

I

INTRODUCTION: THE *DISCOURSE ON
METHOD* AND THE CARTESIAN
REVOLUTION

§ I

THE *Discourse on Method*, planned towards the end of the year 1635, written in 1636, and published in 1637, marks a turning-point in European thought. Composed in French, not in Latin, it was addressed not to the scholar but to the man (and woman)¹ of 'good sense', and its appeal to the ordinary reader was enforced by a narrative of high personal interest. Philosophy was no longer in an academic heaven; it had been brought down again to earth. It became the salt of polite conversation, and was honoured not only by men of science but by dignitaries of the Church and ladies of the Court. Yet its gains were more solid than those of a passing fashion. Although slow to be accepted in the official seats of learning, it gradually won its way to dogmatic supremacy, and the 'new' philosophy of Locke (1690) found the philosophy of Descartes as firmly entrenched as the 'new' philosophy of Descartes had found the philosophy of the Schoolmen.

Striking testimony to the nature and extent of the Cartesian victory is to be found, some half-century

¹ *Corresp.* i. 560, l. 24, and cf. below, p. 98, n. 2.

after the publication of the *Discourse*, in the acute and amusing romance of Father Daniel:¹

'Your *Philosophy* as you know was set up with all the Advantages and Disadvantages of *Novelty* and it has experienc'd the Fortune which all *New Doctrines* use to find. Many there are that have imbrac'd it with Admiration, and defended it with Earnestness and Passion. It hath met with the Patronage and Protection of Persons commendable for their Parts, Capacity and Politeness; but almost all the *Bodies* and Universities have rejected it, and declared against it. . . .

'The Fortune of present affairs hath almost the same Face still; yet if we judge by the Books, whether of *Philosophy* or *Medicine*, brought from *England*, *Holland* and *Germany*, *Cartesianism* hath made very considerable Progress in those Parts. Scarcely once in an age is printed any *Course of Philosophy* according to the Method of the Schools; and almost all the Works of that Nature, that at this time are Publick in France, are Physical Tracts that presuppose the principles of the *New Philosophy*: Such Books as treat of an *Universal*, of *Metaphysical Degrees*, of an *Ens Rationis*, create fears in the Booksellers' Minds; they'll cumber themselves with no more of them and endeavour to rid their hands of all that they have left at any rate, as Merchants do their Stuffs when the Fashion's over. . . . All those questions, heretofore so famous, wherewith the Presses have groan'd for almost two hundred Years and that have found Employment for so many Printers, are no where heard of but in the Schools of the Publick

¹ *Voyage du monde de M. Descartes*, ed. 2, Paris, 1702, pp. 255-7. See below, pp. 98 ff. (The version given is that of the contemporary English translation, 1692, pp. 176 ff.)

Professors. Out of the Desks there is no talk of the *Thomists*, the *Scotists* and the *Nominals*, at least there is no distinction made betwixt them; all are numbered in the same Predicament, and on the same Side which they call the *Old Philosophy*: to which is oppos'd the Philosophy of Descartes, or the *New Philosophy*.

'You have had the good Fortune with your lustre to efface all the New Philosophers, that have arisen both in and since your Time. . . . As in *Spain* the name of Lutheran is indifferently given to all Hereticks of whatever sect or faction, so the title of *Cartesian* is attributed to all those that have undertaken to make Refinements since your day in Point of Natural Philosophy. . . .'

The point of interest in this estimate, and it must be remembered it comes from an opponent, is its testimony to the kind of standing acquired by Cartesianism in the last decade of the century in which it appeared. It marks an epoch. It is the dividing line in the history of thought. Everything that came before it is old; everything that came after it is new. Modern students emphasize the essential continuity of the Cartesian philosophy with the Scholasticism which preceded it, but this continuity was not so obvious (except as a tactical move of the 'Aristotelians')¹ to the learned Father of the Company of Jesus who was fighting against it in Scholasticism's name. To him Cartesianism represented, as it has appeared to represent down to our day, something genuinely new.

¹ *Op. cit.*, pp. 281-2.

Yet if one scrutinizes, in the light of the available evidence, the actual character of the Cartesian contribution, it is clear that the points of view of the seventeenth-century and the twentieth-century critics are not in fact far removed from one another. Modern criticism opened with the remark of Freudenthal that the novelty of Cartesianism lay not in its psychology, its theory of knowledge, its ethics, or its metaphysics, but in its physics; and the justly admired labours of M. Gilson have confessedly¹ only worked out the detail of this all-important theme. Now it is significant that for Father Daniel too the novelty of Cartesianism lay in its physics, not in its metaphysics, and his book is an attack not on the 'cogito' or the ontological argument, but, principally, the theory of vortices. We ourselves look upon Cartesianism as much more than a specific theory of the origin and constitution of the physical universe, but it is at least that; and it is salutary to be reminded that it meant that for Descartes' immediate critics, and indeed for Descartes himself.

§ 2

The Cartesian 'revolution' lay in the attempt² to substitute a physics based on metaphysics for a metaphysics based on physics. It may well be that in this, as has been maintained, it was only following

¹ *Index scholastico-cartésien*, Paris, 1913, Introduction, p. i.

² To demonstrate 'les principes de la Physique par la Metaphysique (*ce que i'espère faire quelque iour mais qui ne l'a point esté par cy-deuant*)'. *Corresp.* ii. 141, l. 25 f. (27 May 1638).

the Platonic element in the emergence of the modern mind from Scholasticism, but there is no doubt that it was reversing the main current which went to make up that mighty, and not yet exhausted, stream. Medieval Aristotelianism was true to its source in basing its argument for the existence of God on the theory of motion. God is the First Mover, and motion is of the physical world; theology, therefore, is based on physics. Logic and mathematics are a 'propaedeutic', disciplines subsidiary to physics, and physics is the entrance hall to the palace of theology. The various sciences are thus architectonically one. The study of method is ancillary to the study of the physical world, and the study of the physical world points to the idea of God.

We hear from the biographers that Descartes in 1628 was meditating a work on 'divinity', but the real reference is to the early draft of the *Meditations*,¹ and it is illegitimate to argue from it an independent interest in theology. On the other hand, we possess positive evidence from his correspondence as to his actual pre-occupations at this early period, and the evidence is borne out amply both from the narrative of the *Discourse* and the fragments which survive from those years. Descartes' primary interest was in physics, the explanation and interpretation of the facts of the world of nature, and his typical study is optics: the suppressed *Monde*, for example,

¹ Below, p. 26. The references in Baillet are i. 153, marginal note, 171, 190.

was primarily a treatise on light. The interest in theology was secondary, indeed, it was not fundamentally an interest in theology at all. The general movement of Cartesianism was from the very first, as to the very end, from the self to God and from God to the external world, and a striking passage in the *Recherche de la Vérité*¹ emphasizes this 'order' as against that of so-called common sense. As far as the early writings are concerned (and we may include within them the *Discourse* itself), God is for Descartes an hypothesis incidental to his account of the physical world, and even the developed *Meditations*, with all its elaborate theological argumentation, leads up to a defence of mathematical physics (*Med.* 5, end). This is even more obvious in the case of the latest work of this group, the *Principles of Philosophy*. This is a handbook of Descartes' physics 'for the use of schools and colleges', and the metaphysics takes its place in the summary and introductory Book I.

This specific and conscious tendency of Cartesianism explains the most important literary fact about the *Discourse*. The *Discourse on Method* is only an introduction to a number of treatises on scientific subjects which constitute 'essays in' that method, and the method it deals with is a method of reasoning which is to bring us not to metaphysical but to scientific truth. The *Discourse* is thus not 'philosophy' but an 'introduction to science'; or rather

¹ x. 505, l. 9 ff.; 510, l. 4 f. (For the late date of the *Recherche* see M. Gouhier's *Pensée religieuse de Descartes*, Paris, 1924, appendix II.)

(since the word 'philosophy', for that and the succeeding century, is ambiguous), the 'philosophy' of the *Discourse* and Descartes' other works is what we now call science and in particular the science of nature or (in the wider sense) physics. We are used to think of the *Discourse* with its 'I think, therefore I am', as inaugurating the new departure in metaphysics the typical product of which is the fascinating series of meditations which in our own day has inspired the *Méditations cartésiennes* of Husserl. But Descartes himself was primarily interested in these metaphysical principles only as providing the basis for his physics, and the work he himself regarded as central, the *Principles of Philosophy*, has its analogue not in the Meditations of Husserl but in the Mechanics of Mach. For Descartes both the 'cogito' and the 'ontological argument' are introductory to the theoretical explanation of the generation and constitution of the natural world.

§ 3

Descartes' primary interest then was not in theology or metaphysics, and far less in the 'pure contents of consciousness'. It is doubtful even whether he can be written down as the type of disinterested scientific curiosity. He himself avers a passion for truth; but the truth he was seeking was, to quote the title of the *Discourse*, 'truth in the sciences', and the sciences for Descartes have a definitely practical aim, the harnessing of nature to the purposes of man.

The will o' the wisp of his life was the conquest of death not only for the soul but also for the body. The significant change in the title of the *Meditations* from the first to the second edition¹ shows that Descartes knew early that he had not demonstrated the immortality of the *soul*, but his dream of the prolongation of the life of the *body* pursued him till his own premature death.² Descartes was dedicated from first to last to 'those studies which are of *use to the whole human race*'.³

In this practical interest, which is explicitly a part of the revulsion against Scholasticism, Descartes was only representative of the tendencies of the age. To Bacon, as to Descartes, there is no knowledge unrelated to the practical problem of human improvement, and the vision of Utopia is for both the source as well as the justification of the delving into the mysteries of nature. The *Novum Organum* is also

¹ '... in qua Dei existentia et animae immortalitas demonstratur' (ed. i); '... in quibus Dei existentia, & animae humanae a corpore distinctio, demonstrantur' (ed. 2). Cf. *Corresp.* iii. 265, l. 28 ff.

² e.g. *Disc.* 6 (vi. 62, ll. 28-9); *Corresp.* iv. 329, ll. 16-17 (1645); *Descript. du corps humain* (1648), pref. (xi. 223, l. 15 f.). For contemporary jests on the subject see *Corresp.* v. 461 (Christine ap. Saumaise), and Adam, *Vie*, 581 (Clauberg).

³ *Ep. ad Voet.* (viii, B, 184, l. 23). So Baillet (i. 195): 'Ne pouvant oublier la fin de sa Philosophie, qui n'étoit autre que l'utilité du genre humain, il résolut de faire une étude sérieuse de la Médecine et de s'appliquer particulièrement à l'Anatomie & à la Chymie.' This is of Descartes in 1629. The sentence following, from Borel, is of peculiar interest: 'Il s'étoit imaginé que rien n'étoit plus capable de produire la félicité temporelle de ce monde qu'une *heureuse union de la Médecine avec les Mathématiques.*'

a Discourse on Method and a method of discovery in the sciences; but the aim of discovery, in the striking words with which the work concludes, is 'the supplying of man with bread'. The opening aphorisms of the same work comprise the classical exposition of this utilitarian view, but they are only caught up in the well-known words of *Discourse 6* summoning mankind to a knowledge 'which is *useful* in life and by means of which we may render ourselves *masters and possessors of nature*'. 'Masters and possessors of nature': 'human knowledge and human power meet in one'. The aim of philosophy-science is for Descartes and Bacon alike the control of nature through the understanding of nature, and both thought their new methods would lead at once to such discoveries as would bring the resources of nature within our immediate grasp.

It is a question whether either method did, as a matter of history, further the work of discovery in the sciences. So far as Bacon is concerned, a recent judgement is that 'the actual course which science has taken, even if it has been in accord with Bacon's principles and has led to the results which he desired to anticipate, has been influenced little, if at all, by his writings';¹ while one of the most profound modern students of Descartes² has given a negative

¹ C. D. Broad, *The Philosophy of Francis Bacon*, Cambridge, 1926.

² Milhaud, *Descartes Savant* (Paris, 1921), the ripe fruit of the inquiry commenced in the early dissertation (Montpellier, 1894): 'Num Cartesii methodus tantum valeat in suo opere illustrando quantum ipse senserit?' In a recent volume by M. Mouy (*Le*

answer to the problem he himself propounded as to whether Descartes' method was really of importance (outside the sphere of pure mathematics) even for his own discoveries. Yet whether or no the *Discourse on Method* really revealed any 'truth in the sciences', or whether or no the *Novum Organum* really helped to the 'kingdom of man', the significant fact is that such was the explicit intention of their authors. The justification of method is for both thinkers alike its practical results, and Descartes could have subscribed whole-heartedly to the Baconian aphorism (N.O. i. 73): 'Fruits and works are, as it were, sponsors and sureties for the truth of philosophies.' He defines wisdom, as opposed to erudition, as a 'perfect knowledge of all things that man can know both for the conduct of his life and for the conservation of his health and the invention of all the arts',¹ and philosophy as 'knowledge of those truths which can be perceived by the natural light and *further human needs*'.²

§ 4

The final novelty of Cartesianism lay neither in its metaphysical principles nor in its utilitarian aims. It lay in its mathematical instrument; and not in the *Développement de la Physique Cartésienne, 1646-1712*, Paris, Vrin, 1934) the attempt has been made to show Descartes as the source of French physics in the seventeenth and early eighteenth centuries. No major discovery, however, would seem even thus to be attributable to his influence. Cf. below, p. 96.

¹ *Princ. Phil.*, pref. (ix, B, 2, ll. 10-13).

² *Ep. ad. Voet.* (viii, B, 26, ll. 3-5).

instrument only but in the grandiose vision which the use of that instrument inspired. 'Throughout all time', writes the anonymous author of the letter prefaced by Descartes to his last published work, the *Treatise on the Passions*, 'the best minds have been employed on research in Physics; yet no one has ever made any discovery in it, that is, no one has ever achieved true knowledge of the nature of corporeal things, except by the help of mathematical principles. . . . Due consideration of this fact forces us to recognise that it is through mathematics alone that knowledge of true Physics can be attained. . . .'¹ And again: 'Thus mathematics is the only one of all human sciences in which indubitable truths have been found hitherto. I know well that the Philosophers wish to consider it as a part of their physics, but they are ignorant of it almost to a man. Nor is it true that mathematics is a part of physics. On the contrary, true physics is a part of mathematics. . . .' (pp. 314-15.)

'C'est par la Mathematique seule qu'on peut parvenir à la connoissance de la vraie Physique': 'la vraie Physique est une partie de la Mathematique': no clearer or more explicit formulation could be found of the creative principle of modern physics. And yet the school was by no means blind to the difficulties:

'However expert an Architect be in his art, he cannot finish the building he has begun if he is wanting the required materials. In the same way, however perfect your method may be, it cannot help you in the explanation

¹ xi, p. 316.

of natural causes if you lack the facts ('expériences') needed to determine their effects. . . . Although your method promises everything that can be hoped for by the human mind concerning the search for truth in the sciences, yet it does not promise to teach us to divine, but only to deduce from certain given things all the truths which can be deduced from them; and those given things, in Physics, can be none other than facts ("expériences"). . . .' (pp. 318-19.)

The Cartesian school, or some of its members at least, had grasped the truth which the most recent inquirer thinks worth emphasizing still: 'The mathematical physicist does not dictate to the world what it must be like. But he is guided by mathematical form to make suggestions to the experimenter. His peculiar role then ends. The experimenter decides.'¹

§ 5

It is the primary aim of this volume to follow out the various aspects of Descartes' central conception, to examine its background and its basis, and to trace out its fortunes as they appeared to Descartes himself. Yet we have not, it would seem, to go far for our information. It is contained in Descartes' own 'manifesto', the *Discourse on Method*; and the *Discourse* opens notoriously with a narrative which sets out its author's interests and aims. Our first task, therefore, as an essential preliminary to our inquiry, is to grasp the main points of that deceptively clear fragment of autobiography.

¹ Milne, *The Aims of Mathematical Physics*, Oxford, 1929, p. 9.