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Three centuries separate us from Descartes: three centuries of uninterrupted and ever quickening progress that utterly transformed the framework and the conditions of human existence.

Three centuries, especially three centuries of progress, are a long stretch of time—long enough to throw back into the dead past most of the subjects and some of the problems that stirred the minds of our forgotten ancestors of three hundred years ago. And yet nobody, when reading Descartes, will feel that he is dealing with dead texts. On the contrary: they are still living and sparkling; we can still enjoy the deceptive simplicity and apparent carelessness of the Discourse; we can still learn something of value from the carefully veiled intensity of the Meditations. Philosophical progress has not made them obsolete, as scientific progress has made obsolete Descartes's Meteors and large parts of his Dioptrics.

Philosophy—we must frankly confess—moves slowly, and makes little progress. It deals with simple things. It deals with being, with knowledge, with man. The questions it asks, moreover, are simple questions: simple, and therefore permanently alive; simple, and thus immensely difficult to grasp. It follows that the attempts of great philosophers to solve these simple questions remain important, and 'modern', for hundreds and even for thousands of years. Thus what is living in philosophy extends as far back as the history of philosophy itself: there is no thought, perhaps, more alive today than that of Descartes.1 Except, of course, that of Plato.

1Edmund Husserl's phenomenology is a conscious revival of the Cartesian tradition; the cogito of Descartes contained more than he himself was aware of.
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Yet, in spite of this perennial aliveness of philosophical questions and answers—or because of it—no philosophy, at least no authentic one, can be 'abstracted' from its context in time. Not only does philosophy speak the language and use the concepts of its time—as it must in order to be understood by its contemporaries—it grows from the deepest reflection on the specific, burning problems of the age. Thus it belongs to an epoch and shares its climate and its background, and these we must study in order fully to understand the philosopher's message. It is therefore first of all to the spiritual climate and mental background of the beginning of the seventeenth century that we must turn our attention.

The Renaissance had brought with it an unprecedented enlargement of the historical, geographical, scientific image of man and the world; a chaotic and fecund effervescence of new ideas, and of old ideas renewed; the revival of a forgotten world and the birth of a new one; the self-assertion of man aware of his might, his freedom and his dignity; a joyful admiration of the colourful multiplicity of things. But these had as their counterpart a spirit of criticism which first undermined, then finally destroyed the old beliefs, the old conceptions, the traditional truths that had enabled mankind to find certainty in knowledge and security in action. These processes are, as a matter of fact, inevitably bound together: human thought starts usually with negation and polemic, and the new truth establishes itself on the tomb of the old.

This applies particularly to the thought of the sixteenth century. It attacked everything: it undermined everything; and nearly everything crumbled: the political, religious, spiritual unity of Europe; the certainty of science together with that of faith; the authority of the Bible as well as that of Aristotle; the prestige of the Church and the glamour of the State.

Deprived of his traditional patterns and rules of judgment and of choice, man finally feels himself lost in an alien and uncertain world, a world in which nothing is certain and everything is possible. Little by little, doubt stirs and awakens. If everything is possible, nothing is true. If nothing is assured, the only certainty is error.

The disenchantment which succeeded the magnificent effort of the Renaissance is not an invention of modern historians. Thinkers of the Renaissance—Agrippa, Sanchez, and Montaigne—amply attest it in their own day.

As far back as 1527, having passed in review all the fields of human knowledge, Agrippa announces the uncertainty and vanity of human wisdom. In 1562, having submitted to a searching and careful examination our very faculty of knowing and reaching the truth, Sanchez reiterates and even reinforces the conclusion: Nothing is known. Nothing can be known. Neither the world, nor ourselves. And finally, Montaigne sums up: man lacks certain knowledge, for he lacks true being.

The case of Montaigne is particularly illuminating. In point of fact, that great sceptic accomplishes his destructive work despite himself. What he really had set out to destroy was superstition, prejudice and error, the narrow-minded fanaticism of private opinion that offers itself for truth and without reason claims for itself an exclusive right. It is not his fault if his radical criticism wins a pyrrhic victory and leaves him with nothing in hand: in an uncertain world where everything is possible no distinction can be drawn between truth and mere opinion. Having gone so far, Montaigne tries to turn round, tries to perform the Socratic inversion, the classical strategy of philosophy at bay.

He abandons the external world—uncertain object of uncertain opinion—and tries to fall back upon himself in
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order to find in himself the foundation of certainty, the firm principles of judgment—that is, of a discriminating
discernment between the true and the false.

For this reason he proceeds to study, to describe, to
analyse himself: in the world of his own being, ' fluctuating
and changeful ', he looks for the firm foundation which
would substantiate the norms of judgment. Alas! he
finds nothing but perpetual change, instability, void.

Montaigne—and that is his greatness—acknowledges
his failure. He accepts himself for what he is, or for what,
at any rate, his bold attempt has revealed him to be. He
does not attempt to conceal the results—he is too honest,
too lucid, too fearless. For him, there is no way out of
the maze. We have to accept things as they are. It is
useless to try to go back, to try to restore the veil of illusions
that has been torn away: we have to renounce the hope
with which we started. We have to abide by doubt.
This is the last word of wisdom. The Essais are by no
means a treatise of despair. They are a treatise of
renunciation.

And yet, scepticism is not an attitude that can be
easily sustained in life. In the long run it is intolerable.
We must not deceive ourselves: the ' soft pillow of doubt ' that
Montaigne offers to us is very hard. Man cannot
abandon, once and for ever, his hope of encompassing
certainty and ' assurance of judgment '. He cannot
renounce the quest of truth.

Thus, against the sceptical trend that culminates in
Montaigne a threefold reaction takes place: Pierre
Charron, Francis Bacon, Descartes. In other words:
faith, experience, reason.

Pierre Charron—who was only the most outspoken and
honest of contemporary religious thinkers—does not
indeed have much to oppose to Montaigne; no more per-
haps than the clear recognition that the situation revealed
by him is, in the full sense of the term, unbearable for man
and finally leads to despair. If human reason cannot reach
absolute truth, so much the worse for it. Yet, perhaps, so
much the better for us who can establish ourselves on the
firm rock of faith that even Montaigne did not shake.

The sceptical criticism has, it is true, undermined the
foundations of scholastic philosophy and theology, de-
stroyed the bases of traditional proofs of religious and moral
truths. This, after all, is not surprising: natural reason, the
reason of man, an ephemeral and fallible being, is not made
for certainty. We possess it in order to be able to muddle
through in this life, not in order to apprehend Being or God.
Sceptical criticism is, therefore, self-destructive: the
proofs of the theologian (existence of God, immortality of
the soul, and so on) are worthless: but the reasons
marshalled against them have just as little value. Thus
to the uncertainty of natural reason Charron opposes the
supernatural certainty of faith.

The sceptical fideism of Charron had, in his day, much
less success than it has in ours. People who had not been
troubled in their faith did not need him. As for the others,
they wanted proofs and not an appeal to authority. As
Descartes has so neatly said in his Epistle to the Doctors of the
Sorbonne, ' though it is absolutely true that one must
believe in God because it is so taught in the Holy Writ, and,
on the other hand, that one has to believe in the Holy Writ
because it comes from God . . . one cannot, nevertheless,
propose this to the infidels [Descartes means the sceptics
and libertines] who might imagine that in so doing one
commits the fallacy which the logicians call a circle '.
Thus the Wisdom of Pierre Charron did not put an end to
the sceptical trend. Quite on the contrary; it became its
text-book.

Pierre Charron was a churchman. Francis Bacon was a
statesman. His chief interest is not religious truth and
the eternal destiny of man in the other world—this is a matter of faith, of supernatural revelation which is outside the realm of man’s reason—but the progress of knowledge and of useful inventions, the temporal destiny of man in this world. He is concerned not with blessedness, but with well-being. Thus it is not in an appeal to some transcendent authority, or in a return to the wisdom of the ancients, but in the achievements of the present and the promise of the future, that he seeks a remedy and guidance for his time.

Sceptical criticism is accepted and even perfected by Bacon: nobody has better classified the types of human errors, the fallacies and idols of our mind; nobody has more successfully uncovered their roots and their origins, natural as well as social, particular as well as general; nobody has less confidence in the spontaneous and unfettered exercise of our reason.

Human reason, discursive, theoretical reason, is not only perverted and diseased, but is in itself fallacious, weak, unstable. But the cure is at hand: not to try to use reason where it cannot be used, and for purposes for which it is unsuited. We are endowed with reason not for the sake of speculation or of spinning out theories about things that are beyond our reach: we possess reason for the sake of action. For man’s essence is action and not mere thought. Thus it is in action, in practice, in experience, that man finds the very foundations of knowledge, of the only knowledge that is available and important to him. Theoretical reason is fanciful and chimerical. It runs wildly astray whenever it leaves the firm ground of experience. Thus we must not allow it to wander at will; we must shackle or enchain it by precise and numerous rules of procedure, we must restrict and restrain it to its only legitimate use, the empirical one. Experience, then, is the remedy that Bacon offers to mankind. The Novum Organon has no other goal than to set against the sterile uncertainty of reason left to itself the fruitful certitude of well-ordered experience. And Bacon’s challenging work On the Advancement of Learning is a reply, as much by its title as by its contents, to the disillusioned work of Agrippa.

The Baconian solution was a tremendous success. Unfortunately it was a purely literary and social one; for, as a matter of fact, this new science—an active, operative, experiential science that the herald of the new learning announced to the world—was not produced by him. And nobody, not even Boyle and Hooke, was able to fulfil the promise, for the simple reason that it was quite impossible to do so. Pure empiricism does not lead us anywhere—not even to experience; much less, of course, to experiment. An experiment, indeed, is a question we put to nature. It presupposes, therefore, a language in which we formulate our questions; in other words, experiment is not the basis of theory, but only a way of testing it. Science does not result from an accumulation of facts; there are no facts that do not imply concepts. It was because he did not understand this, and wanted to follow the order of things and not that of ideas that Bacon failed in his attempted reformation of the intellect. Unlike Bacon, Descartes fully understood it. Going beyond common sense and classification (which Bacon aimed at just as intently as Aristotle), he followed the order of ideas, not that of things. It was for this reason that the Cartesian revolution succeeded.

II

From Descartes’s point of view at any rate, the sixteenth-century landscape is completely dominated by the sceptical element; and among the influences that Descartes has to contend with in the first place, that of Montaigne is paramount. There were, of course, Aristotle and the
Scholastics: yet, for Descartes, they have not the overwhelming importance that historians (myself included) have so often attributed to them; they have to be replaced, not fought against. Montaigne, on the other hand, is not to be set aside, but to be used and absorbed. Thus, Descartes not only opposes Montaigne, he learns from him; he is his best pupil.  

It is obvious that Descartes considers Montaigne perfectly justified in his destructive criticism of the false scholastic rationalism and of all the 'superstitions', 'preconceptions', and 'prejudices' that clutter up the mind and obscure its natural light. The fault of Montaigne, in Descartes's opinion, is not, however, that he is too radical; on the contrary, it is that he is not radical enough. The only way to deal with Montaigne is to go beyond him. It is because Montaigne was too timid that he could not find the way out of the labyrinth; and it was because of Descartes's own fearless decision not to stop, not to yield, but to pursue his way to the end, that he succeeded in breaking through into the realm of pure mind—a realm which Montaigne could not reach; and thus, whereas Montaigne stopped at the finitude of the human soul, Descartes discovered the fullness of spiritual freedom, the certainty of intellectual truth, the reality of the infinite God.

The Discourse on Method, which could be called the Cartesian Confessions or his Itinerarium Mentis in Veritatem, his Journey of mind towards Truth, is simply the story of this successful break-through. It is a reply to the Essais. To the sad story told by Montaigne, the story of a defeat, Descartes opposes his own, the story of a decisive victory.

I will not attempt to follow, step by step, this pilgrim's progress. Yet I would like to point out some moments of this eventful, and yet uneventful journey; and, first of all,

1 Cf. Léon Brunschvicg, Descartes et Pascal lecteurs de Montaigne, 1944

at the starting point, the utter deception, bewilderment, and discouragement of the young graduate of the world-famous Jesuit school of La Flèche.

He had been a good student; he had been told that he must study 'letters and arts' because 'by means of them one could acquire a clear and assured knowledge of all that is useful for life'. He believed this and had worked as hard as he could. Yet now, being 'admitted among the ranks of the learned', he finds himself 'embarrassed by doubts and errors' and forced to recognise that 'there was no such learning in the world as he had been led to hope'.

Much of this teaching was not, indeed, completely worthless. 'Languages'—he means Greek and Latin—'are necessary for the understanding of ancient literature . . . the gracefulness of the fables stimulates the mind . . . the memorable deeds related in historical works elevate it and help to form one's judgment if they are read with discretion . . . Eloquence has points of incomparable strength and beauty . . . poetry contains passages of entrancing sweetness and delicacy; mathematics contains very subtle inventions . . . theology teaches how to attain heaven . . . philosophy enables one to talk plausibly on all subjects and win the admiration of people less learned than oneself . . . jurisprudence and medicine . . . bring honours and wealth to those who cultivate them.' All that, undoubtedly, was not without profit. Still, it was something quite different that had been promised him: he had been made to hope for clear and certain knowledge; a knowledge indispensable in order that he might judge and direct himself in life. In short, he had been promised both science and wisdom. But he had been cheated, having been taught neither.

As a matter of fact, of all that he had been taught, nothing was indispensable. And, apart from mathematics,
nothing was certain, nor even clearly useful. Thus, to
read ancient literature, to learn fables, to study history,
all this doubtless enriches the mind, but may also pervert
it. This is so because 'fables make one imagine various
events as possible when they are not'; as for histories,
even the most truthful never present us with things
as they really were. They cannot therefore 'form our
judgment', that is teach us to distinguish truth from
falsehood. On the contrary: they lead us to forget the
distinction.

Eloquence and poetry are, undoubtedly, beautiful. But
neither of them can be taught. They are natural en-
dowments of the mind, not fruits of study. In order to
convince people, one must speak to them clearly so as to
enable them to understand easily; one must not heap upon
them a mass of rhetorical figures. Plain speech is the best
rhetoric.

Philosophy employs very subtle reasonings, and yet is
it not true that there is 'nothing so strange and incredible
that it has not been said by some philosopher'? 

As for theology 'that teaches us how to attain heaven',
is it not a completely superfluous science, since 'the way
there is no less open to the most ignorant than to the most
learned'? Is it not, also, a very dubious 'science'? For
'revealed truths...are above our intellect' and,
therefore, 'to undertake an examination of them'
obviously 'requires for its success some extraordinary aid
from heaven; one would have to be superhuman'.

Mathematics alone found some recognition 'because of
the certainty and self-evidence of its reasonings'; a very
limited recognition, as a matter of fact, because not
understanding its essence and true use (which is to nurture
the soul in truth and to open the mind to the knowledge
of the Universe), and believing that it was only the sub-
servient means of the mechanical arts, the pre-Cartesian

world did not succeed in building anything worth while
on its firm and solid foundations.\(^1\)

Thus nothing, or almost nothing, in scholastic science
appeared to be of any value whatsoever. Small wonder!
Is it not true that all sciences receive their principles
from philosophy? And is not philosophy itself a realm
of confusion, uncertainty, and doubt? Small wonder
therefore that from this first wave of scepticism which
submerged Descartes and swept away the inherited
certainties of his time, only two things emerged and
were saved from disaster: belief in God, and belief in
mathematics.

Let us note this. It is of great importance. As a
matter of fact, Descartes will attempt in his metaphysics
to link together these two certainties, and in such fashion
as to make them support each other.

Nothing, now, is left over from the wisdom of humanism:
wisdom without science is no more acceptable to Descartes
than science without wisdom, for, as he tells us himself, he
has 'always had an extreme desire to learn to distinguish truth
from falsehood in order to have clear insight into his actions and to
proceed with assurance in this life'.

III

The preceding pages describe the state of mind of the
youthful Descartes when, in 1618, he set out for Holland.
He did not go there to study, though we find his name in-
scribed on the register of the University of Franeker; but
dreaming of a military career, of adventures, of battles, of
conquests, he went there, as did many a spirited youth
of the seventeenth century, in order to take service in the

\(^1\) Thus Descartes considers that his reform of mathematics has not
the aim of making it useful, but, on the contrary, of giving it theoretical
value.
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army of Maurice of Nassau, the most famous captain of his time.

The military career of Descartes seems to have been a failure. In any case it did not last long. He was not of the stuff that makes good soldiers. He probably could not bring himself to follow his own prescription for action—to abide by a decision as if it was the right one (though knowing that it was not). But believing, as he himself remarks elsewhere, that to act well, we have to know that it is for ever. Indeed, it would be marvellous if from our birth we had solid worth and importance, as the old councillor, Pierre Descartes, was of another opinion when he said that his youngest son was not good for anything but to be bound in buckskin (n'est bon qu'à être relé en peau).

1 A happy failure for which we have to thank God. Yet Descartes's father, the old counsellor, Pierre Descartes, was of another opinion when he said that his youngest son was not good for anything but to be bound in buckskin (n'est bon qu'à être relé en peau).

2 [See below, Private Thoughts, p. 3.—Ed.]

cities built by successive generations, in contradistinction to those that are the work of one man. Thus in order to bring clarity and system into the sciences the best thing to do was to make a clean sweep and begin anew.

Scarcely a modest enterprise. But modesty had never been the chief virtue of one who could doubt everything, but never had any doubt about his own ability.

But, continues Descartes, to achieve such clarity would be difficult, because ' as we were all children before we were men', and as our minds in the process of education have become impaired and burdened by many confused ideas, ' it is impossible for our judgments to be as clear and as firm as they would be if we had had the full use of our reason from the moment of birth and had never had any other guide '.

Indeed, it would be marvellous if from our birth we had been in full possession of our powers of reason, not the reason that we have now, perverted as it is by tradition and cluttered up with all kinds of prejudices and errors, but of the pure and essential reason, such as we may assume Adam to have had on the day of his creation by God.

The idea is not new. It comes from Cicero, who probably had copied it from somebody. But among all those who had previously expressed it, none, not even Bacon (though he, too, mentions it), had taken it seriously; no-one had made it the basis of a plan of action. Nobody but Descartes, who, quite seriously, endeavours to restore to our reason its ' native ' purity, and thereby to bring human nature to its highest degree of perfection, and who, in order to do so, decides that ' as to the opinions that I had so far admitted to belief ' he must ' reject them bodily', and put into his mind ' other, better opinions, or even the same ones when once I had made them square with the norm of reason '.

Or, as the first rule of the Discourse on Method enjoins us, he decides ' never to accept anything as true if I had not evident knowledge of its being so; that is, to accept
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only what presented itself to my mind so clearly and distinctly that I had no occasion to doubt it.

IV

Let us pause here for a moment; we have reached an important, indeed a decisive point: the very point of decision, the starting point, at least according to Descartes, of all philosophical thinking. It is a deep intellectual, or even more a spiritual revolution, bringing with it a new science and a new metaphysics, that these prudent and reticent phrases of the Discourse announce to us.

Every man needs, at least once in his life—and mankind, of course, needs it too, though not only once—to get rid of all his accustomed, accepted ideas, to destroy and to throw away all his beliefs and all his opinions, in order to submit them all to the judgment of reason, and the control of truth.

Now this is the method and, at the same time, the remedy that Descartes offers to us. The method, that is, the way, the only way that can lead us to truth; and the remedy, that is, the treatment, the only one that can cure indecision and doubt.

We have to get rid of all our ideas, to renounce all our opinions, to make ourselves free of all blindly accepted tradition, to reject all existing authorities: only thus can we hope to regain the native purity of our reason and to reach the certainty of truth. A formidable task? Alas! there is no easy way to truth.

1 Descartes knows the virtue of prudence quite well; he does not want to share the fate of Galileo and so many others. Thus he sometimes wears a mask; _larvatus prodeo_ are his words about himself (see below, Private Thoughts, p. 3); and if he says what he thinks, he does not always say all that he thinks, but only what he thinks fit to be said.

2 The Meditations present it as a kind of spiritual exercise in which we have to train ourselves for a long time.
square with the norm of reason'—by what means shall we try them? Surely by means of reason; for now that our reason has been stripped of all the false ideas that had 'obscured' its natural brightness, it has recovered its 'native perfection', so that it will now be capable of distinguishing between truth and falsehood. The fog of uncertainty has been blown away and the natural light can shine forth unclouded.

But how shall we proceed? The sceptics have taught us that whatever is in the least obscure and confused is uncertain and doubtful: we shall stand this salutary teaching on its head, making it our principle that whatever is doubtful is so because it contains elements of confusion and darkness. Thus we shall assay and try our ideas by doubt. Doubt itself will be our touchstone: and any idea that the acid of doubt affects will thus be recognised as false metal, or at least as an alloy of poorish quality. As such it must be rejected, and we shall keep only those ideas which doubt is unable to touch; that is to say, those ideas that present themselves to our mind so clearly and so distinctly that we have no occasion to doubt them.

Now if doubt is the acid which dissolves and destroys error, it is clear that we shall have to make it as strong as possible; only thus can we reach the assurance that its aqua fortis will yield us in fine the pure gold of truth.

The sceptic will be beaten by his own weapons. He doubts: let us, then, teach him to doubt. Our doubt will not be, like his, an unhappy and purely passive state of indecision and wavering; quite the contrary, it shall be an action, a free and voluntary action that we will pursue to its limit. Doubt, a passive state; and doubt, a willed activity: the difference between those two 'doubts' is deep and far-reaching; as I have just pointed out, the sceptic, Montaigne, submits to doubt as its slave, through weakness, whereas Descartes employs doubt as his tool.
science, a body of knowledge in which it proceeds in a clear and orderly way, from the most simple things to the most complex constructions. Thus the Cartesian method, the method that Descartes tells us he formed by putting together the best of what he had found in the 'three arts or sciences' that he had 'studied a little when younger' (i.e., logic, the analysis of the ancients, and the algebra of the moderns) will be devised on the pattern of mathematics.

We will not, of course, be able simply to borrow from the mathematicians their modes of reasoning and to apply them, just as they stand, to other realms and other objects of knowledge. For, although among all those who have so far sought for truth in the sciences, only the mathematicians have been able to find some demonstrations, that is, some certain and self-evident reasonings', we have to acknowledge, nevertheless, that their methods, or more exactly their techniques, remain strictly adapted to their subject-matter—a subject-matter which is highly abstract and apparently useless—and as for the Analysis of the ancients and the Algebra of our time '... the first is always so restricted to the considerations of figures that it cannot exercise the understanding without greatly wearying the imagination, and in the latter there is such complete slavery to certain rules and symbols that there results a confused and obscure art that embarrasses the mind instead of a science that develops it'. The first thing to do, therefore, will be to attempt a reform of mathematics itself. We shall have to generalise its methods, or, more exactly, to disentangle and firmly grasp the very essence of mathematical reasoning, the spirit that animates the unfolding of these long chains of perfectly 'simple and easy reasonings by means of which geometers are accustomed to carry out their most difficult demonstrations'.

This true essence of mathematical reasoning, a reasoning quite different from the purely syllogistic or logical one, consists in the fact that the mathematician, irrespective of the particular nature of the objects of his study, be it a geometrical construction or a numerical equation, strives to establish between them strict and precise proportions and to link them together by a series of well-ordered relations.

The finding out or establishing of relations, and of an order between the relations, is, according to Descartes, the very essence of mathematical thinking, a kind of thinking in which reason (ratio) implies, or even means, ratio or proportion; the ratio and proportion which determine an order and evolve into a series. The new science, which is at the same time a new logic which gives us the pattern of intelligibility and the true norm of reason, is the mirabilis scientia of relations and order.

These concepts of relation and order form the base of the Cartesian reform of algebra (as well as of the algebraisation of geometry and arithmetic). And it is the rules of this relational, algebraic thinking that form the basis of the apparently innocuous and even banal rules of the Discourse, at least the last three, which enjoin us 'to divide every problem into as many parts as feasible and as requisite for its better solution' (which means that we have to break up every complex relation or proportion into as many simple relations or proportions as possible); 'to direct our thoughts in an orderly way, beginning with the simplest objects, those most apt to be known, and ascending little by little in steps, as it were, to the knowledge of the most complex' (which means that we have to start with the most simple relations or equations, those of the first degree, and build up, step by step, and in order, relations or equations of superior degrees), 'establishing an order in...

1 The first rule, that which instructs us not to receive anything as true so long as we do not clearly see it be so, expresses the general requirement of the catharsis of the mind by doubt.
thought even when the objects had no natural priority from one another (which means that we have to interpolate intermediate terms between the extreme ones on the assumption that they can all be linked together in a series). And finally, to make, throughout, such enumerations and such surveys that we can be sure of leaving nothing out (which means that we have to take care not to leave one of the terms, or unknown factors, of our problem without a relation to others, and that we must have as many equations as we have unknown factors).

It is perfectly clear that this Method, those rules which Descartes tells us he had conceived on that winter day of 1619, was devised only very much later, just because it does nothing else than formulate (in a rather cryptic manner) the modes of reasoning developed in the Geometry. It is obvious that Descartes, in his Discourse (in spite of his assertion to the contrary), shows us the way that we must follow, and not the winding and difficult path he had trodden himself. But neither the exact date of the great discoveries, nor that of their formulation, really matter: it is certainly true that his first intuition of them, his dream of a science that would be genuine wisdom, dates from far back, from 1619, from the time when alone in his stove-heated chamber, Descartes discoursed with himself about his own thoughts.

V

I shall not attempt to retrace here, step by step, the history of the progressive development of Descartes's thought. I shall imitate his example and present it as it appears in its mature state. It is dominated by the idea of the unity of human knowledge and at the same time of its limits. The unity of mathematics follows from the fact that identical methods, the methods of the new algebra, can be applied as well in geometry as in arithmetic, to number as well as to space, that is to realms traditionally opposed to each other, discrete and continuous quantity.

The application of identical methods implies or means identical acts of the mind; which in turn reveals to us that it is not the objects—numbers, lines—that matter, but those acts or, rather, operations of our mind that link the objects together, compare them to each other, measure them by each other, and thus establish between them a serial order; an order of dynamic production (and not of classification, like the static order of genera and species in scholastic logic) in which each successive term depends on the preceding one and determines that which follows. Now if this is true, if it is the operational order that matters, the order which the algebraical formula discloses and presents to us in its intellectual unity, and not the objects that embody and exemplify it, then it is obvious that by means of these formulae every spatial relation can be transposed into a numerical one, and vice versa; or, at a deeper level, that every algebraic formula can be translated into the language of numbers and of lines. And it is obvious, too, that it is this science of order which supplies the foundation of rational knowledge, and this because it is reason in being, because in it our mind studies only its own acts, its own operations, its own diaphanous relations to itself.

Now, as science is nothing else than mind differently applied to objects, it is clear that in order to build up the universe of truth, of knowledge, we have to find out the simplest and clearest ideas of these very objects, and ascend from these, step by step, and in an orderly way, to things ever more complex. This is so because everything that can fall under human knowledge, forms a sequence... and,
so long as we avoid accepting as true what is not so, and always preserve the right order for deduction of one thing from another, there can be nothing too remote to be reached in the end, or too well hidden to be discovered. It is by following this way, that is by starting with the intuition of ideas and not with the perception of things, and by following the order of composition inherent in our mind, that we shall be able to find out the true order of sciences, an order that is now perverted and hidden, and that we shall see grow and unfold itself into the magnificent 'tree of knowledge', a tree of which philosophy is the root, physics the stem, and morals the fruit.

Descartes did not develop his ethics, though he gives us clear enough indications as to the kind of morals he would have built up: a morality of freedom, of generosity, of duty towards the general good of mankind. But he did develop his physics, a physics that is, at least in principle, nothing else than applied mathematics, or mechanics; a physics based on the clear and distinct ideas of extension and motion, a physics that reduces all material being to an endless interplay of movements, governed by strict mathematical laws, in the uniform space of the infinite Universe.

It is probably because he has a glimpse of this 'tree' that, as he tells us in his *Cogitationes privatae*, he was on 16 November 1619 filled with great enthusiasm: indeed, he began to 'understand the foundations of a marvellous science'.

But what were these foundations? Descartes tells us, *Sunt in nobis semina scientiae*; the seeds of knowledge are in us*. This means that our mind is not a *tabula rasa* which has to receive everything from outside by the channel of sense-perceptions; on the contrary, we have *in ourselves* the foundations and the principles of science and knowledge, which is the reason why our thought, turning back upon itself, will be able to develop, in a luminous order and in perfect security, those long chains of reasons that the *Discourse* speaks to us about.

The seeds of knowledge are in us: that is the deep reason why the Cartesian endeavour is not a chimera, the reason why we can, and must, attempt to disencumber our reason of all the contents that it may have received from outside in the course of our life. These 'seeds of knowledge' or, as Descartes will call them later, thus rediscovering the deep intuition of Plato, 'innate ideas', 'eternal truths', 'true and immutable natures', purely intellectual essences that are utterly independent of the contents given to us by sense-perceptions, concepts that the rigorous catharsis of radical, methodical doubt does reveal in our soul: these are the firm and sure foundations—which Montaigne was not able to discover—upon which we can base our judgment.

Yet a question or two remains. The foundations and the method of science are firmly established. But it is *human* science and it is on *human* foundations that we are building it up. Human science, the science of a weak and, in any case, of a *finite* being, necessarily has limitations. Though the 'chain of reasonings' extends *in infinitum*, we must stop somewhere. And even though extended beyond our reach in its indefinite progress, this chain cannot reach infinity. Infinity is beyond our grasp. Thus it is forever beyond our power—and this applies to any finite intellect—to comprehend, that is, distinctly to understand, either the infinitely great or the infinitely small. Our mind will never be able to embrace the infinity of space; nor the composition of even a finite line. And yet we perfectly well know that the space of the Universe is also infinite, just as the number of points present in the line is infinite. The idea of the infinite—this, by the way, is one of the greatest discoveries of Descartes—is a clear and
positive and therefore a true idea. But it is—for us—an indistinct one. The consequence is that all the questions that involve infinity are beyond our science. We cannot deal with an infinite number of factors nor with an infinite number of algebraic equations. Yet, unfortunately, there is certainly, even in the field of mathematics, an infinite number of objects that imply this infinity. Thus, for instance, there are all the lines that the ancients called 'mechanical' (and we 'transcendental'). We cannot deal with them algebraically and therefore, concludes Descartes, somewhat hastily identifying his science with science, they will for ever remain outwith the scope of truly scientific knowledge. From this it follows that in the realm of physics—physics is nothing else than mechanics, that is, in principle, applied geometry—there will be a number of objects, of motions, of mechanisms, which we deal with an infinite number of factors nor with infinite, that will not be able to analyse completely into their constituent components. This is, perhaps, not so very important; for all physical objects are either motion or produced by motion, and motion is something that we understand perfectly well. But there is more: even if we do not take account of those patterns of motion that transcend our understanding, but consider only those that do not, we are bound to recognise that there are too many possibilities; many more, doubtless, than are realised in fact in the world. Deduction is not univocal; there are many ways of tracing

1 Cartesian science is by no means opposed to observation and experiment. On the contrary, it necessarily implies and requires it. We know that God uses a mechanism, but we do not know which one of all the possible mechanisms He has decided to use. As God is perfectly free in His choice, we have only one means to ascertain it—observation and experiment.

2 Cartesian ideas are representations in our mind of objects that are not in the mind.

3 Such is the case for ideas of sense-perception.

4 We can have clear ideas of objects that do not exist in rerum natura, thus, for instance objects of geometry, squares, circles, straight lines; and even objects that cannot exist: as, for example, the idea of a rectilinear movement that is perfectly impossible in the real world.
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The distinctness of an idea makes it valid for our mind. But how can we be certain that the real world conforms itself to the demands of our reason? Could it not happen that the real was, on the contrary, something obscure and irrational, something which reason cannot penetrate and make clear?

Now it is on the basis of the clear and distinct ideas of our mind that Descartes has banished from the real world—the world as it is in itself, independently of ourselves and of our reason—all sensible quality, all 'form', and all 'force', in short everything that is not mechanical, and has declared them 'mere appearance'. He has thus destroyed the well ordered, rich and colourful Cosmos of ancient and medieval science, substituting for it a new image or conception of the Universe, mere extension and motion, an image more strange and much more incredible than all the fables ever imagined by the philosophers. Has he really the right to do so?

Thus we see that the inner development of Cartesian science leads inevitably to the formulation of the epistemological question concerning the very foundations of this science; and the discovery that the clear and distinct ideas are found, or are, in ourselves, in our minds, brings with it the necessity of asking ourselves, 'what am I?' and, 'how is it to be explained that "I" am endowed with these ideas?' Where do they come from? and, where do "I" come from?—questions that clearly belong no longer to epistemology but to metaphysics; questions that, for the seventeenth century, can only be formulated as questions about the soul and about God.

It is no more probable that Descartes ever seriously doubted the existence of God than that he ever doubted the value of mathematics. Descartes is a deeply, and sincerely, religious mind. But just as he could not accept uncritically the validity of mathematical concepts, so he was unable to accept on pure faith the traditional belief in God. He needed certainty and for him there is no certainty without proofs; and by proofs, he did not mean such proofs of God's existence as those that had been devised by medieval (and modern) scholastics; these are worthless, and the unbeliever (the sceptic) is perfectly right in refusing to accept them as valid. All of them are based upon a false philosophy, and even upon a false logic. As a matter of fact, no-one is more convinced than Descartes is of the futility of all the traditional 'proofs of the existence of God' or of the necessity of finding out better ones at least as clear and as demonstrative as the best demonstrations of geometry.

It is because Descartes demands proof that Pascal reproaches him. Pascal, of course, is perfectly right in one sense—and perfectly wrong in another. Absolutely right, for the reason that Descartes's God is not a God 'felt' by the 'heart', but a God demonstrated by reason, or grasped in an intellectual intuition. Descartes's God is not the God of Abraham, Isaac and Jacob, the God of prayer and grace, the God of salvation from sin, who, having created the world for man and man for Himself, follows and leads, with passionate interest, the destiny of mankind and especially of those human beings He has chosen and called to Him. The Cartesian God is an infinite Being that gives being to everything that is in His world. And His world is the infinite Universe where the Earth and Man play a very small part, and where every creature has just

1 The Cartesian question is by no means superfluous or obsolete. Most of the difficulties of contemporary science proceed from its neglect of a metaphysical foundation.

1 Cf. supra, p. xvii.

2 The logic and the ontology of finiteness.

3 The concept of 'sin' is not a philosophical concept, and no more than that of the 'fall' does it play any role in Descartes's thought.
as much right as man to consider itself the centre and aim of creation. He has given us being, reason and freedom. If we use them badly we fall into error. If we use them well, we shall reach the truth, and know God. We cannot and must not ask for more; we must not rely upon the common rhetoric of preachers. They are playing their part. But their part is not ours.

Once more Pascal is right. Descartes's God is a 'philosophical God'. Yet, what else can a philosopher's God possibly be? As a great philosopher said long after Descartes, philosophy must not be edifying, philosophy must be true.

Descartes's religion is certainly not that of Pascal, but why should we measure Descartes by Pascal's standards? We could, just as well, or even far better, do the opposite. Yet it is a religion. And the God of Descartes is God and not a pale and lifeless abstraction. He is even the Christian God, as nobody can doubt who has read the texts Descartes left to us.

Here is the text of his youth. In his Cogitationes privatae, which I already have had occasion to quote, he notes: Tria mirabilia fecit Dominus. Res ex nihilo; liberum arbitrium; Hominem Deum: 'The Lord has made three marvels: things out of nothing; free will; and the Man who is God.' It is rather curious and rather significant, this choice of the three marvels, that is, of irrational, or better to say supra-rational, things created by God. As a matter of fact, all three have something in common: in all three the infinite unites with the finite. Thus, God's act of creation, which places the world at an infinite distance from Himself, overcomes the infinite chasm that separates even finite Being from mere Nothingness. God's Incarnation unites His infinity to man's finitude; finally, freedom of will, or of choice, is a realisation of the infinite in the finite. Freedom, indeed, even that of a finite being, is essentially, in itself, infinite.

Later on, in his mature years, in 1645, writing to Princess Elizabeth, his pupil, and probably the great love of his life, Descartes says: 'the first and principal intuitive truth is that there is a God upon whom all things depend, whose perfections are infinite, whose power is immeasurable, whose decrees are unfailling'. Moreover, the idea of God is an *innate idea*, an idea that pertains to the very nature of man and is an essential possession of his mind. As a matter of fact, one could, according to Descartes, define man as the natural being that has an idea of God.

And in between, in the years when he was at work at the foundations of his science and his philosophy, in 1630, he writes to his friend Mersenne: 'I consider that all those to whom God has given the use of reason are bound to employ it principally in order to endeavour to know Him and to know themselves. It is thus that I have tried to begin my studies.'

It has often been pointed out—by others as well as by myself—how near this text is that of St. Augustine: *Deum et animam scire cupio*; 'I desire to know God and my soul'. And it is undoubtedly true that it was the teaching of St. Augustine with its Platonic tradition that inspired Descartes and nourished his opposition to the Aristotelian scholastics. Yet it would be wrong to present Descartes as a mere disciple of St. Augustine, and to minimise the difference, or even the opposition, between them. This because the text of St. Augustine that I have just quoted continues: *Nihilne plus? Nihil omnino: 'Nothing more? Nothing whatever*'; whereas Descartes goes on to say: 'and I will tell you that I could not find out the foundations of physics if I did not search for them in this way'.
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It is enough for St. Augustine to know this God and his soul. But Descartes is not satisfied; he needs a Physics, a knowledge of the real world in order to be able to act and to direct himself in life, a knowledge that will make man master and possessor of nature and will give him the power to order and freely determine his very existence. And it is in order to put this science, whose 'foundations' he has discovered, on a firm and secure basis that he develops his metaphysics and turns his steps towards God. Here as elsewhere the Cartesian search is the search for assurance of truth. Here as elsewhere the Cartesian way is the way of insight and freedom.

VI

Metaphysics is the science of that which is. And of our knowledge of that which is. In order to be able to build it, and thus give a firm basis to physics as a science of the real world, we have to find a point, at least one, where our knowledge grasps the real, or, better still, where our knowledge, our judgment coincides with the real. And, in order to reach that point, we have to make use once more of the method of doubt, and to make it even more radical and more exacting than the first time.

That first time, when we tried to make a general critical survey of all our ideas, we made a halt when confronted with the 'clear and distinct' ones. Mathematics was accepted by us as indubitable. Now we shall go even further. Our doubt will encompass mathematics itself.

We shall proceed with the most extreme, the most pitiless rigour. The mere possibility of error shall be deemed good reason to condemn a whole realm of knowledge. Thus we shall condemn sense-perception and imagination, and, because of hallucinations and dreams, deny completely their claim to apprehend the real. We shall condemn reasoning and even intellectual intuition because we err sometimes in performing the simplest operations of arithmetic and geometry: that which deceived us once could deceive us always. And we shall reject the claim of clear and distinct ideas just because it is this very claim that is in question.

We shall revive all the old arguments of the sceptics and even devise new reasons to doubt. We shall adopt the almost Manichean hypothesis of a powerful and malignant spirit that deceives us always and everywhere! Which means that always and everywhere we are immersed in error.

Still, even if I err everywhere and always, even if all my ideas and all my judgments are false, is it not necessary that I myself, I who err or am deceived, should be or exist just in order to be able to err, or to be deceived? And moreover, even if all my ideas are false, it is certain, nevertheless, that I have these ideas. It may be, of course, that just now I am dreaming, that nothing of all that I see and hear exists in rerum natura; it is possible even that nothing exists at all, and there is no world, that I have no body, that all that is, is illusion. Still I have this illusion, I am conscious of it, and therefore I cannot doubt that I am.

The certainty of 'I am', the clearness of 'I think' (I am conscious) resist all the assaults of doubt. No deception can creep into them. The judgment 'I am' condemn reasoning and even intellectual intuition because we err sometimes in performing the simplest operations of arithmetic and geometry: that which deceived us once could deceive us always. And we shall reject the claim of clear and distinct ideas just because it is this very claim that is in question.

1 Of course if we were always deceived by a malignant spirit, we would not be able to know it.

2 The term 'thought'—pensée, cogitatio—had, in Descartes's time, a much wider meaning than it has now. It embraced not only 'thought' as it is now understood, but all mental acts and data: will, feeling, judgment, perception, and so on. The terms cogitation and to cogitate, that are commonly used in the seventeenth and eighteenth centuries, have, unfortunately, become obsolete; thus we have in most cases to render 'thought' by 'consciousness'. [See also below, Translators' Note, p. xlv.—Ed.]
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is true every time that I make it; it is equally true every
time that I make any judgment whatever; every time that
I doubt or err. The ' I am ' is implied or, more exactly,
enveloped in all my judgments, in all my thoughts, in all
my acts or states of consciousness. Thought, consciousness,
implies and encloses being: ' I am ' is an immediate
consequence 1 of ' I think ' or ' I am conscious '.

Thus I think, I am conscious, and I am. But what am I? The answer is clear; simply a being that thinks (i.e. is
conscious), that doubts, affirms, denies, and errs. Which,
of course, means a being imperfect and finite; one, moreover,
that knows it is imperfect and finite. Yet how could it
know that, that is, how could it have that clear
intuition of its own essential finitude and imperfection if it
did not possess in itself an idea of something infinite and
perfect? In other words, how could it have an idea of
itself if it had not, at the same time, an idea of God?

Indeed, Cartesian logic has taught us that the prime and
positive idea, the idea that the mind conceives first of all
and by itself, is not, as is commonly held (and as is taught
by the scholastics) the idea of the finite but, on the contrary,
the idea of the infinite. It is not by negating the limitations
of the finite that the mind builds the negative idea of
infinitude; it is by introducing a limit, that is a negation,
into the idea of infinitude that we form the idea of finitude
(the non-infinite).

The traditional logic is misled by language that gives a
negative designation to a positive idea (and vice-versa).
But language, as often as not, and even more often than not,
is deceptive. It is made by and for common use; it is
based on images. It is not the embodiment of genuine
thought, of a thought clearly conscious of its own require-
ments. This thought, Cartesian thinking, starts with the

1 A logical consequence, not an ontological one. ' I am ' follows
from ' I think ' because ' I think ' implies ' I am '.

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infinite, the perfect. It conceives infinite space before it
inscribes figures in it. It conceives God before proceeding
to understand man. 1

Thus, as Descartes told Princess Elizabeth, we do have
an idea, and a clear one—of God. True, the vulgar, and
the scholastic theologians, will deny it. As a matter of
fact, they are not completely wrong; actually they do not
have a clear idea of God but only a very confused one.
Neither do they have a clear idea of themselves, that is,
of the mind. Yet this is only because they do not know
how to use their reason. They did not go through the
strenuous catharsis of criticism and doubt that alone can
restore the understanding to its pristine perfection; their
ideas, therefore, are not clear and distinct intellectual
intuitions but confused and obscure mixtures of imagina-
tion and abstract thought. Thus, though they have them
de facto in the depth of their souls, they cannot actually
grasp them because they are covered over by all the shadows
that darken the natural light of their souls.

For us, for Descartes, it is different. We have cleansed
our minds; we enjoy, therefore, the actual possession of
the idea of God: for us the relationship between being con-
scious of oneself and being conscious of God is self-evident.

I cannot analyse here the technical structure, nor the
sources, of Descartes's proofs of the existence of God. 2 Yet
I fear that their value, for the modern reader, may be
obscured by the scholastic garb with which they are clothed.
I will try, therefore, to hint at the deep intuition upon
which they are based—the intuition that my being, that is,
the existence of a being conscious of himself, involves the being of
God—and to retrace the main steps of Descartes's
demonstration.

1 This implies the rejection of the traditional via affirmationis of
scholastic theology and opens the way to Spinoza.
2 C.f. my L'Idée de Dieu et les preuves de son existence chez Descartes. Paris,
1923.
We have already seen that ‘I think’ (I am conscious), which implies ‘I am’, involves ‘I think God’; which means that the idea of God is an innate idea, an idea that belongs to our very essence. Moreover, it is a clear and simple idea; it is even the clearest and simplest of our ideas, though, of course, just because of its infinite perfection and richness, it is not a ‘distinct’ one. Now, the idea of an infinite and infinitely perfect being, where does it come from? From myself? Of course not; it is much too perfect. How could a finite and imperfect mind produce an idea that so much surpasses its power that it cannot even comprehend it distinctly? The mind that produces an idea must be at least at the same level of perfection as the idea that it produces. It is clear, therefore, that no finite being, be it ever so much more perfect than ourselves, can produce this idea. Only an infinite being, that is, God, can produce the idea of God. Only God could have given it to us. Accordingly we can conclude: God is thought of; therefore God exists.

We could start with being instead of with consciousness, with the ‘I am’ instead of the ‘I think’ (I am conscious): our consciousness, indeed, is that of being, of our existence, of the existence of a finite and imperfect being. It is obvious that I am not even able to maintain myself in existence: if I could, I could prolong my existence at will. But I cannot extend it even to the next moment: from the fact that I am now I cannot infer that I shall still exist in ten minutes, in ten seconds and so on. My existence is given to me only now, in this instant. Moreover, my own essence, or nature, does not contain any ground, or reason, or cause, even for this instantaneous existence. Thus my being, so to say, is by no means my own.

It is clear that for Descartes ‘being’—which implies reason, ground, cause of existence, power to maintain

1 This rules out the powerful deceiver.

oneself in it—is not a passive enjoyment of a state, but an active, dynamic exertion of a power, of a potency to overcome the chasm of nothingness which, at every moment, is threatening to engulf us. To be, in the full meaning of the term, in its absolute meaning, is to be causa sui, the cause of oneself. This is not our case. Thus we must admit that our being is received from elsewhere, from another being. Yet no finite being could possibly give existence to, that is create, a being such as we are, a being possessing an idea of God, without himself having this idea. Therefore this finite being, which would be the source, or cause, of our existence, would be in the same situation as ourselves: he too would be obliged to receive his being from elsewhere, because, if he could give existence to himself and be causa sui, he would certainly give to himself all the perfections of which he has an idea, that is, he would make himself absolutely perfect. In other words, he would make himself God.

Thus it is only from God that a finite being can receive existence, and it is only God’s continuous action—Descartes calls it continuous creation—that can maintain it in being.

We may, finally, proceed more directly. Our idea of God, a clear and true one, is that of an infinite, infinitely perfect being. As a matter of fact, we have only to analyse it and we shall see, as clearly as we see the truth of any geometrical proposition, that to its perfection pertains not only existence but this self-same absolute sovereignty of being which was implied in the descriptions ‘cause of oneself’ and ‘giving existence to oneself’. God’s essence implies this existence, and because of that, it is impossible to think of Him as non-existent. It would be to conceive of an imperfect perfection, a finite infinite—a contradiction in terms.

The absolute sovereignty of God’s being implies and explains His absolute freedom and absolute omnipotence.
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He created the world freely. He could, if He chose, abstain from creation. And He could, if He chose, have created quite another world. A world with a quite different geometry, and even a quite different arithmetic. But, of course, in that case, He would have given us—or rather those spiritual beings whom He would create instead of us—quite different clear and distinct innate ideas; for notwithstanding His omnipotence and His freedom, there are things that He cannot do; for instance, he cannot lie and deceive, and again He cannot change His freely given decrees for that would be utterly incompatible with His absolute and infinite perfection.

It is only now, having demonstrated the existence of God, that we are finally liberated from uncertainty and doubt. Knowing that God exists and that we are created by Him, we can both explain the presence in our souls of clear and distinct innate ideas, and justify our assurance of their validity: it is God, indeed, who endowed us with them; \(^1\) it is God, therefore, who guarantees their truth, that is, their conformity with the real world created by Him. God's veracity \(^2\) is thus the ultimate foundation of our reasoning, of the right that we have to conclude from the idea to the thing which it represents, to assert, for instance, the real existence of extension and motion, the validity of the mathematical sciences and of the physics based upon them. The reasoned-out confidence that we have in our reason is thus, for Descartes, justified only and alone by the reasoned-out confidence that we have in God. An atheist, denying the existence of God, must, therefore, necessarily be the prey of an absolute scepticism: he cannot have an assurance of anything whatever—not even

\(^1\) The 'seeds of sciences' that we find in us have been planted there by God.

\(^2\) Dei nec fallit nec fallitur, God is neither deceiver nor is He deceived.
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feelings, of bodily pleasures and pain, of passions. It is this unity, too which explains that our bodily faculties of imagination and sense are still, somehow, permeated with thought, and are able to perceive and to grasp, though imperfectly, things that are objects of pure understanding, such as space, geometrical form and so on, thus enabling us to give value to common experience and to devise scientific experiments.

Yet this unity is by no means understandable. How two utterly different substances, so different that they have nothing in common but existence, can be united so as to make a compound one, can never be clearly seen by us.

We have reached the limit of clearness and distinctness. We have reached the region where some kind of mixed thinking must be applied, where we have to think about mind in terms of body, and of body in terms of mind. Along both ways, we must go as far as possible. Yet, they will never join. Incarnation of spirit, and not only of God, will forever remain a mystery.

We have to acknowledge this fact. At the same time, we have to go along both ways as far as we can, always bearing in mind that we must beware of hasty and premature judgment, and accept and assert as true only that which we clearly and distinctly perceive to be so. This Cartesian maxim has lost nothing of its urgency and actuality.

A. KOYRÉ

ECOLE PRATIQUE DES HAUTES ETUDES
PARIS, April, 1950

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1 This fact that there is nothing in common between thought (mind) and extension forms the basis of a purely mechanical physics.
Descartes

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