

# A HUNDRED YEARS OF PHILOSOPHY

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attitudes to precisely this same object, can suppose it, deny it and so on.

Stout does not mean that there is a 'world of possibilities' which is quite distinct from the world of particular existences; on the contrary, he insists on their close interconnexion. Every possibility is possible only relatively to certain conditions: it may, for example, be a mathematical possibility but yet be mechanically impossible. But if the possible thus depends on the actual, so also, Stout argues, the actual depends on the possible: to be actual is to be 'possible in all ways'. The actual is a realized possibility.

A fuller exposition of this view must connect it with Stout's theory of universals, and that we shall discuss in a later chapter. The important point, for the moment, is that Stout's work, from the beginning, is closely concerned with the kind of question which Brentano and Meinong had brought to the attention of philosophers. Like them, he was concerned to defend and to examine the concept of objectivity. And Stout, we must remember, taught both Moore and Russell in the days when he was working on his *Analytic Psychology*. In a variety of ways, their philosophy is continuous with Stout's.

*Moore and Russell*

'MOORE and Russell' – the conjunction is inevitable. Nor is this merely an historian's stereotype. Russell, then completing his undergraduate studies at Cambridge, diverted his younger contemporary, Moore, from classics to philosophy; Moore led that attack upon Idealism, particularly the Idealism of Bradley, which first won for Moore and Russell their reputation as philosophers. 'I do not know that Russell has ever owed anything to me except mistakes,' Moore writes somewhat ruefully, 'whereas I have owed to his published works ideas which were certainly not mistakes, and which I think very important.' Russell gives a different, and more accurate, account of their relationship: 'He took the lead in rebellion, and I followed, with a sense of emancipation.'<sup>1</sup>

Yet the two men were very different. In his *Autobiography* Moore makes a confession which gives us an important clue to the understanding of his teaching and his influence: 'I do not think,' he writes, 'that the world or the sciences would ever have suggested to me any philosophical problems. What has suggested problems to me is things which other philosophers have said about the world or about natural science.' Locke, Berkeley and Hume, in their various ways, begin from Newton; Green, Bradley, Bosanquet and Spencer have Darwin at the back of their minds; Moore's philosophy, on the other hand, is curiously remote from the 'great controversies' of our time. Neither Freud, nor Marx, nor Einstein, so far as one can judge, has affected his thinking in the least. He is a 'philosopher's philosopher' if ever there was one.<sup>2</sup>

Russell's philosophy, on the other hand, moves in an atmosphere thick with science. His first book was on *German Social Democracy* (1896); his second bore the title *An Essay on the Foundations of Geometry* (1897). Philosophy for him is continuous with social, psychological, physical, and mathematical investigation. When he is technical, as in, say, *The Principles of Mathematics* (1903), his free use of mathematical symbols produces in the ordinary reader the feeling that if this is incomprehensible, it is for only-too-familiar reasons. Moore is almost never

technical, in this sense; no writer has ever sought so desperately to achieve utter clarity and utter simplicity, unless it be Gertrude Stein. And yet, sturdy defender of common sense though he is, the point and the method of Moore's philosophy are scarcely intelligible to the ordinary educated reader. W. B. Yeats wrote to T. S. Moore:<sup>3</sup> 'I find your brother extraordinarily obscure'; that is the reaction of a literary man, who expects a philosopher to discuss large questions in a large way. As John Wisdom points out, the scientist is likely to be no less disconcerted. 'Moore offers a game of Logic, and a peculiar one at that for it lacks much that gives satisfaction in ordinary logic and mathematics. In it no architecture of proof is possible, and with that goes too the Q.E.D. with its note of agreement achieved and triumphant discovery'.<sup>4</sup> Yet Moore has a great deal to offer to those who have felt the fascination of his drastic honesty – difficult though it is to convey that fascination, or that honesty, by means of summary.

When he brought together, in his *Philosophical Studies* (1922), those of his contributions to philosophy which he thought worthy of preservation, he included neither his early articles in *Mind* and the *Proceedings of the Aristotelian Society* nor his contributions to Baldwin's *Dictionary of Philosophy and Psychology*, which, indeed, he condemns in his Autobiography as 'extraordinarily crude'. But he also tells us that he 'took great pains' over those early writings; and if the theory they expound was one he rapidly abandoned, it has nevertheless made its mark on English philosophy, partly through Russell's adherence to it. In important respects, furthermore, it set the problems which many twentieth-century philosophers were particularly to explore.

Of those early articles the most important is 'The Nature of Judgment' (*Mind*, 1899). Bradley's *Principles of Logic* is its point of origin. Bradley, Moore thought, had not been sufficiently ruthless in his dealings with Locke's doctrine that judgements are about 'ideas'. Although he had at times written as if judgements are about *what ideas mean*, at other times one would gather that *the idea itself* – as a psychic phenomenon – is an ingredient in our judgement. The former, Moore argues, is the only tenable view; judgements are not about 'our ideas' but about what those ideas point to – what Bradley called a 'universal meaning' and Moore a 'concept'.

The 'concept', Moore maintains, is 'neither a mental fact nor any part of a mental fact'. No doubt it is what, *in our thinking*, we take as our object: but if it did not exist independently of our thinking, there would be nothing for us to think about. Like a Platonic form, which it closely resembles, the concept is eternal and immutable; that is why, Moore says, it can appear as an identical ingredient in a number of different judgements, linking them in chains of reasoning.

Moore's purpose, in this essay, is much like Brentano's and Meinong's: to maintain the objectivity and the independence of objects of thought. His starting-point, one must again insist, is Bradley, not the British empirical tradition; there was in Bradley's *Principles of Logic*, as we have already noted, an anti-psychological tendency to which Moore fell heir. The break with British empiricism in Moore's early work could, indeed, scarcely be a cleaner one. According to the empirical tradition a concept is an 'abstraction', which the mind manufactures out of the raw material supplied by perception. Moore argued, in complete contrast, that 'conceptions cannot be regarded fundamentally as abstractions either from things or from ideas, since both alike can' if anything is to be true of them, be composed of nothing but concepts'. A 'thing', on this view, is a colligation of concepts; a piece of paper, for example, is whiteness and smoothness and . . .

Yet a relation between concepts, Moore also says, is 'a proposition'; he is prepared to accept the inevitable consequence that a 'thing', a 'complex conception', a 'proposition', are different names for the same entity. On this foundation, he constructs his theory of truth. According to the conventional view a proposition is true when it corresponds to reality. There is here involved a contrast between the true proposition – commonly thought of as a set of words or a set of ideas – and the 'reality' it represents. Moore, on the other hand, identifies true proposition and reality. 'Once it is definitely recognized,' he wrote in his article on 'Truth' in Baldwin's *Dictionary*, 'that the proposition is to denote not a belief (in the psychological sense), nor a form of words, but the object of belief, it seems plain that it differs in no respect from the reality to which it is supposed merely to correspond, i.e. the truth that "I exist" differs in no respect from the corresponding reality "my existence".'

What then, if not 'correspondence to reality', is the distinguishing characteristic of a true as distinct from a false proposition? Moore answers that truth is a simple, unanalysable, intuitable property, belonging to certain propositions and not to others, a thesis which Russell also defended in his articles on Meinong (*Mind*, 1904). 'Some propositions,' he there wrote, 'are true and some false, just as some roses are red and some white.'

Any other view, Moore argues, presumes that we can somehow get beyond relations between concepts to a reality which sustains them – and this is impossible in principle. To 'know' is to be aware of a proposition, i.e. a relation between concepts; thus we cannot possibly know anything which 'lies beyond' concepts. This is true, he maintains, even in the case of knowledge by perception. Perception is simply the cognition of an existential proposition – for example, the proposition that 'this paper exists'. Such a proposition, on Moore's analysis of it, relates concepts; it asserts that the concepts which make up *this paper* are related to the concept of *existence*. Whereas Brentano had argued that all propositions are existential in form, Moore regards them all as asserting relations between concepts.

This, then, is the theory of reality and the theory of truth from which Moore and Russell set out, and against which, in certain respects although not in others, they were strongly to react. The world is composed of eternal and immutable concepts; propositions relate concepts one to another; a *true* proposition predicates 'truth' of such a relation of concepts, and is 'a fact' or 'a reality'.

One other striking feature of *The Nature of Judgment* deserves attention: the stress Moore places on 'logic' – and what goes with it, his willingness to follow his dialectic wherever it leads him. 'I am fully aware,' he wrote of his theory of existence, 'how paradoxical this theory must appear. But it seems to me to follow from premises generally admitted, and to have been avoided only by lack of logical consistency. . . . I have appealed throughout to the rules of logic; nor if anyone rejects these, should I have much to fear from his arguments. An appeal to the facts is useless.' Moore was to move a very long way from the sentiments expressed in this passage.

Russell, in his *Autobiography*, has made it clear what Moore's earlier theory meant for Moore and for himself. It was above all a

liberation from Bradley's 'Absolute' and Bradley's relegation, from the standpoint of the Absolute, of the world of everyday life to the realm of appearances. 'With a sense of escaping from prison,' Russell wrote, 'we allowed ourselves to think that grass is green, that the sun and the stars would exist if no one was aware of them, and also that there is a pluralistic timeless world of Platonic ideas. The world, which had been thin and logical, suddenly became rich and varied and solid.'

Russell's own world, as we shall see, was to become progressively more 'thin and logical'. But Moore never lost his sense of wonder and relief at being able to believe in the reality of the everyday world; and he was determined not to be driven out of his hardily-won Paradise. Those who, like most of his younger critics, have never felt the attraction of Idealism, those for whom it has never been a 'living option', find it difficult to understand Moore's philosophy; they convert him into a defender, in their own and Wittgenstein's manner, of 'ordinary usage'. But it is ordinary *beliefs*, not usage as such, that he wants to defend. Unlike his critics, he thinks they *need* defence. Moore had himself argued in his earliest writings (*Mind*, 1897–8) that 'time is unreal'. He had heard McTaggart say that 'Matter is in the same position as the gorgons and the harpies'. He was not to be persuaded that he and McTaggart were merely 'recommending a change in our ordinary linguistic habits'.<sup>5</sup>

At the same time, there were serpents in this Paradise, and they soon made their presence obvious. In a series of lectures, delivered (and studied, in part, by Russell) in 1910–11 although not published until 1953,<sup>6</sup> Moore explains why he abandoned, for all its advantages, his identification of true propositions and facts. When we assert, for example, that 'lions do really exist', we are saying more, he came to think, than that a proposition we happen to believe has the unanalysable property of being true; the 'substance' of a fact, as we might loosely express the matter, does not consist in a proposition together with its truth. A second, and more fundamental, objection is that *there do not seem to be propositions at all, in the sense in which the theory demands them.*<sup>7</sup>

The case of the false belief led Moore to this conclusion. On the propositional theory, there must *be* a proposition for us falsely to

believe in, even although this proposition has the peculiar property of being false. In fact, however, so Moore argues, it is the very essence of a false belief that we believe *what is not*. As Russell put the same point in *The Problems of Philosophy* (1912), when Othello falsely believes that *Desdemona loves Cassio* his belief is false just because there is no such object as *Desdemona loves Cassio*; if there were such an object, as on the propositional theory there has to be, Othello's belief would be true, not false. Once we come to realize that a false belief is not a belief in a proposition, it seems natural to deny, also – or so both Moore and Russell thought – that a *true* belief has a proposition as its object. 'Belief,' so Moore sums the matter up, 'never consists in a relation between ourselves and something else (the proposition) which is believed.' In fact, 'there are no propositions'.

Moore admits that although he is now quite convinced that 'I believe *p*' does not assert a relation between an act of belief and a proposition, he cannot discover any alternative analysis which is not open to serious objections. Yet he does know, he thinks, in what range of possibilities a solution must be found. It is indisputable, he argues, that the truth of *p* consists in its 'correspondence' to a fact, and that to believe *p* is to believe that it thus corresponds; the philosophical problem is to give a clear account of this correspondence. We must not, he exhorts us, let any philosophical argument, however difficult it may be to answer, convince us that 'there is really no such thing' as correspondence; we *know* there is, although we do not know – this is our problem – how to describe its nature.

Thus the general movement of Moore's thought is away from *giving answers* towards *setting problems*. Metz described him as a good questioner but a bad answerer, and Moore pleads guilty to the charge. But he is convinced, at least, that he has come to see what the problem is, and that this is a point of the first importance. 'It appears to me,' he wrote in *Principia Ethica* (1903), 'that in Ethics, as in all other philosophical studies, the difficulties and disagreements, of which its history is full, are mainly due to a very simple cause, namely the attempt to answer questions, without first discovering what question it is which you desire to answer.' If Moore was to be a questioner, he was determined to be a *good* questioner, no easy matter.

Moore's attitude to the classical 'problem of the external world' underwent a transformation parallel to his theory of truth. In this case, too, he began from a point of logic. 'To say that a thing is relative,' he roundly asserts in his article on 'Relative and Absolute' in Baldwin's *Dictionary*, 'is always to contradict yourself.' By this he did not mean that relations in themselves, as Bradley had thought, are self-contradictory. On the contrary, it is the Bradleyian conception of 'relative existence' which Moore is attacking. To assert that a thing 'has no meaning apart from its relations' or 'would not be what it is apart from its relations' is, Moore argues, to distinguish the thing itself (as *it*) from its relations, in the very act of denying that such a distinction is intelligible. Moore is here defending 'external' relations, as against the theory of 'internal' relations which he ascribes to the British Idealists.<sup>8</sup> 'The writers influenced by Hegel,' he says, '(hold) that no relation is purely "external", i.e. fails to affect the essence of the things related, and the more nearly it is external, the less real are the things it relates.' Moore, in contrast, is arguing that the *essence* of a thing is always distinct from its relations. Nothing, therefore, can be 'constituted by the nature of the system to which it belongs' – this is the main point which Moore and Russell urge against Bradley's monism. To be at all is to be independent. Moore chose as the epigraph to *Principia Ethica* a quotation from Butler: 'a thing is what it is and not another thing,' a quotation which summarizes the character of his opposition to monism.

This is the background to Moore's classical 'The Refutation of Idealism' (*Mind*, 1903, reprinted in *Studies*).<sup>9</sup> The importance of that essay to the Realist movement can scarcely be overestimated, even if Moore, ever his severest critic, was to write (1922) that 'it now appears to me very confused, as well as to embody a great many downright mistakes'. And it is historically important in another respect: it is the first example of that minute philosophical procedure, with its careful distinction of issues, its insistence that *this*, not *that*, is the real question – where *this* and *that* had ordinarily been regarded as alternative formulations of the same problem – which was to be Moore's distinctive philosophical style, exercising, as such, a notable influence on his successors, particularly at Cambridge.

Thus he begins by explaining precisely what in *The Refutation of Idealism* he hoped to accomplish. He is not, he says, directly criticizing the central Idealist thesis – that ‘Reality is Spiritual’. His objective is a more limited one. There is, he thinks, a certain proposition which is essential to all Idealist reasoning, although it is not sufficient to establish the Idealist conclusion. It is this proposition – that *to be is to be perceived* – which he sets out to criticize. If he can show that it is false then, he says, the Idealist thesis may still be true, but certainly can never be *proved* to be true.

*The Refutation of Idealism*, then, is an attempt to demonstrate the falsity of *to be is to be perceived*. But there are further distinctions to be made: the Idealist formula, Moore says, is highly ambiguous. He concentrates upon what he takes to be its philosophically important interpretation. The formula asserts, on this interpretation, that if anything *x* is known to exist, the consequence immediately follows that *it is perceived*. Thus understood, *to be is to be perceived* is not a mere identity: if *being perceived* follows from *being*, these two cannot be identical. Idealists, Moore argues, have not generally recognized that this is so. Although they profess to be giving information when they announce that *to be is to be perceived*, they have at the same time proceeded as if *being* and *being perceived* are identical, so that the basic Idealist formula needs no proof. And this means, he says, that they have not clearly seen the difference between, for example, *being yellow* and *being a sensation of yellow*.

Some Idealists, Moore will admit, have explicitly maintained that there is such a difference. But they have at the same time tried to suggest that it is ‘not a real difference’, yellow and the experience of it being so connected in an ‘organic unity’ – Moore’s *bête noire* – that it would be ‘an illegitimate abstraction’ to distinguish them at any but the level of phenomenal appearance. Moore will have none of such facing-two-ways. ‘The principle of organic unities,’ he writes, ‘is mainly used to defend the practice of holding *both* of two contradictory propositions, whenever this may seem convenient. In this, as in other matters, Hegel’s main service to philosophy has consisted in giving a name to, and erecting into a principle, a type of fallacy to which experience had shown philosophers, along with the rest of man-

kind, to be addicted. No wonder that he has followers and admirers.’ Contempt for Hegel, and for Hegelian ‘subterfuges’, was indeed to be a regular feature of the movement of thought which Moore led at Cambridge – for all that, or perhaps partly because, it was McTaggart’s University. As against the Hegelian ‘it is, and it isn’t’, Moore demands a plain answer to a plain question ‘is it, or is it not?’

Moore admits, however, that there are special reasons why one may be persuaded that *yellow* is identical with *the sensation of yellow*. When we examine our cognitive acts, he says, ‘that which makes the sensation of blue a mental act seems to escape us; it seems, if I may use a metaphor, to be transparent – we look through and see nothing but the blue’. For all this transparency, Moore is confident that the difference between act and object nonetheless exists: *a sensation of blue* and *a sensation of red* have something in common, consciousness, and this must not be confused, as both Idealists and agnostics confuse it, with what differentiates them – their object, *blue* or *red*.

The ‘true analysis’, he argues, of *a sensation* or *an idea* is that it is a case of ‘knowing’ or ‘being aware of’ or ‘experiencing’ something. To say that we are ‘having a sensation of red’, on this view, is not to describe our consciousness as red, nor is it to assert the existence of some kind of ‘mental image’ – to *have a sensation of red* is just to *be aware of something red*. The traditional problem of epistemology: ‘how do we get outside the circle of our ideas or sensations?’ is, Moore concludes, no problem at all. To have a sensation is already to be outside the circle: ‘it is really to know something which is as really and truly not a part of *my* experience, as anything which I can ever know.’ If this were not so, if being aware were not an awareness of something, we could never come to be aware even of our awareness; there would only be *a certain kind of awareness*, without our even being aware of that fact.

The question still remains: what is this ‘something’ of which I am aware? In *The Refutation of Idealism* it can be, although it is not always, a physical object. But in ‘The Nature and Reality of Objects of Perception’ (*PAS*, 1905, reprinted in *Studies*), Moore distinguishes sharply between what we ‘actually see’ and that physical object which we ordinarily believe that we directly

perceive. When we assert that we 'see two books on a shelf', all we 'actually see', according to Moore, are coloured patches existing side by side – these being examples of what he later came to call 'sense-data'. He explains in *Some Main Problems of Philosophy* why he prefers this expression 'sense-data' to the more usual 'sensations'. 'Sensation', he says, is misleading because it may be used either to mean *my experiencing of*, say, a patch of colour or to mean the patch of colour itself; Moore is most anxious to distinguish the experiencing from the experienced. For he has not abandoned the principal doctrine of *The Refutation of Idealism*: it is not the essence of a sense-datum to be perceived. It is at least conceivable that the patch of colour which I perceive should continue to exist after I cease to perceive it, whereas it is a mere identity that my experiencing of the patch ceases when I cease to experience the patch.

In this respect, then, Moore's 'sense-datum' is quite unlike Locke's 'idea'.<sup>10</sup> It is not 'in the mind'. Moore has still to meet, all the same, the objections which Berkeley brought against Locke. If all that we see is a coloured patch, what evidence can we have that there are three-dimensional physical objects?

Moore's answer is that we do not need evidence that there are physical objects, since this is something we *already know*. In 'The Nature and Reality of the Objects of Perception' he is already writing with approval of Thomas Reid; in his later articles he has more obviously thrown Reid's mantle over his shoulders, particularly in 'A Defence of Common-Sense' (1925) and 'The Proof of an External World' (*PBA*, 1939).<sup>11</sup>

He knows with certainty, he writes in 'A Defence of Common-Sense', that the common-sense view of the world – which he sets out in some detail – is true; he knows, for example, that there are living human beings with whom he can communicate. Any philosopher who tries to deny that anyone exists except himself presumes that there is such a person in the very act of trying to communicate his denial. Indeed, even to speak, however slightly, of the 'common-sense view' is already to admit its truth: this phrase has no sense unless there are *people who hold views in common*, i.e. unless the common-sense view is true.

In his *Proof of an External World* Moore's argument is more direct – so direct, indeed, that it created something of a scandal.

It 'appeals to fact', in the manner he had, in his earlier writings, condemned as quite inappropriate in philosophy. But the form of his argument had been foreshadowed as early as the 1910–11 lectures. Then, in criticizing Hume, he had reasoned thus: 'if Hume's principles were true, I could never know that this pencil exists, but I do know this pencil exists, and therefore Hume's arguments cannot be true.' This, he admits, looks like a mere evasion, a begging of the question; but in fact, he says, it is a perfectly good and conclusive argument. We are much more confident that what confronts us exists than we are that Hume's principles are correct; and we are entitled to use the facts we are confident about as a refutation of his argument. Similarly in his *Proof of an External World* Moore describes as a 'good argument' for the existence of things external to us the fact that we can indicate such objects. 'I can prove now,' he wrote, 'that two human hands exist. How? By holding up the two hands, and saying, as I make a certain gesture with the right hand "Here is one hand", and adding, as I make a certain gesture with the left hand "and here is the other".'

But even if it be possible, in this fashion, to demonstrate that physical objects exist, the question still remains how they are related to what we 'actually see' (or taste, or feel, or smell). Two things seem to him, as to Stout, to be perfectly clear: that the immediate objects of our perception are sense-data and that we know there are physical objects. What puzzles him is how what we immediately perceive is related to what we immediately know. Take such a statement as 'this (what I am directly perceiving) is part of the surface of my hand'. There is, Moore feels confident, *something* which we are immediately perceiving; and he is confident also that there is a hand, and that the hand has a surface. But he sees difficulties in saying either that what we immediately perceive is *itself* part of the surface of the hand, or that it is an 'appearance' of such a part, or, in Mill's manner, that the 'surface of the hand' is no more than a compendious name for a series of actual and possible sense-data. Different people confronting the same surface at the same time experience sense-data which cannot, Moore thinks, *all* be a part of the surface of the hand – some see a smooth patch, some a rough patch, and the surface cannot be both rough and smooth. And there seems to be

no good reason for giving preference to one such sense-datum and calling it 'the surface itself'. Yet to regard the sense-data as 'appearances' of the surface is to raise all the familiar problems of 'representative perception'. Mill's solution, Moore considers, is no better; impossibly complicated in detail, it has the additional disadvantage of conflicting with our 'strong propensity' to believe that the existence of the hand is independent of any actual or possible perception of it. 'The truth is,' Moore wrote in 'Some Judgments of Perception' (*PAS*, 1918, reprinted in *Studies*), 'I am completely puzzled as to what the true answer can be.' Nor has he ever subdued that sense of puzzlement.

Yet, as in the case of truth and belief, he is not going to be browbeaten by philosophers into denying what he *does* know: that there are sense-data and that there are physical objects. Once more, he would express his uncertainties by saying that although he knows quite well that propositions like 'this is the surface of a hand' can be true, he does not know in what their 'correct analysis' consists. In this distinction between true propositions and their analysis, many of Moore's followers thought they could detect a theory about the nature of philosophy. Thus John Wisdom wrote of Moore, to his indignation, that according to him 'philosophy is analysis'. And it is easy to see why Wisdom should come to this conclusion.

Not only does Moore constantly employ an analytic method, not only does he suggest that the real problem, in a variety of cases, is that of 'discovering an analysis', but in 'The Nature and Reality of the Objects of Perception' he explicitly argues that differences in their mode of analysis are what distinguishes philosophers one from another. All philosophers agree, he there maintains, that 'hens lay eggs'; one affirms, however, and another denies that such propositions can be analysed into statements about relations between sets of spirits. Nevertheless, Moore hotly denies that he identifies philosophy with analysis. And clearly the defence of common-sense, to take only one instance, is not in itself analysis. The fact remains that Moore's use of the analytic method did much to fix the philosophical style of a generation of Cambridge philosophers.

What does Moore mean by 'analysis'? That is not an easy question to answer; perhaps the best explanation is contained in

Moore's reply to a critical article by C. H. Langford – 'Moore's Notion of Analysis' – in *The Philosophy of G. E. Moore*. To give an analysis of a concept, Moore there suggests, is to discover some concept which is the same as the concept being analysed, but which can be expressed in a different way, by referring to concepts which were *not* explicitly mentioned in the expressions used to refer to the original concept.<sup>12</sup> An example may make this explanation clearer: *male sibling* is a correct analysis of *brother*; the two concepts are identical, and yet the concepts mentioned in the expression 'male sibling' are not mentioned in 'brother'. Moore does not agree with those of his successors for whom to 'give an analysis' is to describe 'how to use a certain expression'. It is concepts, not expressions, which are analysed, he thinks, and they are analysed by concepts, even although analysis would be impossible were it not that different verbal expressions are used to refer to the same concept. He frankly admits, however, that he cannot explain at all clearly how it happens that by pointing to the identity of two concepts we can provide information about one of them. Nor can he sharply distinguish what he asserts, and what he denies, to be 'an analysis', so as to explain why, for example, *having twelve edges* is not 'a correct analysis' of *being a cube*. Dissatisfaction with Moore's uncertainties on these points, it would appear, did something to drive his successors in a more 'linguistic' direction.

Dissatisfaction with Russell<sup>13</sup> had the same effect; but arose from somewhat different sources. Russell and Moore grew ever further apart as they developed philosophically: the vast murals of Russell's *History of Western Philosophy* or of *Human Knowledge: Its Scope and Limits* (1948) are as remote as can be from Moore's carefully wrought miniatures. In this matter the sympathy of very many of the younger philosophers is with Moore. Russell – for all his criticism of over-bold generalizations\* – belongs in

\*Most notably in *Our Knowledge of the External World as a Field for Scientific Method in Philosophy* (1914). The new spirit in philosophy, he says, consists in 'the substitution of piecemeal, detailed and verifiable results for large untested generalities recommended only by a certain appeal to the imagination'. This is an admirable statement of the point of view of a great many of his contemporaries, but Russell's own philosophy certainly does not consist of 'piecemeal results', whether or not it is composed of 'large untested generalities'.

spirit to that tradition of philosophy which conceives it as 'the science of sciences'. To the austere minds of his younger contemporaries there is something almost indecent in so bold a display of speculative ambition. They will admit the importance of 'the earlier Russell', the Russell of the early years of the century, but pass by his later books with averted eyes.

Yet there has been no great change in Russell's manner of approach to philosophy; from the very beginning, in his *A Critical Exposition of the Philosophy of Leibniz* (1900), he displays those characteristics which now provoke shock and dismay. He sees in Leibniz's physics, for example, something continuous with, not cut off from, philosophy. It is at once obvious that Russell is trying to link together apparently diverse phenomena as instances of a general law, in the manner of that scientific tradition which first came into vigorous growth, in modern Europe, in the seventeenth century, and in striking contrast to the differentiating habits of the scholasticism against which it forcibly reacted and into which, in philosophy at least, it shows some signs of returning. It would not be absurd to proclaim Russell 'a modern Descartes' or 'a modern Leibniz', a description which no one, for better or worse, could possibly apply to Moore.

A second, immediately apparent, feature of Russell's *Leibniz* is his unusual appreciation of Continental scholarship and Continental speculation. There is no trace of insularity in Russell; and he is always ready to admit, even at times to exaggerate, his indebtedness to his predecessors. His work displays, indeed, a quite unusual capacity for *learning* from his fellow-philosophers, even when they are foreigners, a capacity which has brought a certain amount of opprobrium about his head and certainly complicates the task of a historian.

Thirdly, Russell had from the beginning special views about philosophy, which closely associate it with logic and with mathematics. 'That all sound philosophy should begin with an analysis of propositions is,' he writes, 'a truth too obvious, perhaps, to demand a proof.' Thus whereas for most previous commentators Leibniz had been pre-eminently the creator of an imaginative world-view which 'reconciled science and religion', for Russell the clue to the understanding of Leibniz's *philosophy* – as distinct from the fairy-tales he concocted for the delectation

of his royal correspondents – lies in his belief that all propositions can be reduced to the subject-predicate form, i.e. that relations are reducible to properties of the terms between which they hold\*. Once this step is taken, Russell thought, Leibniz's metaphysical conclusions inevitably follow – or, at least, the only alternative is Absolute Idealism. If, in the proposition *x* is related to *y*, *x*'s relation to *y* is an attribute – what Russell calls a 'predicate' – of *x*, then the consequence immediately follows that *x* and *y* are not really distinct; *x*'s environment, in other words, is an aspect of *x* itself, as Leibniz had argued. And the Absolute Idealist carried this doctrine further by maintaining that *x*, too, is an attribute – of Reality as a whole. Leibniz's importance, as Russell sees it, consists in his having thought out in detail the metaphysical implications of the substance-attribute analysis of the proposition. Thus he drew the attention of other philosophers to consequences which might have escaped their notice: he got them to see how important it is to insist, as Russell does – following Moore's 'The Nature of Judgment' – upon the 'externality' of relations, or in other words upon the irreducibility of relational propositions.

Russell's emphasis on the primacy of logical questions is converted into a theory about the nature of philosophy in the chapter entitled 'Logic as the Essence of Philosophy' in *Our Knowledge of the External World*. 'Every philosophical problem,' Russell there wrote, 'when it is subjected to the necessary analysis and purification, is found to be not really philosophical at all, or else to be, in the sense in which we are using the word, logical.' By 'logical' he means 'arising out of the analysis of propositions', or, as he also puts the matter, out of the attempt to determine what kinds of fact there are, and how they are related one to another.

Russell, then, deserts the British empiricist tradition that the essence of philosophy is psychological – although it is interesting to observe that in his later work he manifests a certain tendency to reinstate psychology, and to return in more ways than one to a philosophy very like Hume's. As well, he is contesting the not uncommon view that philosophy consists of the defence of a

\*By the 'subject-predicate form' Russell and most of his successors mean what could be less misleadingly described as 'the substance-attribute' form.

*parti pris* – an ethical, religious, or social outlook which philosophy exists to justify and must not question. The philosopher, he maintains in his ‘Scientific Method in Philosophy’ (1914, reprinted in *Mysticism and Logic*, 1917), must be ‘ethically neutral’, scientific, impartial. Any other sort of philosophy he describes as ‘pre-Copernican’ on the ground that it proceeds as if the human being, with his special ethical interests, were the clue to the understanding of the Universe. Thus Russell stands firmly for that ‘submission to fact’ which Clifford had extolled and James had condemned as neither possible nor desirable.

Although there was much in *The Philosophy of Leibniz* to attract the eye of an attentive reader, *The Principles of Mathematics* (1903) first made it perfectly clear that a new force had entered British philosophy. The rigorous philosophical examination of logico-mathematical ideas was a genuine novelty, and there was an atmosphere of intellectual adventure about the whole book which stamped it as an achievement of the first order.

Once more, Russell’s indebtedness is primarily to Continental ideas. He tells us that on his first introduction to geometry he had been distressed to find that Euclid began from axioms which had to be assumed without proof: the idea of a mathematics which was absolutely certain, which contained no loophole through which error could wriggle in, obviously attracted him from his earliest days. Mathematicians like Weierstrass showed him what mathematical rigour could be like; Peano opened his eyes to the possibility of constructing a single deductive system of mathematics, resting on a bare minimum of definitions and elementary propositions. But like Frege before him – although at first in ignorance of Frege’s work – Russell could be content with nothing less than the definition of Peano’s primitive mathematical conceptions in wholly logical terms. *The Principles of Mathematics* sets out to show how this can be done; in particular, Russell there tries to formulate the logical principles and methods which, so he thinks, must be involved in any construction of mathematics. No work since Aristotle’s time has had so striking an effect upon the logic ordinarily taught at universities. Then Russell went on, now in conjunction with his former mathematics teacher A. N. Whitehead, to undertake in detail the construction of mathematics out

of logic in the three volumes of *Principia Mathematica* (1910–13)<sup>14</sup> – a classical contribution to symbolic logic which, however, by its very intricacy persuaded most philosophers that this sort of logic was not for them.\*

Like Husserl, Russell distinguishes sharply between logic and psychology. ‘It is plain,’ he writes, ‘that when we validly infer one proposition from another, we do so in virtue of a relation which holds between the two propositions whether we perceive it or not’; this relation – ‘implication’ – not the human activity of inferring, is the principal subject-matter of logic. That is the crucial point of opposition between Russell’s logic and the Idealist ‘morphology of knowledge’ or Dewey’s ‘logic of inquiry’. In inferring, according to Russell, the human being is ‘purely receptive’; he simply ‘registers’ the fact that an implication is present. For Bradley and for Dewey, on the contrary, inference is a ‘construction’ which arises out of, and is only discussable within the context of, the attempt to undertake an inquiry. But Bradley’s own development had been in the direction of emphasizing the ‘objectivity’ of inference, and Russell was simply pushing that objectivity harder.

The *Principles of Mathematics* begins with an extraordinarily audacious sentence: ‘Pure Mathematics is the class of all propositions of the form “ $p$  implies  $q$ ”, where  $p$  and  $q$  are propositions containing one or more variables, the same in the two propositions, and neither  $p$  nor  $q$  contains any constants except logical constants.’ A ‘constant’ is defined as ‘something absolutely definite, concerning which there is no ambiguity whatever.’ Thus *Socrates* in ‘*Socrates is a man*’ is a ‘constant’, as contrasted with the  $x$  of ‘if  $x$  is a man,  $x$  is mortal’, which does not refer to any specific person and is therefore a ‘variable’.

Russell admits that it is difficult to make precise what is meant by a ‘variable’. The same is true, he also grants, of a ‘logical constant’ – that special type of constant which, on his view, is the only sort to be found in the propositions of pure mathematics.<sup>15</sup>

\*Russell agrees with them. ‘Logic,’ he says in the Preface to *Human Knowledge* (1948), ‘is not part of philosophy.’ This does not mean that he now rejects the view that ‘logic is the essence of philosophy’. ‘Logic’ in *Human Knowledge* means the construction of deductive systems; the ‘logic’ which is the essence of philosophy, as we saw, is an attempt to describe what kinds of facts there are.

(We could put his point roughly by saying that mathematical propositions assert that whatever has a certain general structure must also have a certain other structure; they make no reference to this or that particular entity. As he says later, 'proper names play no part in mathematics'. This is Russell's version of the Platonic-Cartesian doctrine that mathematics is about 'essences', not about 'existences'.)

If 'logical constants' are too fundamental to be defined, they can, Russell thinks, at least be enumerated. Russell's first list reads as follows: 'Implication, the relation of a term to the class of which it is a member, the notion of *such that*, the notion of relation, and such further notions as may be involved in the general notion of propositions of the same form.' These further notions are 'propositional function, class, denoting, and *any or every term*'. Of these constants, we shall be able to comment only on five of the most important – propositional function, implication, relation, class and denotation.

By a 'propositional function' Russell means an expression like '*x* is a man', which in itself is neither true nor false; it is converted into a proposition by substituting, say, *Socrates* for *x*. His theory of implication rests on this distinction between proposition and propositional function. There are, he says, two types of implication – 'material' and 'formal'. A proposition *p* materially implies a proposition *q*, if it is not the case that *p* is true and *q* is false; thus material implication is a relation between propositions. A formal implication, on the other hand, relates propositional functions; thus '*x* is a man' formally implies '*x* is mortal'. And just as a propositional function can be regarded as a class of propositions – all those propositions with '*is a man*' for their predicate – so also a formal implication is a class of material implications. Thus '*x* is a man formally implies *x* is mortal' asserts the class of material implications, 'Jones is a man materially implies Jones is mortal, Smith is a man materially implies Smith is mortal. ...'

Russell recognizes no other variety of implication. He argues that '*q* can be deduced from *p*' means exactly the same thing as '*p* materially implies *q*' – even although it then follows, as we have already seen,\* that any proposition can be deduced from a

\*See p. 140 above.

false proposition – and that a true proposition is deducible from any proposition whatsoever. Moore, however, in his essay on 'External and Internal Relations' characterized Russell's identification of *is materially implied by* with *is deducible from* as 'simply an enormous howler'. He introduced the word 'entails', now in common use amongst philosophers, to refer to that relation between *p* and *q* which entitles us to say of *q* that it must be true if *p* is true.

Russell himself, in the first of his Meinong articles, shows some signs of uneasiness, particularly over the consequence that 'there is a mutual implication of any true propositions'. 'It must be admitted,' he writes, 'that one-sided inferences can practically be made in many cases, and that consequently some relation other than that considered by symbolic logic must be involved when we infer.' But he seems to think that the illegitimate consequences of his dealings with implication can be laid on the doorstep of epistemology, so that symbolic logic can be left free to live its gay and unfettered life.

On relations, Russell adds little to Peirce except clarity of exposition.<sup>16</sup> But it is certainly as a result of Russell's emphasis on relational propositions that they came into their own amongst philosophers. His theory of classes and of class-membership, likewise, at first follows closely in the footsteps of his immediate predecessors. It is in terms of classes that he proposes to define natural numbers, and through that definition all the fundamental notions of arithmetic. Arithmeticians like Peano had already maintained that all other numbers could be defined in terms of the natural numbers; if Russell can define the natural numbers in terms of classes, he has proved, he thinks, that mathematics has no need of *numerical*, as distinct from merely *logical*, constants.

Russell defines a cardinal number – which is always, he says, the number of a class – as 'the class of all classes similar to the given class'; a class has six members, on this definition, if it belongs to the class to which all classes similar to it belong. 'Similar' has a special technical sense – it means 'having the same number as'. Russell had therefore to meet the objection that his definition is circular, that he is defining the number of a class as that class to which all classes with the same number belong. His

reply is that he can define 'similarity' or 'having the same number' in non-numerical terms, two classes having the same number when they can be correlated one-to-one. Nor do we need the number one, he further maintains, to establish a 'one-to-one' correlation; a relation is one-to-one when if  $x$  stands in this relation to  $y$  and so does  $x^1$ , then  $x$  and  $x^1$  are identical, and if  $x$  has this relation to  $y$  and to  $y^1$ , then  $y$  and  $y^1$  are identical. For example, to say that there is a one-to-one correlation between legal wives and legal husbands in a christian community is to assert that if  $x$  is the legal husband of  $y$  and  $x^1$  is the legal husband of  $y$ , then  $x$  and  $x^1$  are identical; and if  $x$  is the legal husband of  $y$  and  $y^1$ , then  $y$  and  $y^1$  are identical. Thus, Russell maintains, his definition of numbers in terms of similar classes involves no circularity.

In this definition of number is illustrated one of the central techniques of Russell's philosophical method – what he calls 'the principle of abstraction' and might have less misleadingly named 'the principle of *dispensing with abstractions*'. On the normal view, a 'number' is picked out, by abstraction, from a set of groups which possess a common numerical property. But Russell objects that there is no way of showing that there is only one such property – the one we have picked out: abstraction leaves us, indeed, with a class of properties, when we were in search of a single property. The 'principle of abstraction' – which can be employed whenever certain formal conditions are satisfied<sup>17</sup> – avoids this difficulty: it defines by reference to a class consisting of all the classes which have a unique relation (for example, one-to-one correspondence) to each other. Such a definition does not rule out the possibility, Russell will freely grant, that there is a property common to all the members of these classes, but *it does not need to make that presumption*. Here, for the first time, there clearly emerges what was to become a principal driving-force behind Russell's philosophy – the desire to reduce the number of entities and properties which *must* be presumed to exist in order to give a 'complete account of the world'.

Even if the definition of numbers in terms of classes is not paradoxical in itself, it threatened, Russell soon discovered, to produce paradoxes; there were difficulties, in particular, in the notion of 'a class of all classes'. This, it seemed obvious, is itself a class; it

follows that it is itself a member of the class of all classes, i.e. that it includes itself as a member. And it is not unique in this respect: the class of things which are not men, to mention another case, is itself something which is not a man. On the other hand, there are classes which do not include themselves. The class of things which *are* men, for example, is *not* itself a man.

It appears, then, that classes can be of either of two types: those which are members of themselves, and those which are not members of themselves. Now suppose we consider the class which consists of all the classes which are not members of themselves. Is this class a member of itself or not? If it is a member of itself, then it is not one of the classes which are not members of themselves; and yet to be a member of itself, it *must* be one of those classes. Here, then, there is a manifest contradiction. But equally if it is not a member of itself, then it is not one of those classes which are not members of themselves – again a contradiction. Thus we are led to an antinomy; either alternative implies a contradiction.

Paradoxes, of course, were no novelty. One of them, the paradox of the liar, is almost as old as philosophy. Russell restates it as follows: Suppose a man says 'I am lying', then if what he says is true he is lying, i.e. what he says is not true, and if what he says is not true, then also he is lying, i.e. what he says is true. Such familiar paradoxes had usually been passed by as mere ingenuities; but the paradox of 'the class of all classes' could not be so lightly regarded, and the same was true of other paradoxes which had raised their head in mathematics and in logic.

Russell, by now aware of Frege's work, sent him his paradox.<sup>18</sup> Frege was greatly perturbed. 'Hardly anything more unfortunate can affect a scientific writer,' he wrote in an Appendix to his *Fundamental Laws of Arithmetic*, 'than to have one of the foundations of his edifice shaken after the work is finished' – and Russell's paradox, he thought, did shake the foundations. The difficulty, as Frege saw it, is that if the logistic construction of arithmetic is to be carried through, we must be able to pass from a properly constituted concept to its extension, so that in the present case we ought to be able to talk without contradiction about the members of the properly constituted class of classes which are not members of themselves. Yet this is just what Russell's paradox

seemed to rule out. Frege attempted a solution of the difficulty: he so modified his previous account of 'equal extensions' as to exclude the extension of a concept from the class of objects which fall under it. It will then be no longer permissible to say that the class of things which are not men – the extension of the concept 'not-men' – is itself not a man, or that the class of classes which are not members of themselves is a member of itself. In general, he believed, the addition of limiting conditions to his proofs would enable him to avoid Russell's paradoxes.

Russell's own solution is more radical – the introduction of a theory of types.<sup>19</sup> Not that he was ever wholly satisfied with it. He describes it, indeed, as chaotic and unfinished. But it has had important effects on the development of contemporary philosophy.

The paradoxes all arise, he argues, out of a certain kind of vicious circle.<sup>20</sup> Such a vicious circle is generated whenever it is supposed that 'a collection of objects may contain members which can only be defined by means of the collection as a whole.' To take a case: suppose we say 'all propositions have the property *X*.' On the face of it, this is itself a proposition, so that the class of propositions has among its members one which presumes that the class has been completed – because it talks of 'all propositions' – before it has itself been mentioned. This contradiction – that the class must at once have been completed and not been completed – brings out the fact that there is *no such class*. 'We shall therefore have to say,' Russell concludes, 'that statements about "all propositions" are meaningless.' Then how are we to develop a theory of propositions? The pseudo-totality 'all propositions', Russell replies, must be broken up into sets of propositions, each capable of being a genuine totality, after which a separate account can be given of each such set. This 'breaking up' is the object of the theory of types; it is, however, applied to propositional functions rather than to propositions, because they, Russell thinks, are more important for mathematics.

Properly speaking, there are *two* theories of types – the simple and the ramified. The simple theory depends upon the conception of a 'range of significance'. In the propositional function '*x* is mortal', Russell argues, *x* can be replaced by certain constants in such a way as to form a true proposition, by others so as to form a false proposition, but in certain cases the resulting

proposition will be neither true nor false, but meaningless.\* The constants which, when substituted for *x*, form a meaningful proposition are said to constitute the 'range of significance' or 'type' of the function. In the case of '*x* is mortal' the range of significance is restricted to particular entities. It is always sensible, even if false, to assert of any particular thing that it is mortal, but it is without meaning, Russell now says, to describe, say, 'the class of men' or 'humanity' as being mortal. The general principle is that a function must always be of a higher type than its 'argument'. That is why 'mortal' can take 'Socrates' as its argument, but cannot be meaningfully predicated of 'the class men', and that is why, also, a thing can be a member of a class but a class cannot be and cannot fail to be – the denial would be as meaningless as the affirmation – a member of anything less than a class of classes. (Just as an individual can be a member of a club, but a club cannot be a member of anything less than an *association* of clubs.) In the paradox of the class which is a member of itself, this rule, Russell says, had been ignored. It had been presumed that all classes are of a single type, and that any class could be a member of another class. But this supposition gives rise, he argues, to a vicious circle: 'the class of all classes' would then be a *class* additional to the 'all classes' of which it is the class. Once the distinction between types is firmly maintained, it will be obvious nonsense to say of a class either that it is or that it is not a member of itself. Thus the dreaded antinomy vanishes.

Russell thinks that distinctions between types have been unconsciously respected in everyday speech, unconsciously because no one would *want* to say, for example, that 'Humanity is not a man'. But whereas the difference in type between 'Humanity' and 'a man' is an obvious one, the fundamental notions of logic – such notions as truth, falsity, function, property, class – have, he says, no fixed or definite type. We have been accustomed to talk simply about 'truths', whether we mean first order truths (*x is y*) or second-order truths (*x is y is true*) or third-order truths

\*There was, it should be observed – for the contrary is sometimes asserted – no novelty in the trichotomy, true, false, meaningless. As Russell himself points out, it was to be found even in the older logics – quite explicitly in Mill's *System of Logic* – and we have already had occasion to refer to it in talking about Frege, for example.

('x is y is true' is true). Paradoxes are then inevitable; we are led to imagine that propositions about truths are, as true, about themselves, whereas they are really second-order truths about first-order truths, and we are soon floundering in a sea of nonsense. The only way out, Russell thinks, is always explicitly to mention what *order* of truths, or classes, or functions we are talking about.\*

The simple theory of types, according to Russell, does not suffice to remove all risk of paradox. It is necessary to make further distinctions, he thinks, *between* types. Compare the two propositional functions, 'x is a general' and 'x has all the properties of a great general'. They have the same range of significance; 'Napoleon' could be sensibly substituted for x in both cases. But the predicate 'all the properties of a great general' is an illegitimate totality, since it itself would be one such property. This totality can be avoided, Russell argues, only by distinguishing differences of order within each type; then 'has all the properties of a great general' will be of a higher order than 'is a general', and will not itself *be* a property. Such a 'ramified' theory of types is essential, he considers, if every variety of logical antinomy is to be successfully avoided.

Obviously the original hierarchy of types is greatly complicated by the introduction of the ramified theory. But a much more serious handicap, in the eyes of Russell and his critics, was that the ramified theory seemed to rule out certain varieties of mathematical analysis which made use of what, according to the ramified theory, were illegitimate totalities.<sup>21</sup> Russell thought he could overcome this difficulty with the help of 'the axiom of reducibility'; this asserts that corresponding to any assertion of

\*Russell later confessed to some uneasiness about *type* itself. Is this, too, of different types? But how is it possible to say that *Socrates* and *mankind* are of different types, unless there is some single general sense of type? Are we not sinning against the theory of types in ascribing a single function *are of different types* to arguments of different types? For this sort of reason, Russell welcomed the 'linguistic' interpretation of the theory of types offered by writers like R. Carnap; it is a mistake, he came to think, to speak of *entities* as being of this or that type, it is *expressions* which differ in type. And it can be said without any contradiction, in a language of the second order, that the words 'Socrates' and 'Humanity' have different syntactical functions. See on this Russell's 'Reply to his Critics' in *The Philosophy of Bertrand Russell*. See also J. J. Smart: 'Whitehead and Russell's Theory of Types' (*Analysis*, 1950); P. Weiss: 'The Theory of Types' (*Mind*, 1928).

the form 'x has all the properties of a y' there exists a formally equivalent assertion which does not contain any reference to 'all the properties' but which, just because it is formally equivalent, can replace the original assertion in mathematical reasoning. But this axiom stood out awkwardly in the deductive system of *Principia Mathematica*; and it lacked the 'self-evidence' which mathematicians are accustomed to demand. Not surprisingly, other logicians attempted to avoid the paradoxes without recourse to the ramified theory of types.

The best known of these attempts is contained in F. P. Ramsey's essay on 'The Foundation of Mathematics',<sup>22</sup> and in the second edition of *The Principles of Mathematics* Russell accepts Ramsey's solution. According to Ramsey, Russell has grouped together paradoxes which are quite different in character – those which (like the paradox about classes) arise within the attempt to construct a logical system and those which (like the paradox of the liar) are 'linguistic' or 'semantic' in their origin, i.e. which arise only when we try to *talk about* that system. The simple theory of types, Ramsey argues – following Peano – suffices to resolve paradoxes of the first sort, and they are the only ones which really matter to the logician as such. Paradoxes of the second type can be removed by clearing up ambiguities; they depend upon the ambiguity of everyday words like 'means', 'names', 'defines'. Thus the ramified theory of types is in neither case necessary, and the much-despised 'axiom of reducibility' can be abandoned.<sup>23</sup>

The effect, then, of Russell's theory of types is that, like Moore's account of 'analysis', it encouraged the view that linguistic inquiries, of one sort or another, are of special importance to the philosopher. The same effect, even more obviously, flowed from Russell's theory of *denoting*: and the discussion of this 'logical constant' will lead us into the heart of Russell's philosophy.

As we have already seen, Russell's early metaphysics derived from Moore. 'On fundamental questions of philosophy,' he wrote in *The Principles of Mathematics*, 'my position, in all its chief features, is derived from Mr G. E. Moore. I have accepted from him the non-existential nature of propositions (except such as happen to assert existence) and their independence of any knowing mind – also the pluralism which regards the world, both that of existents and that of entities, as composed of an infinite

number of mutually independent entities, with relations which are ultimate and not reducible to adjectives of their terms or of the whole which these compose.' These entities are the 'terms' in propositions.

With this ontology is associated a theory of language. 'It must be admitted,' he wrote, 'that every word occurring in a sentence must have some meaning . . . the correctness of our philosophical analysis of a proposition may therefore be usefully checked by the exercise of assigning the meaning of each word in the sentence expressing the proposition.' Every word a meaning, every meaning an entity – these are the principles on which Russell at first worked.

He is already recognizing, however, in his analysis of 'denoting,' as Frege had before him, that the grammatical structure of a proposition can be misleading. A concept may occur in a proposition which is not, in spite of appearances, *about* that concept but about 'a term connected in a certain peculiar way with the concept'. Thus 'I met a man', for example, does not mean 'I met the concept "man" '; 'a man' here 'denotes' some particular human being. Similarly, although less obviously, 'Man is mortal' is not about the concept 'Man'. 'We should be surprised to find in the *Times*,' Russell writes, 'such a notice as the following "Died at his residence in Camelot, Gladstone Rd., Upper Tooting, on the 18th of June, 19–, Man, eldest son of Death and Sin".' And yet that announcement ought to provoke no surprise if 'Man' is mortal.

In *The Principles of Mathematics*, however, propositions like 'the King of England is bald' are not subjected to any considerable transformation; this proposition means, Russell says, that 'the man denoted by the phrase "the King of England" is bald'. It was the consequences of this interpretation which provoked the new theory of denoting presented in Russell's 'On Denoting' (*Mind*, 1905).<sup>24</sup> The years which intervened between *The Principles of Mathematics* and 'On Denoting' Russell had devoted to the study of Meinong. At first, he was confirmed in his allegiance to the philosophy he had learned from Moore. But doubts crept in: Meinong's 'objects' began to look like a *reductio ad absurdum* of Moore's 'concepts'. It was all very well for Meinong to talk with scorn of 'the prejudice in favour of the actual'; that 'prejudice', rechristened 'a robust sense of reality', is essential,

Russell came to think, to any scientific philosophy. 'The sense of reality,' as he eventually summed the matter up in his *Introduction to Mathematical Philosophy* (1919), 'is vital in logic, and whoever juggles with it by pretending that Hamlet has another kind of reality is doing a disservice to thought.'

Yet what is to be said, in terms of 'reality', about such assertions as, in a Republican age, 'the King of France is bald'? This cannot mean that 'the man denoted by the phrase "the King of France" is bald', because there is no such entity for the phrase to denote. Meinong had said that it refers to an object which lies 'outside of being', an object to which the law of contradiction does not apply, since one can say of it, with equal truth, that it has and that it has not any property we care to mention. Of a non-existent King of France we are entitled to say that he is bald or that he is not-bald, just as strikes our fancy. This is the point at which Russell's new-found sense of reality revolted. There must, he thought, be another way out, a way which does not involve interpreting the phrase 'the King of France' as referring to any entity whatsoever. And that is what he sought in his new theory of denoting, and, in particular, in what he came to call 'the theory of descriptions'.

By a 'denoting phrase', he first of all explains – and it is worth observing that it is now *phrases*, not *concepts*, which denote – he means such phrases as the following: 'a man, some men, any man, every man, all men, the present King of England, the present King of France, the centre of mass of the Solar System at the first instant of the present century, the revolution of the earth around the sun, the revolution of the sun around the earth.' He offers no general characterization of such phrases, but it is clear, at least, that they are none of them 'proper names', and yet that they can stand as a grammatical subject in a sentence.

The fundamental principle of Russell's theory of denoting, indeed, is that – in opposition to Mill – these denoting phrases *are not names for entities*, even although their being used as the subject of sentences makes them look as if they were. He tried to prove his point by so reformulating sentences containing denoting phrases as to retain the meaning of the original sentence without employing any denoting phrase. If this can be done, the presumption is, it will no longer be necessary to suppose that a denoting

phrase names some specific entity; then Meinong's unreal 'objects' can be abandoned – on the principle of 'Occam's razor', that entities ought not to be multiplied except of necessity.

We can illustrate Russell's general procedure from the 'most primitive' cases – 'everything', 'nothing', 'something'. Such a proposition as 'everything is *c*', Russell says, does not assert that there is a mysterious entity *everything* which can be truly described as *c*. That there is no need to suppose the existence of such an entity comes out in the fact that 'everything is *c*' can be reformulated as 'for all values of *x*, "*x* is *c*" is true', which makes no mention of 'everything' and yet which fully expresses what was originally asserted.

A more complex, and a more important, case is what Russell later called 'the definite description' – denoting phrases which contain 'the'.\* On the face of it, a phrase like 'the so-and-so' must refer to an entity: Frege, for example, had thought that 'the' was the sign *par excellence* that an 'object' was being referred to. But such a proposition as 'the author of *Waverley* is Scotch', which one would ordinarily suppose to predicate a property of a particular entity, 'the author of *Waverley*', is not, Russell argues, about the author of *Waverley* at all. This proposition asserts, he tries to show, a conjunction of three propositions: '(a) at least one person wrote *Waverley*, (b) at most one person wrote *Waverley*, (c) whoever wrote *Waverley* is Scotch.' Or, more formally, 'there is a term *c* such that (1) "*x* wrote *Waverley*" is equivalent, for all values of *x*, to "*x* is *c*" and (2) "*c* is Scotch".'

This reformulation does not mention 'the author of *Waverley*'; that means that we could intelligibly assert that 'the author of *Waverley* is Scotch' even if *Waverley* in fact had no author. In that case, our assertion would be false, since proposition (a) – 'at least one person wrote *Waverley*' – would be a false proposition, but it would not be nonsensical. Now we can understand, then, how an assertion like 'the King of France is bald' – which is precisely parallel to 'the author of *Waverley* is Scotch' – can have a sense, even although there is no entity named by 'the King of France', no Meinongian object.

\*As distinct from *indefinite* descriptions, containing 'a'. See particularly Russell's *Introduction to Mathematical Philosophy* on descriptions.

Russell was by now well embarked upon what was to be his main philosophical occupation. 'Occam's razor' dealt destruction like a sword – unnecessary entities were miraculously cut down right and left. Numbers, as something distinct from classes of of classes, had been the first to go; but the victory over Meinong's 'objects' had been a more sweeping one. And they were soon to be joined in Hades by more commonplace-looking victims.

Definite descriptions, Russell had argued, are 'incomplete symbols' – what Frege had called 'names of a function' – as distinct from 'complete symbols', i.e. proper names (the names of arguments). They have a use in sentences, but they do not name entities. The same is true, *Principia Mathematica* suggests, of 'classes'; classes, too, are 'symbolic linguistic conventions', used in order to make statements about functions of propositional functions. The assertion 'the class "man" is included in the class "mortals"' looks like a statement about the relation between two entities, the class 'man' and the class 'mortals'. But in fact, Russell maintains, it is no more than a shorthand formulation of the proposition "'*x* is a man" formally implies "*x* is mortal".' There is no entity, as Russell had at first supposed, which is named by the phrase 'the class as one'.

Similarly, whereas in such early articles as 'Is Position in Time or Space Absolute or Relative?' (*Mind*, 1901), Russell had operated freely with spatial 'points' and temporal 'instants' – ultimate units of space and of time – Whitehead now persuaded him that sentences which apparently refer to such entities can, without loss of meaning, be translated into statements about the relations between 'events'. Points, instants, particles, shared the fate of numbers, classes, the author of *Waverley* and the present King of France.

So far, however, the ordinary objects of everyday life, tables, chairs, our own and other people's minds, had been left untouched. But the process by which they are gradually disintegrated into classes of 'sensibilia' is already under way in *The Problems of Philosophy* (1912). In the preface to that book, Russell acknowledges his indebtedness to those lectures of Moore which were published in 1953 as *Some Main Problems of Philosophy*; he agrees with Moore, in particular, that what we are immediately acquainted with are sense-data, not physical objects.

But there are notable differences between Russell's epistemology and Moore's; the existence of physical objects, to Russell, is a scientific hypothesis – parallel, say, to an hypothesis in physics – which we accept as being true because it allows us to give a 'more simple' account of the behaviour of our sense-data than any other hypothesis which has occurred to us. It is not, as it was for Moore, something that we 'immediately know'. And Russell's argument in favour of the view that we do not directly perceive physical objects appeals to 'what science tells us' about the nature of perception, in contrast with Moore's appeal to 'commonsense' and to familiar sensory illusions. Furthermore, the whole atmosphere of *The Problems of Philosophy* is logico-mathematical, in the Cartesian style; Russell sets out in search of the indubitable, of what it is *impossible* to doubt, and criticizes our everyday beliefs from that standpoint. It is already clear that Russell, although he makes certain concessions to 'commonsense' in the form of 'what we instinctively believe', will not be permanently satisfied by the loose and somewhat precarious structure of Moore's 'defence of commonsense'; it is science, not commonsense, which he is anxious to defend and it is science, too, which must sit in judgement on that defence.

The search for the indubitable, in *The Problems of Philosophy*, is formulated as an attempt to discover those objects with which we are immediately 'acquainted'. Russell takes over from James, who had in turn, oddly enough, learnt it from Grote – so that this doctrine travelled from one Cambridge man to another via Cambridge, Mass. – his distinction between knowledge by acquaintance and knowledge by description; this is the point at which Russell's analysis of denoting bears directly on his general philosophy.<sup>25</sup> We have 'knowledge by acquaintance' of an object if we are 'directly aware' of it. The most obvious case, Russell thinks, is the sense-datum: I can be directly aware that I am experiencing a certain sense-datum. And it follows, he more hesitantly concludes, that I am also directly aware of the 'I' that does this experiencing, and of its mental states.

Mental states, our own self, and sense-data are the only 'particulars', he thinks, with which we have direct acquaintance. But we are also acquainted with 'universals' – with whiteness and beforeness and diversity. When we experience one sense-

datum as *before* another one, for example, we are acquainted with a universal, the relation 'before'.

We are not acquainted, he argues, with physical objects; we know such an object as a table as that to which a certain description applies – as, say, 'the thing which causes these sense-data' – and it is only by inference, not by direct perception, that we know that there is any such thing. Nor are we acquainted with other human beings, even with those whose 'personal acquaintance' we are accustomed to claim. Such human beings, he thinks, are in the same position as physical objects: they are inferences from our sense-data. As for people with whom we are not in the ordinary sense 'acquainted' – Julius Caesar, for example – we know them, more obviously, through descriptions: as, to keep the same instance, 'the man who crossed the Rubicon'.

On the face of it, this is an odd doctrine. 'Julius Caesar' is not the sort of thing we should ordinarily call 'a description', and in such assertions as 'Julius Caesar crossed the Rubicon' Julius Caesar seems to be *what* we are describing, not a description. But, Russell objects, we cannot possibly talk about anything which lies beyond the reach of our acquaintance; this proposition, therefore, cannot be *about* Julius Caesar, grammatical appearances to the contrary notwithstanding. 'Every proposition which we can understand,' he says, 'must be composed wholly of constituents with which we are acquainted.' A proposition which appears to be about Julius Caesar must really be about certain sense-data (something, in this case, that we have been told or have read) and certain universals. Thus just as the author of *Waverley* is not the true subject of propositions like 'the author of *Waverley* is Scotch', so, too, according to Russell, Julius Caesar is not the true subject of propositions like 'Julius Caesar crossed the Rubicon'. Although the details are complicated, such propositions, he thinks, can be reduced by the methods characteristic of his 'theory of descriptions' to propositions which, without mentioning Julius Caesar, still manage to convey all that the original proposition asserted.

The problem now arises – what about our knowledge of general principles? Is that reducible to statements about objects with which we are acquainted? There is no difficulty, on Russell's view, about mathematical propositions; these, he thinks, relate

universals, and we are acquainted with universals. But the inductive principle he finds more puzzling. Like Hume, he thinks that if this principle is unsound, 'we have no reason to expect the sun to rise tomorrow, or to expect bread to be more nourishing than a stone'; but, also like Hume, he does not see how the inductive principle can either be a relation between universals or an inference from experience. He is forced to the conclusion, highly uncomfortable although it is, that 'all knowledge which is based upon what we have experienced is based upon a belief experience can neither confirm nor refute and yet which seems to be as firmly rooted as any of the facts of experience'. This was one of the sore places in his philosophy; his attempts to heal it were finally to lead, in his *Human Knowledge: Its Scope and Limits* (1948), to a position considerably remote from *The Problems of Philosophy*.

Another sore place was the status of the physical object. Physics is supposed to be an empirical science, yet – as Russell pointed out in his essay on 'The Relation of Sense-Data to Physics' (*Scientia*, 1914, reprinted in *Mysticism and Logic*, 1917) – physics itself tells us that what we perceive is something entirely different in character from the entities which form the subject-matter of physics. 'Molecules have no colour, atoms make no noise, electrons have no taste, and corpuscles do not even smell' – yet what we directly experience is always a colour, a sound, a taste or a smell. How then, Russell asks, can the existence of physical objects be verified by the sense-data we experience? He had so far presumed that the existence of such entities can somehow be inferred from sense-data. But he came to agree with Berkeley that such an inference – to entities quite different in nature from anything we can experience – is in principle impossible. Unless physical objects are in some way reducible to sense-data, physics must, he thinks, be a mere fantasy.

The difficulties in such a reduction were, on the face of it, insuperable. Sense-data, as they had ordinarily been defined, are subjective and discontinuous; physical objects are objective and continuous. Different persons experience incompatible sense-data; how can a penny, say, consist of the round sense-datum you experience and the elliptical sense-datum I experience? With the

help of lessons he had learnt from the New Realists – especially T. P. Nunn and S. Alexander in England and E. B. Holt in the United States<sup>26</sup> – Russell thought he could overcome these objections.

The major points<sup>27</sup> are, first, that a sense-datum is not 'subjective' – it is neither a mental state nor a constituent in such a state; secondly, that once this is recognized, there is in principle no difficulty in supposing that there are 'sensibilia' – objects 'which have the same metaphysical and physical status as sense-data but which are not actually being perceived by anybody'; and thirdly, that the supposed 'incompatibility' of sense-data rests on a simple-minded conception of space and time. Since sense-data are objective, the argument then runs, physical objects can be defined as series of sense-data, linked together by sensibilia. The supposedly 'incompatible' sense-data will be different members, in different 'private spaces', of such a series of sense-data. Thus, according to Russell, a penny, for example, consists of the elliptical sense-datum which occurs in your private space and the round sense-datum that occurs in my private space, together with various other sense-data in other private spaces. These various appearances, he says, form 'one thing', in the sense that they 'behave with respect to the laws of physics, in a way in which series not belonging to one thing would in general not behave' – at least, this is true of the 'things' with which physics is concerned. The 'things' of commonsense, according to Russell, are conceived with so little precision that a satisfactory account of their construction is scarcely possible.

Physics, Russell concludes, stands in no need of 'physical objects' understood as something wholly distinct in nature from sense-data. And it is, he says, the supreme maxim of all scientific philosophizing that '*wherever possible, logical constructions are to be substituted for inferred entities*'.<sup>28</sup> Thus if physical objects can be constructed out of sense-data, a 'scientific' philosopher ought obviously to abandon the doctrine, which Russell had held in *The Problems of Philosophy*, that their existence has to be 'inferred' as a relatively simple explanation of the sense-data we experience.

At this stage in Russell's philosophy, then, the world as the scientific philosopher sees it consists of sense-data, universals,

and mental facts. Russell had by now rejected the view that we are directly acquainted with a self over and above particular mental facts; he still held, however, that mental facts are quite distinct from sense-data. Believing, willing, wishing, experiencing, he thought, are mental facts; what is experienced, willed, wished for, in contrast, is a series of sense-data.

Belief, however, was an embarrassment to him, as became particularly clear when, partly under Wittgenstein's influence, he tried to formulate what he called 'the philosophy of logical atomism.'<sup>29</sup> The philosophy of logical atomism, as Russell conceives it, is an attempt to describe the kind of facts there are – just as zoology tries to describe the different types of animal. He still, that is, accepts Moore's view that philosophy tries to give 'a general description of the whole universe'. Russell begins with a description of the fundamental *constituents* of facts – the logical atoms. These, Russell not surprisingly maintains, are of two kinds, sense-data and universals. An 'atomic fact' – a typical example is *A is before B*, where *A* and *B* are sense-data – has these basic elements as its constituents.

Facts can be particular, like 'this is white', or universal, like 'all men are mortal'. It is impossible to regard the world as wholly composed of particular facts, Russell says, because that view would itself involve the *general* fact that atomic facts are all the facts that there are. And once this general fact is admitted, there seems to be no good reason for not admitting others. Again, a fact may be either negative or affirmative. Some facts are 'completely general' – referring not to particular entities but only to the general form (or 'syntax') of statements – these, he thinks, are the facts of logic. And then there are facts about facts and so on.

There are not, however, true facts and false facts – only propositions can be true or false and a proposition, Russell now says, is a symbol, not a fact. 'If you were making an inventory of the world,' he writes, 'propositions would not come in. Facts would, beliefs, wishes, wills, would, but propositions would not.' It is in the classification of 'propositions' that Russell's troubles about belief arise.

Propositions, according to Russell, fall into two classes – atomic and molecular. All molecular propositions can be ex-

pressed as 'truth functions' of atomic propositions i.e. their truth or falsity is wholly determined by the truth or falsity of the atomic propositions which make them up. The truth of an atomic proposition, on the other hand, can be decided only by passing beyond the proposition to the fact which it depicts. Thus, to take the simplest case, the molecular proposition *p* and *q* is true if the atomic propositions *p*, *q* are both true and is false if either of them is false, but the truth of *p* is independent of the truth of any other proposition.

The problem for Russell is to fit propositions about mental facts into this classification. Is 'I believe that *x* is *y*' an atomic or a molecular proposition? It looks like a molecular proposition with two constituents – *I believe* and *x is y*. But the difficulty with this view is that the truth or falsity of *x is y* is quite irrelevant to the truth of 'I believe that *x* is *y*'; *x is y*, therefore, is not a 'constituent' in 'I believe that *x* is *y*' in the sense that *p* is a constituent in '*p* and *q*'. A belief, Russell has to conclude, is 'a new species for the zoo'. Yet there is something unsatisfactory about this conclusion; mental facts do not seem to be marked off from other facts by *logical* peculiarities.

If, on the other hand, 'I believe that *x* is *y*' can be reformulated, in the behaviourist manner, as 'when I encounter an *x*, I react in such and such a way' – if, for example, 'I believe that snakes are dangerous' is a way of saying such things as that 'when I see a snake, I pick up a stick' – then there will be no need to distinguish beliefs, or other 'mental facts', as a peculiar logical species. Thus it is not surprising that Russell moved in this direction in *The Analysis of Mind*; significantly, he asked the behaviourist J. B. Watson and the realist T. P. Nunn to read his proofs.<sup>30</sup>

Russell is now in violent reaction against the whole pattern of ideas within which his own and Moore's earlier theories had been worked out; in particular, he rejects outright Brentano's definition of psychic phenomena. He no longer believes that the essence of such a phenomenon consists in the fact that it 'points to an object'; indeed he can see no reason for maintaining that there are either 'acts' or 'objects'. 'Instead of saying "I think", it would be better,' he writes, in a passage which echoes Mach, 'to say "it thinks in me" or better still "there is a thought in me".' The form of the sentence 'I think of *x*' suggests immediately

that there is an act of thinking and an object of that act: but in reality, Russell is now arguing, there is only the thought, which is 'in me' in the sense that it forms part of that series of events referred to by the word 'I'. Whereas he had previously, like Moore, insisted on the distinction between sensation and sense-data he now rejects sensation as a purely mythical 'act'.

This is as far as Russell ever went in the direction of neutral monism; in *The Analysis of Matter* – in which he comes to terms with Einstein's 'new physics' – he turns hard a-port to something more like, although very different from, that 'inferential' theory of physical objects which he had maintained in *The Problems of Philosophy*. The sense-data of *The Analysis of Mind*, even although they do not depend for their existence on something mental, are yet 'subjective' in a wider sense; they exist only in relation to a human nervous system. Indeed, Russell identifies them with states of that human brain which is ordinarily said to 'experience' them. It is obvious, he says, that the actual process of sensing is in the human brain; the process of sensing, he has argued, is identical with the sense-datum sensed; it follows that the sense-datum, too, must be 'in the brain'.<sup>31</sup> When the physiologist examines a brain what he is *immediately* considering must be states of his own brain, not of the brain which he is attempting to describe.

Russell came to feel, however, that the physical objects *themselves* cannot be thus dependent on the existence of our nervous system, i.e. that physical objects are not, after all, sets of sense-data. He had already admitted 'sensibilia' over and above sense-data. Why stop at that point, he began to ask? 'It is impossible to lay down a hard-and-fast rule,' he wrote, 'that we can never validly infer something radically different from what we observe . . . unless indeed we take up the position that nothing unobserved can ever be validly inferred. This view . . . has much in its favour, from the standpoint of a strict logic; but it puts an end to physics.' And physics, Russell was determined to retain.

The problem, as he sees it, is the old one: how is the sun I am now seeing related to the sun of the astronomer, which is not 'now' but eight minutes away, not hot or bright, and very different in its structure from anything I can hope to experience? We can infer the existence of the astronomer's sun, Russell argues, only

because there is a continuous single causal chain<sup>32</sup> linking events in our nervous system with events in the sun. The inference can never be an exact one, because the causal chain is not *completely* isolated; it is interfered with, in various ways, by other similar chains, and these disturbances prevent us from inferring precisely what lies at the end of any process terminating in our nervous system. But if it were not for the possibility of *some* such inference, Russell argues, we could never pass beyond what he calls 'a solipsism of the moment': we would take nothing to exist except the transient sense-datum – a position, he says, which although it is logically unassailable no human being can consistently maintain.

The twists and turns in Russell's argument after *The Analysis of Matter* we cannot follow in detail. But a few points can be picked out for special consideration, because they bear on those continual preoccupations of Russell's philosophy which we have particularly emphasized. He is still trying to work towards a satisfactory theory of belief, still worried about the relation between physics and perception, but he sees new difficulties, as well, in his earlier views. From the beginning Russell has presumed that there are in our experience 'particulars', which are named by 'logically proper' names. At first, 'I', 'that table', 'Julius Caesar' were all regarded as logically proper names, each referring to some unique entity with which we are acquainted and which we can describe by means of universals. But as his theory of denoting developed, these all ceased to be proper names; each, it was argued, is a descriptive phrase in disguise. Only 'this' survived the scrutiny.

In his articles on logical atomism, Russell pointed out that 'this' played the same part in his philosophy as 'substance' in traditional philosophies – it named entities, 'logical particulars', which 'stand entirely alone and are completely self-subsistent'. But it only gradually occurred to him that if this is so then the classical objections to 'substance' might also apply to 'logical particulars'. Once he noticed this fact, his whole theory of universals and particulars took on a new complexion.

His general view – it is most fully worked out in his article 'On the Relations of Universals and Particulars' (*PAS*, 1912) – had always been that a sharp distinction can be made between

logical particulars and universals. He had more than once been tempted by the doctrine that universal *qualities* can be reduced to sets of similar particulars, but he had always drawn attention to the fact that even in such a case there is still at least one universal *relation* – similarity. And why not others?

But in *Meaning and Truth*, he writes as follows: 'I wish to suggest that "this is red" is not a subject-predicate proposition but is of the form "redness is here"; that "red" is a name, not a predicate; and that what would commonly be called a "thing" is nothing but a bundle of coexisting qualities such as redness, hardness, etc.' On any other view, he now thinks, 'this' becomes an 'unknowable somewhat in which predicates inhere, but which nevertheless is not identical with the sum of its predicates'.

Russell is not, it should be observed, defining a thing as a 'meeting-place of universals', in the manner of some Idealists. On the contrary, he is maintaining that *the qualities of a thing* are themselves particular; a 'red thing' is the occurrence in a certain place of a specific shade of colour, which ought to have a proper name. Qualities, now, are particulars, and 'things' are collections of such qualities occurring at such and such a set of spatio-temporal co-ordinates; the 'here' in 'redness is here' refers to a set of qualities by which shades of colour are 'placed' in our visual field as having a certain absolute position there.<sup>33</sup> But this view, he willingly admits, is 'tentative'.

A further question to which he often recurs, particularly in *Human Knowledge*, is a familiar one: how are the general propositions of science to be justified?<sup>34</sup> And with this is linked another problem: what is the minimum departure from empiricism that the philosopher is forced to admit? Russell had never been an empiricist, in the strict sense; even in *The Problems of Philosophy* he had rejected the view that all knowledge can be derived from experience. Mathematical propositions cannot be so derived, he had argued, nor can the inductive principle. Yet at the same time, Russell's conscience is uneasy – as if his secular-godfather Mill were exercising his spiritual rights – whenever he passes beyond experience. If there are limits to empiricism, these limits must still be passed with trepidation.

The outcome of his argument in *The Analysis of Matter* had been, however, that a strict empiricism – since Russell never

questions that experience is of 'sense-data' – would be a 'solipsism of the moment'; it would deny that anything is real except our present sense-datum. The question, now, for Russell is to lay down the 'postulates' which have to be added to empiricism if it is to be a satisfactory philosophy of science. The 'inductive principle' is one such postulate, but Russell thinks that its importance has been exaggerated. It is only one postulate, and not the fundamental one. Russell uncovers quite a collection; their general nature can be illustrated from the 'postulate of quasi-permanence' which asserts that 'given any event A, it happens very frequently that, at any neighbouring time, there is at some neighbouring place an event very similar to A'. This is a way of saying that there are continuous things, without invoking the forbidden conception of substance. And without 'things', Russell considers, physics cannot be worked out. His canons, in general, are an attempt to lay down the principles which have to be adopted if scientific inference is to be possible; they are very like the 'general rules' of Hume's philosophy.

Such canons, according to Russell, cannot be inferred from experience. Nevertheless, he also thinks, they have their *foundations* in experience. They derive out of reflection on 'animal inference' – the habits of expectation which the human organism exhibits; they pick out the principles implicit in these habits. And if their mere existence demonstrates that empiricism, as a complete theory of knowledge, is untenable, that very discovery, Russell argues, has been inspired by the empirical spirit, which recognizes 'that all human knowledge is uncertain, inexact and partial'. This is a long way from the optimism of *The Problems of Philosophy*. Russell's philosophical development, it is not too much to say, is the passage from Descartes to Hume epitomized.