## CHAPTER V

## CARTESIAN MATHEMATICISM

IN spite of their various interpretations of Cartesianism, histories of philosophy usually agree that "more than any other figure in the seventeenth century, Descartes marks the transition from the Middle Ages to the modern world."[1] Commonplace as it may be, the statement contains a solid nucleus of historical truth; for, although mediæval thought had already been slumbering for two centuries when Descartes began to write, he was the first to build up a new system of ideas and to open formally a new philosophical era. His predecessors had done little more than to distrust scholastic philosophy, and, as they knew no other one, to extend their distrust to philosophy itself. Descartes brought to the world the unexpected revelation that, even after the breakdown of mediæval philosophy, constructive philosophical thinking was still possible. Ever since the fourteenth century there had been men to criticize Aristotle, but Descartes' ambition was quite different: it was to replace him.

That statement needs, however, to be qualified. In the first place, Descartes marks the transition from the

[1]R. M. Eaton, *Descartes Selections*, Scribners, New York, 1927, Introd., p. v.

Renaissance, rather than from the Middle Ages, to the modern world. In the second place, he does not even mark the transition from the whole Renaissance to the modern world, but, quite exactly, from the scepticism of Montaigne to the modern period of constructive thinking in philosophy. The line that goes from Nicolaus Cusanus and Bruno to Leibniz does not run through Descartes, but Cartesianism was a direct answer to the challenge of Montaigne's scepticism. The long list of passages of the *Discourse on Method* that are but an echo of the *Essays*, clearly shows how conversant Descartes was with the work of Montaigne. What can be more modern, for instance, than the opening sentence of the *Discourse?* "Good sense is of all things in the world the most equally distributed, for everybody thinks himself so abundantly provided with it, that even those most difficult to please in all other matters do not commonly desire more of it than they already possess." Was not this the first article of the charter of independent thought? If, as Descartes immediately added, good sense, or reason "is, by nature, equal in all men"[2] why should it ever submit to authority? True, but the fact remains that the first lines of the *Discourse* are borrowed from Montaigne's essay *On Presumption* (Essays, Bk. II, Chap. 17) : "of all the gifts made to man by Nature, the most justly distributed is judgment (or sense), for no man is ever displeased with what amount of it he may have received." I quite agree that Descartes read his own thought into the text of Montaigne, but

[2] *Ibid.*, p. 2.

rather than an objection to my thesis, it is the very point I hope to make: the philosophy of Descartes was a desperate struggle to emerge from Montaigne's scepticism and the very form of the *Discourse on Method* is enough to suggest it. Written in the untechnical French of a seventeenth-century gentleman, Descartes' first intention had been to call it, *A History of My Mind.* A perfect title indeed, not only for the *Discourse,* but for the *Essays* as well. In fact, the *Discourse* was one more essay written by Descartes as an answer to Montaigne's *Essays.*

What was the last conclusion of Montaigne? That there was a wisdom, but very different in kind from that of the schools. Deeply perturbed by the religious and political dissensions of his time, and above all by the disruption of moral unity resulting from the Reformation, Montaigne had traced back the common source of those evils to dogmatism. Men are so cocksure of what they say that they do not hesitate to eliminate each other, as if killing an opponent were killing his objections. Montaigne has been, and still is, the master of many minds, but the only thing we can learn from him is the art of unlearning. It is very important, and nowhere is it better learned than in the *Essays;* the trouble with the *Essays* is that they never teach anything else. As Montaigne sees it, wisdom is a laborious training of the mind, whose only result is an acquired habit not to judge. "I can maintain a position," says Montaigne, "I cannot choose one." Hence his practical conservatism. If a religion is there, why should we

change it? It cannot be proved; but the next one will not be more proved, and that one at least is there. There is nothing more dangerous than to touch a political order once it has been established. For who knows whether the next will be better? The world is living by custom and tradition; we should not disturb it on the strength of private opinions which express little more than our own moods and humours, or, at the utmost, the local prejudices of our own country. A well-made mind is never fully convinced of its own opinions, and therefore doubting is the highest mark of wisdom. Not "I know," or even "I don't know," but "What do I know?" This is doubting.

Such it is as Descartes describes it in the *Discourse*, the program which he followed at the College of La Flèche was well adapted to convince him that Montaigne was right. As soon as he had achieved the entire course of these studies, he realized clearly that he had learned nothing that was clear, certain, or of any use in life. Then, says Descartes, "I found myself embarrassed with so many doubts and errors that it seemed to me that the effort to instruct myself had no effect other than the increasing discovery of my own ignorance."[3] As has been seen, many others before him had already made the same discovery, but what had been their ultimate conclusion was only a starting point for Descartes. True enough, at the end of his studies, he found that he was a sceptic. He had to be one, for it was the fashion; but he was a sceptic waiting for something better than

[3] *Ibid.*, p. 4.

scepticism. The purely negative wisdom of Montaigne could not possibly be complete wisdom, but it was the first step to a complete one. True wisdom should be positive, not made up of what we do not know, but grounded on the fullness of what we do know. The problem therefore was to find a knowledge such as would stand the acid test of Montaigne's universal scepticism, for that at least would be an unshakable certainty. But was it possible to find it?

If Descartes had not felt confident that it was, he would not even have thought of asking the question. When he left La Flèche, his ideas were probably much less definite than would appear from the *Discourse*. Memoirs are always a reconstruction of the past in the light of the present. Yet the germ of what now is the present must have already been there in the past, and a man who writes his memoirs, knowing himself from within as he does, has a right to stress that continuity. We shall, therefore, not be far from the mark if we simply say that Descartes left La Flèche with a general feeling of disappointment, but not of despair. In point of fact, even before he could clearly formulate his philosophical problem, Descartes had already found, if not the answer, at least what was later to give him the answer. The course of study established by the Jesuits made provision for forty-five minutes of mathematics a day during the second of the three years of philosophy. It was not much, but that little proved more than enough for such a boy as the young Descartes, not only because he had genius, but also because the teaching of mathematics

at La Flèche seems to have been rather intelligent.

In all the colleges of the Jesuits the great authority in mathematics was Father Clavius. We do not know if even so brilliant a student as Descartes would be invited by his teacher to use the ponderous treatises of the so-called "Modern Euclid," but there is solid evidence that he read them a little later, and very likely before 1519. Descartes found there not only a complete exposition of the more modern theories in algebra and geometry, but also a good deal of the results that had already been achieved by the Greeks by means of the analytical method. As G. Milhaud says: "If Descartes was dissatisfied with the teaching of the School, was not his very dissatisfaction, and his craving for another kind of learning, partly due to what he had learned?"[4]

Milhaud's statement is undoubtedly right; I wish to add only this, that besides his first stock of mathematical knowledge, Descartes inherited from Clavius something much more valuable—the spirit of mathematical learning. Let us only read the introduction of Clavius to the 1611 edition of his complete *Mathematical Works:* "The mathematical disciplines demonstrate and justify by the most solid reasons everything they may call for discussion, so that they truly beget science in, and completely drive out all doubts from, the mind of the student. This can hardly be said of other sciences, where most of the time the intellect remains hesitating and dubious about the truth value of the conclusions, so manifold are the opinions and so conflicting the judg-

[4]G. Milhaud, *Descartes savant,* Paris, 1921, p. 235.

ments. Leaving aside other philosophers, the many sects of the Peripatetics are enough to prove it. All born of Aristotle, as the various branches of a common trunk, they disagree so completely with each other, and sometimes with Aristotle himself, who is their source, that it is quite impossible to know what Aristotle was really after, or whether his philosophy was primarily concerned with words or with things. Such is the reason why, among his interpreters, some will follow the Greeks, some others will favour the Latins, or the Arabs, or the Nominalists, or the so-called Realists, and yet all boast that they are Peripatetics. I suppose that every one sees how far all that is from mathematical demonstrations. The theorems of Euclid, as well as those of the other mathematicians, are just as purely true today, as safe in their results, as firm and solid in their demonstrations, as they already were in schools many centuries ago. . . . Since, therefore, mathematical disciplines are so exclusively dedicated to the love and cultivation of truth, that nothing is received there of what is false, nor even of that which is merely probable . . . there is no doubt that the first place among sciences should be conceded to Mathematics."[5]

This was not yet Cartesian philosophy. Clavius had certainly nothing more in mind than what he wrote in his Introduction. Yet it was a provoking statement, even though he himself did not know it. There are innumerable sects in philosophy, there are no sects in

[5]*Cf.* E. Gilson, *Descartes: Discours de la méthode,* J. Vrin, Paris, 1930, p. 128.

mathematics; philosophers are always dealing with mere probabilities, mathematicians alone can reach demonstrated conclusions; such statements do not imply the slightest suspicion of what Descartes' own move was going to be. It was an unpredictable move, yet so natural after what Clavius had said, that it assumed at once an outward appearance of necessity. Instead of concluding with Clavius that mathematics was the first of all sciences, Descartes' own inference was that mathematical knowledge was the only knowledge worthy of the name. Hence his conclusion, "not, indeed, that arithmetic and geometry are the sole sciences to be studied, but only that in our search for the direct road towards truth, we should busy ourselves with no object about which we cannot attain a certitude equal to that of the demonstrations of arithmetic and geometry."[6]

The whole philosophy of Descartes was virtually contained in that initial decision, for the *I think, hence I am* is the first principle of Descartes' philosophy, but it is his pledge to mathematical evidence that led Descartes to the *I think*. This, I am afraid, was one of those initial decisions, which beget systems of philosophy where everything is conclusively justified, except their very principle. If we need a philosophy whose certitude is equal to that of mathematics, our first principle will have to be the *I think;* but do we need such a philosophy? And supposing we do, can we have it? In other words, are we sure that everything that *is* is susceptible of a mathematically evident interpretation? The answer, of course,

[6]Eaton, *op. cit.*, pp. 43–44.

is arbitrary. You have a full right to bet on the affirmative, but it is gambling, and if by any chance you happen to be wrong, you will be playing a losing game from beginning to end. Everything will be mathematically proved in your philosophy, save only this, that every*thing can, and must be, mathematically* proved.

There, at any rate, lies the deepest root of the Cartesian philosophy. If anything can be truly said to express its innermost spirit, it is what I venture to call "Mathematicism," for Descartes' philosophy was nothing else than a recklessly conducted experiment to see what becomes of human knowledge when moulded into conformity with the pattern of mathematical evidence. We would waste our time in asking Descartes for a rational justification of his attitude, for there was none, except that he was weary with scepticism; but it is interesting to watch him on his way towards his decision, for it helps in understanding how he reached it. Descartes did not jump from the mathematics of Clavius directly to his own mathematicism; something very important happened to him in the interim which accounts for the apparent rashness of his conclusion.

*The professor who taught Descartes mathematics at* La Flèche was a certain Father François, S.J., who was interested particularly in applied mathematics. Practical applications and, wherever possible, concrete demonstrations were according to him the best way to make that science understood by young students. He wanted them, as he wrote in his *Treatise on Quantity*, "to eye-witness his demonstrations." Judging from the

books he has written, his pupil must have heard a lot about land surveying, topography, hydrography, and hydrology. This is precisely what Descartes suggests in two passages of his *Discourse*, where he says that mathematics had been taught him chiefly as a means of furthering all the arts and of diminishing man's labour. I would not be surprised to learn that these Jesuits had read Francis Bacon. It is typical of Descartes, however, that he should immediately react against that attitude. His personal interest in mathematics was entirely due to what he calls there "the certainty of its demonstrations and the evidence of its reasoning"; and of course mathematics should have its applications, but of a loftier order than drawing maps, digging canals or building bridges.[7] That such was really his feeling, even at that early date, is wholly confirmed by the fact that, as soon as he left La Flèche and went to Holland, he became interested, not in mathematics applied to engineering, but in mathematics applied to physics.

Descartes was by no means the first to enter that field of research; nor was he the only one to follow that line of thought around the year 1618. Yet these who then called themselves "physico-mathematicians" were very few in number, and when one stumbled upon another, both experienced the pleasant feeling of meeting one of the initiated. Such was, for instance, Isaac Beeckman, a young Dutchman whom Descartes happened to meet three or four years after he himself had graduated from La Flèche. Fortunately for us, Beeckman used to keep

[7]Eaton, *op. cit.*, pp. 5 and 7.

a diary, where we can read that in November, 1618, he had just hit upon a young Frenchman by the name of René, who had been delighted to meet for the first time in his life another man equally interested in solving physical problems by means of purely mathematical demonstrations. Physico-mathematicians are scarce, Beeckman sadly remarks (*physico-mathematici paucissimi*), and, he adds, "neither had I myself ever had any conversation on that topic with anybody but him."

His acquaintance with Beeckman became an important factor in Descartes' evolution, in this sense at least, that the questions which his new friend asked him to answer directed his mind towards purely theoretical problems. As a matter of fact, on March 26, 1619, Descartes could already write to Beeckman that he had just discovered four demonstrations, all of them important and entirely new, in the field of geometry. He immediately began to make the first of his truly Cartesian moves. Having found the solution of four geometrical problems, Descartes felt immediately that it should be possible to find a more general method applicable to all geometrical problems whatsoever. Such was the first mental shock he received from his personal studies in mathematics, and the first one of those always wider concentric circles that were to spread around each one of his discoveries. From that very moment he himself could feel that he was up against a task of tremendous difficulty, but he felt confident that it could be done: "My project," he then wrote to Beeckman, "is unbelievably ambitious, but I cannot help feeling that I am sighting I know not

what light in the chaos of present-day geometry, and I trust that it will help me in dispelling that most opaque darkness."[8]

Yet full light was not to shine in Descartes' mind until the end of the year 1619. He had by then left Holland, and was going to Germany, where it was his intention to serve as a free officer in the army of Maximilian. There he found many soldiers, but very few battles. In these happy times Turenne had not yet taught the world that a winter campaign was a possibility. His army having nothing to do, Descartes himself had to spend the better part of that winter in a quarter where, as he says in the *Discourse*, since he found no society to divert him and had no cares or passions to trouble him, he remained the whole day shut up alone in a stove-heated room where he had complete leisure to occupy himself with his own thoughts.[9] His natural inclination brought him back to mathematics, and, more precisely, to the huge problem of a universal method in geometry which, so far, had not yet received its solution.

He was really pursuing what we call today analytical geometry. How far advanced Descartes was in its discovery on the night of November 10, 1619, no one knows. What, on the contrary, is certain, is that during that very night he felt clearly not only that what he had dreamed of could be done, but that he was actually doing

[8]Descartes, *Œuvres complètes*, ed. by Adam-Tannery, Vol. X, pp. 157–158.

[9]Eaton, *op. cit.*, p. 10.

it. Right or wrong, Descartes could not help feeling that he had found such a method by which geometry, taken as a whole, would rapidly be brought to completion. As he himself had written to Beeckman eight months before, there would be almost nothing left to be discovered in geometry (*adeo ut pene nihil in Geometria supersit inveniendum*); such had been his "incredibly ambitious" project, and there it was now, before his eyes, a concrete reality. "I was filled up with enthusiasm," says Descartes in one of his personal notes. And no wonder. He was twenty-three years old and, alone with his own thoughts in the solitude of an unknown German village, that young man had just made an epoch-making mathematical discovery.

The strong wine of intellectual enthusiasm went to his head. Fully convinced that he had virtually completed geometry by combining it with algebra, Descartes proceeded on the spot to another and still bolder generalization. After all, his only merit had been to realize that two sciences hitherto considered as distinct were but one; why not go at once to the limit and say that all sciences are one? Such was Descartes' final illumination. He suddenly realized that he had found out, together with a universal method of solving all problems whatsoever, what was to be the work of his lifetime. All sciences were one; all problems had to be solved by the same method, provided only they be mathematical, or could be dealt with in a mathematical way; last, but not least, such a universal restoration of human knowledge

was bound, out of its own nature, to be the work of a single man. He himself was that man, for he was the only one to know the true method, the only one therefore who owned the key to a rational explanation of reality. During the same night Descartes had dreams where he ventured to find a confirmation of his extraordinary and almost supernatural mission. Was that, as has been suggested by a modern historian, the Pentecost of reason? It merely was the Pentecost of mathematical reasoning, and less a Pentecost than a deluge. In the joy of a splendid discovery, mathematics began to degenerate into mathematicism and to spread as a colourless flood over the manifold of reality. Descartes was a great genius, but I sometimes wonder if his dream were not a nightmare. At any rate, it will be seen later that the men of the eighteenth century had their doubts about it.

The memory of that eventful night was still vivid when, seventeen years later, Descartes was writing in the *Discourse* the history of his mind; but the long train of thoughts by which he then justified his philosophical endeavour had lost the fire and glow of his first enthusiasm. A mature man, he was now taking less interest in the dramatic side of his discoveries than in their contents. Yet even in that public confession of a philosopher, where decency restricted him to mere allusiveness, the salient points of the drama still remain clearly discernible. One of the first considerations that occurred to him, Descartes says, was that there is often less perfection in works "carried out by the hands of various

masters, than in those on which one individual alone has worked."[10] Clearly enough, he had not lost his inner conviction that God had entrusted him with the task of achieving human knowledge and that the only way for him to succeed was to go at it single-handed. Such was the first act of that philosophical play. During the second one, we are called to witness the birth of the famous method. A man can be convinced that he is about to complete the whole body of knowledge, and that he will do it the better by doing it alone, but there would be no end to such a task unless it be carried in a simple and consistent way. It clearly results from the *Discourse* that his discovery of analytical geometry gave Descartes the clue which was to guide him always. He had successfully combined the analysis of the ancients with the algebra of the moderns; the next move had to be obviously the further combination of both with logic. The Cartesian method was the upshot of that experiment; a method, says Descartes, which, "comprising the advantages of the three, is yet exempt from their faults."[11] And that was the end of the second act.

In 1619 the third act was only beginning, and it was to extend itself over a long period of years. Descartes was dedicated to the proposition that all sciences are one, which means that he had no choice between knowing them all and ignoring them all. He could see now why Montaigne had found himself condemned to a complete scepticism. In a way, Montaigne had been right, in this at least, that since he had not found the key to universal

[10] *Ibid.*, p. 10.

[11] *Ibid.*, p. 16.

knowledge, he rightly felt that he knew nothing at all. Now, however, a positive wisdom was more than a bare possibility. It was there, virtually implied within the method, which itself was but a normal use of the natural light of reason. Wisdom, that is to say, neither chronicle doubting nor the mere heaping up of an indefinite number of facts, but reason itself, which "suffers no more differentiation proceeding from" its various subjects "than the light of the sun experiences from the variety of the things which it illumines."[12]

Nor was that all. If all sciences are one owing to the unity of their common method, Descartes was not only condemned to knowing all, but to knowing all with an absolute certainty. Born in mathematics, the method had to yield results that were mathematically true. This time, Descartes was answering the challenge of Father Clavius. The Jesuit, simple and modest old scholastic that he was, had argued: necessary knowledge is better than mere probability; mathematical knowledge alone is necessary; mathematical knowledge is better than all other knowledge. That was not original, but it was true. The young Descartes was following a much more risky way: true knowledge is necessary; mathematical knowledge alone is necessary; hence all knowledge has to be mathematical. Whatever such a reasoning may be worth, the fact remains that Descartes was thereby eliminating from knowledge all that was mere probability. The second of his *Rules for the Direction of the Mind* is an explicit statement of that important item of his pro-

[12] *Ibid.*, p. 38.

gram: "Thus, in accordance with the above maxim, we reject all such merely probable knowledge and make it a rule to trust only what is completely known and incapable of being doubted." The standard sciences would henceforward be arithmetic and geometry, in the new form they had just been given by the young mathematician.[13]

From now on Descartes had his whole life carefully planned ahead of him. First he would try his method for a number of years on a large number of different subjects; next, he would see about building the complete body of sciences and, before his death, the whole business should have been brought to completion. The first trouble was that, in order to extend mathematical certitude to all sciences, Descartes had to tamper with mathematics itself. In point of fact, the gigantic stretching out of mathematical method had for its first result to put an early end to Descartes' own career as a mathematician. While he had allegedly found the means to solve all problems, Fermat was laying down the foundation of such an insignificant detail as the differential calculus, which both Leibniz and Newton were soon to bring to completion. His friends, who sincerely admired him, were trying vainly to make him see that there were still a few problems which his own method could not solve; Descartes would not listen to them, or rather he could not. He got *the* method, and that was an end to it.

Thus directly inspired by mathematics, the new method could not be universalized without undergoing

[13] *Ibid.*, p. 50.

a deep transformation. It had been a great idea to substitute algebraic signs for geometrical lines and figures, but algebraic signs would never do in metaphysics, not always in physics, still less in biology, in medicine and in ethics. Descartes was therefore confronted with the necessity of extracting from his mathematical method that which would be applicable to all possible problems. The very nature of his own discovery invited him to think that it could be done without altering the nature of mathematical reasoning. Having succeeded in eliminating figures from geometry, he felt inclined to believe that quantity itself could be eliminated from mathematics. It was necessary for him to do that, at least if he wished to extend the mathematical method even to such problems as metaphysics and ethics, where no quantity is involved. Now, if quantity had to go, the algebraic signs by which it was expressed were bound to fall out of the picture, with the result that nothing was to be left of mathematical reasoning but order and measurement where matter is concerned, and order alone where the mind is not dealing with material objects. "Method," says Descartes, "consists entirely in the order and disposition of the objects towards which our mental vision must be directed if we would find out any truth."[14]

Let us, with Descartes himself, call that method "Universal Mathematics";[15] it certainly was universal, but could it still be called mathematics? Descartes felt sure it could, because he was aiming at a complete liberation

[14] *Ibid.*, p. 56.

[15] *Ibid.*, pp. 54–55.

of knowledge from its objects. According to Aristotle and the Scholastics, each science was both defined as a distinct branch of knowledge and determined in its method by the definite nature of its own object. Biology, for instance, was distinct from mathematics as a science because its proper object was life, and not quantity; for the same reason it was supposed to use a different method from that of mathematics, because what is more than simple quantity cannot be studied as if it were nothing else. Of course you can do it up to a point. You can do it exactly insofar as biological facts can be expressed in terms of quantitative values, but no further. Descartes' own position was to be just the reverse. Since according to him all sciences were one, being but varied expressions of the same human reason, nothing could warn him that he was taking a chance in totally disregarding the rights of the object. Mathematics has something to say everywhere, because quantity is everywhere; and not only in physics, or in biology, but, indirectly at least, even in sociology and in ethics. Statistics, for instance, have a definite part to play in social and moral sciences. But if you go one step further, and deprive mathematics itself of its proper object, it becomes a science of the relationships of order between all possible objects. Is that still mathematics, or is it logic?

At first sight, this is but a question of names. Shall we restrict the name of mathematics to the logical relations of order that apply to real or possible quantity, or extend the name of mathematics to all relations of order? Yet names have a dreadful power of suggestion. They

are invitations to deal in the same way with what we call by the same name. By calling "universal mathematics" a method, which had been extracted from geometry, algebra and logic, Descartes was pledging himself to the task of making all problems "almost similar to those of mathematics,"[16] as if the extreme simplicity of the object of mathematics was not partly responsible for the evidence of their conclusions. The evidence of mathematics depends upon both their complete abstract generality and the specific nature of their object. Because of its complete generality, the mathematical method can be indefinitely generalized, but, if we want it to yield evidence, it cannot be indiscriminately extended to all possible objects. These logical laws of abstract order which, applied to quantity, yield the exact science called mathematics lead to nothing but arbitrary generalizations when they apply to objects more complex than quantity. This, at least, is what happened to Descartes, and the result of his bold experiment was scientifically as well as philosophically disastrous.

The principle that lies at the root of Cartesian mathematicism is that, since the most evident of all sciences is also the most abstract, it would be enough to make all the other sciences as abstract as mathematics in order to make them just as evident. This, I am afraid, was a sophism because it disregarded the most important aspect of abstraction. To abstract is not primarily to leave something out, but to take something in, and this

[16] *Ibid.*, p. 27.

is the reason why abstractions are knowledge. Before stretching mathematical methods to nonquantitative objects, one should therefore remember that our abstract notions validly apply to what they keep of reality, not to what they leave out; next, one should make sure that the content of these nonquantitative concepts constitutes an object as completely analyzed, or analyzable, as numbers, figures or positions in space; last, but not the least, one should keep in mind that all conclusions drawn from incompletely analyzed or incompletely analyzable objects, logically correct as they may be, shall lack the specific evidence of mathematical conclusions. Everybody is free to call mathematics any logical ordering of more or less confused notions, but he will have made mathematics arbitrary in its results instead of making the results of other knowledge mathematically evident.

This is exactly what Descartes himself did. In order to make the objects of philosophical knowledge as similar as possible to those of mathematics, he reduced their number to three: thought, extension, and God. Moreover, in order to make them as simple as our notions of number and space, Descartes decreed that the whole content of each of them was such as can be exhausted by a simple intuition. This, of course, was a bold decision. Even number and space are far from being perfectly simple; but the notion of thought is a hopelessly confused one, and that of God is little more for us than the sign of that which surpasses human understanding. Yet, if Descartes wanted to achieve anything like a mathematical metaphysics, these concepts had to be

held by him as so many clear and distinct ideas, which every mind can see within itself and see in the same way, provided only it pays attention to them. This is precisely what drove Descartes to the famous doctrine that our clear and distinct concepts are, in his own words, as many "simple natures," each of them endowed with a definite essence of its own, and wholly independent from the minds in which they dwell. From that time on, philosophy was to be the mathematical knowledge of the necessary order there is between the so-called *simple natures*, or fundamental ideas of the human mind.

How Descartes managed to do it, and how far he was successful in his undertaking, are points we will set aside for later consideration. What I now wish to suggest is that, by so doing, Descartes put his money on the actual existence of a set of intellectual intuitions, or pure ideas, quite independent of any empirical reality. Moreover, supposing, as he did, that these mental essences are the very stuff human knowledge is made of, the slightest error about them had to affect science as a whole, from physics to medicine and to ethics. Last, but not least, the nonexistence of these ideas, or of their internal necessity, remained an open possibility, in which case the whole structure of mathematical philosophy would be left in the air without any foundations.

Descartes himself never entertained any doubts as to the absolute validity of his position. True enough, he met much opposition in his own life time and he often provoked it, but he was so sure of his answers that, on the whole, he must have lived in a state of intense in-

tellectual satisfaction. Take, for instance, his metaphysics; Descartes saw no difficulty in writing that "it is *at least* as certain that God . . . is, or exists, as any demonstration of geometry can possibly be."[17] In fact, he had already written to his friend Mersenne on November 25, 1630: "As for me, I dare well to boast of having found a proof of God's existence which I find entirely satisfactory, and by which I know that God exists, more certainly than I know the truth of any geometrical proposition." As to his physics, it had been deduced *a priori* from evident philosophical principles; no flaw could possibly be found in it; nor for that matter in his biology, and Descartes felt so sure of himself on those points that he had announced his method as an infallible way to find a mathematically demonstrated medicine. As early as 1630, he wrote to Mersenne that he was now headed for "a Medicine grounded on infallible demonstrations." There, however, he found himself in a peculiar position: unless he lived long enough he would not have time to complete his mathematical medicine, but so long as he had not done it, he could not be sure to live long enough to do it. That was a vicious circle. Rather, it was a race against time, and Descartes was bound to lose.

He finally did, but he had put up a good fight. In a letter of January 25, 1638, to his friend Huygens, Descartes seems seriously concerned with the problem of how to last until the time of his medical discovery. What was worrying him then was that, while he had

[17] *Ibid.*, p. 33.

hitherto considered that death could not take from him more than thirty or forty years of life at the utmost, he now felt sure that an early death would shorten his life by more than a century. And then he did an awful thing. He broke the sacred rules of the Method and set about writing an "Abridged Medicine" before his physics had been completed. He just wanted a short delay that would take him to the time of his really demonstrated medicine. After that, lasting for a century would be the easiest thing in the world. This, I think, is the only point where Descartes had time enough to realize that all was not well with his philosophy. In 1646 he wrote to Chanut that though he had spent much more time on medicine than on ethics, he was making more headway in ethics than in medicine. Thus, Descartes modestly concludes: "instead of finding the means to preserve my life, I have found another one, far more easy and more safe, which is not to be afraid of death." A very useful discovery indeed, but a rather old one, and one which does not require the brains of a physico-mathematician. When he died, on February 11, 1650, Descartes was but fifty-four years old. Death had won the race by a long margin; yet it was perhaps better for him that he should die at a time when his doctrine had not yet been openly disproved by facts. Merciful death took the great dreamer away still full of his dreams. For they were dreams, and it did not take much time for the fact to be known.

In 1650 both Spinoza and Locke were eighteen years old: Spinoza, who was to use a still more geometrical

method than Descartes himself, and nevertheless to reach thereby completely different conclusions; Locke, who was to undermine the very foundations of Cartesianism and to provide the French eighteenth century with a new philosophical orthodoxy. For a mathematically proved system of metaphysics, this was hardly a success. But the worst of it is, that even the scientific part of Cartesianism was also doomed to an early destruction. When Descartes died, Leibniz, who had already been born, was destined to prove that the Cartesian laws of motion were mathematically wrong, from which it followed that, grounded as it was on erroneous mechanics, Cartesian physics had no scientific value whatsoever. Yet, what has perhaps been the most striking of Descartes' scientific failures took place already during his own lifetime. W. Harvey had just discovered the circulation of the blood, and the modest litle book wherein he submitted his conclusions to the learned world (1628) will always remain as a perfect example of scientific demonstration. Harvey was no less admirable in not explaining what he did not understand than in clearing up all the rest. Descartes read the book, and immediately took sides with Harvey, against those who were opposing his conclusions. He certainly could see the truth when he forgot his universal mathematics. The trouble was that Harvey's description of the motion of the heart, still today perfectly correct, could not very well fit in with the mechanical biology of Descartes. The learned world was then called upon to witness that surprising spectacle: Descartes, who had not discovered the circulation of the blood, explaining

it to Harvey, who had made the discovery, and adding to it as many mistakes as he was adding explanations. Yet, Descartes was so sure of himself that he made public his wrong theory in the fifth part of his *Discourse,* where it is expounded at length as a perfect instance of mathematical demonstration in biology. A more blindly trusted method never took anybody to more consistently wrong conclusions.

There would be no excuse for reviewing the failures of such a great man as Descartes, were it not done for other purposes than to debase him. But nobody can either debase him or raise him above his real level. Descartes alone has a right to judge Descartes, and he alone can do it. Any one who is at all acquainted with him will probably agree that Descartes' absolute devotion to truth would feel hurt by any attempt to palliate his defeat; but what he would certainly resent more deeply than anything else is the cheap generosity of his liberally minded historians. Descartes was not a liberal mind. He was most generous, he was charitable, he was unreservedly tolerant; yet he always took ideas seriously, which means that while granting any one full freedom to hold as true what he himself knew to be false, he could not bring himself to think, or to say, that what he knew to be false might after all be true. In dealing with such a man, straight honesty is the only mark of respect he would appreciate. Were we to tell him: "There is not much left of your physics and still less of your biology, but the spirit of Cartesianism will live forever in mathematical physics; as for your meta-

physics, it is neither better nor worse than many other ones, but it remains full of the most stimulating suggestions," Descartes would probably answer: "Thank you. But I fail to see how the spirit of Cartesianism can be all right if Cartesianism itself is all wrong. From the very beginning I pledged myself to give mathematically true demonstrations of everything; to which I added that I had no use for mere probabilities; and last, I made it a point that Wisdom was one, so that where one science is right, all sciences are bound to be right, while where one is wrong, all the others must be wrong. That, and nothing else, was my message to the world, and it is the standard by which I have a right to be judged. You can praise Montaigne by saying that he was partly right, not me. I was in the world to rid the world of Montaigne; don't you grant me the benefit of his indulgent scepticism; there is nothing that I hate more. I promised an infallible method; if I failed to fulfill completely my promise, I failed completely; say it." But it will be less unpleasant to let facts speak for themselves and, rather than judge Descartes, merely register their own verdict.

## CHAPTER VI

## CARTESIAN SPIRITUALISM

WHEN Descartes at the age of twenty-three first conceived his project of a universal mathematics, he was fully aware of its unusual importance. He even considered it as "the most important in all the world," so much so that he decided to spend several years in preparing himself for the work. For nine years, he did nothing but study particular questions, especially in mathematics and in physics, without paying the slightest attention to what was then considered as philosophy and philosophical problems. Nor was it until 1628 that he began, in his own words, "to seek the foundation of a philosophy more certain than the vulgar."[1] But then he worked so fast that within three or four months his whole system of metaphysics was completed.

That it took him so little time to succeed in his undertaking was of course an effect of his philosophical genius; but it was no less an effect of the very nature of philosophical knowledge itself, such as Descartes conceived it. Philosophy had to become a department of universal mathematics; now mathematicians deal with nothing but ideas, and ideas can be dealt with much

[1] R. M. Eaton, *Descartes Selections*, p. 27.

more rapidly than concrete facts. The first important point was precisely to realize that the new philosophy, unlike the old one, but like mathematics, would always go, not from things to ideas, but from ideas to things. What is a circle, to the mind of a mathematician? Is it this and that circle, such as I can imperfectly draw on a piece of paper or on a blackboard? Obviously not—the real circle is the definition of a circle, and nothing else. It may be that no material figure ever answered that definition in reality; what the mathematician is interested in is something different: the essence, or true nature of the circle, as is to be found in its definition, and only there. Let us therefore state this first principle, whose consequences will run not only through the whole body of Cartesian philosophy, but through the whole body of modern idealism as well: all that can be clearly and distinctly known as belonging to the idea of a thing can be said of the thing itself. As a matter of fact, it *is* the thing.

But what is it, to know something *distinctly?* When a mathematician knows a circle, he knows not only what it is, but, at the same time, what it is not. Because a circle is a circle, it has all the properties of the circle, and none of those that make a triangle a triangle, or a square a square. Philosophers should therefore proceed on the same assumption: as mathematicians, they will always proceed not only from thought to existence, but from distinct thoughts to distinct existences. In other words, since it is the nature of ideas to be mutually exclusive in mathematics, each containing everything that

comes under its definition, and nothing more, so it follows that it must be in the nature of real substances, in philosophy, to be mutually exclusive, each containing everything that comes under its definition and nothing more.

Thus, when Descartes made up his mind to get down to brass tacks and reconstruct the world, the only material at his disposal was: ideas, clear ideas, and distinct ideas. That was the main reason why he could do it so quickly; for to him, as to the mathematician, the only problem was henceforward to be: with what idea should he begin, and in what order should he put the succeeding ideas? Now, even there, mathematics could help. If we consider the very essence of mathematical reasoning apart from the fact that it applies to numbers, figures and symbolic signs, it can be reduced to very simple rules, which are the rules of reason and of plain common sense itself.

The first is to divide up each of the problems we examine into as many parts as possible. In other words, we should never try to solve a complete problem as such, without first having tried to solve the different problems it implies. The second rule is, having thus divided our problems, to conduct our reflections in due order, that is to say: to begin with those objects that are most simple and easy to understand, in order to rise little by little to the knowledge of the most complex. The whole problem, then, becomes a problem of *order;* finding out the natural order of ideas, and, where none can be found, devising one of our own as a substitute. A fictitious

order, known as such, is better than none, since it can help us to connect long stretches of the natural order, even though we had no knowledge of their real connection.

Now, what was the first of all particular problems, for a man who needed nothing but ideas to rebuild the world? It was to decide whether or not something can be evidently known; and not, this time, in the order of abstract speculations, such as mathematics, but in the real order of actually existing things. And what was the only way to solve that problem? By finding some judgment of existence that would withstand even the most extravagant objections of the sceptics. When he reached that point Descartes—or was it only a young boy of sixteen who had heard of it at La Flèche?—remembered that long ago, another man had found himself in a similar difficulty, and had discovered a way out. St. Augustine too had known such a time in his life, when a man with a passionate love for certitude has to surrender to the evidence that he is sure of nothing. Like Descartes then, and before him, St. Augustine had become a sceptic in spite of himself, but he had also succeeded in his effort to discover a decisive answer to scepticism. It is to be found in his *Soliloquies*, Bk. II, Chap. I. Reason is leading the discussion with Augustine: "You, who wish to know yourself, do you know at least that you are?—I know it.—How do you know it?—I don't know.—Are you a thing that is simple, or that is composed?—I don't know.—Do you know whether you are moving or not?—I don't know.—But do you know

that you think?—Yes, I know that.—Consequently, that you think at least is true.—It is true.—You know therefore that you are, that you live and that you think."

Such also was the first evidence which Descartes laid down as the unshakable cornerstone of his philosophy: I think, hence I am. For let us suppose with Montaigne that everything else is false, or at least doubtful; let us even suppose that the creator of this world be a very powerful and very cunning deceiver, who ever employs his ingenuity in deceiving me: "Then without doubt I exist, also if he deceives me, and let him deceive me as much as he will, he can never cause me to be nothing so long as I think that I am something."[2] Even in this, Descartes was repeating what Augustine had said in another text, *On Free Will*, Bk. II, Chap. 3: "First, I ask you, in order to begin with what is the most evident, whether you are, or not? And in this you cannot fear to be deceived in your answer, because in case you did not exist, you could not possibly be deceived." And again, in his *City of God*, Bk. XI, Chap. 26: "If I am wrong, I am, for he who does not exist, cannot be deceived; thus, from the very fact that I am deceived, it follows that I am. How then could I possibly be deceived in believing that I am, since it is an obvious thing that I am so long as I am deceived?"

In 1641, when Descartes restated his first principle in his *Meditations in First Philosophy*, one of those whom he had personally invited to send him their objections, namely, Arnauld—the great Arnauld—was not

[2] *Ibid.*, p. 97.

slow in pointing out the fact that Saint Augustine had already said the same thing many centuries ago. Descartes did not seem to relish the remark: "I shall not take up time here," he said in his reply, "by thanking my distinguished critic, for bringing to my aid the authority of St. Augustine, and for expounding my arguments in a way which betokened a fear that others might not deem them strong enough."[3] Arnauld could have surmised as much: quoting an authority against Descartes' clear and distinct ideas would have been a foolish thing to do, but quoting an authority in their favour was worse: it was an insult.

Not only did Descartes himself resent it, but even Blaise Pascal was to raise a vigorous protest against it in his famous treatise *On the Geometrical Spirit*:[4] "Indeed, I am far from saying that Descartes is not the true author of that principle, even if it were true that he came by it only through his reading of that great saint. For I know all the difference there is between writing a word at random, without devoting to it fuller and broader reflection, and perceiving within that word an admirable series of consequences, that prove the distinction between material nature and spiritual nature, so as to make it the firm and sustained principle of a whole Physics, as Descartes claimed he was doing. . . . That word is as different in his own writings from what

[3]This text has not been included by Prof. R. M. Eaton in his *Descartes Selections;* it is found in the *Philosophical Works of Descartes,* by E. S. Haldane and G. R. T. Ross, Cambridge University Press, 1912; Vol. II, p. 96.

[4]Blaise Pascal, *Pensées et opuscules,* ed. by L. Brunschvicg, 4e édit. Paris, Hachette, 1907; p. 193.

it is in the writings of those who said it casually, as a man full of life and strength is from a dead man."

When he wrote those glowing lines, Pascal himself had already made his own discoveries concerning conical sections; he was a young mathematician and physicist of genius, who could not foresee that an older and more mature Pascal, having made other discoveries in a higher field than that of science, would some day write this short sentence: "Descartes useless and uncertain."[5] He understood Descartes perfectly, he admired him, he loved him, and he was right; but we can safely conclude from what he says, that when he wrote his treatise *On the Geometrical Spirit*, he knew little, if anything, of the work of St. Augustine. For it is hardly fair to consider as written at random, a statement four times repeated by St. Augustine, in four different books, at the end as well as at the beginning of his long career. Nor is it possible to maintain that Augustine failed to see in his own principle a series of important consequences, since he used it to defeat scepticism, as did Descartes; to prove the existence of a spiritual soul, as did Descartes, and, like Descartes again, to prove the existence of God. As to the other consequences, if St. Augustine was not able to perceive them in his principle, it is perhaps simply that they were not there. He had no need of Pascal to feel that the rest would be useless and uncertain.

Descartes, on the contrary, had nothing to warn him

[5]Pascal's *Pensées*, trans. by W. F. Trotter, J. M. Dent, 1931; p. 23, n. 78.

that he was in danger. His principle was a true principle, not in the ancient sense of an abstract and universally valid statement, but in the new Cartesian sense of a "beginning," or "starting point" for the attainment of real knowledge. Besides, it undoubtedly was the first principle, since it could be known without our knowing anything else, while nothing else could be known without our first knowing it: whatever else I may happen to know, I think; hence I am. Furthermore, it was the perfect type of a clear and evident knowledge, since such a principle could not even be doubted without being at the same time proved: if I doubt that I am, I think; hence I am. Last, but not least, it provided Descartes with his first opportunity to show what it means for an idea to be "distinct." But this point requires further explanation.

First let us come back to our mathematical definition of knowledge: "When we say that something is contained in the nature or concept of anything, that is precisely the same as saying that it is true of the thing or can be affirmed of it."[6] In the present case, I know that I am; but I know it only because I know that I am thinking. If I now ask myself that new question: but *what* am I? the only legitimate answer will be: I am a thinking thing. Whether that thing be called a thought, or a mind, is immaterial to the problem at stake. What matters, is the fact that I can rightly ascribe to my own nature all that is evidently contained in the nature

[6] *Reply to II Object.*, ed. Haldane and Ross, Vol. II, p. 53. The "quid" of the Latin text has been substituted, in our own translation, for the "attribut" of the French text.

of a thinking thing. And what is a thing that thinks? "It is a thing which doubts, understands, conceives, affirms, denies, wills, refuses, which also imagines and feels."[7] To know that I am such a thing is to have a clear idea of myself as a thing which thinks, but to have a *distinct* idea of it is something else, and no less important: I have a clear idea of what I am as soon as I realize what it is to be a thinking thing, but in order to have a distinct idea of it, it is just as necessary to realize what a thinking thing is not. In short, clearness comes to ideas from the fact that we ascribe to them all that belongs to their nature, distinction comes to them from the fact that we deny to them all that does not belong to their nature.

For instance, such philosophers as Aristotle and his followers assure us that our soul is an animating force, which exercises various operations in and through our body: nutrition, motion, sensation. Now we cannot ascribe such functions to the soul without associating its idea with that of a body.[8] But do we even know that we have a body? The idea of body is in no way contained within the clear idea of thought; it should therefore be excluded from it, if we want it to be a distinct idea. And since we pledged ourselves always to affirm or to deny of things themselves, all that can be affirmed or denied of their clear and distinct ideas, to say that the idea of the soul implies nothing that pertains to the body is precisely the same as to say that the soul is really distinct from the body. Substances

[7]Eaton, *op. cit.*, p. 100. [8]*Ibid.*, p. 98.

are as radically exclusive of each other as are our ideas of those substances. When the philosopher deals with metaphysics, he has no need of knowing whether he has a body, since, in case he had one, his thought would not have anything to do with it. When he deals with physics, he would do better to forget that he has a soul, because, in case there were bodies, his soul would not have anything to do with them. As the soul is nothing but thought, so also the body is nothing but extension in space according to the three dimensions. Metaphysics then is pure spiritualism, and physics pure mechanism. In this sense it is true to say, with Pascal, whose insight here into the meaning of Descartes' method was truly deep, that Descartes made his "I think" the firm and sustained principle of a whole physics.

Let us add that paving the way to a purely mechanical physics, biology and medicine was the thing in which he was most interested, and this may perhaps account for his readiness in asking metaphysics to pay the price for it. First of all, since a thinking substance has nothing in common with bodies, it would be better to avoid even the word soul. "Soul" always suggests some connection with a body; even "Spirit" is not so good, for it is equivocal and is frequently applied to what is corporeal. It would therefore be better to call "Mind" that substance in which thought immediately resides, or rather which *is* thought.[9] Mentalism, if the word were received, would therefore be a better denomi-

[9]Haldane and Ross, *op. cit.*, p. 53.

nation than spiritualism for Descartes' metaphysics.

Again, once it is accepted that the Mind is purely thought, it becomes obvious that it cannot cease to think unless it cease to be. A thing whose nature it is to think, either thinks, and is, or does not, and is not. Hence this new consequence, which Descartes always upheld, against all objections, as standing and falling together with his whole system: the mind is always thinking. If we do not feel that way, we certainly are wrong, since it follows from the clear idea of the mind and from its very definition.

But it is impossible to go that far with Descartes without going a little further. If the thinking thing is conceived as radically distinct from the body, that substance, or mind, would be exactly what it is, and think as it does, even if there were no bodies in the world, either its own, or any other one. Where then does that mind find its ideas? The necessary answer is: in itself, and nowhere else. There is in the mind a natural aptness to grasp by a direct intuition such ideas as represent true, eternal and unchangeable essences: the mind itself, for instance, or God, or the Body conceived as pure extension, the Triangle, and so on.[10] In the description of that first class of notions we can easily recognize the attributes of the divine ideas in St. Augustine. But whereas, according to St. Augustine, ideas were shining above the mind, they are now conceived by Descartes as being in the mind. Other ideas, we make up at pleasure, and they are mere products of our

[10] R. Descartes, *Discours de la méthode,* ed. E. Gilson, p. 328*b*.

imagination: centaurs, chimeras for instance: they are "fictitious" ideas. There remains a third group, made up of our so-called sensations. These seem to come to us from without, but we are sure that, in a way at least, they do not, because that would be self-contradictory and impossible. How indeed could a distinct substance receive anything from another distinct substance? What, then, is a sensation? At the utmost, an innate idea awakened within the mind on the occasion of some change that takes place in a body. If there are bodies, a thing which we do not yet know, they cannot be the *causes* of our ideas; they are but occasions for the mind to conceive them; therefore, as Descartes himself says, even sensation "must have been there beforehand."[11]

Descartes' conception of man as an angel, or disembodied thinking substance, swept Europe, and was soon received as immediate evidence by the greatest thinkers of his time. Stripping themselves both of their bodies and of their souls, they became magnificent minds who, theoretically at least, did not feel indebted to their bodies for any one of their ideas. Leibniz in Germany; Malebranche in France; Spinoza in Holland, were such minds, and all of them had nothing but innate ideas. For all of them, like Descartes himself, were living under the spell of Cartesian mathematicism. Even apart from his philosophical deductions, had not Descartes himself proved that he was right by inventing analytical geometry? For if Descartes had made that remarkable

[11] *Ibid.*, p. 327a. Cf. R. Descartes, *Oeuvres completes,* ed. Adam-Tannery, Vol. VII, 2nd. Pt., p. 359.

discovery, it simply was because he had used reason, instead of imagination, to study matter itself and its properties. By so doing, he had done more than deduce from some principles the conclusion that man is a mind, he had given an experimental demonstration of it. Descartes' mentalism reigned supreme in French philosophy until about the first third of the eighteenth century, when a sudden change brought its domination to a close.

A few years ago, when a severe storm had cut off all traffic between Great Britain and the rest of Europe, the London *Times* summed up the tragedy in this simple headline: *Continent Isolated.* In a way, the Continent always is. This, I suppose, accounts for the fact that from time to time some Frenchman has to rediscover England. It always comes to him as a shock. Such an adventure befell Voltaire, when he crossed the Channel and went to London in 1728. As he would later write in the IVth of his *Philosophical Letters,* "When a Frenchman arrives in London, he finds things very much changed in philosophy, as in everything else."[12] Thus, says Voltaire, very few people in London read Descartes, whose writings have indeed become obsolete; and if you ask them for an opinion on that great mathematician, they will answer you that he was a "dreamer."[13] Surprising destiny, indeed, for the philosopher of good sense, of clear and distinct ideas, and of mathematical evidence, to be finally condemned on

[12]Voltaire, *Lettres philosophiques,* ed. G. Lanson, Paris, Hachette, 1917; Vol. II, p. 1.

[13]*Ibid.,* Vol. II, p. 5.

such a charge! But between Descartes and Voltaire had come another philosopher, to whose doctrine Voltaire himself was very soon to become a convert.

He was an Englishman, and his name was John Locke. When I say that he was an Englishman, I mean much more than the bare facts that he was born in England near Bristol, in 1632, and lived and died there in Oates (Essex) in the year 1704. Locke was as thoroughly English as Descartes was thoroughly French, and they proved themselves to be English and French even in their respective ways of approaching philosophical problems. We may feel surprised to hear a mathematician of genius branded as a dreamer; but what was good about Locke, Voltaire tells us, was precisely that he was *not* a mathematician: "There was never a more sober and more methodical intelligence, nor a more exact logician than Mr. Locke; yet he was no great mathematician."[14] And, as late as 1749, Condillac would repeat the same thing in still more forceful terms, in his *Treatise on Systems*: "We have four famous metaphysicians: Descartes, Malebranche, Leibniz and Locke. The last is the only one who was not a geometer, and how far superior to the others he was!" Not being a geometer, he would not yield to the temptation of deducing human nature from some abstract principle, which all his predecessors had done. "All those praters having written the Romance of the Soul," Voltaire concludes, "a wise man has come, who modestly wrote its history."[15]

[14] *Ibid.*, XIII letter, Vol. I, p. 166. [15] *Ibid.*, Vol. I, p. 168.

To write a mere history of the soul, such, indeed, had always been Locke's design. By profession a physician, he naturally advocated what he himself once called: "a historical, plain method";[16] that is to say, a method of observation and of description, chiefly dealing, in his own words, with "particular matters of fact," since such facts "are the undoubted foundations on which our civil and natural knowledge is built." His ambition was therefore to follow a moderate Empiricism; for even in his Empiricism Locke was a moderate. As he saw it, the problem came back to the steering of a middle course between two opposite errors. Some men lose the improvement they should make of matters of fact, by merely crowding them in their memories instead of lodging them in their understandings; others, on the contrary, having no patience with facts, "are apt to draw general conclusions and raise axioms from every particular they meet with."[17] One of Locke's editors, J. A. St. John,[18] commenting upon this text, observes that: "of the two methods here described, the former is that of the Germans, the latter that of the French; and perhaps nearer home we might find examples of both." The fact remains, however, that Locke's own ideal was to shun both, and that he did it to the best of his ability.

His celebrated *Essay Concerning Human Understanding*, published in the year 1690, remains a remark-

[16] J. Locke, *Essay Concerning Human Understanding*, Bk. I, Chap. I; Introduction, 2. ed. by J. A. St. John; 2 vols. London, 1877; Vol. I, p. 129.

[17] J. Locke, *On the Conduct of the Understanding*, 13, *cf.* 25; Vol. I, p. 55 and pp. 76–77.

[18] *Op. cit.*, Vol. I, p. 55, note.

able example of what can be done by a man who takes hints from carefully gathered material, and carries them to his intellect to be judged. As Locke himself was later to write to Stillingfleet: "All that I can say of my book is, that it is a copy of my own mind, in its several ways of operation." Descartes had written his *Rules for the Direction of the Mind* without even suspecting that he might be wrong in eliminating from the mind all that is not clear and distinct, and yet, does not what is confused and obscure equally belong to the mind? As a consequence, before setting down his own rules for the *Conduct of the Understanding*, Locke felt himself obliged to inquire into the original of those ideas "which a man observes, and is conscious to himself he has in his mind; and the ways whereby the understanding comes to be furnished with them"; for he saw that such an inquiry would enable him to ascertain "what knowledge the understanding has by those ideas, and the certainty, evidence and extent of it." Even opinion, even faith, all the reasons and degrees of assent; in short, each particular mode of intellectual life has to be taken into account. It was to be the work of a true physician; a complete anatomy, physiology and pathology of human understanding.

When John Locke submitted the conclusions of Descartes to the rules of his own method, he did not find much in them that he could keep as truly proved. Descartes had taught that, from the very nature of the mind, it necessarily follows that all our ideas are innate. What ideas? The general principles of human knowl-

edge, such as: what is, is; and it is impossible for the same thing to be and not to be? But children, idiots, and even many a normal man, die without ever coming to the knowledge of such principles. Yet they have souls, they have minds; how could those notions be imprinted on their minds, and yet remain unknown to them? As Locke says, it "is to make this impression nothing."[19] In fact, there are no principles, no ideas which are innate, not even the idea of God; all of them come to us from both sensation and reflection. External material things are the objects of sensation, and the operations of our minds within are the objects of reflection. And such "are to me," Locke concludes, "the only originals from whence all our ideas take their beginnings."[20]

As soon as we reach that point, and Locke reached it in the very first chapter of his *Essay*, the fate of Cartesian philosophy is a settled thing. Descartes maintains that it is necessary for the soul always to think; if it is necessary, it ought to be so; unfortunately, it is a fact that the soul is no more always thinking than the body is always moving. The question is about a matter of fact, and it is "begging it to bring, as a proof for it, an hypothesis, which is the very thing in dispute."[21] How about men who sleep without dreaming? Are we going to say that they think, but do not remember that they think? If they do not remember it, how could it be proved that they think? After all, it is not even evident that the soul is nothing but a thinking sub-

[19] J. Locke, *Essay*, I, 2, 5; Vol. I, pp. 136–137.
[20] *Ibid.*, II, 1, 4; Vol. I, p. 207.
[21] *Ibid.*, II, 1, 10; Vol. I, pp. 211–212.

stance, radically distinct as such from a merely extended body. It thinks, but it also wills; it has a power of putting body into motion by thought, that is to say, motivity. And not only motivity, but mobility as well, since every one "finds in himself that his soul can think, will and operate on his body in the place where that is, but cannot operate on a body, or in a place a hundred miles distant from it."[22] The coach that carries your body from Oxford to London carries at the same time your soul, so that it constantly changes place during the whole journey between those points. What indeed does Descartes mean, when he says that the mind has nothing to do with the body? He does not even know whether his body itself is able to think or not. Since mobility belongs to souls, why should not thought belong to bodies? There is no contradiction in supposing that God could, if he pleased, "give to certain systems of created senseless matter, put together as he thinks fit, some degree of sense, perception, and thought."[23] In other words, let us say we have no positive reasons to believe that matter is a thing that thinks, but when Descartes says that a thinking matter would be a contradiction, he goes far beyond the limits of what we know, and of what can be proved by the power of human understanding.

We have got so used to those sudden changes of perspective in the history of philosophy, that we look at them as if they were inseparable from philosophy

[22] *Ibid.*, II, 23, 20; Vol. I, pp. 436–437.

[23] *Ibid.*, IV, 3, 6; Vol. II, p. 144.

itself. More than that, we feel tempted to view philosophical revolutions as the normal signs of its inexhaustible vitality. One should not forget, however, that the radical destruction of what has been held as absolute truth by many minds is bound to have a destructive effect on these minds themselves. Descartes had succeeded in convincing the greatest thinkers of his time, that scholastic philosophy had completely failed to prove the existence of God and the spirituality of the soul; then he had proved both in his own way. I would not say that every one had been convinced by his demonstrations; there still were sceptics, and obscure scholastic teachers in colleges, to oppose his views; but the strange fact was, that Descartes had precisely succeeded in convincing many thinkers who were not of the *hoi polloi.* He had convinced Malebranche, who was a great philosopher and a priest; Arnauld, who was a remarkable theologian and a Jansenist; Bossuet, who was a great orator, a bishop and the fierce adversary of the Jansenists; and Fénelon, who was also a bishop, and a great writer, but who could agree neither with the Jansenists, nor with Bossuet. Around the end of the seventeenth century, Cartesianism had become the scholasticism of all those who prided themselves on being up to date in philosophy. When, on the contrary, Locke's criticism began to undermine the influence of Descartes, these people remained convinced that an intelligent man could not be a scholastic, but it also became apparent that he could not easily keep on being a Cartesian. What

then was to become of the existence of God and of the immateriality of the soul? If neither Descartes nor the scholastics had been able to prove them, it was to be feared that they could not be proved at all.

Edward Stillingfleet, Bishop of Worcester, provides us with a vivid illustration of what was then a not uncommon state of mind. He had been persuaded by Descartes that innate ideas were the only means to prove the existence of God; Locke was now trying to prove that there are no such ideas; but then, asked Stillingfleet in his *Discourse in Vindication of the Doctrine of the Trinity* (1696), how are we to refute the atheists, if there is no innate idea of God? To which Locke replied, that if there really were in man an innate idea of God, there would be no atheists: "I would crave leave to ask your Lordship, were there ever in the world any atheists, or not?" That was enough to settle the whole question.

Anybody can see at once the fallacy in Stillingfleet's position on the question. A philosopher has no right to say: the existence of God must be proved; it cannot be proved unless we have innate ideas; hence we have innate ideas. It works the other way around: what ideas have we? Then, and only then, can the existence of God be proved? But I have not quoted Stillingfleet as a great philosopher; I merely called him in as a witness to the mental distress in which men found themselves, when Locke began to threaten Cartesianism with the same ruin it had brought upon scholasticism. When

Stillingfleet wrote to Locke: "If this be true, then for all that we know by our ideas of matter and thinking, matter may have a power of thinking, and . . . then it is impossible to prove that the spiritual substance in us is immaterial," what could Locke say to remove the Bishop's fears? Not very much indeed. In true Ockhamist spirit, he answered that it is highly probable that immaterial thinking is not the attribute of some solid, corporeal substance, though the contrary cannot be proved to be an impossibility: "But your Lordship thinks not probability enough . . . your Lordship seems to conclude it demonstrable from the principles of philosophy. That demonstration, I should with joy receive from your Lordship, or any one."[24]

Of all the discoveries made by Voltaire on the other side of the Channel, there was none in which he felt more interested than in Locke's hypothetical materialism. That was just the sort of stuff he wanted. One cannot fully account for his impassionate backing of the "wise Locke" against old Descartes, unless one takes into account the very definite service which Voltaire was expecting from Locke. Of course, Descartes had rid the world of scholasticism, and that was good. Voltaire was always grateful to some one for destroying something. But Locke had destroyed Descartes, and that was better, for it meant the destruction of even the scholastic conclusions which Descartes had attempted to vindicate in his own way. Such as we still can see him

[24]The texts are to be found in *The Works of John Locke,* ed. by J. A. St. John, Vol. II, Appendix, pp. 339–411.

in Voltaire's *Philosophical Letters*, Locke had become there a sly, cunning materialist, who had concealed his game in an artful way. Let him say that materialism is a possibility, Voltaire thought to himself, everybody will soon realize that it is an obvious reality.

In point of fact, the main responsibility for the spreading of materialism throughout the whole eighteenth century does not rest with Voltaire, and still less with Locke, but with Descartes. He had assumed the heavy task of giving a mathematical demonstration of the spirituality of the soul. The better to do it, he had begun by turning the old scholastic soul as the form of the body into a disembodied mind. Now that the Cartesian mind was dead, the body was left without either a mind or a soul. It was a mere machine; and Descartes himself had always said it was; but Descartes had not foreseen that his human machine would some day lose its mind, and would therefore be asked to produce even thought.

The mathematicism of Descartes then began to bring forth unexpected, yet necessary, consequences. If you set about dissecting concrete reality into as many separate things as there are distinct ideas, the substantial unity of man disintegrates into two really distinct substances: his mind, and his body. Let us now suppose that you fail in your mathematical demonstration to prove that there is such a separate mind, it will then be impossible for you to prove it in any other way. You have no right to appeal to what is going on in your body in order to prove that there is a mind: the

existence of a *soul* could be proved in that way, not that of a *mind*. Since its existence can be established neither mathematically nor empirically, the obvious implication is that there is no mind.

Thus, by seemingly paradoxical yet necessary consecution of ideas, the materialism of La Mettrie was ushered into the world by the mathematical spiritualism of Descartes. In his famous book, *Man a Machine* (1768) La Mettrie will openly claim Descartes for his direct ancestor: "This celebrated philosopher, it is true, was much deceived; no one denies that. But at any rate he understood animal nature; he was the first to prove completely that animals are true machines. And after a discovery of this importance, demanding so much sagacity, how can we without ingratitude fail to pardon all his errors?"[25] Thus, according to this unforeseen disciple, the upshot of Cartesianism is, that man is a machine that thinks: "What an enlightened machine!" La Mettrie exclaims![26] It certainly was, and Descartes would have been surprised to meet it. Yet he would perhaps have been still more surprised to read in the papers of Du Marsais this "Cartesian" description of a philosopher: all men are machines; the only difference there is between a philosopher and other men is, that a philosopher is a machine which, "owing to its mechanism, reflects on its own movements." In short, Du

[25]La Mettrie, *Man a Machine,* French and Engl. text ed. by G. C. Bussey, The Open Court Co., Chicago, 1912; p. 143. Engl. text only, reprinted in 1927. *Cf.* the old English translation, 3d edit., G. Smith, London, 1750.

[26]*Ibid.,* p. 56.

Marsais concludes, every man is a watch, but a philosopher is a self-winding watch.[27]

Fathers are sometimes surprised at their own children; yet La Mettrie and Du Marsais were legitimate sons of a father whose body had already lost its soul. But it was in the nature of Cartesian mathematicism that it could disintegrate into two opposite ways, and it actually did. While the body was losing its Mind in France, the Mind was losing its body in Great Britain. To find the abstract connections between the ideas that turned such an improbable consequence into a philosophical necessity is the problem to which we have now to turn our attention.

[27]*Cf.* W. H. Wickwar, *Baron d'Holbach. A Prelude to the French Revolution,* G. Allen, London, 1935; p. 70.

## CHAPTER VII

## CARTESIAN IDEALISM

DESCARTES had proved his existence to be that of a thing that thinks. Being a geometer, the only opportunity he had now to make any headway was to discover, within the nature of his mind, other natures which he could submit to his analysis. What is it, to be a thing that thinks? It was, to be knowing a few things, ignoring many others, willing, desiring, imagining and perceiving. For a psychologist, such as Locke for instance, what a wonderful field for exploration! But Descartes was working towards something else, and the incredible variety of psychological facts was of little interest to him, because he knew that all of them were nothing but particular varieties of thought, that is to say, that they were fundamentally one and the same thing.

After wandering to and fro among his ideas, unable to decide which one he should single out as coming next in the order of deduction, Descartes made up his mind to go back to his starting point. After all, the only thing he was sure of was that he was a doubting thing, that is, a thinking substance, a mind. But there might be more knowledge involved in the act of doubting than the bare certitude of mind and of its existence. He who doubts knows that he does not know as perfectly as he would like to know. He must therefore have in mind at

least some confused feeling of what perfect knowledge should be, that is to say, the idea of perfection. Now, by carefully observing that new notion, he rapidly becomes aware that there is, present to his mind, a very remarkable idea: that of a perfect being, in other words, of a being in which all conceivable perfections are to be found. Such is God, whom we conceive as a supreme being, eternal, infinite, immutable, all-knowing, all-powerful, and creator of all things which are outside himself.[1] What is there, in us, which is the origin of such an idea?

It cannot be our mind, for a doubting, and consequently imperfect, mind cannot be the model from which it draws its own idea of perfection. It cannot be any of the material things existing outside our mind. True, philosophers commonly believe that the best proofs, not to say the only proofs, of the existence of God, are those that prove Him to be the necessary cause of the physical order. But, first, even could such demonstrations be made, we, at least, could not attempt to make them; all we know, so far, is the existence of our own mind, and since we are not yet sure that there is an external world, how could we use it to prove the existence of God? Furthermore, supposing that it could be done, such a proof would still not be a demonstration of the existence of a perfect thing, for the world of matter is not perfect, or eternal, or actually infinite in perfection. Why then should its first cause, if there be one, be infinite and perfect?

[1]R. M. Eaton, *Descartes Selections*, p. 113.

And yet, as everything has a cause, there should be a cause of our idea of God. It should be such a cause as contains within itself at least as much perfection as there is to be found in its effect; in other words, the model from which our idea of perfection is copied should be at least as perfect as the copy itself. It must therefore be a perfect being, endowed with all the perfections that are found in our idea of its nature: supreme, eternal, infinite, all-knowing, all-powerful, creator of all things which are outside of Himself; in short, such a being must necessarily be that which we call God.

The very idea of perfection, which is identical with our idea of God, is therefore in our minds as an objective reality, for whose existence no other conceivable cause can possibly be found but that of an actually existing God. That it is a reality, and not a fiction of the mind, is obvious from the fact that it appears to us as a true "nature," endowed with a necessity of its own, just as our ideas of a circle, or of a square. Some people say they do not know whether or not there is a God, but even these people would agree that, if there is a God, He must of necessity be a perfect and infinite substance, and that, together with the principle of causality, is the only thing required for our demonstration of His existence.

Let us therefore conclude that God, in creating us, placed the idea of perfection within us "to be as the mark of the workman imprinted on his work." Nothing, after all, is more natural, for, as Descartes says in his second *Meditation on First Philosophy*, "from the sole

fact that God created me, it is most probable that in some way He placed his image and likeness upon me, and that I perceive this likeness (in which the idea of God is contained) by means of the same faculty by which I perceive myself."[2] In other words, as is always the case when we are dealing with truly geometrical deductions, we are not so much deducing as perceiving intuitions within other intuitions; for since the very act of doubting implies the notion of perfection, which is one with the notion of God, we have just as much right to say: *I doubt, hence God is,* as to say: *I doubt, hence I am.*

Even at this distance from Descartes, it seems to me that we still can understand his philosophy as he himself understood it: an initial intuition, then more intuitions flowing from the first by means of a deductive process; and finally, a powerful effort of the mind to eliminate deduction itself by reintegrating its successive stages in that first single intuition. The whole body of human knowledge was present to his mind, and he could see it at a glance, grounded as it was on the truth of its first principle, and sharing in its evidence. What else, and what more is there to be found in mathematical certitude? Nothing at all. Here, for instance, is the idea of God; it is possible to prove, as we have done, that an actually existing God is its only conceivable cause; but a mere analysis of the content of that idea would be enough in itself to prove the existence of God. For if our notion of God is identical with the notion of perfection,

[2] *Ibid.*, p. 125.

how could we not see that existence is involved in that idea, as one of the perfections which it signifies or connotes? I am no more free to think of God as non-existent, than I am to think of a triangle whose three angles would not be equal to two right angles. Existence pertains to God, whether or not I wish it, as necessarily as geometrical properties pertain to geometrical figures. I cannot think then of God otherwise than as existent,[3] and since all that is true of the idea of a thing is true of the thing itself, existence belongs not only to the idea of God, but also to God.

We are now in a better position to understand in what sense Descartes could say that "it is at least as certain that God, who is a being so perfect, is, or exists, as any demonstration of geometry can possibly be."[4] It is even more certain than any mathematical truth, for as long as I did not know God as a perfect being, I could not be sure that my Creator was not systematically deceiving me in mathematics as in everything else. At any rate, it is an obvious fact that the existence of God is better known to me than even the existence of the external world, since I know that there is a God, but I do not yet know whether or not there is an external world.

This was precisely the point at which Descartes found himself confronted with an entirely new and very difficult task. Up to his time, no philosopher had denied flatly the existence of material things; Descartes him-

[3]Eaton, *ibid.* (*Vth Meditation*), pp. 138–139.
[4]Eaton, *op. cit.*, p. 33.

self, of course, had never entertained any real doubt as to their actual existence; but he was forbidden by his own principles to take it as an established fact. Like the rest, it was in need of being proved, and it could not have been proved at an earlier stage of the deduction. The mind first, God next, then, and only then, the external world. Such was the order. Why should Descartes have worried about it? He himself believed in the existence of matter, and he knew that every one else would keep on believing in it anyway. Besides, was he not about to prove it? The only difference would be that men, henceforward, would know it instead of believing it, and for a philosopher at least, that was the proper thing to do.

Having thus made up his mind, Descartes looked about for a proper starting point towards that new goal. Of course, as he still was but a mind, he could begin only with an idea, and the idea to be tried first was obviously that of matter. What is matter? Taken in itself, that is, as a clear and distinct idea, it is pure extension in space according to the three dimensions. Now, however carefully I examine that idea, I cannot find in it anything from which I can deduce the existence of its object. Unlike the idea of God, it does not represent anything so perfect that I could not be the cause of my idea of it. Why should not a mind be able to form the notion of matter, even though there were no actually existing matter? We shall therefore have to try something else.

Besides his idea of matter, Descartes could find in his

mind another representation of the same object, for which he was indebted, not to his reason, but to his imagination. Apart from our abstract notion of extended bodies, we can picture them to ourselves, as we do circles, triangles, and so on, when we begin to study geometry. Now here, the problem is different; for there is nothing in the mind, taken as a mind, to account for its having an imagination. According to its nature, it should not have images, but ideas only. In order to account for the obvious difference between pure intellection and imagination, we might be tempted therefore to suppose, that there is a body, to which mind is conjoined and united. Pure intellection then would be a turning of the mind inward upon itself, while imagining would be a turning outward towards the body and beholding there something that is foreign to its own nature. To tell the whole truth, there is no other convenient explanation for the presence of an imagination within a mind. It is therefore highly probable that body exists; but we do not yet have a demonstration of its existence; even that idea of corporeal natures which I find in my imagination is a distinct idea, since geometers had nothing else whereon to build their science until analytical geometry was discovered. If it is a distinct idea of something which, unlike God, is only equal and even rather inferior in perfection to the mind, how could we deduce from its presence in the mind the actual existence of its object?

Our last hope then rests with sensation, and, this time, we are bound to succeed in our undertaking. It is

true that sensations like our ideas and images are to be found within the mind, and that is why we can use them as a new starting point, but they are very different from all our other thoughts, both in their content and in their origin. First of all, they are but confused representations of some qualities, to which no distinct idea can be attached. Let us take, for instance, the feeling of pain. Where is pain, and what is it? If I am hurt by a piece of wood, or steel, it is obvious that the pain itself is not in the wood, or the steel. It cannot be anywhere else but in my mind; but how are we to account for the fact that a mind experiences such a feeling? A mind is a thing that thinks, not a thing that feels; as such, it can form clear and distinct ideas, as for instance the idea of extension, but it cannot form sensations like pain and pleasure, or smell, or taste, which cannot be measured and numbered, or become the fitting objects of any true science. Besides, it is a fact that the mind does not form sensations at will, as it does ideas, and even images; sensations come to the mind in the most various and unexpected ways, as though they were caused in it by something that is outside of it. In this case, then, we can safely say, that the mind not only surmises but actually experiences its union with something foreign to its own nature, *i.e.*, a body, through which it becomes related to all other bodies. We might still fear of being deceived in our conclusion, did we not know that God's existence, proved in the way in which we have proved it, entails the existence of a supremely perfect being, who cannot allow

us to be deceived. Now he would deceive us if, while we have both a natural inclination to believe that there is a world and a rational justification for that belief, that world did not exist.

Descartes' demonstration was as good as it possibly could be; its only defect was that it was a demonstration. As soon as Descartes published it, it became apparent that, like Cæsar's wife, the existence of the world should be above suspicion. As long as it never occurred to any one to prove it, every one was sure of it, but the first attempt to prove it turned out to be the first step towards the denial of its existence. Descartes had endeavoured to prove something that could not be proved, not because it is not true, but on the contrary, because it is evident. Let us add that it is evident to a soul, not to a mind; and since Descartes was but a mind, he could no longer accept as evidence that which is such only to a soul, to a spiritual principle substantially united to a body; nor could he hope to find in mind, that is in a thinking substance distinct from, and exclusive of, the body, ground for the demonstration of its existence.

If sensations belong to the mind itself, nothing but the mind should be needed to account for their existence, but then there would be no reason to suppose that there is a material world. If, on the contrary, sensations are in us as coming not from the mind, but entering it from without, the so-called mind is not a true mind, but a soul, which immediately perceives the existence of bodies, as a certainty that neither can be proved, nor needs proof. Descartes had tried to find some possible position

between the two horns of the dilemma; but there was none. He wanted a mind, at once so radically distinct from matter that the existence of matter would have to be proved, and so intimately conjoined with matter, through feeling, that the existence of matter could be proved. Even metaphysicians know that you cannot eat your cake, and have it; so, as soon as Descartes' successors realized his failure, they devoted themselves to the task of finding a new answer to the questions.

These successors were three in number, and all three were great metaphysicians: Leibniz, who was at the same time a great mathematician, for he discovered the differential calculus; Spinoza and Malebranche. All three were fully alive to the fact that Descartes had failed to account for the existence of sensations; as Leibniz said: "At that point, Monsieur Descartes withdrew from the game." And yet, not one of them was able to perceive that Descartes' failure was due to the fact that he had dealt with concrete substances as geometers deal with abstract definitions. They took up the game at exactly the same point where Descartes had dropped it, they kept the same hand with the same three cards, the mind, matter and God, and as Descartes himself had already played the first two, and failed, they had but one card left; which accounts for the fact that all three of them played the same card. They had to explain everything by God. The problem, as they saw it after Descartes, could be reduced to very simple terms. Mind and matter are in reality two completely distinct substances; that, at least, Descartes had fully demonstrated. On the

other hand, it seemed to be a fact that there was some sort of connection between mind and matter; but the possibility of such a connection could never be found in those two substances themselves, since they were by definition mutually exclusive. Now outside of those two substances, there was still another one, and only one, namely God; through God, therefore, should proceed the unknown force that linked mind to matter and matter to mind.

That is the reason why Leibniz, Spinoza and Malebranche, despite the fact that they spent a good deal of their time in refuting each other, can be considered as having formed a distinct school, the Cartesian school. Leibniz said that God, in His perfect wisdom, had ordered all things from the very beginning, in such a way that every modification in a certain body would be accompanied by a certain modification in a corresponding soul. He called his system pre-established harmony.[5] Spinoza went still further: he decided that thought and extension were two attributes of one and the same infinite substance, flowing from that substance with the same necessity, and according to the same law, so that every mode of extension had to find its equivalent in a corresponding mode of thought. God, being the only true substance, was therefore the common source of those parallel attributes.[6] For this reason His system was often called metaphysical parallelism. As to Malebranche, he rejected Leibniz' solution on the ground that if God

[5]Leibniz, *The Monadology,* Art. 80.
[6]Spinoza, *Ethics,* Pt. II, prop. 1–3; in B. Rand, pp. 168–169.

has pre-established a universal harmony, there was no room left for free will; and he rejected the system of Spinoza (whom he once called: "le misérable Spinoza," the wretched Spinoza) because to conceive mind and body as two finite modes of two attributes of the divine substance was to identify them with God. It was pantheism. But where could he find another solution?

Malebranche was greatly helped in finding one, by an expression that had already been used, but only in a casual way, by Descartes, and even by Saint Augustine. Why not say that God has established such laws, that on the *occasion* of some change taking place in our bodies, some other change should necessarily take place in our souls? According to such a doctrine, which is commonly called *occasionalism*, matter and its modifications are but occasions for God to give us corresponding sensations and corresponding ideas. In a way, it can be said that Malebranche had answered the question, but his answer was fraught with fearful consequences, some of which he had not been able to foresee.

Let us begin with those which he himself perceived, and accepted. The first consequence is, that since we know everything through God, or, as Malebranche would say, in God, our knowledge is not directly related to actually existing things, but only to their ideas in God. Of course, we know *that* things are, and *what* they are; but since material substances, by their own natures, are entirely foreign to thinking substances, it might perhaps be better to say that, owing to God, we know everything about them, but do not know them.

This is so true that even were the external world annihilated by an act of the divine will, the character of physics as an exact science would not be changed. For indeed, physics is not a knowledge of the external world in its actual existence and its own reality, but rather a science of that intelligible idea of matter which is in God, and through which alone we know the properties of matter as well as its laws. Science is what it is, and always will remain such, whether there be an external world or not.

The second consequence of occasionalism is, that I do not know my own body any more than I know other bodies. To me, my own body is just as much part of the external world, that is to say, just as foreign to my mind, as every other body. I do not see my body, except through the ideas and sensations I have of it impressed upon my mind by God. Another way of expressing the same fact would be to say that the body which our soul *sees* is not the same as the body which our soul *animates;* for the body it animates is a concrete and material thing which, as such, can be neither felt nor known by the mind, whereas the body the mind knows is but the intelligible nature of the same body, in God.

From those two consequences there follows a third, the importance of which for the ulterior development of metaphysics was immediately perceived by some of Malebranche's contemporaries. It is that Descartes was wrong in saying that God would be a deceiver, if He made us falsely believe that external bodies make themselves known to us through sensations. What had happened

was simply this: Descartes admitted that sensations were actually caused in us by external bodies. That he admitted it, is strange; for, just as he had been the first to prove the real distinction of mind and body, he also should have been the first to realize that no action of a body upon a mind is conceivable; but he did admit it, and as he felt sure that he was right, he decreed that if he, Descartes, could be wrong when he was sure he was right, *then* God would be a deceiver. Unfortunately there was a third possibility, which Malebranche was not slow to see. On Descartes' principles, we know, as an evident truth, that the external world is not the cause of our knowledge of it; on the other hand we know, with equal certainty, once more from Descartes' own demonstrations, that God is not a deceiver. Whence it follows, as a third evident truth, that Descartes was wrong. He was wrong in considering as an evident truth our natural inclination to believe that bodies can act upon our minds. True, there is in us such an inclination, and it was put in us by God, and it is a deceiving inclination, yet the presence in our mind of such an inclination is no proof that God is a deceiver. To ask why it was put there by God is irrelevant to the question; the only thing that matters is the fact that God has not given us that inclination, as a rational evidence to be accepted by reason. On the contrary, God has given us, together with that natural inclination, the natural light of reason, by which we can question the truth-value of that inclination, and prove that it has none. Descartes should have reached that conclusion from his own principles;

if he did not reach it, it is because he was deceiving himself, not because he was being deceived by God.[7]

Now let us recall what has already been said about Descartes' demonstration of the existence of an external world. It is well worth remarking that Descartes himself had considered Malebranche's vision in God as a possibility, but had rejected it on the ground that "since God is not a deceiver, it is very manifest that He does not communicate to me these ideas immediately and by Himself. . . ."[8] On the contrary, Descartes had said, God not only did not give me a faculty with which to recognize that this is the case, but he gave me rather a very great inclination to believe that these ideas were sent to me by corporeal objects. Hence his conclusion: as I have that natural inclination, and, on the other hand, as I have no evident knowledge that it is a deceitful one, "I do not see how He [God] could be defended against the accusation of deceit, if these ideas were produced by causes other than corporeal objects. Hence we must allow that corporeal things exist."[9] It is clear that, with the failure of this last argument, the whole Cartesian demonstration of the existence of an external world goes to pieces. How then are we going to prove it?

To that question, Malebranche's answer was simply: we are not going to prove it, because it cannot be

[7]Malebranche's argument is the stronger, for Descartes himself, by his rejection of secondary qualities, had been obliged to admit that: "notwithstanding the supreme goodness of God, the nature of man, as it is composed of mind and body, cannot be otherwise than sometimes a source of deception." Eaton, *op. cit.*, p. 163.

[8]Eaton, *op cit.*, p. 154.

[9]*Ibid.*, p. 154.

proven. It was a very bold step, but at the same time it was obviously an inevitable one for any one who wanted to be truer to Descartes' principles than Descartes himself had been. As a matter of fact, the founder of the school lived long enough to see one of his first disciples arrive at the same conclusion. Regius, a Dutch professor of philosophy, and a great admirer of Descartes, said, and even printed, that according to the new philosophy: "it was naturally doubtful, whether or not corporeal things were actually perceived by us." But, he added, "that doubt is removed by the divine Revelation in Holy Scriptures, since it cannot be doubted that God has created heaven and earth."[10] When he read that statement, Descartes was furious; reminding Regius that he had given conclusive proof of the existence of the world in his writings, he added that his proofs could be understood at least by such people as "are not like the horse and the mule which have no understandings."[11] That, at least, could be proved by the Bible.

Unfortunately, there soon appeared another Cartesian horse, or mule, in the person of Géraud de Cordemoy, who in his interesting essay: *On the Distinction of Mind and Body*, 6th *Discourse*, expressed surprise to hear that some people are not quite sure of having a soul; the real problem, says Cordemoy, is rather to prove that we have a body; without faith in divine revelation, how could we be sure of it? Thus, when Malebranche came

[10]R. Descartes, *Œuvres*, ed. Adam-Tannery, Vol. VIII, 2nd Pt., p. 344, n. ix.

[11]Descartes, *op. cit.*, pp. 356–357. *Cf.* Ps. xxi: 9, in the revised Douay edition.

third in the series, there was very little left for him to do, except confirm, by deeper and more convincing proofs, an opinion generally received in the French Cartesian school.

In his *Conversations on Metaphysics and on Religion* (1688), Malebranche devoted the VIth Conversation to a proof of the existence of bodies by means of divine Revelation. The obvious objection was, that by doing so he was substituting religion for philosophy; but Malebranche knew several answers to that reproach. Since he had already proved that we receive our sensations directly from God, he was bound to consider sensations themselves, as some sort of natural revelations.[12] This was even the reason why Malebranche, far from being ashamed because he could not find a demonstration of the existence of matter, took great pride in proving at least that it is impossible to prove it.[13] Bodies cannot be directly perceived by our minds; on the other hand (and this is where Spinoza was wrong), their existence cannot be concluded from the nature of God, since God has created them, not by any necessity of nature, but rather by a free decision of His will. How then could we prove an existence that can be neither perceived nor deduced? It is a radical impossibility. But we know there is a God, and we believe that He is the Christian God; consequently, we should also believe that what He says in the Holy Scriptures is true. We are, then, bound in conscience to believe that "in the beginning, God created

[12]Malebranche, *Dialogues on Metaphysics and on Religion*, VI, 3; trans. M. Ginsberg, G. Allen and Unwin, London, 1923; p. 165.
[13]*Ibid.*, VI, 4, p. 166.

heaven and earth," together with the millions and millions of creatures contained therein. We should therefore hold, as an article of faith, that the external world is, or exists.

Just as Descartes had been labelled a "Dreamer," so Malebranche was commonly to be called a "Visionary." Yet he immediately found an audience, even in England, where J. Norris supported Malebranche's views, in his *Conduct of Human Life* (1690), with the unexpected result that the Quakers immediately recognized their own doctrine in Malebranche's doctrine of the Vision in God.[14] Norris himself, who was a good scientist, was then accused of being a Quaker, which he denied, not however without adding, that were the Friends able to elaborate their doctrine into a clear system, it would not be so different from his own opinions.[15] This is why, in his IInd *Philosophical Letter*, Voltaire introduces the famous Quaker, who justifies his own doctrine of inspiration by saying, that God gives us all our ideas: "Eh!" Voltaire says, "here is Father Malebranche true to life." —"I know thy Malebranche," the Quaker rejoins, "he was a bit of a Quaker, but not enough."[16] Such was Malebranche's reward for having pledged himself always to follow the pure evidence of reason. As Faydit said of him in a then oft-quoted verse:

"He who sees all in God, there, sees not he is mad."

[14] *Cf.* J. Locke, *Remarks upon some of Mr. Norris's Books, wherein He Asserts P. Malebranche's Opinion of our Seeing all Things in God;* in J. A. St. John's edit., Vol. II, pp. 459–471.

[15] Voltaire, *Lettres philosophiques,* ed. G. Lanson, Vol. I, p. 31, note 14.

[16] *Ibid.,* Vol. I, p. 25.

That was not the worst. According to an old tradition, when Malebranche was in the last year of his life (1715), and already very weak, a young Irish philosopher waited upon him. His name was George Berkeley. Having published his own *Essay Towards a New Theory of Vision* (1709), it was only natural that he should carry on a serious philosophical discussion with Malebranche. We are not sure what the topic of the discussion was, but we should not be very far from the mark in supposing that it ran something like this: "Father, I quite agree with you that God gives us all our ideas, including sensations, and that, consequently, the existence of a material world cannot be proved. But then, why are you so keen on upholding its existence? The existence of *what?* You have proved conclusively to us that the so-called matter 'neither acts, nor perceives, nor is perceived.' Then, *what* is it? You say it is an occasion. But since matter has nothing in common with mind, God could not possibly find there even an occasion to do something in our minds."[17] "Then you add that we should at least believe what Revelation tells us about it; but Revelation tells us nothing at all about it; all it says is, that God created heaven and earth, not that he created an unknown and unknowable substance, called matter, that lies hidden behind our own ideas and our own feelings. Nothing will be changed in the usual interpretation of Holy Writ whether there be, or be not, external things."[18] Ideas, then, and spirits, make up the whole of reality, and

[17] *Cf.* G. Berkeley, *Of the Principles of Human Knowledge,* Part I, n. 67–79; ed. A. C. Fraser, Clarendon Press, Oxford, 1901; Vol. I, p. 43.
[18] *Ibid.,* Part I, n. 82–85; Vol. I, pp. 302–304.

outside of them, there is nothing; nay, not even an outside.[19]

If young Berkeley did use such an argument, which I have borrowed from his later criticism of Malebranche, the account given by Stock of their interview is not entirely lacking in probability: "In the heat of the disputation," says Stock, "he [Malebranche] raised his voice so high, and gave way so freely to the natural impetuosity of a man of parts, and a Frenchman, that he brought on himself a violent increase of his disorder, which carried him off a few days after."[20] If the story is true, it is a good one; if it is not true, it is better than true, for it should have happened. No wonder then, that DeQuincey inserted it in his famous Essay on *Murder as One of the Fine Arts.*[21] What a murder case, indeed: "Murder by Metaphysics!"

Whether the sudden revelation that he had always been an unconscious idealist actually killed Malebranche or not, the fact remains, that while Locke was bringing Descartes' reign to an end on the continent, the geometrical distinction of mind and body was reaching on

[19]The idealistic implications of Malebranche's vision in God had already been seen by Locke: "What he (Malebranche) here means by the sun is hard to conceive; and according to his hypothesis of seeing all things in God, how can he know that there is any such real being in the world as the sun? Did he ever see the sun? No; how then does he know that there is a sun which he never saw?" J. Locke, *An Examination of P. Malebranche's Opinion of Seeing all Things in God,* n. 20; ed. J. A. St. John, Vol. II, p. 425.

[20]A. C. Fraser, *The Works of Berkeley,* Clarendon Press, Oxford, 1871; Vol. IV, p. 73. *Cf.* a shorter account of the same story in the 1901 edition, Vol. I, p. 43.

[21]*DeQuincey's Works,* Riverside editions, Boston, 1877; Vol. II, p. 551

Irish soil the last stage of its natural evolution. Like all philosophers, Berkeley felt rather interested in those points of his own system on which he was at variance with Malebranche and Descartes, but his radical idealism was none the less a natural and necessary offspring of the "I think, hence I am." In spite of Berkeley's own protests, his contemporaries, and particularly his friend Doctor Clayton, had no difficulty in finding him a place among the members of the Cartesian family. In the *Essay on Spirit*, printed in 1750, and attributed to Clayton, we read that the opinion of Spinoza was, that "there is no other substance in nature but God; that modes cannot subsist, or be conceived, without a substance; that there is nothing in nature but modes and substances; and that therefore everything must be conceived as subsisting in God. Which opinion, with some few alterations, has been embraced and cultivated by Father Malebranche and Bishop Berkeley."[22] Clayton was right, save only in this, that if Malebranche, Berkeley, and let us add Leibniz, had made God the only knowing, acting, and subsisting reality, Spinoza had played no part in their decision. The responsibility for so much metaphysical trouble behind all those systems rests with Descartes and his geometrical metaphysics. Every one is free to decide whether he shall begin to philosophize as a pure mind; if he should elect to do so the difficulty will be not how to get into the mind, but how to get out of it. Four great men had tried it, and

[22] A. C. Fraser, *op. cit.*, Vol. IV, p. 324, n. 83. *Cf.* J. Locke, *Remarks upon some of Mr. Norris's books*, n. 16; Vol. II, pp. 468-469.

failed. Berkeley's own achievement was to realize at last, that it was a useless and foolish thing even to try it. In this sense at least, it is true to say that Berkeley brought Descartes' "noble experiment" to a close, and for that reason his work should always remain as a landmark in the history of philosophy. But Descartes was not only a metaphysician, he was also a physicist; and we shall now see how, after destroying our natural belief in the existence of the world, Descartes' mathematicism was to destroy our natural belief in physical causality.

## CHAPTER VIII

## THE BREAKDOWN OF CARTESIANISM

NO one who knows the ulterior destiny of Descartes' doctrine can read without surprise the heedless sentence with which his VIth *Meditation* begins: "Nothing further now remains, but to inquire whether material things exist."[1] So far was he from fearing any difficulty on the point that, when some readers told him he was headed for trouble, Descartes refused to believe it. Yet, he had been duly warned. "What must the union of the corporeal with the incorporeal be thought to be?" Gassendi had asked him: "how will that which is corporeal seize upon that which is incorporeal, so to hold it conjoined with itself, or how will the incorporeal grasp the corporeal, so as reciprocally to keep it bound to itself . . .?" True, you say that you actually experience such a union when you *feel* pain, but then "I ask you how you think, that you, if you are incorporeal and unextended, are capable of experiencing the sensation of pain?" In short, to conclude in Gassendi's own words, "the general difficulty always remains, *viz.*, how the corporeal can have anything in common with the incorporeal, or what relationship may be established between the one and the other."[2]

[1]Eaton, *Descartes Selections*, p. 145.
[2]Gassendi, *Vth Objections*, in Eaton, *op. cit.*, pp. 245–246.

To Gassendi's most pertinent objections, Descartes had simply answered: "At no place do you bring an objection to my arguments."[3] Such blindness in such a genius would remain a mystery, did we not know that Descartes' real purpose, in proving the existence of an external world, was less to prove the existence of something outside of the mind, than it was to make clear that nothing exists outside of the mind but geometrical extension. As he himself understood it, his distinction of mind and body had to cut both ways; first, it had to prove that nothing of what belongs to the nature of corporeal substance can be ascribed to the mind; and secondly, which was what Descartes wanted above all, it had to prove that the converse is true: that nothing of what belongs to the nature of the mind should be ascribed to corporeal matter. In other words, if Descartes never worried very much about his demonstration of the existence of matter, the reason is that in his mind, the real problem had never been: does matter exist? but, rather: of what do we prove the existence in proving that matter exists? And the answer was: extension in space according to three dimensions; whence it follows that matter is that, and nothing else.

Thus, Descartes was resorting once more to his fundamental principle: what is true of the concept of a thing is also true of that thing.[4] The only existence I can conceive outside of my mind is that of extension; consequently, what is outside of my mind is nothing but

[3]Eaton, *op. cit.*, p. 262.

[4]Descartes, *Reply to Objections II*, ed. Haldane and Ross, Vol. II, p. 57, Propos. 1; and p. 53, Defin. 9.

extension. Hence the title of his VIth and last *Meditation:* "Of the existence of material things, and of the real distinction between the soul and body of Man."[5] And the precise point, which he wished to make in his demonstration, may clearly be seen from its carefully worded conclusion: "Hence we must allow, that corporeal things exist. However, they are perhaps not exactly what we perceive by the senses, . . . but we must at least admit, that all things which I conceive in them clearly and distinctly, that is to say, all things which, speaking generally, are comprehended in the object of pure mathematics, are truly to be recognized as external objects."[6] We shall then have to remove from the idea of matter all the so-called "qualities," such as weight, hardness, colour and so on, for they do not arise from the body alone, and, therefore, they do not actually belong to it.[7] In the same way, and for the same reason, shall we have to eliminate from matter the so-called "natures," or "forms," which were supposed by Aristotle and his mediæval followers to be in animate and inanimate bodies, as the internal causes of their motions, growth, nutrition, generation and sensations. What are such "natures," or "forms," but disguised souls, ascribed by men to matter, as if all natural bodies were made up of a body and a soul? True, it is in man a natural illusion to conceive all things after the pattern of man; nevertheless, it is but an illusion. Man alone has both a

[5]Eaton, *op. cit.*, p. 145.
[6]*Ibid.*, p. 154.
[7]Descartes, *The Principles of Philosophy*, II, 2–4; Eaton, pp. 290–291.

body and a mind; as to physical bodies, they are nothing but bodies, that is to say, variously shaped particles of extension, arranged according to various orders, and occupying certain places in space. Even living bodies, animals, for example, are mere machines, and our human body itself, when considered apart from the mind to which it is united, is nothing but a machine.

The ultimate conclusion of Descartes' metaphysics provided him, therefore, with the first principle of a purely geometrical and mechanical conception of the physical world, which was the very thing he wanted. Let us then suppose with him a matter created by an all-powerful God. There is no reason to conceive an extension beyond which no further extension could be found, and even no possibility of doing so, whence it follows that we can say, as we do in the case of the idea of matter we have in the mind, that matter itself is indefinitely extended and the material world has no limits. On the other hand, since matter is identical with extension, there can be no empty space in the world; for, where there is space, there is extension, and consequently there is matter; not only therefore is the world of matter indefinitely extended in space, but it is full. Last, but not least, as we cannot conceive a particle of extension so small that it could not be conceived as capable of being divided into still smaller parts, we are bound to think of material bodies as indefinitely divisible. In short, there are no atoms, which makes motion possible in a perfectly full world. A material movement is always a complete circle of infinitely small particles of matter moving together,

so that, as similar to the case of a perfectly full street-car, where no man can get in without another man getting out, each particle of matter successively occupies every one of the places left vacant by the previous one. All natural motions in material bodies are therefore whirling motions; each of them is a "vortex."

Beyond these intrinsic properties of matter, the only metaphysical hypothesis we need to assume is that, when God created matter, He caused a certain amount of movement in it. Given that fundamental assumption, all the laws of physics will be deduced with mathematical evidence; observations and experiments having no part to play, other than to clear up every successive point of the deduction, or to provide us with more facts to be deduced from the same principles. Having created the world with a certain amount of motion, God, who is immutable because He is perfect, still preserves in the world just as much motion as there was on the day of creation. Every moving thing, then, as far as lies in it to do so, continues to move as it was once moved, keeping its whole motion when it comes in contact with a stronger body, and communicates to weaker bodies just as much motion as it loses by their impact. Such motion is not the external manifestation of some energy hidden within the matter; such a fancy is inconsistent with straight mechanism and would bring us back to the scholastic illusion of "forms," or "natures." Ultimately it would mean that some "souls" are animating matter from within, setting it in motion and stopping it at will. A purely geometrical idea of motion reduces itself to a change of place; a body then will be

said to be moving, when it passes from the vicinity of those bodies that are in immediate contact with it, into the vicinity of others.[8] Motion, as Descartes says, is nothing but "the *transportation*, and not either the *force* or the *action* which transports." And the reason why he says so is obvious: "motion is always in the mobile thing, not in that which moves."[9] Bodies in motion keep what motion they have received until they communicate it to other bodies according to very simple laws; it would be even more correct to say that motion passes through bodies, from some to others, for mobile bodies are in motion, they are moving things, not movers; so much so that the sole mover of the whole world is not himself in motion: He is the immutable preserver and mover of moving matter, *viz.*, God.

The better to explicate the full meaning of such a philosophical revolution, allow me to take you back, for a few moments, to the mediæval world which Descartes was attempting to replace. According to St. Thomas Aquinas, the physical order was essentially made up of "natures," that is to say, of active principles, which were the cause of the motions and various operations of their respective matters. In other words, each nature, or form, was essentially an energy, an act. Now it is an obvious fact that such a world was no fit subject for a purely mechanical interpretation of physical change; dimensions, positions and distances are by themselves clear things; they can be measured and numbered; but those secret energies that had been ascribed to bodies by

[8]Descartes, *Principles of Philosophy*, II, 25; Eaton, p. 301.
[9]*Ibid.*, p. 301.

Aristotle and St. Thomas, could not be submitted to any kind of calculation. Should they be allowed to stay there, and this indeed was to Descartes the main point, there would remain in nature something confused and obscure, and in science itself a standing element of unintelligibility. As a geometer, who wanted physics to become a department of his universal mathematics, Descartes could not possibly tolerate such a nuisance. Forms, natures and energies had to be eliminated then from the physical world, so that there should be nothing left but extension and an always equal amount of motion caused by God.

How thoughtful and accommodating a God indeed was Descartes' God! All-powerful, He had created just the kind of world which Cartesian philosophy could explain; immutable, He was preserving things with so conscientious a regularity that Descartes could unfold the whole explanation of his world without bothering any more about Him. Pascal had clearly perceived that deep intention, when he wrote that in all his philosophy, Descartes "would have been quite willing to dispense with God. But he had to make Him give a fillip to set the world in motion; beyond this, he has no further need of God."[10] However true this may be, it should not be forgotten that if, in a sense, the Cartesian God does not do much in the world, since science can freely develop itself as though there were no God, in another sense it is just as true to say that God does everything in it. Like Descartes' God, the God of St. Thomas was a

[10]Pascal, *Pensées*, trans. W. F. Trotter, p. 23, n. 77.

continuous creator of all things; but the things He had created, and which He was still keeping in existence, were "natures," that is to say, active causes, true causes. Indebted to Him for their actual existence, their operative powers and even the very efficacy of their operations, they nevertheless were efficient causes, and such operations could truly be said to be their own. Thus, what God has to keep in existence, in a Thomistic world, is a set of enduring, active natures, each of which is an original power with a sufficient capacity to do its own work. Not so in the world of Descartes. Once all individual sources of energy had been expelled from it, nothing was left therein but extension and its laws; not natures, but Nature, that is to say, those changes that happen in the various parts of matter. As to the "laws of nature," they were nothing more than the divinely and freely created rules, in accordance with which these changes occur; the Divine activity, which does not itself change, remained, in fact, the only active cause still to be found in such a world.[11]

Of those two Descartes, the Descartes who would have been quite willing to dispense with God, and the Descartes who wanted to ascribe all causality to God, which one was the true Descartes? Both; for Descartes was quite willing to give everything to God in metaphysics, if that were necessary in order to have nothing but extension left in physics. As he himself had no use for physical energy of any kind in his purely mechanical physics, what Descartes needeed in metaphysics was a

[11]Descartes, *The World,* VIII, Eaton, p. 322.

monstrous and despotic God, whose proper function it would be to draw from matter all that was not bare and naked extension in space. The actual condition of such a world, in any given moment, would then require no other explanation than the creative and preserving power of a God who would make it to be so; what such a world is now does not follow from what it was in the instant immediately preceding, nor is it a cause of what it will be in the next one. In short, the existence of such a world is not a continuous duration of permanent substances, but a succession of disconnected and instantaneous existences, each of which has no other cause than the creative power of God.[12]

I wish I could honestly tell you that Descartes' sacrifices in the field of metaphysics were repaid a hundredfold by his discoveries in the field of physics. But it was not to be so. Truth is one, and bad metaphysics seldom pays, even in the interests of science. Immediately after Descartes, Leibniz proved that even the Cartesian laws of impact were scientifically wrong, and precisely because Descartes had failed to grasp the importance of such notions as form, force and energy.[13] As soon as Newton published his *Mathematical Principles of Natural Philosophy*, in 1687, it immediately became apparent that Descartes' physics was a thing of the past. Aristotle's physics had lasted twenty centuries,

[12]This is the reason why, as Spinoza was to see very clearly, bodies should not be considered as "substances" in a Cartesian world: Spinoza, *Ethica*, Part II, prop. 13, lemma 1.

[13]On the Leibnizian meaning of those notions, see the important text quoted in H. W. Carr, *Leibniz*, Little, Brown and Co., Boston, 1929; pp. 77–79.

Descartes' lasted about thirty years in England, and not much more than sixty years on the Continent. True, there were still some belated Cartesians both in England and France during the first third of the eighteenth century, but the real scientists regarded them as curious specimens of an actually extinct race. When the worthy Fontenelle was so heedless as to compare Descartes with Newton, English public opinion felt very indignant and blamed it on French national prejudice. "This," said a letter to *The London Journal* in 1723, "is just as if a comparison had to be made betwixt a Romance and a real History, between a scheme of mere suppositions and a set of real truths; between conjectures, imaginations, mere reveries, and plain facts, visible laws and known experience."[14] From that decision there was to be no appeal, even in France. Around the year 1732, Voltaire became a convert to Newton's physics, French public opinion followed him, and hardly a single one of the physical laws laid down by Descartes in his *Principles of Philosophy* has been held as valid by any scientist since that time. As a matter of fact, Descartes' physics was an almost complete failure; yet his metaphysics of nature was to give a new turn to natural philosophy.

As we should expect, it is to France that we must turn in order to witness the beginnings of those new developments. In 1664, one of Descartes' disciples, Louis de la Forge, published a posthumous work of the master:

[14]The text is quoted, together with several others to the same effect, by G. Lanson, in Voltaire, *Lettres philosophiques,* Vol. II, pp. 9–10.

*Man by René Descartes*, to the text of which he added an interesting commentary of his own. In 1666, the same de la Forge published his own *Treatise on the Spirit of Man, Its Faculties, Its Functions and Its Union with the Body according to the Principles of René Descartes.* In Chapter X of his book, de la Forge proved that, on Descartes' own principles, the physiological modifications of our body could not be more than "occasional causes" of our feelings, but in Chapter XVI he raised another question, which proved to be a very important one. Philosophers are always wondering how a mind can act upon a body, and a body upon a mind; but a body itself is just as distinct a substance from another body, as it is from a mind; how then are we to account for the fact that one body seems to act upon another body? True, we see, or at least we believe we see, that some material things, which are in motion, communicate some of their own motion to other bodies; but have we any clear and distinct idea of *how* that can be done? We have absolutely none; instead we perceive clearly and distinctly, that it is a contradiction to posit such direct communication betwen two distinct substances. What actually happens is not that body A is acting upon body B, but that God, who was preserving both A and B in contiguous places, is now conserving them apart, that is, in separate places, on the occasion of their former contiguity.

Thus initiated by Descartes and de la Forge, the breakdown of physical causality soon became an accomplished fact with Géraud de Cordemoy. No one did more

than that obscure man to bring into the open those essential implications that had always been involved in Descartes' principles. As soon as he began to deal with the question, in his treatise *On the Discerning of Mind and Body*, he was able to settle the whole case at once, and he made a thorough job of it. Two axioms, and it was done. First axiom: a thing cannot have by itself that which it can lose without ceasing to be what it is. Second axiom: a body can gradually lose its motion until no motion at all be left, without ceasing to be a body. Conclusion: no body has by itself any motion. Cordemoy's conclusion indeed reached the very root of the problem, and helps us to realize the deep meaning behind Pascal's irony. Descartes had no need of God, save only "to give a fillip to set the world in motion." But, for that at least, he was in very great need of God.

Descartes, we remember, had planned to give geometrical explanations of all phenomena, even life; but he met with difficulty from the very beginning of his undertaking. How indeed could he extend pure geometry even to mechanics, since pure geometry deals with extension only, while mechanics deals with extension plus motion? Motions do not belong in the geometrical order; they come from without, as something new that cannot possibly be deduced from the bare essence of extension. True, extended things are actually moving, but they are not moving as extended, that is to say, in virtue of their own essence as extended things. Descartes himself knew that so well that he did his very best to palliate the difficulty; if we saw him reducing motion itself to

a transportation from place to place, passively undergone, it was because he wanted to leave nothing in bodies but relations of place and distance, that is to say, geometrical relations. Yet, transportation itself still remained a fact to be accounted for. Transportation by what? No "what" could be found in extension itself, since motion does not belong to extension as such. Then, transportation by whom? The only possible answer obviously had to be: by God.

This was Cordemoy's final answer. Since no body can move another body, and as the only other kind of substance we know of is mind, the cause of all motions in space must needs be a mind. Not our mind, which cannot move even its own body; then it must be God. The conclusion flowed so necessarily from Descartes' method, that in the last third of the seventeenth century all Cartesians received it as a truth conclusively proved. We find it quoted as "the principle of the Cartesians" in the anonymous pamphlet: *Letter of a Philosopher to a Cartesian*, which was printed in 1672. According to the 32nd article of the Letter, all Cartesians agree that God alone is able to cause motion. We fancy that cannon balls bring walls down; they do not. No gun in the world, no gun powder, no cannon ball, no engine, no man, even no angel, is able to move anything, be it a straw. God alone can do it.

When Malebranche took up the problem in his turn, he could do little more than provide his contemporaries with new demonstrations of the same conclusion. As a matter of fact, other great minds of the time were intent

upon working out some answer to the Cartesian problem of the "communication between substances." Spinoza, for instance, identifies Nature with God (*Deus sive natura*); individual things therefore are nothing but "modes by which the attributes of God are expressed in a certain determined manner, that is, they are things which express in a certain determined manner the power of God whereby God exists, and acts."[15] Bodies, therefore, do not act, they merely exhibit particular modes of God's action. Leibniz's famous monads "have no windows, through which anything could come in or go out"; there is then "no way of explaining how a monad can be altered in quality or internally changed by any other created things."[16] Hence Leibniz's conclusion, that "the influence of one monad upon another is only ideal, as it can have its effect only through the mediation of God,"[17] or in still fewer words: "There is only one God, and this God is sufficient."[18]

If Malebranche's answer to the question was to exercise a particularly deep influence on eighteenth-century philosophy, it is because he, at least, still believed in the existence of a concrete and actually subsisting world of matter. To him, matter was not simply a confused perception, as it was to Leibniz; nor would he reduce bodies to what they were for Spinoza, *viz.*, finite modes of a purely intelligible extension, which itself is one of the attributes of God. Even knowing, as he did, that

[15]Spinoza, *Ethics*, Part III, prop. 6.
[16]Leibniz, *Monadology*, 7; ed. R. Latta, Oxford, 1898; p. 219.
[17]*Ibid.*, 51; p. 246. [18]*Ibid.*, 39; p. 239.

it could not be proved, Malebranche clung through faith to the conviction that God had created, after the pattern of its intelligible idea, an actually existing substance, that was something in itself, apart from its idea in God and from our knowledge of it. Malebranche was thereby compelled, by his own position, to deal with the nature of causality in the material world, and, of course, to deny it.

According to Malebranche, the first step to the conclusion that bodies cannot act upon bodies is the realization that we have no idea whatsoever of what such an action could be. As a true Cartesian he insists that we consult the idea which we have of bodies, and always remember that "one must judge of things by the ideas which represent them."[19] Now the idea of an action exerted by a body upon another body does not represent anything to our mind; we simply have no such idea; consequently, there is no such action. And what is more, there can be no such action, for its very supposition would involve a flat contradiction. What could we mean in saying that a body moves another body? The only possible meaning that such an expression could have would be that a certain body A causes another body B, which at first was existing in a certain place, to exist now in another place. But how could a material body cause another material body to be in the place where it is actually to be found? It is God's will which gave existence to bodies, as well as to all created things, and

[19]Malebranche, *Dialogues on Metaphysics and on Religion,* VII, 5; trans. M. Ginsberg, G. Allen and Unwin, London, 1923; p. 183.

the same divine power that created them is still keeping them in existence, so much so that should this divine will cease to be, bodies themselves would necessarily cease to be. Now, it is impossible for us to conceive a body that is not somewhere, that is to say, that is not in a certain place; nor is it possible for us to conceive a body that is neither moving, nor at rest, neither changing its relations of distance to other bodies, nor keeping the same. So true is this, that "God himself, though all-powerful, cannot create a body which should be nowhere and which should not stand to any other body in some special relation." It is therefore one and the same thing to say that God's will is preserving the existence of a certain body, and to say that it preserves that same body as existing in the very place where it actually is. God, indeed, could not do differently; since "He cannot will that which cannot be conceived" namely, that which involves a manifest contradiction. But then, what is there left, that created bodies can do? A certain body is where it is because God's creative power is conserving it just where it is; in the next instant, God will conserve that same body in another place, if the body be moving, or in the same place, if the body be at rest. Consequently, bodies are in no wise the causes for other bodies being where they are, since they neither move these other bodies, nor are moved by them.[20]

It would be difficult to conceive a more lucid explanation of the logical consequences involved in Descartes' conception of matter. Pure extension is pure passivity,

[20] *Ibid.*, VII, 6; pp. 184–185.

that is to say, it is by its nature exclusive of causality. When God first created the world, the world itself stood for nothing in its own creation, it simply was "being created." Every one understands that, in the very moment of their creation, things were not the causes of their own existence, of their own natures, or of their own location in space; God's will alone made them to be, to be what they were, and to be where they were. Most of us would admit that it was so at the moment of creation, but that, the moment of creation once passed, it is no longer so. "The moment of creation once passed!" says Malebranche, but "that moment never passes away. The conservation of created beings is . . . *their continuous creation*. . . . In truth, *the act of* creation never ceases, since in God, conservation and creation are but one and the same volition, and in consequence are necessarily followed by the same effects."[21] In short, just as bodies cannot be endowed with any kind of efficacy, "it is God alone who adapts the efficacy of His actions to the *ineffective actions* of His creations."[22]

A man who could find so perfect an expression of his thought will certainly not be charged with inconsistent and loose thinking; nor could his conclusions be rejected on the sole ground that they were unusual and disconcerting, which true conclusions often are; but it is still quite legitimate to ask him whether there was not something wrong in his very approach to the question. This is precisely what John Locke did, and he did it with

[21] *Ibid.*, VII, 7; pp. 185–186. [22] *Ibid.*, VII, 10, p. 189.

his usual acuteness, both in his *Examination of Malebranche's Opinion of Seeing All Things in God*, and in his *Remarks upon Some of Mr. Norris's Books wherein He asserts P. Malebranche's Opinion of Our Seeing All Things in God*. Locke had clearly perceived the two main reasons why Malebranche had to uphold occasionalism: the desire to extol the absolute power of God, and the radical impossibility of finding in matter the cause of its own motion. Locke's answer to the first of those reasons is identically the same as that which had already been given by St. Thomas Aquinas, in the thirteenth century, to those who made man "altogether passive in the whole business of thinking." The parallel is so striking that I beg leave to quote Locke's text in full: "The infinite eternal God is certainly the cause of all things, the fountain of all being and power. But because all being was from Him, can there be nothing but God Himself? Or because all power was originally in Him, can there be nothing of it communicated to His creatures? This is to set very narrow bounds to the power of God, and, by pretending to extend it, takes it away."[23] So much for the theologian, but there is also something for the philosopher. Malebranche had been compelled to resort to occasional causes, because we have no clear and distinct idea of how one body can act upon another body, and still less upon a mind. But have we any clear and distinct idea of what an *occasional* cause could be? If it does not act upon God, it is not

[23]J. Locke, *Remarks upon some of Mr. Norris's Books*, n. 15, ed. cit., Vol. II, p. 667.

a cause; if it does, we shall arrive at the conclusion that God can give bodies a power to operate on His own infinite mind, but He cannot give them a power to operate on the finite mind of man, or on other things, which is an absurdity.[24] The trouble with Malebranche, as with all the Cartesians, was that he wanted to make everything clear and to know how everything is brought to pass; "but perhaps it would better become us, to acknowledge our ignorance, than to talk such things boldly of the Holy One of Israel, and condemn others for not daring to be as unmannerly as ourselves."[25]

The lesson was not lost, and it was to bear unexpected fruit in the mind of David Hume. How could the deeply religious and almost mystical Father Malebranche, of the Oratory, have foreseen that his world would some day fall into the hands of a man to whom the existence of God could neither be successfully preached nor rationally proved? Yet this thing happened on the very day Hume became acquainted with Malebranche's philosophical conclusions. And what would become of the physical world of Malebranche if God, who is the keystone of its whole structure, were to be taken out of it? It would crumble to pieces; nothing would be left of it but disconnected fragments.

This is precisely what happened when David Hume took up the problem of physical causality where Malebranche had laid it down. Generally speaking, Hume was much more a continuator of Locke than of Malebranche; yet, on this precise point, there is little doubt

[24] *Ibid.*, p. 466.

[25] *Ibid.*, n. 16; p. 469.

that Malebranche's occasionalism played an important part in the formation of Hume's doctrine. Like his predecessor, Hume applied his analysis to the idea of cause and effect, with the result that he could find nothing essential in that idea but a relation of contiguity, or succession, between what we call cause and effect, plus the notion of a necessary connection between them. A certain body approaches another, touches it, and, without any sensible interval, the motion that was in the first body is now in the second. We see that it is so; we feel that it cannot be otherwise, and that, in similar circumstances, it will always be so. But why and how it is so, we have not the slightest idea, for the simple reason that we cannot even imagine what an impulse, or a production, could possibly be.[26] What is there in our mind, for instance, which answers to the word "efficacy"? Nothing at all. Malebranche, to whom Hume himself expressly refers us on that point, had conclusively proved that no philosopher had ever been able to explain the so-called "secret force and energy of causes." Hence, Hume says, Malebranche's own conclusion "that the ultimate force and efficacy of nature is perfectly unknown to us, and that it is in vain we search for it in all the known qualities of matter." And how indeed, Hume concludes, could the Cartesians have given any other answer to the question? They had established as a principle that we are perfectly acquainted with the essence of matter; "as the essence of matter consists in extension, and as extension implies

[26]D. Hume, *A Treatise of Human Nature,* Bk. I, Part IV, Sec. 3.

not actual motion, but only mobility; they conclude that the energy which produces the motion cannot be in the extension."[27] One could hardly wish for a more intelligent and acute observer; but it is easy to see that the reason for which Hume had so closely watched that philosophical game was that Malebranche's conclusion was to be his own starting point.

For, Hume tells us, this conclusion leads the Cartesians into another, which they regard as absolutely inevitable. Since, according to them, matter is in itself entirely inactive and "deprived of any power by which it may produce, or continue, or communicate motion," the power that produces the physical effects evident to our senses must be in the Deity. "It is the Deity therefore, . . . who not only first created matter, and gave it its original impulse, but likewise, by a continued exertion of omnipotence, supports its existence, and successively bestows on it all those motions . . . with which it is endowed." But, says Hume, if we have no adequate idea of "power" or "efficacy," no notion of "causality" that we can apply to matter, where could we get one that would apply to God? "Since these philosophers, therefore, have concluded that matter cannot be endowed with any efficacious principle, because it is impossible to discover in it such a principle, the same course of reasoning should determine them to exclude it from the Supreme Being."[28]

Thus, according to Hume, causality could no longer be considered as the transportation of a thing by another

[27] *Ibid.*, Bk. I, Part III, Sec. 14. [28] D. Hume, *loc. cit.*

thing, or as the transportation of a thing by the power of God, but as a transportation of our own mind from an idea, which we call cause, to another idea, which we call effect. Custom makes us believe that an idea will soon be followed by another idea, and we mistake the force of our belief for a physical force to be found in things. Irrefutable conclusion indeed, which blasted, once and for all, the Cartesian school's last hope of maintaining even the slightest shadow of causality in the world. Owing to Hume's philosophical insight, the Cartesian cycle had thus been brought to a close; and it really was a cycle, because its end was in its very beginning—scepticism. Montaigne's scepticism at the beginning; Hume's scepticism at the end; in between, a tremendous effort, tirelessly renewed by a chain of philosophical and scientific geniuses, to no other effect than the wiping out of the external world by Berkeley and, for those like Hume who still believed in the existence of matter, the final dismissal of the principle of causality. What do I know apart from what I am being taught by custom? Montaigne had asked. The mind, God, and the world, as evidently as mathematics, if not more so, was Descartes' answer. But Descartes' geometry had turned the world into a mosaic of mutually exclusive substances, that could neither act nor be acted upon, neither know, nor be known. And now, after a steady scrutiny of that answer for a century, Hume had to write as its ultimate conclusion: "that all our reasonings concerning causes and effects are derived from nothing but custom."[29]

[29] *Ibid.*, Part IV, Sec. 1.

On a deeper level, it was Montaigne's answer to his own question; but that answer was being repeated now in another tone, not with the smiling carelessness of a man who does not know because he does not even want to know, but with the despondency of a great mind, who comes into the spiritual legacy of many other great minds, and, as soon as he looks at it, sees it shrivel into nothingness. "I am . . . affrighted and confounded with that forlorn solitude in which I am placed in my philosophy," says Hume at the end of the Treatise. What was Hume, after all, but a sad Montaigne?

Let us thank him, however, for having deeply felt and sincerely expressed what he himself called his "despair."[30] His voice was soon to be heard by a young professor of philosophy at the German university of Koenigsberg. The name of that man was Immanuel Kant. With him a new philosophical cycle was to begin, and it is to that cycle we now turn our attention.

[30] *Ibid.*, Part VII, Sec. 8, Conclusion.