in giving a sort of justification before the interior tribunal.⁴ In other cases it was a matter of ideas which were abstract but well defined, in which may be recognized a true interior objectivity. Thus it was that philosophy and mathematics were established as independent activities of the human mind. Both provide those who practice them with occasion for great satisfaction,

4. A quite superficial justification comparable to that which we give, sometimes as an afterthought and because of the need for logic, to the obscure but irresistible impulses of affectivity.

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but they differ profoundly in the nature of their results. The results of the philosophers are generally neither concretely usable nor even universally accepted. While the principles and methods used are to be admitted by every rational mind, the concepts to which they are applied can scarcely be defined either rigorously or objectively. The works thus obtained through the application of precise tools to uncertain and subjective materials remain confined to the appreciation of individuals or of schools—their value is even at times purely verbal. They lack the great proof of experience, which their very nature denies them.

Only the geometers have succeeded in conserving, without the help of that experience and within the most extreme abstraction, a rigorous and universal value for their propositions; this is perhaps due to the fact that the conceptual materials to which they apply the methods of logic represent elements of precise structure, of truly interior objects, resulting from the very constitution of our own thinking system. They are thus in a position to apply a sort of experimental method, demonstrating that the propositions they reject *cannot be thought*. Their works, besides, have known the vicissitudes of the experimental sciences, from which the works of the philosophers are drawn: the age-old controversy concerning the Euclidean postulates which was finally resolved in the acknowledgment of the legitimacy—accepted at length by the whole body of the scholarly world—of the steps of non-Euclidean thought, is a magnificent example of this. The demonstration of concrete utility for experimental sciences did not pass for naught in a good number of these conquests of the mind.

The exuberant development of the three forms of thought—Gods, Heroes, and Beasts—developments independent of one another, produced up to the end of the Middle Ages an accumulation of mystical works,⁵ logical and empirical. It was then that the second spiritual revolution occurred, accompanied by an extraordinary and sudden change whose consequences are still only beginning to be felt. The Heroes, tired of extending themselves in sterile efforts to justify the Gods, turned toward the Beasts—and, from their commerce with the latter, Men were born. The adamant tool of logical thought was applied to objective materials which had up to then been given over entirely to a strictly limited empiricism. And the miracle occurred—the second miracle, after that of the birth of pure thought itself. Matter resounded clearly under the hammer's blow and

5. Works of art, which are in the religious, sentimental, or sensual realm, are here included in the mystical group, since they are linked to the search for direct contact between beings, whether human or divine, and since they are independent of all rational logic.

began to shine with a thousand facets, as abstract methods elaborated for the pure joy of the mind found themselves adapted to phenomena of physical and organic nature. The reign of science as a whole, at once theoretical and experimental, began.

We have attempted a schematic view of the present, then an indication of how its historical genesis might be imagined; we have still to prophesy for the future. Will the four populations of ideas persist, or shall we witness the disappearance of some of them and the appearance of new species? Let us practice what we preach and remain "men," not playing at prophecy; following the habitual method of the sciences, let us examine the current tendency and effect a careful extrapolation. The result is something like the following.

The Gods, as good immortals, will survive all storms. But certain of them will be lost in the nirvana of being forgotten; they are the ones which claimed to have some influence in the world of external realities, those which science regularly routs from their successive positions of retreat. It is enough for me to recall the notion of the "vitalists" that they could prevent the chemists from artificially manufacturing compounds called "organic," considered by them as the special property of a transcendent vital force. But, with the synthesis of acetylene, Berthelot inaugurated the magnificent series in which, after imitation of the substances produced by life, thousands of others have been wholly created. Vitalism took refuge in alcohols, in sugars, then in proteins and nucleic acids. But biologists already know how to decompose into simpler groups and recompose at will some of those large half-living molecules which are called "viruses." The electronic microscope and chromatography give promise of a physical and chemical analysis of chromosomes. All the strongholds of vitalism are falling; it will not die, since immortality is its special privilege, but its place in the realm of shadows and memories is ready and waiting. Others of the Gods, those whose kingdom extends to tastes, feelings, and emotions, are too necessary, too inherent, in our deepest nature, not to prosper. The best loved, as I have called the arts, will continue to dazzle us by their strength and their constantly renewed variety. There is, besides, a large part in our life which we shall doubtless never be able to wrest from the total domination of the Gods. I mean sleep and its cortege of dreams. Here reigns an almost complete independence between events (fictional but giving rise to memories) and the feelings which accompany them. Besides, dreams are subject to no form of criticism and cannot be unmasked throughout the duration of their presence within us. Only true awakening

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re-establishes the tribunals, and these are then quick to judge and condemn to execution the poor dreams, fallen Gods standing naked before us like the emperor in the old tale. Assimilating the dreams of sleep to those of poets and mystics, it has been said that science, whose arrival constitutes a veritable awakening of man, was going to chase faith and beauty from his life. Not at all from his inner life, as we have seen, but rather from his knowledge of the world and the considered action resulting therefrom.

We may go further and admit that each of us, though in most variable fashion, can be prey to thoughts belonging to the four castes described here. Sometimes one of the categories dominates or even rules almost alone. But often several of them may co-exist simultaneously in our consciousness, with all their characteristics. Some of the most distinguished minds divide their inner life among several domains, separated into watertight compartments. They think as believers, as scholars, as metaphysicians, or as artisans according to the nature of the subjects occupying their attention, or whether they are in the church, the laboratory, the library, or at the workbench. Some have, on the contrary, attempted to break down the dividing walls and to "reconcile" science and religion or, more modestly, to apply a rational logic to articles of faith. The considerations here presented show that such efforts are senseless. A peaceful coexistence, however, may be successfully established and may assure a happy balance on condition that the frontiers be carefully watched. One may only ask about the real identity of the thinking being who passes from one population of ideas to another. In the meaning of the present essay, everything happens as though it were each time a matter of *another man*, *other* in the line of his thoughts, *other* in the sequence of his actions.⁶

Returning to our predictions, we can foresee that science will pursue its conquest in all fields of nature, making intelligible all its mechanisms and conferring upon awakened humanity a power constantly increasing. For everything that can be considered objectively, even in our interior world, must at length enter into the great edifice built by the Men. Peaceful coexistence with the Gods will be assured by the limitation of this edifice to the subjective aspect of all things, emotional, sentimental, or artistic. The Beasts will profit from the progress of the Men because each technique,

6. Here I cannot resist the pleasure of recalling the story of Cauchy, a fervent Catholic, discussing his theory of the functions of a complex variable with his father-confessor. The latter spoke dazzlingly of the satisfactions Cauchy would have in finally knowing the full truth of these things when he appeared before God. "I shall learn nothing new," answered Cauchy, "for I have given the complete solution." And then there is Laplace's answer to Napoleon, who asked him what place he had assigned to God in his cosmogony: "Sire, I have had no need of that hypothesis."

born of science, no longer needs in everyday practicality to refer to the nobility of its birth and can pass without danger into the patrimony of habits and traditions, even into that of reflexes. We may predict that the Gods will capture some Beasts from time to time, thus transforming techniques into rites. The beneficial aspect of this smuggling is found in the profit it brings to the arts.

Doubts have occasionally been cast upon the ability of scientific method to extend indefinitely its field of application. It is certain that our brain is constituted of a limited number of cells, ten billion or so, and that this arithmetical limitation cannot fail to entail a limitation in the complexity of thinkable structures. As a matter of fact, this limitation is less serious than it would be if our brain existed in isolation; thanks to the many-tracked communication established among thinking men, we enjoy a considerable broadening of our intellectual capacity. This is also true for those indirect communications represented by the taking of knowledge from the written, viewed, and heard documents which are multiplying with such dizzying rapidity in the modern world. The extension of this capacity and especially of the speed of its utilization (promised through electronic machines) must also be considered. However, the limitation is real, and we must recognize in all honesty that a living species endowed with a brain ten times richer would easily resolve many of the enigmas and difficulties which hold us back, some of which will no doubt always hold us back. It is probable that the mathematicians will first sound the alarm, not because they will have encountered precise limits to their capacity for thought—since the limits themselves must be “unthinkable”—but perhaps because they will realize that they are revolving around certain difficulties without being able to achieve direct contact with them. A two-dimensional being living on a sphere might recognize, for example, that his geometry is not plane and that there must therefore be an interior and a center to his world, but he would still be unable either to make a representation of it or to approach it. While awaiting this discovery, which the future may perhaps hold in store for us, science will, however, encounter no definitive limitation and will pursue its brilliant career.

It is in pure rational thought that the evolution which we here foresee will cause the greatest trouble, that is, among the Heroes—at least for those who are not geometric. After their splendid role in the birth of Men, nothing will again appear worthy of their ambitions. It was always a great temptation for the philosophical members to become Gods—at the price, alas, of abandoning their own code of honor. Such betrayals are still pro-

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duced before our eyes, and they are the occasion of grave spiritual crises.

On their scientific frontier it is rather by progressive attrition that the real domain of philosophers has shrunk, their classical subjects becoming “scientized” one by one. In recompense, philosophers can borrow from the sciences certain notions, certain new concepts, to nourish their own works: evolution, probability, potential, field, and so on. But, when the conceptual materials of their thought are all defined objectively and through universal agreement, we shall be able to say that these Heroes, having accepted the discipline of Men, came to swell the cohort of the latter, thus engaging themselves resolutely with Men in the greatest adventure of all time.