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IDEALISTIC LOGIC



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IDEALISTIC LOGIC

A STUDY OF ITS AIM, METHOD AND ACHIEVEMENT

BY

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PREFACE

THIS study has been developed out of lectures delivered in the course of the last five years under the terms of my appointment as Jowett Lecturer in Philosophy at Balliol. It does not attempt to provide an introduction to the logic of the Idealists, in the sense of giving an easily intelligible exposition of the doctrines of that logic as they are propounded by the Idealistic writers themselves. From the outset I have approached the matter from a critical standpoint, seeking to discover for myself what is in the last resort the essential logical position of modern Idealism, to estimate how far the implications of that position have been fully worked out, and finally to judge of the philosophical value of the Idealistic logic generally. I have throughout been influenced by the conviction that the broad issues in this enquiry are best seen in proportion by reflecting on the debt which any Idealistic Logic must owe to Kant. He, though his arguments are too sweeping in character and his conclusions, for all his native caution, too unreservedly stated and too easily arrived at, was in a position—and his *Critique of Pure Reason* forces the reader into a position—to see the issues broadly and as a whole. The Idealists, while they have rarely, if at all, in my view, passed outside the terms of reference set for logic by Kant, or added substantially to the germinal ideas given by him, have not unnaturally shown a tendency to lose sight of the wood in giving necessary attention to the trees.

In working out my argument I have concentrated attention primarily on an attempt to make the several logical positions which I have set against one another as clear and well-defined as possible. To that end I have thought it better quite frankly to take a high line in dealing with the philosophies concerned. I have not scrupled to use the terms 'the Traditional logic' and 'the Idealistic logic' quite freely, without necessarily having in mind at the given moment any particular utterance or even, sometimes, any particular thinker; and no attempt has been made by quotation and reference to give an appearance of a kind of scholarship which it is no part of the purpose of this study to claim. The exposition of the essentials of a philosophical position, while it requires a knowledge of the relevant writings, also demands judgment in the expounder, especially when those doctrines are being exhibited from a special and independent point of view; and no wealth of documentation can obviate that need, though it may conceal it. No doubt it is a weakness, but if in this study I had turned aside to justify every attribution of doctrine, I could not have kept my line of argument clear. The main theses about the essential principles of the Traditional and Idealistic logics, though they may appear unorthodox at first sight, tend, I hope, to justify themselves as their implications become clearer in the course of the argument.

My conclusions about the Idealistic logic are based primarily on reflection on the writings of Bradley and of Professor Joachim. As regards Kant, experience certainly does not suggest that quotation is of much value in itself as a support for a particular interpretation of his thought. In the case of Cook Wilson, I have been forced to ask the reader to pay close atten-

tion here and there to particular statements; but this is because it is essential to his position to criticise other views by pressing their particular statements in his own way, and because he wrote his own pages in full anticipation that this method of interpretation, which he thought the only sound one, would be applied to his own writings.

My chief obligation is to Professor Prichard, without whose teaching I could never have achieved any understanding of the logic of Cook Wilson, in the study of whose doctrines I was brought up. My respect and admiration for Bradley, and for the logic of Idealism generally, is due chiefly to the lectures of Professor H. H. Joachim, which I heard more than twelve years ago; my recollection of these has been the main force driving me to the attempt to learn more about the philosophy of Kant. I owe much more than I can estimate in detail to the privilege of being able frequently to hear Professor J. A. Smith defending Idealism in private conversation, usually against an essentially Cook Wilsonian attack. I am also especially indebted to the Master of Balliol and to Mr. T. D. Weldon, who have read the MS. of this study and have made valuable suggestions; and to Mr. O. de Selincourt and to my wife for reading the proofs.

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CHAPTER I

THE AIM OF LOGIC

LOGIC, as we find it in the modern Idealistic writers, is a difficult and highly technical subject. Whether or not it may properly be regarded as a science, it evidently has a technique and a discipline of its own—a technique and a discipline which are by Idealism jealously distinguished from those of empirical psychology. This discipline must be accepted by the student of logic, and such original work as he does must be conducted within it and under its general control, as in the case of the sciences. Unless the discipline is accepted, no progress is made with the science.

Normally speaking, when we take up any enquiry, we are prepared at once to submit to the orthodox discipline of the science with which we are concerned. We take it on trust that fruitful research in this matter must obey certain rules, which have gradually come to be accepted in the course of the development of our science. And so it is with logic. We ask ourselves certain questions, because they are the questions asked by logic. We set ourselves to answer them in certain ways, because that is the procedure adopted by logic; and for most of our time we go on humbly working at the departmental work within our subject, without ever asking ourselves, 'What is the good? What is logic all about? What does it hope to discover, and why does it use these particular methods in the endeavour to discover it?'

Yet these fundamental questions must be constantly arising in the mind of the student of logic. It is not only the beginner who finds it difficult at times to think his way into the subject. To the novice and to the master alike there probably come moments when the arguing of logic means nothing to him; when it appears, in fact, so much logic-chopping. Either the plain man's answer to his question seems quite satisfactory, or it seems at once evident that no answer can be given. At these moments no work in logic can be done; the mind simply fails to accept the task demanded of it. If we believe in logic as a real study, we believe, no doubt, that the answers to its questions are neither immediately obvious nor impossible to find, but that patient analysis and research will throw light on them. But, in order to be successful, we need to have a clear understanding of what the questions of logic are, and to what end they are of importance; and we need also, each of us, a working assurance, if we are to go forward with our work without undue looking back, that research on these particular matters by this particular method may reasonably be expected to throw light on these particular questions.

To most people, the need for this assurance is paramount. No doubt there are those who will work on blindly on any task by any discipline, without requiring to be satisfied first that the task is of value, and that their labour, employed in this way, will in time achieve the task with reasonable economy. But for most men this is not so. They demand to know where they are supposed to be going, and whether this is the right road to follow. These questions, moreover, seem to have a special urgency in logic. At first it is difficult to see any problem; then, when the problem is descried, we need to be satisfied of the need to answer it; and

even in the end of all we need to be assured of a reasonable hope of a successful issue to our labours.

But there is more to be said for our present enquiry than this. Apart from the very human desire to be assured that as logicians we are asking an important question, and are using a proper method to answer it, there is the further justification that our work in the subject will make no progress unless we have at least a provisional answer to these basic questions. No advance can be made by simply obeying rules and submitting to discipline. Important as it is that we should get on with the detailed work of analysis and research, without which our thought makes no way because it meets with no resistance, we know that any scientific enquiry suffers if the enquirer does not from time to time drag such fundamental questions forward from the back of his mind, and force himself to take stock of his situation and give himself a provisional answer. If we do this too often or with too rigorous insistence, we shall never begin on our work at all, or at least shall have left insufficient time and energy to make progress. If we do it not at all, we shall stumble about blindly, sometimes inside sometimes outside our own province, and our work will produce no more than unrelated and valueless jottings in a notebook.

What then, we ask, is the aim of logic, and what is its method? There is a common belief that it is the aim of logic to enable us to distinguish between sound and spurious proof; and that its method is to examine the *forms* of statement and of inference, abstracted from their matter. Logic would thus be essential to the possibility of knowledge. Since there are many truths which we know, not immediately, but by inference, it is essential that we should be able infallibly to distinguish inference from false arguing. It is thus of

great value if we can classify arguments into different forms, and determine what forms are valid and what not. Obviously many of the errors which have been current among mankind have been due to an inadequate logic in this sense; premises have been thought to carry conclusions which on further investigation they clearly could not support. If it is possible by an examination of *form* to determine what kind of premise can support what kind of conclusion, a valuable step will have been taken towards the avoidance of future error.

There was a time when it was taken for granted that logic could achieve this aim, and even that it had achieved it. Every thinker, it was thought, no matter what the subject of his enquiry, must submit his alleged demonstrations to the scrutiny of the logician, who could tell by the general laws of logic whether they were formally valid or not. Against the verdict of logic there was no appeal. It mattered not how new was the subject of investigation, how intricate or delicate the ratiocination, or how complicated or difficult the terminology. Always logic could and must judge the validity of the proofs on general principles. It was taken for granted that all proof could be reduced to one or other of the known forms, and was therefore bound to conform to the rules which governed that form. As regards all the knowledge which depends on reasoning, logic was thought to provide the test of truth.

Probably nobody would advance so sweeping a claim for logic nowadays. The beginning of the modern attitude is perhaps marked by Locke's famous remark that God did not make men barely two-legged creatures and leave it to Aristotle to make them rational[1]; though

[1] *Essay*, *IV*. xvii. 4.

Locke did not press home his point of view or realise its implications for logic. As time went on the traditional logic more and more obviously failed to impose its authority on the man of science. When modern physics was shown to be using methods of demonstration which the old logic was bound to condemn, the old logic failed to carry conviction; though dragged to its conclusions, nobody but the professional logician embraced them. The result was that the modern logic was driven to be more sceptical of the possibility of any systematic distinction between the form and the matter of argument. It was forced by experience to recognise that a logician, however well equipped, was quite incompetent to judge of the reasoning of a modern scientific theory, and that, for instance, the proof of a physical hypothesis can be neither understood nor tested by anyone who is not a physicist. With this admission is banished once for all the original claim of logic to provide an absolute, general test of truth. If, in order to judge of a particular demonstration, it is necessary to have special knowledge of the subject matter with which the demonstration is concerned, then clearly there is no question of the possibility of a formal criterion of reasoning; what is required is full knowledge of the particular science concerned. Here there is no need for logic.

Yet if logic humbles itself to this extent, as it seems that it must; if it no longer claims to scrutinise, and accept or reject, the arguings of the sciences; if every particular science must itself alone be answerable for the validity of its own reasoning, and must brook no interference on the authority of general logic; is there then any worthy place at all for logic to occupy? Can there any longer be any such thing as logic? The case against logic has only to be put in this extreme form

for it to be seen at once that it can hardly be the whole truth. If it were sound, then every science would have a logic of its own. Every scientist would in the course of practice acquire an art of thinking suitable to his own subject matter, but such that it would fail him at once if he sought to use the same technique in another sphere. He would first perhaps acquire the art unconsciously, and then in the course of time learn from his successes and failures what are the rules of this thinking, and so develop more or less consciously and deliberately a practical logic of his own—the logic of physics, as it might be, or the logic of biology.

Now clearly there is much truth in such a view, and any sound general logic must allow for this. The physicist learns to reason, not by studying logic, but by the study of physics; furthermore, he often quarrels with the reasoning of other people, as for instance with the reasoning of the pure mathematician. Also he often shows an inability to think straight on other subjects, sometimes combined with a rigid belief that a training in physics equips a man at once to solve any problem. No doubt to some extent each science has a practical logic of its own. But this can hardly be the whole truth; or at least we cannot accept it as the whole truth without careful examination. It seems worth while at least to canvass the view that all these thinkings are, or might be in the end, thinkings of one mind, and that therefore they are all to some extent informed by the character of the mind as a whole, and all themselves contribute to form the activity of the mind as a whole. If this is so, it is clear that the mind of man lives not by his activity as a physicist, but by the activity of the mind as a whole; and it would seem that by examining and comparing the mind's thinking in the various sciences we might throw light on the

nature of that activity of mind in general, which to some extent informs them all. We should also thus get a clearer view of the relation of the mind itself to its thinking under the particular scientific disciplines. Also, if we are right, and the thought of man does not live by physics alone or by biology alone, we may discover what should be our attitude to physics and to biology and to their results; whether, that is, we may accept their results as true, or whether, while we need their help, we have further to go in search of truth. If on the other hand we are wrong, and the enquiry either of the biologist or of the physicist ultimately constitutes the whole cognitive activity of his mind; if, that is, either biology or physics is in itself the whole pursuit of truth; then our enquiry, which starts with a different assumption, will fail in the face of the facts of real thinking, and betray its own uselessness.

This at any rate, as it seems to me, is the task which is undertaken, at first half-blindly but gradually with clearer vision, by the Idealistic logic. Whatever be the outcome, at least it shows itself a living and growing enquiry, and not a completed and barren one which was born and died in the mind of Aristotle. If this is true, then just as the true logic had to come to life again because of the new methods of enquiry adopted by modern science, and had to recognise that there are modes of thinking never recognised by the schoolmen; just as, later, it had to waken again to recognise that the account of thought which had been worked out by an examination of physics had to be further modified and developed to comprehend the discipline of the new systematic biology; so now it must remain alive to square itself to the newest developments of scientific method and thinking, lest it unduly narrow the activity of mind and represent the mind as a smaller

and less fertile thing than it is. It is a far cry indeed from such a view to the old claim of logic to be a pure enquiry legislating for, and limiting *a priori*, the possibility of all thinking. But along this road logic may secure for itself perhaps a humble, but at least a living and growing activity in pursuit of the truth about the nature of thinking and the nature of mind.

It may seem to some, as it seemed to the old logic, that this is a wrong statement of the problem based on a confusion. It may seem that, strictly speaking, there can be no development of new modes or disciplines of thinking; that what is really the same thinking, in accordance with the same principles and under the same discipline, has been applied to new subject matter, and thus, because it uses new terms, has been mistaken for a new kind of thinking. In truth, it may seem, thinking has the same principles and is confined within the same limits at all times and in all places, at all periods of the history of thought, and as applied to all kinds of subject matter. Thinking is thinking, and demonstration is demonstration; and it should be possible to arrive at a sound account of thinking as such, in complete abstraction from its subject matter, and in a way which makes it quite unnecessary to look for anything new in the present or recent past, or to await it in the future.

This view, the view implicit in the old logic, may be a true one; but, true or not, it seems to me quite clearly alien from the real spirit of the Idealistic logic. This logic has from its earliest days with Kant taken a different line. Though it took Kant a long time to realise it himself, and though his followers in logic have not always remembered it, the new logic is strongly based in empiricism—in a lesson learnt from experience. Attractive as the old logic is—and intrinsi-

cally, as Kant recognised, it is difficult to find fault with it—the new logic starts from the observed fact that its doctrines are simply not true of the actual thinking of modern science; the physicist just does not in fact think like that. Kant himself was waked up to this by noticing that science, which had comparatively speaking slumbered for nearly two thousand years, had suddenly taken on a new lease of unprecedently strenuous life in the century or so before his time. This he asserted to be due to the fact that science was working on a new method, which had been either not at all or imperfectly exploited by the ancients. On the examination of this new method Kant founded the new logic. Kant claims to have learned something about thinking which was to produce a revolution in logic by reflecting on those new methods of physical science by which a 'light broke upon all students of nature.'[1] Though it took Kant long to learn it himself, this meant that he was condemning logic forever to fail of that completeness and perfect authority of which, like the ancient logic, he dreamed at first. He was in fact condemning it to be in an important sense an empirical science. It must in future be prepared to wait upon the development of fresh scientific modes of thought, which must inevitably bring with them fresh revolutions in logical theory, just as the development of physics in the seventeenth century had now brought in its train the Copernican Revolution of Kant. Indeed much of this kind has already happened since Kant's day. The logic which learned a lesson from the examination of physics, had yet much to learn from a scrutiny of systematic biology and of the methods of history; and these have left their mark on the pages of the great

[1] *Critique of Pure Reason* (N. K. Smith's translation), p. 20.

Logics of the nineteenth century. It may even be that in our day physics itself has another page to write in the history of logic; but it is as yet too soon to say. Certainly the new logic must be prepared to grow.

It would be a mistake, however, to overestimate the humility of the modern logic. It would be a fundamental error to regard logic as a wholly empirical enquiry, or to think of it as having entirely given up its claim to be the final arbiter in regard to truth. In the hands of Kant, the new logic, while prepared to take a hint from the examination of the methods of the sciences, claimed to determine the limits of the possibilities of the scientific method, and to be the final judge on the claims of science to apprehend ultimate truth. Historically, the new logic was bound to take its stand as an enemy of science, since it arose to repel a spurious theory of thinking which had been put forward on the credit of scientific method as applied to the phenomena of mind. This theory sought to supplant the theory of thought put forward by the old logic, and supported itself by appeals to scientific psychology. Kant, in founding the new logic, rightly treated this as an attack, not simply on the old logic, but on logic itself, on the behalf of empirical psychology; and he sought to repel it, not by combating the particular psychological views on their own ground, or even by attacking scientific psychology as such, but by attacking (or, more strictly, by attempting exactly to value) scientific method itself. If we regard Hume as a sceptic, poking holes in the demonstrations of science, then we regard Kant primarily as a defender of science. But if we think of Hume, as we also must, as developing his scepticism by using scientific method as applied to the phenomena of the human mind in a wholly dogmatic manner characteristic of

the scientific spirit of the coming age, then Kant's answer to Hume consists in an attack on scientific method. Kant seeks to show, not that Hume has got his psychology wrong, but that the psychological method cannot yield the truth about mind, and in particular about thinking. He attempts to do this, not by saying that the method of empirical science, so successful in physics, breaks down when applied to mind; but by maintaining that the method of empirical science is of its own nature doomed never to discover ultimate truth about anything. In trying to prove this, Kant founded the Idealistic logic.

Historically then the Idealistic logic sets out on its course with two fundamental tenets. First, that the old logic is inadequate to explain modern science; secondly, that empirical psychology cannot produce an adequate theory of thinking—and therefore logic must set its own house in order by the use of a method of its own, distinct from that of psychology. With the second we are not here directly concerned, as we shall consider it in the next chapter. It is mentioned here simply to show that in considering this modern Idealistic theory of thinking we are dealing with a real logic, and not with a psychological substitute. In regard to the first point, we have seen that the attempt to set logic on its feet again historically took the form of a logical estimation, which was at once a defence and an attack, of the reasonings of science. In this can be detected in some measure the assertion of the old claim for logic as a test of truth. It seems to be implied that logic can defend the argumentation of science in some respect in which it cannot defend itself; for obviously the new logic in its defence does not simply take the particular conclusions of science and repeat the scientific arguments in support of them. Mathe-

matics and physics themselves, as represented in philosophy by Descartes, had indeed thought that this was all that was necessary. Descartes thought that the proofs of science sufficiently guaranteed themselves in every way, being the work of reason, and that there could in no sense be any external test of their truth.[1] If a man at any time feels any doubt in any degree of the truth of these propositions, all he can do, says Descartes, is to go through the scientific proof again. Either that will remove his doubt and satisfy him of the truth, or nothing can. But this is not the position of the new logic. The history of thought, culminating in Hume, had thrown up a line of attack against which the sciences themselves seemed defenceless, since it denied the possibility of all proof whatever, and represented the belief in scientific proof as a more or less complicated illusion, the development of which in the mind was naturalistically explainable, as bodily disease is naturalistically explainable. So long as one bore in mind the arguments of Hume, one could go through any scientific proof and remain unconvinced of its validity. This seemed to mean that all scientific proof as such is only convincing if certain presuppositions are accepted, and that Hume had demolished those presuppositions. If that is so they cannot in the nature of the case themselves be defended or established by science. This was the task undertaken by the new logic: it sought to vindicate the possibility of proof as against Hume. It saw that in order to do this it must discover what these presuppositions are. Kant, so far forth as logician (that is, in nearly all of the *Critique of Pure Reason*), sought to

[1]He seems sometimes to have held that the *premises* of mathematical reasoning require extra-mathematical vindication, *i.e.* by deduction from the *cogito*; but he certainly thought that mathematical reasoning itself was reasoning *par excellence*.

show that Hume's arguments hold only if the old logic is accepted. If modern physics is examined by properly logical methods, he thought, it will be seen that thinking is not what the old logic represented it as being, and its presuppositions are not of the kind they were there represented to be; and therefore Hume's attack fails. It remained to determine of what nature thinking was, and what were its presuppositions. How is scientific proof possible? What presuppositions must be accepted if the proofs of science are to be convincing? But as we have seen, though logic still claims to be the final arbiter as regards truth, Kant, in appealing as against the old logic to the method and practice of modern physics, has, as he himself perhaps finally saw, bound logic down to an ultimately empirical basis from which it can never free itself. As we shall see, it can never deny the possibility of another Copernican revolution.

Under these conditions the claim of logic to be the ultimate arbiter as regards truth is clearly not a simple or an unequivocal one. This fact is betrayed at once by its humble approach to the problem and its apparent initial worship of science. The enquiry, as begun by Kant, starts deeply impressed by the success of science. It speaks of scepticism in regard to scientific proof as foolish, and of the argumentation of scepticism as obviously carrying no conviction. Kant takes it for granted that nobody will really *believe* in the philosophy of Hume. So he does not set out to sit in judgment *ab initio* on the ratiocinations of science. He does not ask, as Hume did—Is this argument sound? Has it any soundness in it whatever? He starts rather from the presumption that it is sound in some sense, and asks himself how it can be so. What are the implications of the possibility of such an argument?

What must the mind be taking for granted if it is convinced by this argument? And logic, by employing its own proper method, the only method by which such questions can be answered, replies that these proofs *could* only be accepted as valid under certain specified conditions—under these conditions and these conditions alone; and it further insists that the recognition of the necessity of these conditions is relevant to a final judgment of what the arguments really prove. If we think, as in common life we tend to think, that the proofs of science are valid unconditionally, when the truth is that they rest upon the assumption of certain unverified conditions, then we are obviously under an illusion. And if these conditions are the absolute conditions of the very possibility of scientific method itself, then it is not science, but only logic, which can save us from that illusion. Such at any rate is the task which Kant himself in his logic undertook, and handed down to the Idealist logicians after him.

Certainly it is clear that this critique of scientific argumentation, if it is a real task at all, is a highly important one, being essential to the march towards truth. The question is—Can logic perform it? Has it a method which can enable it to determine what the presuppositions of a given proof *must be*? As we have seen, logic differentiates itself from any merely empirical enquiry as to what a particular scientist, or a particular class of scientists, or scientists generally taken as a class, seem as a matter of fact to be taking for granted. Logic seeks to achieve more than this. It does not ask the scientist what he is presupposing, or what he thinks he is presupposing; it claims rather to tell him. It examines his proofs in a certain way and informs him that his proof is only convincing on certain presuppositions, though he himself may not have

recognised this; except on these presuppositions, the proof has no validity. Because it is a presupposition of all his thinking the scientist himself does not recognise its presence. But for all that logic reveals that it is there, and that it gives all his conclusions a conditional character which he himself has not recognised.

Now this is a very presumptuous thing to do with a scientist, or indeed with anybody else; but especially so with a scientist, since it is a recognised part of his own discipline to notice carefully the conditions under which alone his arguments hold. Clearly logic must be very sure of itself before it makes any such claim. Evidently everything depends on its method. Is its method competent to enable it to go behind the apparent facts and say—Whatever scientists *think* are their presuppositions, these are really so, for without them their proofs as a whole *cannot* be valid? Only if logic can justify this 'cannot' can it claim in any sense to sit in judgment. Unless it can retain for itself at least this relic of the *a priori*, it at once becomes no more than a methodical empirical enquiry into the conditions under which certain arguments seem in actual fact to carry conviction with scientists; that is, it uses, quite simply, the very method which it is seeking to criticise and evaluate, and it loses therewith its last vestige of authority. If he who uses a method is the judge of the limits of the method, then the physicist is the judge of his own, and the psychologist of his; and there is no place for logic at all.

Everything then depends on the method of logic. If it has a method by which it can justify its own special enquiry, well and good. If it has not, there is no other ground for believing in the necessity of the enquiry. Its place will be taken partly by empirical

psychology and partly by the empirical study of the history of thought and scientific method; and logic as a real study is dead. In actual fact, the new logic, while it has reared itself largely upon an empirical basis, still claims a final authority. This claim, both in Kant and in the later Idealistic logic, rests upon its belief in its own special method, which it carefully differentiates from the method of science itself, and in particular from the method of psychology. It is to an examination of method therefore that we must now turn.

*

CHAPTER II

THE METHOD OF LOGIC

Logic proceeds by examining statements and inferences in regard to their form. In so far as statements of the same form differ in respect of their subject matter, logic takes no interest in this difference. It is concerned with form alone, and seeks to draw only such conclusions as can be drawn from the analysis of form. We have now to determine just what is meant when we say that logic is concerned with the form of statements, how logic actually sets about its task, and what grounds there are for believing that such a method of enquiry will produce valuable results. Can statements be classified under different logical forms? Can the logical form be distinguished from the grammatical form, or are they the same? What is the significance and value of this logical classification when it is achieved?

In practical life it is clear that we all attach importance to the ability to say what we mean. We also recognise that to do so is a matter of difficulty, since we often say what we do not mean, and often, in spite of taking pains, just fail to say what we mean. Perhaps there are even occasions when it is impossible to say what we mean. No doubt when we fail to do so it is often because we do not know what we mean; but, at any rate according to common opinion, this is not always so; and furthermore it is difficult to see how we can recognise that we have said what we did

not mean unless we also know what we mean, though we have not said it. At any rate we commonly distinguish between what we say and what we mean.

In making this distinction we seem to be allowing that what is said has a meaning independently of the meaning of the speaker in saying it; that is, that a man's statements have a meaning which may or may not coincide with his meaning. If this is so, in order to be able to say what we mean, we must not only be able to discern clearly what we mean to say, but we must also (and this is quite a different matter) know exactly the meaning of the statement we use. It is a common experience to try to say something, and to recognise in the moment of saying it that *this* is not quite what we mean; we then either withdraw the statement and try again *de novo*, or we attempt to modify the statement. The latter procedure may seem to some to be especially characteristic of philosophers. This does not seem to be always because the philosopher is in confusion as to what he does mean; it is sometimes due to his not being able to hit upon the right statement. In these cases the right form of expression sometimes is found after some hesitation; sometimes it is not.

In any case, let us not for the moment consider the difficulties involved in determining exactly what we mean to say; let us here consider whether it is possible to determine just what a given statement means. We must remember, of course, that we may perhaps be forced to admit, as our enquiry proceeds, that our *prima facie* distinction between what we mean and what our statements mean was an unsound one, and that a statement has no meaning as distinct from that of the person who makes the statement. In that event, we should have to say that a man always says what

he means, and means what he says at the time of saying it; in some cases he has only to say what he means and he finds he no longer means it; he then speaks again and says what he now means, and so on. We will not, however, pause and attempt to demolish this hostile view here and now; we will rather claim leave to proceed with our own hypothesis, comforting ourselves with the reflection that in doing so we seem to be not a thousand miles removed from the subject matter and procedure of logic. We know that logicians have quarrelled about the meaning of statements as if statements in themselves had some meaning. They have differed, for instance, as to whether the statement 'the soul is not circular' has any meaning at all, that is to say, whether it has a meaning and is true, or is nonsense having no meaning at all. Also they have asked themselves, for instance, whether it means exactly the same thing to say 'in every triangle the internal angles are together equal to two right angles' as to say 'if the figure ABC is a triangle, then its internal angles are together equal to two right angles.' Evidently logicians do ask themselves our question, and regard the finding of the answer to it as being important.

It may help to clear up the scope and limits of our enquiry still further if we first ask ourselves just *why* we regard it as of such importance that we should say what we mean. The first answer that occurs to the mind is that when we speak we wish to be understood, and rightly understood, by others; and how can we bring this about unless we know the meaning of the statements we use? It may thus appear that in seeking to determine the meaning of a statement, we are simply seeking to determine what other people will as a matter of fact understand by that statement. This

is to say that our enquiry would become an empirical one, being a simple analysis of the conventional use of language, and having little or no philosophical value of any kind. Different tricks of style in different languages, and in the same language at different periods, confirm this view. It is a common experience that the difficulty of expressing oneself comprehensibly and unequivocally in a foreign language is largely due to conventional idioms and turns of phrase. But is this the whole truth? Are the meanings of statements and forms of statements wholly conventional? When we say that two different statements mean the same thing, do we simply mean by this that the same thing will as a matter of fact be understood by both statements by people within a given circle—*e.g.* everyone who knows the language, or every educated person, or every physicist, or everyone who has been a soldier? Or is it rather our belief that a given form of statement has of its own nature a definite fixed meaning, independently of any convention; and that that meaning is its meaning, and can be shown to be its meaning, whether or not it is commonly recognised, or recognised by any particular group of people, and whether or not it is commonly or conventionally used to convey that meaning or some other meaning?

If the former alternative is the truth, and the meaning of statements is wholly conventional, it would seem desirable for those who are especially determined not to misunderstand one another to form a new conventional language of their own for their particular subject of discourse. In view of the obviously empirical and inconclusive nature of any enquiry as to what is as a matter of fact conventionally understood in common usage, this course would seem to be unavoidable. It will then be necessary to start by defin-

ing exactly what we shall mean by certain common forms of statement, and we must discipline ourselves to abide by our rules rigidly and never to use these forms of statements except in the exact sense defined; and when, as will no doubt happen, we find that we want to say things which there is so far no form of statement in our special language to express, we must find and fix a new form to express just that, and so on. We must say of forms of statement, as Humpty Dumpty said of words[1], When *I* use this form, I mean just this—no more and no less. When, for instance, I say, 'A gryphon has a beak and pecks, a dragon has teeth and bites,' there is no existential implication about my statement at all. I do not mean to say that there really are such things as gryphons or dragons; I simply mean—whatever it is that I do simply mean. But here we find that the shoe begins to pinch. It is by no means easy to lay down exactly what we mean when we say these things, if we bear in mind that we have to adhere rigidly to what we now declare in our future discourse, especially as that discourse will presumably contain many difficult and tricky descriptions and many long and subtle ratiocinations, in which the exact meaning of our statements—as, for

[1] Lewis Carroll, *Through the Looking Glass*, ch. vi.

"There's glory for you!"

"I don't know what you mean by 'glory'," Alice said.

Humpty Dumpty smiled contemptuously. "Of course you don't—till I tell you. I meant 'there's a nice knock-down argument for you!'"

"But 'glory' doesn't mean 'a nice knock-down argument,'" Alice objected.

"When *I* use a word," Humpty Dumpty said in rather a scornful tone, "it means just what I choose it to mean—neither more nor less."

"The question is," said Alice, "whether you *can* make words mean different things."

"The question is," said Humpty Dumpty, "which is to be master—that's all."

instance, whether we mean to assert *any* kind of existence of the gryphons and dragons—may make a great deal of difference to our argument. When we consider this, we are appalled at our undertaking and inclined to admit its impossibility. Further investigation convinces us that we are constantly using statements of which we do not seem quite to know the meaning; and yet this does not seem entirely to preclude us from using them or even drawing conclusions from them. So perhaps we shall find it simpler to recognise this fact, that language seems to have the mysterious property that we can use forms of statement the meaning of which is not wholly known to us, and still draw valid conclusions and make valid proofs. We shall thus be inclined to use the forms of statement that lie ready to our hand, admitting that there seems to be more in them than meets the eye, and certainly more than mere convention. We shall even be tempted to enquire deeper into the meanings of these forms of statement, with a reasonable hope that we shall thereby learn something which we evidently do not at present know; and we shall abandon the task of constructing a new and more accurately-defined system of statement, convinced that we shall not be able to achieve it successfully until we have completed our logical enquiry. Then it seems likely we shall no longer feel the need.

It seems then that our enquiry, while it is evidently to be difficult, is not empirical in the sense in which the lexicographer's investigations are empirical. We have no essential need to ask, What do men as a matter of fact understand by this form of statement? We may, of course, ask this question by the way, to gain a hint in our search for the true meaning of the statement. But we shall gain thereby no more than a

hint; certainly we shall not thus complete our search. For, as we have seen, the determination of what a man means when he uses a particular form of statement still leaves the true meaning of the statement itself a mystery; the true meaning of statements is evidently not fixed by what men understand by them, but by something else. Therefore our method cannot be the empirical method of psychology either. It is of no use to determine what I or somebody else meant to say when we used a particular form of words, nor what some other person understood by them. We shall not answer our question in this way. To determine the meanings of different statements, and what it is that fixes those meanings, we must leave these empirical enquiries and turn in another direction.

We must now look back on our attempt to determine, Humpty-Dumpty-wise, the exact meaning of different forms of statement, and try to learn the lesson of our failure. We see at once that what finally made us abandon the attempt was the consideration of the part played by statements in concise descriptions and nice distinctions, and in long and subtle inferences. We saw that in order to play a part in any future inference the meaning of statements must be exactly determined, since any difference of opinion about any point in regard to their meaning might be relevant to the inference. Thus it seems that every statement, or at least some statements, have not only a meaning but also implications. Often, if not always, when we say something, our statement has implications. It may be that we affirm our statement to be true in full knowledge of its implications; or it may be that if we recognised the implications we should withdraw it, recognising that it is not what we meant to say. But in any case the implications seem to be there; and they seem

to depend on the statement, not upon me or upon my meaning. It seems that if I make a statement, and then seek to work out its implications, I shall discover the implications, not of what I meant, but of my *statement*. It seems in fact that I shall never discover the implications of what I meant to say unless I find a form of statement which actually states it. The possibility of proof seems to be necessarily bound up with statement. I do not prove a thing unless my statements are related as premise and conclusion. Hence perhaps the importance we attach to saying what we mean. If we discover some new fact about the universe, we cannot use it to prove any general theory—that is, it can contribute nothing to our body of knowledge or of belief—unless we can state exactly what we have discovered. To have discovered in itself is of no value as far as proof is concerned; I must also be able to state my discovery. If I say what I do not mean, and my proof is a valid proof, I shall come to a conclusion different from that which I should have drawn if I had said what I meant; for in this event my conclusion follows, not from what I have discovered, but from something else. Proof depends not upon what a man means to say, but upon what he says.

There are no doubt cases where our beliefs are affected by what we mean to say rather than by what we say. We seem sometimes to concentrate so closely upon our point that we do not notice exactly whether we have really stated it or not. It is easy to find instances where a writer in proving a point makes a particular statement and then goes on to argue as if he had said something quite different. This seems sometimes to betray a real confusion of thought, and sometimes a mere slip of statement. Sometimes it is quite clear that the writer really meant to say the

other thing, which would have made his proof good, and actually thought he had said it. Be that as it may, the point for us is that in these cases the conclusion has not been *proved* by him, and the writer could be brought to see that it is not proved; and if at the time he thought it proved, he was in error. As far as he was concerned, his conclusion could not take its place within his body of knowledge, because, not being proved, it might be true or it might be false. Proof can only be recognised if the conclusion as stated follows from the premises as stated. Whether or not there are other ways of arriving at convictions or beliefs is not here our concern; there is no other way of *proof*.

Now if this is so, it is only by examining the meaning of statements that we can hope to investigate the nature of proof. If we wish to know what has been proved and what has not, what can be proved and what cannot, it is by this road that we must proceed. Evidently psychology cannot help us, since psychology could only reveal to us what a particular speaker meant when he used a particular form of words on some particular occasion; and, as we have seen, what we mean to say is not relevant in regard to proof, but only what we say. It is quite true that we must be very chary of drawing from our enquiry any conclusions about the order of events in particular minds, or even of thinking that our investigations can throw any light at all on such matters; but at least it has become clear that it is unlikely that the close investigation of the order of events in any individual mind can throw light on the nature of proof. *Prima facie* at least there is a task and a procedure for logic quite distinct from those of psychology; namely, to throw light on the nature and limits of proof, and thereby of knowledge strictly so-called, by determining the meaning and

implications, not of particular persons, but of statements. We have recognised that when we use a particular form of statement, we use that which has a meaning of its own, whether we like it or not, so that it cannot simply bear *our* meaning, Humpty-Dumpty-wise; and we have seen that this characteristic of statements seems closely connected with the possibility of proof. Therefore if we wish to understand the nature of proof, we must first come to a clear understanding of this mystery—the meaning of statements.

No doubt we shall often feel tempted to check ourselves in our advance by commonsense considerations. We shall say to ourselves, what is this meaning which is not the meaning of any particular mind? If it is this which is vital to and determines any particular proof, then the thinking of the proof seems to be the thinking of no individual mind. What is said determines what is proved; but clearly it does not determine the operations of the mind which said it. Proof is being represented as dependent upon a proving which is not the activity of any particular mind. Evidently we are on the highroad which leads to the Absolute. Some no doubt will tremble and abandon the march at once. But if the considerations which we have adduced are sound, the only alternative road which we can descry leads downhill to an everlasting scepticism which no one can really embrace. At any rate it seemed so to the Idealists; and if we are to understand their logic we must take our courage in both hands, risk the Absolute, and follow them. Moreover, if there is a middle road at present hidden from our view, if we pursue our final aim with consistent discipline and determination, we may reasonably hope imperceptibly to be forced on to it through a growing dissatisfaction with our own.

We may take it then that it is our task, or at least the beginning of our task, to attempt to determine the meaning of statements, bearing in mind that not every one who uses a statement means by it what the statement itself means, and also that it has been shown to be a matter both of great difficulty and of great importance to determine exactly what even the simplest statement itself means. But how shall we proceed? We must have a method and a technique. If we take at once a simple statement like the one we considered before—'A dragon has teeth and bites'—and seek to determine its meaning and what, if anything, can be inferred from it, we shall find ourselves in such difficulties at once that we should despair of our investigation before we had well begun. Clearly we must reserve so difficult a matter to the end, and find something simpler to do first, hoping that these simpler investigations will offer us some help for the difficult ones which await us. What logic actually does is first of all to survey the field and to *classify* statements. It seeks to discover whether statements can be reduced to different kinds, and if so how many kinds there are. In doing this, of course, it is forced to note clearly the distinguishing marks of the various kinds, so that the various kinds can be discriminated. It thus clearly makes some progress towards discovering the meaning of any particular kind of statement in learning to discriminate it from all others. Whether or not it is possible by this method of classification and distinction fully to determine what is the meaning of any particular form of statement remains to be seen; but at least this is the method which logic adopts in attempting to do so. The logician at first assumes the meaning of some simple form of statement to be known, and proceeds to work

out the differences between other forms of statement, differentiating them from one another by explaining them in terms of the known form. But then in the last resort he has to give some account of the meaning of this simple basic form itself; and it is then that we discover what he has learned from his logical investigations. It is then that he produces his general account of statement and of thinking.

But how, it may be asked, are we to classify statements? Surely we are not to classify them simply by their grammatical form? Yet if not, how are we to proceed? We have nothing to go on but their form as stated. We are clearly not allowed to consider their context, or anything which might help us to determine the meaning of the speaker. What else can we do but classify them by grammatical form? In fact, logic seems to proceed by a method which is at first sight curious and mysterious. If we look to the traditional logic for a hint, we find that for the purposes of classification it did not consider the statements *as stated* at all, but first converted them all into the form *S* is *P*. We shall not, just for the moment, attempt to determine why logic converted into this particular form, for this would be to anticipate and raise at once the question of the fundamental distinction between the ancient and the modern logic. But we must consider the significance of such conversion in general as a feature of the method of logic at the outset of its enquiry. Obviously, if logic does this, its classification will not depend upon the grammatical form of statements as stated, so that we shall have little difficulty in divorcing logic from grammar. But why does logic do this? Can any justification be found for this procedure? We are not asking, we repeat, why did it convert into the particular form *S* is *P*? We are con-

cerned with the general question, why does it convert at all?

It is evident that to reduce all statements, however they may be stated in the first event, to the one form must eliminate certain differences between them; many of their distinguishing marks will have gone. It will not, of course, eliminate all differences, or even all formal differences; for if it were so no subsequent classification would be possible. It seems clear then that the justification of this procedure, if there is any justification, must be that the differences which are left after the conversion are the ones which matter for logic, and those which are eliminated do not matter. The conversion seems to be a simple device by which the logician ensures that he shall not waste his time investigating differences between statements and features in statements which are not germane to his purpose; while it by the same token naturally throws into high relief the differences which are relevant to him. This will become clearer if we for a moment consider the practical working of this device. Take the statement, 'Gone, gone is every hope': this when converted becomes 'Every hope is gone.' These two statements are obviously not interchangeable in all respects. Given the particular situation in which Hannibal was[1], it would be quite informative as to his character to know whether he used the one form of words or the other. Similarly, from many points of view the order of words in a written sentence, or the inflection of words in a spoken sentence, are of great importance, and in one vital sense the sentence does

[1]Horace, *Odes*, IV. iv. 70.

Occidit, occidit
Spes omnis et fortuna nostri
nominis Hasdrubale interempto.

not remain the same sentence if the order of the words is changed. Yet these particular differences, at least, while they clearly throw some light either on the context from which the statement is taken, or on the character of the speaker, or perhaps on the general character of the particular language and thereby perhaps on the national character of the people who use the language, have no significance for logic. Whatever conclusions might, more or less fairly, be drawn from these distinguishing marks by the experts on style or on personal or national character, the fact remains that the statement, whether in its original form or as converted, may still assert the same fact and have the same meaning, and may therefore for logic be the same statement. There are many complicated statements tricked out with graceful features which give hints of many things; and yet these statements actually state the same, no more and no less, as a much simpler form of statement; and it is with this alone that logic is concerned. If I say, 'Your friend may have all the virtues you please, all the graces you please, all the money, birth and position you please, but if he is under forty, he is not a bishop of the Church of England'; no doubt it is possible by reflecting on this sentence to reconstruct, more or less fancifully, the situation in which these words were spoken and the character of the speaker; but all that is actually asserted (rightly or wrongly) is that all bishops of the Church of England are over forty years of age. Now if the simple trick of conversion to a particular form really cuts out all irrelevant characteristics, and retains just those differences which must remain if the statements concerned are still to assert that which they asserted in their original form, every other difference having been eliminated, then this

procedure is not only justifiable, it is essential to logic. Without it the logician cannot delimit his own sphere of enquiry and distinguish it from that of, for instance, the psychologist, the literary critic, or the grammarian. Without it he cannot embark on his proper task at all.

It is clear, however, that the successful working of this procedure depends entirely upon the form to which statements are converted being the right form for the purpose. Moreover, until we discover the right form, we cannot know whether this trick of conversion will actually work with success or not. We can see that such a device is desirable. Indeed it is difficult to see how forms of statement can be classified on any other than a grammatical basis, unless some such preliminary procedure is adopted. But this desirability does not in itself show that the right formula can be found; and without the right formula, the method itself is impossible. How, then, we must ask, are we to find the formula? How was it that the traditional logic selected the formula *S* is *P*? What are the grounds for thinking that the adoption of this formula produces the required result? These are vital questions; for, as we have seen, these conversions really fix the subject matter of logic, since nothing is examined until it has been submitted to this process. And if logic allots itself an inadequate or incomplete or distorted material for its investigations, what hope is there of a successful issue?

Yet the attention of logicians was never directed to these fundamental questions until Kant wrote his *Critique of Pure Reason*; and as we shall see it is impossible to give any answer to them without considering the essential differences between the traditional and the Kantian logic. We must therefore turn our attention to the Copernican revolution in logic.

CHAPTER III

THE TRADITIONAL LOGIC

In the old logic it was taken as obvious that a statement or proposition falls naturally into two parts. There is always something about which we speak, and something which we say about it. This, it was thought, must obviously be the case with all statements whatsoever; there must be a subject and a predicate, the predicate being asserted of the subject. This doctrine was not put forward as a tentative theory, but as a dogma. It was not simply suggested that if statements were divided up in this way, useful results might follow from an analysis of the parts and of the relations between them. It was rather taken as obvious that statements naturally consisted of these parts, and that these parts must therefore be examined if we are to understand the whole, the whole being simply a whole of these parts. The modern Idealistic logic essentially maintains that this procedure is entirely misleading from the point of view of logic; that to regard this particular analysis as essential and fundamental obscures differences between statements which are vital to the understanding of the nature of apprehension and of knowledge.

At first sight it may appear that the position taken up by the old logic is obviously sound; that it is obvious that every statement must be analysable into a subject about which we speak, and a predicate which we assert of it. And it may thus seem that the logic

starts from a first principle which is an axiom. This was no doubt the conviction of the traditional logicians themselves. But when it is understood that this doctrine was interpreted to mean that all statements are *attributive*, that is, they assert an attribute of a subject, the point may not appear so obvious. If I say, 'Good heavens, the door *is* red after all,' there may seem to be no difficulty in regarding the statement as attributive. But when I say, 'At this precise moment Miss Jones, who had hitherto been punting well, lost her balance and fell into the water,' it may seem a pointless task to reduce the statement to a cumbrous attributive form. It is indeed doubtful whether in any proper sense I am here asserting an *attribute* of Miss Jones at all. And when we reflect on the difficulty of reducing most of the statements of ordinary life to the attributive form, we may be puzzled as to why the old logic so readily assumed both the possibility and the value to logic of such a reduction. Regarded in this light, so far is it from seeming obvious or self-evident, that it strikes us as a far-fetched and highly unnatural view.

Why then did the traditional logic take this view? The attempt to answer this question will take us to the very fundamental bed-rock principles of all logic. And if we are to keep our enquiry in proper perspective we must remember that it was not until the full implications of Kant's revolution were coming to be recognised that such an enquiry was seen to be necessary at all. The presuppositions of the old view were so much taken for granted that it was not recognised that there were any presuppositions at all. This means that in seeking to answer our question, we shall not be setting the doctrines of the old logic in quite the same light, or expounding them with quite

the same emphasis, as the traditional logicians themselves would have done. Our statement will be affected through and through by the fact that we are deliberately forcing an issue which they themselves never explicitly faced. It does not follow, of course, that their view will not emerge from the ordeal with credit: but in our statement it may at times for this reason appear rather stilted and odd.

The truth is that the standpoint of the old logic was closely associated with a special theory of knowledge put forward by Socrates and Plato, and handed on by Aristotle—a theory of knowledge which has been very roughly handled in modern times under the influence of an analysis of modern science. Told in terms of theory of knowledge the tale is an old old story. But what has not always been so clearly recognised is that this old theory is essentially bound up with the old logic, and that the change in theory of knowledge has gradually been showing itself in a revolution in logic. This is what it is now necessary to make clear.

Considered in the large, the central point of the theory of knowledge in question seems to be this; that all acts of knowing are of one essential type, *viz.* the recognising of the universal in the particular. In the individual Alcibiades we perceive, for instance, beauty and humanity; we recognise that Alcibiades is a man, that men are mammals, that mammals are mortal, and so on. In the individual we see the species, in the species the genus. All these perceptions are represented as acts of knowing of the one kind—the perception of the universal in the particular; and by such acts alone all human knowledge is supposed to come into being.

It is not necessary for us here to examine judicially the history of the matter, and to apportion praise and

blame as between Socrates, Plato and Aristotle; though it may perhaps be said that it seems arguable, in consideration of the later Platonic dialogues, that Aristotle caught a theory of Plato's at a moment of arrested development, as it were, and perpetuated it in essentials in a logic which no subsequent philosopher for two thousand years felt the necessity of criticising in its fundamentals. Nor is it necessary for us to consider here in detail how far this theory of knowledge was already a completed, closed and fully paid-up system, taken as a basic dogma in the working out of the logic. Certainly there is something to be said for this view. Nothing essential seems to have been added to the theory of knowledge by the working out of the logic; the logic just fits the theory as if it were made for it. Moreover, it is now a commonplace to point out that many of Aristotle's theories, expressed and implied elsewhere, are much too advanced to square with his logic. And this perhaps accounts for the logic becoming a kind of cultivated game, for the discredit into which it fell, and for the fact that nobody felt the urgent necessity of overhauling and revising the fundamental rules of the game. On the other side, however, it should be said that it certainly must have appeared to people as they worked out the traditional logic in detail that it was coming out all right; that is, that the thinking of which it was giving an account was valid thinking and would produce truth, and also that it corresponded to the actual thinking of mankind as they knew it. And as a matter of fact we shall see that it is not impossible still, even after modern criticism, to capture something of this spirit, when we review the theory as a whole.[1]

We have already said that the cardinal principle of

[1] *Cf. infra*, chh. xii and xiii.

the old logic is that the act of knowing is always the recognising of a universal in a particular. There is no other type of apprehension than this. Nothing else can be immediately apprehended. No argumentation is really inference, nor can it lead to knowledge, unless it can be set out as a series of apprehensions of this kind. This means that ultimately the work of knowing is always done by an act of immediate apprehension, to which act in itself logic has nothing to say. When we closely consider the matter, we see that logic can only reduce all statements to that form in which they *could* be true, and leave it to be immediately apprehended that they are true, if true, or that they are false, if false. Of this immediate apprehension itself, or of the rules which may seem to underlie its action, logic can offer no criticism, nor can there be any test of it. All that logic can do when presented with a particular statement is to convert that statement into one or more statements of what it considers to be correct logical form, and then leave it to immediate apprehension to recognise the statements as true or false. Similarly, when presented with a particular argument, it can reduce that argument to a series of statements in correct form, leaving it to this final, untestable, immediate apprehension to accept or reject each one in turn.

It is true that we are here putting the doctrines underlying the traditional logic in an unfamiliar, perhaps at first sight an unrecognisable way. In pointing out that in *all* knowing, the knowledge ultimately depends on an immediate intuition, and that to this intuition itself logic can have nothing to say, but can only investigate the operations which are necessary to make such intuitions possible—in this we are stressing a point which the traditional logic does not stress,

because we are interested in a problem in which the traditional logic was not interested. It was Descartes who first brought the point into the foreground; and it is significant that it is to Descartes that the beginnings of the downfall of the traditional logic are to be traced. But though the traditional logic does not explicitly stress the point, it is clear that its doctrines essentially imply the existence and necessity of such immediate apprehensions, and also that it is throughout taken for granted that these apprehensions are always of the one type, *viz.* the recognition of the universal in the particular. It is our first task now to show that this is so. Perhaps we can best do this by considering for a moment the situation out of which the Aristotelian logic arose.

Socrates laid great stress on definitions, and the traditional logic followed him. His whole dialectic implied that there could be no knowledge and no straight thinking unless terms were defined. He went about asking people who should have been experts on particular subjects to define their fundamental terms, and discrediting their general views by demonstrating their inability to do so. There are signs, it is true, that Plato was giving up this position. For instance, while he always insisted that strictly speaking it was not possible to determine whether virtue is teachable until we have first defined virtue, or to determine whether the just man is happy until justice has first been defined, Plato shows a perhaps progressive preparedness in practice to waive the point of definition, and to get on with the original question as best he can—to the lasting benefit, be it said, of his philosophy considered as positive teaching. But from the point of view of logical theory, the Socratic insistence on definition remained a cardinal point. Until we have

defined our terms, the logic teaches, there can be no true thinking, and no knowledge can be acquired. Only error, it is implied, can come of using terms which have not first been defined. Strictly viewed, the traditional logic teaches that we must bend every effort to define all our terms, and to use in argument no terms whatever which have not been defined.

It is perhaps unnecessary to say here that this teaching is not as *obviously* true as it may look at first sight. Many people think that there are many terms which can be, and are, used accurately and without danger of confusion, though their meaning cannot be defined. Many philosophers think, for instance, that the meaning of the term 'good' cannot be defined; though not all of them conclude that it has no fixed meaning, and that its use is necessarily a sign of confused thinking. Some thinkers, also, maintain that the fundamental terms of physical science are indefinable, *e.g.* energy, entropy, charge, radiation, etc.; though not all of them conclude that the statements in which these terms are used are therefore inaccurate or confused, or that inference in physics is therefore impossible. But how, it will be asked, if we cannot define terms, can we communicate their meaning to one another? How can we be sure that any two people mean the same thing by their terms? This whole question of communication is, of course, central, and it is highly complicated and difficult. All we need maintain here is that the answer given by the definition theory is not the only answer, nor is it an *obviously* right answer. In practice we do not ordinarily use the method of definition to assure ourselves that we mean the same thing by a given term. Indeed we have to, and do, assume that we mean the same thing before we can agree or quarrel about a definition. That is to

say, we communicate the meanings of words to one another by other means, by illustration, by description, by producing statements and inferences in which the particular word occurs, and so on; and then we attempt to argue and hammer out the truth as best we can in terms whose meanings have been communicated in these ways.

Of course, Socrates was aware of this. When he asked for definitions, he was always first given illustrations and descriptions; and it was only with difficulty that he could bring people to see what he wanted. He knew that people constantly use terms in argument *as if* they each meant the same thing by them, and even that they have devices, more or less crude, for assuring one another that they mean the same thing. The point is that on Socrates' view these methods *are* crude and ineffective; and that the use of terms on this basis always does, and always must, lead to confusion and error; and that this confusion and error can only be avoided by defining terms. Only by the defining of concepts is strict argument possible; only so can knowledge be attained. This is the doctrine which Aristotle regarded as fundamental to Socrates; and it is incorporated in the traditional logic.

I do not wish at present to enquire how far this doctrine is correct, but to indicate what are its positive implications as shown in the logic. Socrates himself spent a great deal of time trying to convince people that in no other way could knowledge be attained. He spent little or no effort in trying to demonstrate that in this way knowledge *could* be attained. What he did do, if we are to believe Plato, was to devote much of his time to the attempt to add in particular to our knowledge of moral values, by using his own

method. If he succeeds in this particular enquiry, his success amounts, of course, to a practical demonstration of his view so far—that it shows that if we first define our terms, it is possible to arrive at new knowledge by argument. How far he did in fact give such a practical demonstration is a matter for question on two points: first, whether he did acquire new knowledge; secondly, whether in acquiring this new knowledge he truly used his own method, and if so whether he achieved success because of, or in spite of, his use of this method. This question, however, we shall not pursue further; for it has become the agreed procedure of logic to test logical doctrines not on the arguments of particular philosophers, for instance Socrates, but on the inferences of modern science. It will suit our purpose better at the moment to follow this procedure.

Socrates, then, attempted no general proof of his definition theory, considered as a positive theory of knowledge. But what are we to say of the Aristotelian logic, which, as we have said, follows the Socratic theory? Certainly it seeks to exhibit in detail the mechanism of thinking, by which, starting with definitions, we can arrive at new knowledge. And no doubt in passing it seeks to satisfy us that this thinking, of which it gives an account, is the actual real thinking which is ordinarily performed by human beings, not just some possible thinking available to angels or beings of some other kind. But how far does it really prove its point? Suppose, for instance, that a physicist, harassed by Socrates, fails to find a definition of 'energy,' or that a moral philosopher cannot define 'good'; and suppose that, reflecting that he has hitherto got on well enough without, he is tempted to abandon this apparently fruitless hunt for definitions,

and asks, 'What guarantee is there that if I find such a definition, I shall then, and only then, have my feet firmly planted on the road to knowledge?'—What answer has the Aristotelian logic to give? It seems that its answer is that, given definitions, it can be shown how from them new knowledge can be produced by following certain rules; the whole mechanism can be exhibited. No doubt some logicians would be tempted to argue in addition that actual instances can be given of such definitions, and of knowledge being produced from them in accordance with these rules. But strictly speaking this latter argument is illegitimate. For the logic requires itself to *show* that such instances are instances of true knowledge, and to point to that characteristic of them which convinces us that they are knowledge. It cannot therefore appeal to the instances to support its general doctrine. Still less, of course, can it allow itself to use any kind of circular or reciprocating argument; for any such is explicitly excluded by the definition theory itself. Thus the conclusion seems to be this; either the traditional logic regards the definition theory as obviously true from the start, or it expects that it will be recognised as obviously true when it is exhibited in all detail. At any rate the only serious attempt that is made to convince us of the truth of the theory is the exposition of it in detail.

We may now examine the traditional view more closely in order to see what it involves. It insists, we have said, on the definition of terms. But how after defining terms do we proceed in the acquiring of knowledge, and why is definition so important? Apparently, as we have seen, it is argued that if we do not define terms we shall become confused and make mistakes; and evidently the view is that if we *do* define

terms, then, so long as we confine ourselves scrupulously to the use of terms so defined, we shall *not* become confused and shall *not* make mistakes. This means, I suppose, that we shall not make false judgments. Definition, it appears, has this virtue, that it makes knowledge possible and error impossible. If we never use any word unless we know the meaning of it, in the sense that we can define it, then we shall never make a false judgment.

But this, of course, is not all. It is not simply meant that we shall not make mistakes. We are not meant to understand simply that insistence on definition will just make us *not* do something; that is, prevent us from doing something, and make us do nothing. We are meant to understand that, if we always start from definitions, not only shall we not make mistakes, we shall actually discover truth. Definition will open the only road to positive knowledge. But this doctrine is not without difficulty, and we must pause a moment to determine just what it means. Certainly it does not mean that defined terms simply *cannot* be strung together in such a way as to form a false statement, *i.e.* that a man cannot *speak* a falsehood, using definable terms. Nor can it mean, positively, that when a man knows the definitions of certain terms, then he must inevitably and automatically make all the true statements in which those terms are employed. It must mean, I think, that when a man uses terms which he can define in making a statement, he will then be able to recognise the statement when made to be true if it is as a matter of fact true, or false if it is as a matter of fact false. That is to say, granted definition of terms, there can then be immediate apprehension of the truth or falsehood of particular statements. It is not maintained, I think, that after definition of terms

immediate intuition will necessarily enable a man to *formulate* true statements. For this formulation the Socratic 'midwifery' or the Aristotelian dialectic is necessary. It *is* maintained that under these conditions such statements, when formulated, will be immediately recognised to be true or false. Thus definition is vital because it gives an opportunity to this kind of immediate apprehension, which cannot do its work without definition. To use a phrase of Kant's, it makes it possible for this faculty, which would otherwise lie dormant in the soul, to do that which it is able to do. The immediate apprehension in question is always, according to the traditional logic, the recognition of the universal in the particular; it is implied that there is no other type of immediate apprehension whatever available to human beings, by which they can arrive at knowledge.

To be more particular, the general scheme of the logic is that, having once defined terms, we can find some statements which are *at once* seen to be true, and others which are known to be true because they can be *inferred* from the former by arguments consisting of a number of steps. In both cases, whether we apprehend immediately or mediately, no single act of knowledge is involved which is not a recognition of the universal in the particular. Immediate judgments are of the form S is P; and inferences are set out as a series of statements each of the form S is P, so that the apprehension of the conclusion of an inference is itself the recognition of a P in an S, made possible for us under certain conditions. We shall examine more in detail presently how the doctrine of the syllogism manages to represent all argument as a series of apprehensions of this kind. The whole logic thus insists that the one act of cognition of which we are capable,

upon which therefore we must rely for all our knowledge, is this recognition of an attribute in a subject. This faculty, provided always that we define our terms and obey the rules of the syllogism, will never deceive us, and by this alone is all knowledge produced.

Perhaps, at the risk of obscurity, it should be said here and now that it does not matter to our present argument whether this immediate apprehension of which we speak, by which we recognise the universal in the particular, is conceived of as being such as to make judgment and inference, in the Kantian sense of the word, analytic, or such as to make it synthetic. It does not matter whether we think that definition makes true judgment and true inference possible because in judgment and inference we are simply *analysing* the concepts defined, or because the definition of terms makes it possible for us then to have further genuine apprehensions of new facts, not contained within the definitions, but apprehensible by us only if we use defined terms. To take an instance, it is irrelevant to us at the moment whether the propositions of geometry are analytic or synthetic, provided it is maintained that the apprehension of the propositions is made possible only by the previous definition of the terms involved. The point which concerns us here is simply this, that the intuition, whether the propositions which state it are rightly regarded as analytic or as synthetic, is always of the form *S* is *P*.

We have still thrown little or no light on the question *why* the traditional logic reduced statements to the form *S* is *P*; that is, why it maintained that all apprehension is the recognition of a universal in a particular. Yet this is for us an important as well as a

difficult question. It is none the less important for the fact that the logic gives no clear explicit account of itself on this point. In its general procedure, as we have seen, it is rather taken for granted or taken as obvious than argued in any way.

Are we then to take it that the principle is supposed to be self-evident? Is it supposed to be *obvious* both that we have immediate apprehensions of this kind, and that we have immediate apprehensions of no other kind? Take the case of sense-perception. Is it clear that what we apprehend in sense-perception is always a quality as inhering in a subject, and that there is no immediate apprehension of succession, causation, spatial relations, etc.? Or again, in the case of the fundamental truths of mathematics, is it not commonly maintained that these are immediately apprehended? Consider, for instance, the statement that a straight line is the shortest distance between two points. Is this axiom immediately apprehended? And is it of the form *S* is *P*? The history of modern philosophy makes it abundantly clear that even if the doctrine underlying the logic is true, it is certainly not obvious. At least it requires analysis and argument to support it. Yet such argument is not given in the logic. These questions are the questions canvassed by modern philosophers who write about theory of knowledge, not by the traditional logic.

Why, then, is the doctrine assumed? And, even more difficult, why have so many thinkers who are well acquainted with modern theory of knowledge continued to subscribe to the fundamental principles of the logic? It cannot be, I think, because people have thought on analysis that they obviously do have such immediate apprehensions in their own actual experience. The history of philosophy shows rather that it is

from this side, that is from the side of scientific analysis of actual personal experience, that the most constant, and some of the most damaging, criticism of the doctrine has come. Why, then, has there been so much almost unhesitating support for the principle?

The answer must be sought, I think, in the analysis of inference. It is here that the real battle-royal of logic rages. The traditional logic does not argue primarily that there are in fact such immediate apprehensions, recognisable in experience; nor, if our previous argument was sound, is it primarily the business of logic to do so. It argues rather that if we analyse the nature of argument and proof, we see that there *must be* such apprehensions because without them inference would not be possible; that is, new knowledge could not be gained by thinking. Similarly on the other side the Idealistic logician, strictly *qua* logician, argues, not that there are no such apprehensions to be found in actual experience, but that such apprehensions are not necessary to the possibility of inference. The analysis of inference is the centre of logical enquiry; and it is to its account of inference that we must turn if we are to go to the root of the matter, and find what defence there can be in the traditional logic of the view that all apprehension is of the form *S* is *P*.

The old logic maintained that all inference, properly so-called, was deductive; that is, that it consisted of deducing conclusions from statements already established as true. The origin of this view is, I think, not far to seek if we reflect on the nature of the Socratic dialectic. When Socrates wished to refute a thesis, he would seek to find some ὁμολογία as a basis for argument—that is, some statement as to the truth of which both parties were agreed—and then

deduce from this some conclusion which was incompatible with the thesis under discussion. If this kind of argument was not to be merely sophistic—and Socrates, of course, always intended his arguments to lead to a real contribution to knowledge, and not merely to refute a man out of his own mouth, *i.e.* to show that he held two contradictory beliefs—it was essential that the ὁμολογία should be something universally agreed to and accepted as *true*. Only then could the thesis be shown to be false. If the ὁμολογία was a mere agreement 'for the purposes of argument' between the two parties, the argument could only show that there was a contradiction between the ὁμολογία and the thesis in question; that is, they could not both be true. So, in order to distinguish Socratic argument from sophistry, Plato lays stress on the necessity that the ὁμολογία must be certain knowledge, and implies that to attempt to argue from anything else is mere sophistic playing with words. For, he says, unless a man starts from an ἀρχή which is knowledge, how can he hope that his conclusion will be knowledge? This is, of course, put as a rhetorical question, the answer being presumed to be obvious—that it cannot be knowledge. Here he is using the word ἀρχή in a technical sense. He quite recognises that there are hypothetical arguments where you argue, not from, but to an ἀρχή—though what you start from is, of course, an ἀρχή in the ordinary non-technical sense of the word. For instance, you say in geometry, 'Let us suppose that *A* were *B*,' and you find that if this were so it would follow that *X* would be *Y*, it being known to you independently that *X* is *Y*. Here the ἀρχή, in the logical sense, is *X* is *Y*; and the argument will finally be set out with *X* is *Y* as premise and *A* is *B* as conclusion; that is, it starts

with something known and concludes with something known. Plato and the traditional logic, as we say, recognise this kind of hypothetical argument. But they lay no stress on the fact that after all you *can* argue from a supposition, even in cases where the result is a *reductio ad absurdum*; nor do they ask themselves what are the implications of this fact. They simply notice that *A* is ultimately known to be *B* because it is deduced from the known fact that *X* is *Y*; and they conclude that it is the essence of inference to be deduction from known premises.

It should be noticed that Socrates in the use of his dialectical method mainly concerned himself, so Plato tells us, with mathematics and morals; and it is perhaps worth considering whether the apparent nature of our thinking *in these spheres* seems especially to bear out this view of inference. In the case of geometry it has traditionally been thought obvious that it is essential to understand the definitions, and to be convinced of the truth of the axioms, before we start. The acquiring of new geometrical knowledge has commonly been thought to be merely the discovery of what is necessitated by the axioms. It has *not* commonly been thought that in the course of working out subsequent propositions we might become ever *more certain* of the truth of the axioms; still less was it considered possible that acquaintance with subsequent propositions might convince us that the axioms were after all untrue, in spite of appearances. The axioms have always been thought to take the whole weight of the system from the beginning; on them the whole body of knowledge was considered to rest for its claim to be knowledge. If a man was not convinced of their truth at the outset by consideration of themselves alone, then nothing could ever convince him. But

fortunately, it was thought, one is convinced of their truth. One has only to understand their meaning to see at once that they are true;[1] and the mere fact that another proposition 'follows' from them is enough to convince us that *it* also is true. This is certainly the traditional estimate of geometry; *viz.* that geometric inference is essentially deductive.

With morals the case is not so simple. It is not easy to find moral axioms, or to represent our moral judgments as a body of knowledge, all the propositions of which follow from one or two first principles. But even here, we must remember that it was Socrates' aim to convince people by argument that certain views were false; that is, that they were incompatible with something known to be true. He was not merely showing that certain principles contradicted one another; he was seeking to demonstrate that they were absolutely untrue. Plato's theory of knowledge, and through it the Aristotelian logic, have been profoundly affected by the fact that in expounding and interpreting the arguments of Socrates, Plato was defending his use of dialectic against a charge of sophistry and mere

[1]It is true that in the *Republic* Plato seems to feel some difficulty in allowing that the first principles of mathematical reasoning are obviously or self-evidently true at the outset of the mathematician's enquiry. But Plato's difficulty is, I think, definitely set aside by Aristotle with his doctrine of ἴδιαι ἀρχαί, and so is not reflected in the doctrine of the logic. Even Plato did not in the *Republic*, I think, doubt that the first principles of mathematics were γνωριμώτερα than the conclusions of mathematics; he thought that *all* mathematical knowledge, first principles and derived propositions alike, had a weakness from one point of view, and that this could only be removed if the philosopher by διαλεκτική (not by mathematics) deduced the first principles from an ἀρχή which was ἀνυπόθετος, *i.e.* in Aristotelian phrase, ἁπλῶς γνώριμον. Thus Plato, if he differs on the particular point of the self-evidence of the first principles of mathematics, may yet be taken to conform, in the *Republic* at any rate, to the general doctrine that all such knowledge as is not immediate apprehension is arrived at by deduction.

negativism. The whole argument of Socrates presupposes that every man knows in his heart what is right and what is wrong, what is virtue and what is vice; and the success of Socrates' moral philosophising confirmed the view that this fundamental knowledge is really there in the mind, to be built upon as soon as it can be formulated. Only Socrates was more concerned to insist that certain, accurate and simple formulations of this knowledge must be found before a sound structure could be built—hence his insistence on his μαιευτικὴ τέχνη—than to ask himself whether his practice did not really indicate that to formulate moral axioms was impossible, and that the task of actual human philosophy must be the humbler one of simply seeking to approach nearer and nearer to knowledge by a series of more or less negative arguments like his own.

In any case, it must be admitted, I think, that the traditional theory of inference can only by faith be applied to the arguments of Socrates and Plato about morals. The great general principles are not there, nor the deductions from them. Even a more positive dialogue like the *Republic* cannot be said to have established such a first principle, or even to seek to establish it. It might be maintained perhaps that moral thinking *ought* to be like this: and that it is because we have not succeeded in making it so that our moral judgments are as full of confusion as they are. No doubt it was maintained at a later date that such first principles are to hand for humanity, written in the Bible, for instance, or handed down by authority through the priests of a revealed religion; and that all actual thinking about particular problems of conduct takes the form of finding out what particular actions are consistent with these principles, *i.e.* of deducing

the conclusions which follow from these principles as premises. But in the moral theory of Plato and Aristotle themselves we find nothing of this kind, however much they may have tried to make their systems conform to this model. We may find in their writings instances of deductions from ὁμολογίαι; but these do not in themselves produce knowledge. It may be that they thought that moral thinking ought to be, and ultimately will be of this kind—Plato's doctrine of the Form of the Good has often been interpreted in this sense—but they have certainly not shown that there *is* any moral thinking of this kind which has produced knowledge. We must conclude that if an actual example is sought in real thinking to conform to the traditional view, then geometry must take all the weight. And this has, broadly speaking, been recognised to be so in the history of thought.

So far we have simply laid stress on the *deductive* nature of thinking in the doctrine of the old logic. And this is as a matter of fact for our purpose the vital point. This, it will be argued, is the essential doctrine from which springs the fundamental distinction between the traditional and the Idealistic logic; with this as the point of parting, they diverge from one another evenly and inevitably. But closely associated with this doctrine in the old logic—so closely asociated that the two are not generally distinguished —is another doctrine which has come in for a great deal of criticism, and which is an essential link in the explanation of the insistence laid by the traditional logic on the form *S* is *P*. This is the doctrine that thinking is *syllogistic*. As we shall see later, it is possible to abandon the syllogism without abandoning what we regard as the essential position of the old logic, and without subscribing to the distinctive

teaching of the Idealistic logic. But in actual fact in the traditional logic the doctrine that thinking is deductive has been inseparably associated with the doctrine that it is syllogistic.

The syllogistic logic shows how from two statements of the S is P form as premises, a conclusion also of this form can be drawn; and it formulates rules exhibiting the conditions under which the drawing of the conclusion is valid. It maintains that the reduction of argument to the syllogistic form, involving as it does the reduction of the statements concerned to the form S is P, will always satisfy the mind that an argument is valid, if it is valid—or more strictly, according to the traditional logic, that the conclusion is true. Such reduction is alleged to be nothing but a mere simplification of the argument in question, and it is maintained or assumed that neither the use of symbols nor the reduction to this particular form involves any alteration or distortion. To take an instance: the validity of the apparently simple argument

$$\begin{aligned} &A > B, \\ &B > C, \\ \therefore\ &A > C, \end{aligned}$$

is not allowed to be immediately self-evident—though probably most mathematicians and other people think it so if they think anything self-evident. For this proof to be finally convincing, it should, according to the traditional logic, be reduced to a syllogism or a number of syllogisms, whose form, at least in the first figure, *viz.*

$$\begin{aligned} &B \text{ is } C, \\ &A \text{ is } B, \\ \therefore\ &A \text{ is } C, \end{aligned}$$

makes it immediately self-evident. The point seems to be this: the statement $A > B$ states a *particular* kind

of relation between A and B, while other statements state other particular relations between them. Now it is possible to reduce all these statements asserting particular relations to the general form S is P, where the two terms S and P are such that they are always connected *simply* by the copula. Now if we reduce all statements to this general form, to which any statement whatever can ultimately be reduced, we shall surely lay bare the most general forms of inference valid of all cases under all conditions whatsoever. We cannot then be misled into considering anything which just *appears* to be valid because of something special to the particular case, or even to the particular species of case. We shall thus discover the rules of proof as such. Only under these conditions can we conclusively distinguish cases where the argument is in itself valid from spurious cases where, although each statement happens to be as a matter of fact true, there is really no argument. This at least seems to be the principle underlying the syllogistic procedure.

Of course, it is not maintained that all arguments which produce true conclusions are in ordinary practice expressed syllogistically; nor is it maintained that no one can infer correctly without putting it into syllogistic form. But it *is* argued, I suppose, that no one if pressed can ultimately be sure that his argument is valid unless he reduces it to syllogism; and conversely, that an argument so reduced will satisfy the most confirmed sceptic. Reduction to syllogism is the one method of ultimately satisfying oneself of the validity of inference.

This, however, is not the end of the matter; yet more reduction is necessary. Aristotle did not regard all figures of the syllogism as in themselves immediately convincing. He thought that the validity of

the second and third figures was ultimately assured by reduction to the first. If pressed as regards the first figure, he seems to have thought that we were assured of the validity of this by the fact that it conformed to the *dictum de omni et nullo* as he formulated it, this dictum itself being a self-evident proposition as he formulated it. He does not seem to have attempted to formulate a self-evident *dictum* for the other two figures; nor does he appear to have enquired whether what really satisfies us first is the formula

$$\begin{aligned} &B \text{ is } C, \\ &A \text{ is } B, \\ \therefore\ &A \text{ is } C, \end{aligned}$$

and the *dictum* is then accepted just because we see it to be a statement of the principle of this formula. He just boldly arranges his theory in the neat and unitary form—first, the *dictum*, which is self-evident; then the first figure syllogism, which is guaranteed by the *dictum*; then the second and third figures, guaranteed by the fact that they can be reduced to the first figure. The *dictum* is the primary thing. Of its truth we must be satisfied first, once and for all; then the rest follows. This is the essential principle of the syllogistic theory of inference.

A word must here be said of the use of symbols. There is no doubt that Aristotle, and the traditional logic generally, considered that the validity of an argument is more obvious when expressed symbolically than it is in an actual instance. This might be taken at first sight to mean that there is involved some obscure magic in the symbols, or in the use of symbols in this connection, so that the symbolic form itself immediately and directly satisfies us in some mysterious way of the validity of principles, which we could not otherwise grasp at all, and whose validity we

could not otherwise apprehend. Most people certainly feel that something of this kind goes on in algebra; they think that there are to be found here proofs of principles, which cannot be stated or apprehended except in algebraic form, and which can only be proved algebraically. But nothing of this kind seems to be involved in the traditional logic, however much it may be so in the modern symbolic logic, starting from the same essential principles. In the traditional logic the use of symbols is not to lay bare to us laws of thought which we should not otherwise see, nor to convince us of their validity, when we could not otherwise be convinced. No such magic or mathematics is involved at all, even in its most simple form. The vital point is the reduction of the second and third figures to the first, and the demonstration that the first figure conforms to the *dictum*. The symbols are, first and last, simply convenient means of doing this. The arguments are certainly not thought to be valid just because they are represented symbolically; the symbols simply serve to show, not immediately that the arguments are valid, but that they conform to the *dictum*. The whole weight of guaranteeing the validity of inference is made to fall on the *dictum*, of which one is supposed to be convinced immediately, independently of the use of symbols, and prior to and independently of any knowledge of the figures and moods of syllogism. If syllogistic reasoning implies more knowledge than a knowledge of the *dictum*, the traditional logic has not noticed it, and does not say so.

The important thing to notice for our argument is that the syllogistic logic in effect seeks to exhibit the possibility of manipulating true statements of the *S* is *P* form so as to produce new statements of this form

which are true. It maintains that all inference is argument of this kind, and that its reduction to this form is ultimately necessary to convince us of its validity. Whether Aristotle first satisfied himself that immediate apprehension is always of propositions of the form *S* is *P*, and then saw that in that case inference, if it is to be possible at all, must consist of the manipulation of statements of this form; or whether he first made up his mind that inference was syllogistic, and concluded that immediate apprehension, since it must give the premises for inference, must be of this form; or whether he arrived at both views independently and then thought that they confirmed one another—it is impossible finally to determine. As we have said before, it seems probable that he never forced himself to decide, but that on the whole the second explanation is nearest to the truth. In any case, it is impossible not to notice how beautifully the two doctrines dovetail to form one logic, the whole system showing how a mere series of acts of recognising a universal in a particular can produce a body of knowledge, without calling on any apprehension of any other type whatever. For the premises and the conclusions obviously represent apprehensions of this form, and the drawing of the conclusion is shown to involve no apprehension over and above that of the premises except the apprehension of the *dictum*, which is itself a proposition and necessarily of this form. The recognition of the validity of inference itself is represented as involving no apprehension whatever except the immediate apprehension of one statement of the form *S* is *P*.

Thus the tendency of the old logic is always to throw the difficulty one stage further back, and to centre the whole problem in the acquisition of starting-points. There is really no problem in judgment; or

rather the problem of judgment is avoided by throwing the difficulty back on to conception; and there is no problem in inference, the difficulty being thrown back on to the question of our knowledge of first principles, which are themselves not inferred. Consider judgment first. Here we assert a predicate of a subject; if we can define our predicate, says the logic, if we know precisely what it means, then we cannot apply it to the wrong subject. The doctrine amounts to this, that if we look after the predicate, the judgment will look after itself. The real problem is thus, How do we come by these definable predicates? Certainly not by using them in a series of judgments; for definable predicates are alleged to be a necessary presupposition of true judgments. The acquiring of these predicates must be prior to and independent of the judgment; otherwise our judgments would be confused and false. Thus the possibility of judgment is explained at the cost of throwing all the real work in the acquisition of knowledge on to conception.

The same in principle is the case with inference. Inference itself is made to present no problems by the device of throwing all the weight on to the first principles. Inference is represented by a simple quasi-mechanical operation in accordance with certain rules, by which is set out explicitly knowledge which is already contained in the first principles; and the operation itself is shown to be valid—that is, to add nothing in the conclusion which is not contained in the premises—by being demonstrated to conform to a *dictum*, the apprehension of the truth of which does not itself depend on inference. But what of the first principles themselves? The apprehension of them clearly must be maintained, in accordance with the general view of judgment, to depend on the definition

of the terms. What then of the concepts? Of these the logic itself has nothing to say. It shows us how we operate with them in judgment and inference; but this does not really show us how we come to knowledge, nor assure us that what we are coming to is knowledge, for the knowledge is alleged to be there before we start. As to how we acquire this knowledge, or what makes us sure that the knowledge is knowledge, the logic has nothing to say.

This is what Kant complains about in the old logic, that it does not take judgment and inference seriously at all. It just explains them away. It speaks as if neither in judging nor in inferring do we *add* anything to what we knew before; as if by these activities we did not acquire any new knowledge. Kant expresses this by saying that in the old logic judgment and inference are regarded as *analytic*.[1] At another time he expresses it by saying that the whole weight falls on conception. In the traditional logic conception is treated, he says, as *prior* to judgment and inference; whereas according to him the truth is that judgment and inference are prior to conception, and it is only by a series of judgments and inferences that we can arrive at clear concepts.[2] Thus for Kant judging and inferring are the vital acts in the acquiring of knowledge. The old logic speaks as if when the mind is provided with clear concepts knowledge is already acquired; and yet it treats the acquisition of these essential concepts as necessarily *prior* to judgment and inference, and gives no account of that acquisition, but assumes it as a necessary preliminary to the

[1] *E.g. Critique of Pure Reason* (N. K. Smith's translation), p. 55; *cf.* also p. 177.

[2] *Cf.* the passage from Kant's pamphlet on *The Mistaken Subtlety of the Four Syllogistic Figures* quoted by N. K. Smith, *A Commentary to Kant's Critique of Pure Reason*, p. 181.

processes of which it does give an account. It would be bound to throw this acquisition back on to some transcendent experience beyond our consciousness and beyond criticism. The processes which the logic does investigate and criticise have nothing to do with the acquiring of knowledge at all; as regards the real acquiring of knowledge it has nothing to say.

It should be said in partial explanation of the viewpoint of the old logic that Plato had worked out a theory of conception; a theory which came in for much criticism from Aristotle, who never perhaps fully recognised how necessary some such theory was to his own logical doctrine, since without it the latter hangs, as it were, suspended in the air. Plato makes Socrates argue that for thought or speech to be possible, we must have some apprehension of what he calls 'ideas' or 'forms.' If we are to recognise lines as ' straight' or 'equal,' we must *first* know what we mean by 'straightness' and 'equality'; and if knowledge is to be possible, then however confusing may be the world as presented to us, however much two particular lines may appear to us now equal, now unequal, in one aspect straight, in another not straight—we must all the time know exactly what we *mean* by 'straight' and 'equal.' Straightness and equality must themselves never change; otherwise we could certainly never make a statement which was true, nor could we prove anything. Moreover, at least in the instances commonly given by Plato, this doctrine appears to correspond to the facts. There does seem to be an immutability and reliability about 'straightness' and 'equality,' which might justify us in saying that they are timeless and changeless. And it seems to be this very fact which enables us to make statements which are timelessly true; that is, they express knowledge,

even though the sensible world around us seems so changeable and unreliable that we can never 'step into the same river twice.' Thus Socrates urges that it is essential to the possibility of knowledge that we should have, and it is also a matter of experience that we do have, a clear apprehension of 'straightness,' 'equality,' 'beauty' and 'goodness.' In these we have apprehended eternal, immutable verities.

Any theory of knowledge must then recognise, according to Socrates, that there is and must be in the soul, independently of all conscious and earthly experience, some apprehension of these great 'ideas.' It is not necessary to maintain that the soul at birth is consciously aware of them fully and clearly; Socrates rather maintains that conscious experience on this earth 'reminds' us of them. But for this recalling to be possible, the soul must have acquired knowledge of them in some transcendent pre-natal experience. In Plato's beautiful picture-story, the soul before birth lived in a world of 'ideas,' where unhampered by the senses it apprehended them in all their fullness and purity. Then just before birth it drank the water of Lethe, and conscious knowledge of the ideas passed away; but not so completely that they could not be recalled later on earth under favourable conditions. This recalling happens more or less to everybody, it is to be presumed; but, according to Plato, it is the aim of education that the recalling of these ideas should be given a chance to be to every soul, as it would be in the natural healthy state, a more vital and satisfying experience than its immediate awareness of the mere sensible things themselves. For only so will the soul rise to that real knowledge which is the fullest life of man.

In this lovely story Plato touches the spot. On his

account, knowledge (to use the language of Kant) begins with experience, but is not derived from experience. Without the senses, we could in this life have no knowledge of the 'ideas,' because we should not 'recall' them. On the other hand, without the recalling of the ideas, we could make nothing of what the senses give us; that is, we should have no understanding of our experience, and the sensible world would not be even as intelligible to us as it in fact is. Plato arranges for the soul to be provided prior to experience with the very things which, according to the traditional logic, are necessary in order to make the whole machinery of thinking start, *viz.* clear, immutable, eternal concepts, from the use of which knowledge may flow. There is no doubt that Plato's story fills the bill, and provides the very support which the traditional logic needs.

But, of course, the difficulty about it is that it is simply a story. It is no part of our purpose here to consider whether Plato himself accepted it as his last word on the subject. Certainly it did not satisfy Aristotle. Yet Aristotle never replaced it by a better theory. In the celebrated passage[1] where he directly attacks the problem of how we come by the first principles of knowledge, he reviews the possible accounts with masterly criticism; and he shows a considerable advance in psychology. But of the logical problem, as he is bound to formulate it, no possible solution seems to be left open by his own criticism. He rejects generalisation from experience as a final explanation, and he sees difficulty in accepting an intuitionist account; but he has nothing satisfactory to suggest. In fact he looks the difficulty firmly in the face, and passes on. Thus, as far as Aristotle himself is concerned,

[1] *Post. Anal.* ii. 19.

the logic is left without basic support, having no satisfactory explanation to offer of how we satisfy ourselves of the truth of the first principles upon which, according to its own teaching, all knowledge must depend.

It is at this very point that the modern philosophers begin to show their dissatisfaction with the old logic. With the pre-Kantians, the whole problem tends, under the influence of the traditional theory of inference, to centre in the question of the apprehension of first principles. It is true, indeed, that these philosophers are so far emancipated from its influence, that they think of this as a problem concerned with the origin of *principles* rather than of concepts. This is to say that for them already the vital question is by implication really one of judgment rather than of conception. As we have seen, the traditional logic taught that if concepts were clear, then propositions looked after themselves; or, as Kant seems to have put it to himself, a proposition was simply an analysis of a concept, so that the real problem was the origin of the concept. But the modern philosophers, taught by their analysis of science, do not talk in these terms. When they thought of origins, they thought primarily about principles, *i.e.* propositions which could serve as premises for inferences; and they tended to take only a secondary interest in the origin of concepts. Indeed, I think it will be found that they all of them really imply, what Kant explicitly states, that concepts are formed by means of a series of judgments. Even Descartes, with his doctrine of innate ideas, seems normally to have thought of his 'simple natures' as propositions. What Locke attacks is not 'innate ideas' but 'innate principles.' Locke and Berkeley both clearly imply that a primitive sense-impression is an awareness of a proposition such as 'it is red,' 'it is hot,' etc., and

that it is only *after* a number of judgments of this kind that abstraction is possible of such general ideas as 'colour,' 'heat,' etc. Hume, too, is worried about the causal principle, not about the concept of cause; indeed had he paid more attention to the *idea* of cause, and to the source of its origination as an idea in our minds, he might well have come to a different conclusion about the causal principle itself. All these thinkers, in fact, however little they may explicitly recognise it, are implying that judgment is prior to conception.

So far these pre-Kantian philosophers may be regarded as emancipated from the old logic. But in a more important sense they are still entirely under its spell. Their search for first principles is to them the urgent matter it is because they are unquestioningly accepting the essential principle of the traditional theory of inference. The form of the first principles for which they were searching was determined by this acceptance. They were looking for indubitable, certain, self-guaranteeing first principles as a basis for knowledge; and they did so because they accepted the traditional account of inference as deductive. They saw that no satisfactory account had been given of the origin of such principles, nor any satisfactory reason for accepting particular principles as certainly true; and they saw that this deficiency must be supplied. Their quarrel was therefore inevitably about the origin of these principles. Not even Hume saw that a deeper analysis was required, and that a more sceptical spirit must be shown in regard to a previous question—namely, whether it could be proved that such principles were necessary at all to the possibility of knowledge. This is the true measure of the unconscious subservience of these philosophers to the traditional logic.

CHAPTER IV

THE DOWNFALL OF THE TRADITIONAL LOGIC

THE downfall of the traditional logic is closely associated with the attempt of modern thinkers to make something of the method of modern science, especially of physics. For various reasons, they all thought it vital to examine this method as a preliminary to propounding their general views about the nature of knowledge. They thought, of course, that the method of modern science was essentially and fundamentally distinguished from previous methods of philosophising about nature; and each of them supposed that his recognition of this fact had emancipated him from the influence of past philosophical theories about the nature of knowledge and the nature of thought. Because each of them had at least some one thing in previous theories which he was eager to criticise, he thought he was cutting out the past history of philosophy root and branch. As a matter of fact, as Kant saw, they were all only nibbling at the knot. Each of them was assuming the main principles of the logic to be true, without even knowing it. But in so accepting these principles, they were in practice making it clear, each in his own way, that these principles were unacceptable. So that the conclusion was gradually forced home that a new logic was necessary. Each philosopher came to grief in his own system, because he was trying to make a point about know-

ledge which in itself was a good point, but was ultimately incompatible with the fundamental theory of thinking which he was unconsciously taking on trust from the past.

This is how Kant himself exhibited the situation. He maintains that the logical principles which he himself puts forward, even if at first sight they may seem obscure and unattractive, are absolutely necessitated by the breakdown of the old logic as exposed by Descartes and other philosophers who followed him. In view of the further development of Kant's logic since Kant's own time, we cannot in detail put the criticism of the earlier philosophers in the exact terms in which he put it. But essentially our point is the same—that in principle they were, without recognising it, accepting the traditional logic, while advocating principles which were, rightly regarded, incompatible with it.

In order to get the position clear, we need only consider here, I think, the views of Descartes and of the British Empiricists. If we reflect on the worst difficulties in Descartes' system, it is not difficult to see that these at least were due to the fact that he had put himself into the position of making the best of a bad job. Descartes never seems seriously to have considered abandoning a *deductive* theory of reasoning. On examining the method of geometry—a method which he thought he had himself recently applied with outstanding success in physics—he considered that this bore out the traditional view that in thinking new knowledge is deduced from simple first principles, which are the foundation of all geometrical knowledge and are themselves absolutely known to be true; their truth not being dependent in any way on the knowledge of their implications, but being known before

or at least independently of, the recognition of those implications. This is of course traditional doctrine, and doctrine which the Idealistic logic has been forced to reject, following on some considerations adduced by Descartes himself. Yet Descartes did not canvass its rejection. He always insisted on the character of the axioms as 'simple natures,' truths immediately apprehended by the 'natural light'; and he always regarded the subsequent propositions as known to us by deduction from these. No doubt Kant is wrong in saying that Descartes treated thinking as 'analytic.' He did not. He treated it as intuitive; and as such it would be as synthetic in Kant's sense of the word as the simple judgment of sense-perception, which Kant admits to be synthetic. But though he does not regard deduction as analysis, he subscribes to the traditional view that inference is deduction, in the sense that new knowledge is deduced (albeit not without a series of new intuitions) from a few very general, simple principles, which must be known first and independently.

It will be worth while to enquire into this matter more closely. Clearly Descartes' view of the nature of thinking presupposes that in addition to the intuitions of *connexions* between propositions which go to make up deduction proper, we have also intuition of the *truth* of the first premises, *i.e.* the axioms—this knowledge of the truth of the axioms being prior to, and independent of, the intuitions of the connexions between these axiomatic propositions and the conclusions which follow from them. Thus it looks as if he must be maintaining that two kinds of intuition are involved:—first, the intuition of the axioms, which is directly and immediately an intuition of truth; and secondly, the intuition of each step in the deduction, which is primarily and immediately an intuition of

necessary connexion, and secondarily and mediately an intuition of truth because the propositions concerned are intuited to be necessarily connected with the axioms, which are true. When we ask what convinced Descartes that intuitions of the first kind were possible to man, that is, that there really were such axiomatic propositions, of the *truth* of which we have immediate intuition, we remember that Descartes felt himself not quite sure of the existence of 'the objects of speculative geometry'; while the 'natural light' revealed to him immediately the certainty of propositions such as 'two straight lines cannot enclose a space,' it did not assure him immediately of the *existence* of the straight lines. What, then, could he mean by maintaining, as in effect he does maintain, that these axioms are not only known to have implications, but are also known to be *true*? It seems from what has just been said about the existence of objects that Descartes was at bottom doubtful of the *truth* of the axioms, in any ordinary sense of the word 'truth'; that is to say, he was really doubtful of the existence in man of that 'intellectual intuition' which Kant denied to human beings.

It should be said that Descartes commonly maintains that the intuition of the truth of the axioms is the same kind of intuition as that of the connexion between premises and conclusion in geometric proof. But it is difficult to see how this doctrine can be maintained. It has been taken to mean—and this view has been adopted by Cook Wilson—that the recognition of the connexion between conclusion and premise and the recognition of the truth of the conclusion are one inseparable act of recognition. But if this is so, if intuition of necessary connexion and intuition of truth are inseparable, then, apart from the difficulties in-

volved in regard to *reductio ad absurdum* and to hypothetical thinking generally, what are we to say of the axioms? If we allow the inseparability here also, that is, if we allow that intuition of their truth is inseparable from intuition of their connexion with the propositions with which they are connected, we have then denied their peculiarly axiomatic nature as distinct from derived or deduced propositions. That is to say, we have abandoned the traditional doctrine that inference is deduction from very general, simple propositions, the truth of which is independently known, in that we have allowed that our apprehension of the truth of the axioms is as much dependent on our apprehension of their necessary connexion with other propositions as is the case with our apprehension of the truth of those other propositions themselves. This conclusion, of course, was never explicitly drawn by Descartes himself, who seems normally to have held that the first principles were apprehended *immediately* by the natural light.

Thus, as Kant saw, Descartes subscribed in essentials to the traditional doctrine that inference is deduction, when there was much in his own philosophy which should have made him question it. One result of this was his unfortunate doctrine of 'innate ideas' and of 'natural light,' which was rightly rejected by the British Empiricists. For having rejected authority as a proper source of knowledge, Descartes was committed, in view of his insistence on the peculiar exactness and certainty of the propositions of mathematics, to a doctrine of intellectual intuition in order to account for an independent primary knowledge of the truth of the axioms and of the first principles of thought generally—a doctrine which he could not maintain, and at times indeed almost abandoned

himself. Sometimes he seems to hope to deduce all other principles, however apparently simple and primary, from the *cogito* as his one primary certainty; but in the first place he never shows how this is to be done, and, in the *Meditations* and *Discourse* at least, abandons deduction altogether and introduces instead the obviously unsatisfactory doctrine of a *criterion* by which the truth of mutually independent propositions can be tested; and in the second place he does not succeed in formulating acceptably the *cogito* itself as a premise from which anything can be deduced. At other times he speaks as if there were a number of independent axiomatic principles, intuited separately, and standing each upon its own support—and this is the doctrine which Locke attacks. But whether he maintains that he has one primary certainty or several primary certainties, he is always thinking that knowledge must start from some absolutely certain, independently known, proposition or propositions, and that without these knowledge would not be possible at all.

Thus the effect of Descartes' subscription to the traditional account of inference is that the whole weight in his theory of knowledge is thrown on his account of our knowledge of the axioms or first principles, from which all our knowledge is alleged to be deduced. In his account of our apprehension of these lies his only revolt. He denies that these first principles are taken from authority, but he admits that there are and must be such principles to serve as premises for thought. He thinks that his position is sufficiently safeguarded by insisting that every man apprehends these principles independently for himself. His account of the nature of this apprehension is nebulous, and, if pressed, he has no clear ground, as we have seen, for

maintaining the existence of such principles at all. Having insisted on the intuitive nature of every step taken in a demonstration, it is not clear why he should have thought that such demonstration must start from independently apprehended axioms, *i.e.* why he regards such demonstration as in any sense deductive, properly speaking, at all. In this he seems simply to be holding on uncritically to the traditional doctrine.

It was an essential point in the position of Empiricism to deny Descartes' account of the apprehension of first principles. Descartes had thought it sufficient to deny that these principles were derived from authority, and sought to retain both their basic nature and their immediacy by his doctrine of intuition. The British Empiricists attacked this view of the origin of knowledge, as they were bound to do. Locke, of course, only half recognised where he stood, allowing as he did the intuitive nature of mathematical knowledge. Even Hume is not quite self-consistent in his account of arithmetic and algebra, though he is a thorough-going empiricist about geometry. But it is clear enough that the essential position of the Empiricists really is that all knowledge is derived from sense-perception; and therefore that the primary knowledge given us by particular sense-perceptions is itself immediate, and is certainly not derived by deductions from axioms or general principles of any kind. It might seem that this must have involved an immediate and thorough-going rejection of the old logic lock, stock and barrel. Yet we shall see that this was not so, but that the Empiricists still accepted, without knowing it, the essential principles of the old logic, and that this profoundly affected the development of their views. Indeed it is hardly too much to say—and this is Kant's view—that it was chiefly and mainly his

uncritical subscription to traditional doctrine that caused Hume's brilliant enquiry to end prematurely in a sceptical result.

When all is said, the Empiricists really put the problem to themselves in essentially the same terms as Descartes had done. They, too, sought primarily to explain the origin of those basic ideas and principles on which they supposed all knowledge to depend, trying to show that they were derived from experience, that is, from sense-perception. This is seen perhaps most clearly in Locke. He maintains that all the knowledge, which is properly called knowledge, is due to the perception by us of agreement or disagreement between our ideas. By perception, Locke must here mean some kind of non-sensuous intuition, for he can hardly think that this perception of agreement and disagreement—he is mainly thinking at the moment of geometry—is itself a species of sense-perception. If he had thought this, and had recognised this as his view, he would have made much more fuss about the point explicitly, as Berkeley does. Locke thus allots an important part in the production of knowledge to non-sensuous intuition. In doing so, he entirely relies, for the safe-guarding of his empiricism, on maintaining, or seeking to maintain, that the ideas, between which agreement and disagreement are intellectually perceived, are themselves wholly the product of sense-perception. That is to say, he is speaking as if he thought the judgments of mathematics to be synthetic, but without in the least realising the implications of admitting them to be synthetic. He could not possibly have thought of his empiricism as safe-guarded by his teaching here, if he were not absolutely taking it for granted, in spite of the apparent implications of his own language, that all thinking is analytic

—that is, that what he calls the 'perception of agreement and disagreement' is the mere recognition by analysis of something already contained in the ideas concerned. His language, of course, suggests that non-sensuous perception of this type gives us knowledge as much as sense-perception does; that however much it may be necessary for the one to take place before the other is possible, non-sensuous intuition is as much a fresh apprehension as sense-perception is. But this is certainly not strict empiricism, and it was not really Locke's view. Locke *thought* he was maintaining, and meant to maintain, that all knowledge is derived from sense-experience alone, without any contribution from any other source whatever. That his own account of mathematical knowledge was inconsistent with this he failed to see simply because of his acceptance of the traditional logic.

The same influence can be seen even more obviously at work in determining Locke's theory of sense-perception itself, the acceptance of which by Berkeley and Hume was one of the most important factors in determining the history of the school. If we ask why it was that Locke thought that my perception of any object consists of a series of momentary awarenesses, in each of which I am aware of one simple idea and one only, the simple idea being the idea of one simple quality, it is difficult to feel that such a view can have been due to pure, unbiassed introspection. No doubt the view that an apparently continuous consciousness can be broken up into such a series of discrete moments—or, to put it in another way, that a series of discrete moments of awareness can become compounded in some way into an apparently continuous consciousness—no doubt this doctrine owes much to reflection on the physical theories of the day. But grant-

ing this, why maintain that each momentary awareness is awareness of one simple quality? Why simple? It is difficult to believe that anyone could have come to such a view simply by a straightforward introspective analysis of primitive awareness in sensation. The fact seems to be that Locke's notion of simplicity was determined for him by his acceptance of the traditional account of the nature of thinking. His 'simple' ideas, like Descartes' 'simple natures,' are simple in the sense demanded by the old logic. The most general statements from which all knowledge is deduced, and on whose independent credit all knowledge depends, can only deal with ideas so simple that nothing could be simpler; otherwise they would not be basic and fundamental. Since, as taught by the logic, if knowledge is to be possible, thought needs ideas which are simple in this sense from which to start, Locke jumps to the conclusion that it is precisely simple ideas of this kind which are given in sense-perception; he can thus maintain that sense-experience provides all that thought needs to make the growth of knowledge possible. Thus Locke's acceptance of the traditional theory of thinking in a large measure operates to fix prematurely once and for all the official theory of perception of the Empiricist school. This in turn determined the form to be taken later by the official theory of thinking in the Empiricist philosophy, namely the doctrine that thinking is association of ideas.

Berkeley and Hume recognised that Locke's account of the nature of mathematical knowledge would not do, being inadmissible on Empiricist principles. But the general result of this recognition on their part, as far as their empiricism was concerned, was that they were led to scepticism. What happened to them

more or less than association of ideas. But Hume himself hardly ventures to put this forward as a positive theory of knowledge, or to make a logic out of it. He rather regards it as the destruction of logic, and the denial of knowledge altogether. He makes no attempt to put forward a new theory of true judgment or of valid inference in keeping with his own general position. He takes it as immediately obvious that it cannot be done. My point is that he would not have thrown up the sponge so readily if he had not accepted so whole-heartedly, at least in one essential particular, the verbal inspiration of the old logic. If he had not assumed throughout that any valid thinking must start from absolutely true first premises, which must be recognised as true at the beginning, he might well have sought to work out a new theory of knowledge following his own principles, instead of being content to explain away knowledge as mere unavoidable illusion.

Thus Kant was right in saying that the great mistake made by his predecessors was their acceptance of the old logic. His criticism was wrong, of course, in detail. He was wrong in saying that they regarded thought as analytic. As a matter of fact, as we have seen, they regarded it as synthetic—and synthetic in Kant's sense of the word. Descartes tried to represent it as synthetic on a basis of intellectual intuition, and the Empiricists as synthetic on a basis of sense-perception. Hume finally showed that neither view could be maintained. The mistake made by these philosophers was not that they treated thought as analytic, but that they assumed it to be *deductive*, in the sense of drawing out conclusions from simple, general, true premises. They broke down in their attempt to explain the origin and validity of these premises; yet they

never reconsidered the grounds for believing in the existence of any such premises at all. They never asked themselves afresh whether thinking is deductive; and they never analysed the thinking of science in order to answer such a question. They did not seek to determine whether it is essential, for instance, to physics to have absolutely certain, self-evident first principles, and whether the physicist, when he demonstrates, simply *deduces* from such first principles. They simply took it for granted that this was so, on the credit of the traditional logic.

No doubt it appears paradoxical at first sight to say this of the Empiricists, who may seem to have laid great stress on induction as generalisation from experience; but a close analysis of Hume will, I think, show that it is the case. Hume's sceptical position really rests upon the presupposition that the validity of the causal principle is essential to the possibility of any inference; he is really thinking of it as the fundamental first principle or premise. Therefore, on traditional principles, he thinks that it must be justified first, before any argument is acceptable. When he finds that he cannot do this, he concludes at once that there is no such thing as valid inference, and developes a naturalistic theory of belief. He is saying in effect—*If* there are no certain first principles there can be no knowledge; the causal principle is the fundamental first principle, and it is not certainly true; therefore there can be no knowledge. But he does not *argue* and seek to prove the truth of the first statement; he just takes it for granted. What he *argues* is that there are no certainly apprehended, absolutely valid first principles. In this he seems to be right. If the history of the philosophies of Kant's predecessors brings home to us anything, it is this—that the search

for immediately apprehended, absolutely valid first principles has completely broken down.

So far we have argued that the pre-Kantian philosophies failed because of their uncritical acceptance of essential doctrines in the ancient logic, and that this break-down was bound to lead to a revolution in logical theory. We may now turn to other signs of the break-down of the traditional system which were being brought to light by the modern philosophy. Most of these philosophers had, of course, in some measure shown dissatisfaction with the syllogism. But it will have become clear by now that, if our argument is sound, the syllogism itself is not vital to the essential position of the traditional doctrine. I have tried to show that the view that thinking is syllogistic has played an essential part in determining the whole structure of the old logic; and in this sense it is of great importance. But, as it has actually turned out, the main point on which depends the revolt of the Idealists from the old doctrine is obscured, I think, if too much stress is laid on the syllogism itself. As has been hinted already, and will be explained more in detail later, it is possible to reject the syllogism, and still to adhere to the traditional logic in respect of those doctrines which essentially distinguish it from the Idealistic. Descartes indeed did this, and following him Cook Wilson.[1] It was inevitable that the modern philosophers should reject the syllogism, in view of their investigation of the argumentation of science; but if the Idealists are right, it is necessary to do more than this. Descartes rejected the syllogism, but sought to retain *deductio*; if we follow the Idealists *deductio* also must go—in any sense, at least, like that in which it was understood by the old logic.

[1]Cf. *infra*, ch. xii.

Besides this rejection of the syllogism, however, there were a number of other, and more important, signs of dissatisfaction with Aristotelian teaching, which show which way the wind was blowing, though no one of them perhaps in itself points right to the root of the matter. Of these we may here draw attention to two. The traditional logic does not tend to throw into a sufficiently high light the categories which seem to be central to the working of scientific thought; and also it seems to be inevitably associated with a doctrine about the nature of reality, which science seems apt to reject.

To take the first point first, it seems obvious enough, as Hume saw, that the idea of necessary connexion is vital to science. The man of science is always looking for necessary connexions, and he regards his enquiry as successful when he finds them. Berkeley, it is true, sought to represent laws of nature as not statements of necessary connexion, but mere generalisations from experience asserting a regular but ultimately contingent concomitance. But Hume saw that in asserting causation, for instance, the man of science is undoubtedly asserting necessary connexion. Whether or not he has any right to do so is, of course, another matter; and Hume's view is that he has not. But certainly he does assert it, and thinks that he has found it in nature. He thinks, indeed, that he has a special technique for finding it, and this is at least the immediate aim of his enquiry. It may even be that the work of science proper begins and ends with the apprehension of necessary connexion. A classification, therefore, of the various kinds of necessary connexion which can be discovered in nature, and of the conditions necessary to the discovery of each kind, would seem to be an important part

of any investigation of the nature of scientific thought.

Now the traditional logic, to say the least of it, does not throw such a classification into a high light. Hume's enquiry really brought home this point. Hume succeeded in convincing people that the knowledge of everything, or at least of everything that matters—*i.e.* all knowledge of real existents—depends upon the causal principle. That is to say, when we say, for instance, *A* is *B*, we must really have come to know this not immediately, but mediately; we must have apprehended it in some such way as this—*X* causes *Y*, therefore *A* is (or, more strictly, must be) *B*. Unless this is so, Hume's attack on the causal principle does not involve a universal scepticism. To take Kant's simplest instance, when we say 'The event *B* is subsequent to the event *A*,' we must have apprehended this, if we have apprehended it at all, in this way—*A* is the cause of *B* therefore *B* is subsequent to *A*; or, of course, in a more complicated case, *X* is the cause of *Y*, *X* is co-temporaneous with *A* and *Y* with *B*, therefore *B* is subsequent to *A*. Thus the statement '*B* is subsequent to *A*,' and other statements of the form *S* is *P*, really conceal by their form the mediate process by which the man of science comes to apprehend them, and the grounds which convince him that they are true. And if we take it, as modern philosophy normally does, that the grounds which the man of science has for being convinced that such particular statements are true are the best grounds available—or, if you like to put it more confidently, that it is science which gives us knowledge of the truth of these particular statements—we may say roundly, that the form *S* is *P* entirely conceals the way in which these facts are apprehended; it misleads us as

to the actual nature of the birth of knowledge in the soul. No analysis of statements of this form can throw any light on how we come by knowledge, or on our evidence for thinking it to be knowledge. An investigation of science shows us that the apprehension of statements of this form is not immediate, but mediate, depending as it does on the apprehension of necessary connexions; and what we need to do in our logic, if we are to throw light on the nature of apprehension, is to examine the statements of necessary connexion which lie at the root of the matter.

It is here that an ever-widening breach with the old logic begins. Hume, of course, was not explicitly writing logic, but some of the logical implications of his doctrine are not difficult to see. In the last resort, Hume speaks as if you could know *nothing* without the causal principle; as if *every* significant judgment implied its use; and, as we have said before, unless we follow him here, his attack on the causal principle does not involve us in scepticism. According to Hume I cannot state even the simplest apprehension without involving the causal principle. If I say, 'This is green' or 'I am thinking,' I am implying the existence of the 'this' and the 'I,' which I can never apprehend unless I rely on the causal principle. All such statements, on Hume's view, require a process of mediate apprehension, in which the causal principle is involved. Thus, on his showing, the vital problem is concerned with the apprehension of causation itself. How do we come to recognise necessary connexion in nature? This is the question to which the attention of logic must be turned.

Of course, the Idealistic logic is far from accepting without qualification and elaboration Hume's simple view that all knowledge depends on the *causal* prin-

ciple, as he describes it, involving as it does the view that all necessity is causal necessity. Indeed one of the first tasks of this logic is to distinguish between several types of necessary connexion. The point that concerns us here, however—and the details do not at the moment matter—is that there was a growing recognition that simple statements of the *S* is *P* form do not represent immediate apprehensions as they stand, but are mediated; and that the vital link in this mediate apprehension, as the analysis of science shows, is the recognition of necessary connexion. The traditional logic had thus entirely failed to allow sufficient importance to the categories which seemed to be vital to scientific thinking.

The second cause of dissatisfaction, to which we may just draw attention here, is that the doctrines of the old logic seem to be closely associated with an account of the ultimate nature of reality, which science has so far tended to discredit. If the truth about the world is ultimately to be told in statements of the *S* is *P* form, this seems to require that reality must consist of independent substances, differentiated from one another by their properties and accidents. On this view it is difficult to avoid allowing to these substances the entirely independent, autonomous, 'windowless' nature of Leibniz' monads. Indeed, there is one well-known interpretation of Leibniz, which maintains that he developed his monadology primarily by working out the implications of the fact that propositions are essentially of the attributive form. At one time no doubt the man of science himself assumed that his ultimate account of the universe would represent it as having some such nature. The old chemistry with its classification of elemental substances was a comparatively sophisticated instance of this. Certainly it was

a similar view which in Aristotle's mind went hand-in-hand with his logic. But the main influence of modern science has been to stress the unity of the world at the expense of its plurality, the systematic or organic nature of the Whole at the cost of the independence of the real individual. So that when we come to the attempt at a strict and proper statement of such knowledge about the universe as science has acquired, there tends to be a suspicion of particular statements of the *S* is *P* form, at least if they are understood as the traditional logic understood them.

Thus there are unmistakable signs of a general dissatisfaction in modern philosophy with the doctrines of the old logic all round; and it is clear enough that such dissatisfaction was inevitable. But, as we are representing it here, the central point, on which all its failures ultimately depend, is its doctrine of the necessity to knowledge of a fixed, independently guaranteed starting point—at least this is, I think, the key to the fundamental difference in point of view in the Idealistic logic. The old logic had taught that thought consists in deducing conclusions from fixed first principles, and in pre-Kantian philosophy the battle raged round the establishment and validity of these first principles, without squarely reconsidering the logic on the strength of which it had been maintained that such first principles must or do exist. When Hume came to consider the matter, he examined two alternative theories as possible explanations of our knowledge of first principles, *viz.* the theory that they depend on inductive argument by generalisation from particular sense-perceptions, and the theory that they are apprehended by intuition. He easily shows that neither theory can explain knowledge of the causal principle. Since he thinks that the causal principle is

fundamental to all knowledge, his logical position is that the first principle which is necessary to the establishment of knowledge cannot itself be established. He is thus a sceptic. The general line taken by the Idealistic logic is to cease to kick against the pricks in this matter; that is, it ceases from the attempt to establish such independent, self-guaranteeing first principles, taking it that Hume has shown that it cannot be done. Instead, it goes back and re-opens the previous question of the nature of inference. Was the old logic right, it asks, in maintaining that for inference to be possible, thought must be able to start from independently established first principles? It ends by maintaining an account of inference which dispenses with the necessity of such fixed starting points.

No doubt this sounds a paradoxical thing to say for one who regards the whole development of the Idealistic logic as based upon the teaching of Kant. On the usual interpretation of Kant, with the great emphasis laid on his attempted vindication of the causal principle against Hume, it appears to be obvious enough that Kant is accepting Hume's position that the causal principle is essential as a fundamental premise of all knowledge, and that he is simply seeking to establish and vindicate that first premise. But I think that this appearance is due to too much emphasis being laid on the alleged purpose or intention of the argument of the Second Analogy[1], and too little attention being paid to the actual nature of that argument itself and to the place that it occupies in the development of Kant's whole system. I hope it will be made clear in the following chapters that Kant, by his whole attitude and method, started a new logic, the end of which he only partly foresaw, but which was bound to develop

[1] *Critique of Pure Reason* (N. K. Smith's translation), pp. 218-33.

into the Idealistic logic. It is no part of my purpose here to attempt a measured estimate of how far Kant advanced along the road himself; and it is certainly not a germane objection to the argument in these pages to point out that Kant himself did not clearly see all the implications of what he said exactly as they are expounded here, or to maintain that Kant would not have exhibited his system in the order in which it is here exhibited, and that he would not have placed its centre of gravity just where I place it. My argument is that it is the fact that Kant said what he said which started the new logic going and made it inevitable; and I have spoken of Kant's philosophy in such a way and with such emphasis as is necessary to make this point. That Kant did not entirely see himself in the light of his influence on his successors is neither here nor there.

Perhaps, however, it should be said that, though it is not relevant to the argument here, it is as a matter of fact the case, in my opinion, that Kant normally recognised himself as standing very much where he is here represented as standing. It was certainly his view that the chief mistake of his predecessors lay in their acceptance of the old logic, and that his own main contribution was the inauguration of a new logic. It is true that he clung desperately to the belief that his new logic should be *added* to the old as a kind of supplement to it. But it is clear from what he explicitly says that this cannot be done, and that the new view involves a thorough-going revolt from the old. Moreover, there are many signs that Kant at times clearly recognised this himself. He certainly thought, and he criticised his predecessors for not realising, that an account of thought as synthetic cannot be made to square with the old logic; and he

regarded it as being his main task to provide a new logic to give an account of such thinking. He is apt, as we have seen, to phrase his criticism by saying that previous philosophers had not recognised that thought is synthetic. What he should rather have said is that they were really regarding thought as synthetic,[1] but did not realise that this involved the complete re-modelling of logic. This re-modelling would ultimately show that they were following a wrong track in attempting to vindicate independent first principles; for it would show that first principles, in the sense in which they and the old logic understood them, were not necessary to thought at all.

[1] *i.e.* synthetic in the sense in which Kant is using that word in the passages in question in the Introduction to the *Critique of Pure Reason*. Of course, if synthetic really implies *putting* together, as opposed to *recognising* as together, as it normally does, I think, in Kant's use of it in the Transcendental Analytic, then the pre-Kantians, with the exception of Hume, did not regard thought as synthetic.

CHAPTER V

THE IMAGINATION: HUME AND KANT

In the preceding chapter we have tried to show how there were signs in the philosophies of the pre-Kantian thinkers that a revolution in logic was inevitable, since each of these in his investigation of science and scientific method made points which revealed the traditional logic as a misleading account of the nature of thinking. We must now turn close attention to a rather different aspect of the philosophical situation out of which the new logic arose. After all, though the traditional logic was being strained to bursting point in the hands of all these modern thinkers, yet it was actually Hume who woke Kant from his dogmatic slumber, and caused philosophy to wait for the new logic in a state of suspended animation, as it were. Moreover, it is Hume whom Kant has primarily in mind in the formulation of his most careful doctrines. No doubt he was so deeply imbued with Leibnizian doctrine that he lisps in Leibniz, so to speak, without knowing it. But it is Hume to whom he gives his explicit attention throughout; and it is the evading of the difficulties raised by Hume which costs him his main effort in the modelling of his new logic.

It is natural, moreover, that while Kant carefully surveys and judicially estimates the whole previous history of modern philosophy in making up his mind as to his proper point of departure, he should be specially affected by consideration of the proximate

cause of his sudden awakening to the urgent need for a new logical system. As Kant saw it, and indeed as we still see it, this cause lay in the specifically psychological teaching of Hume about the nature of thought.[1] Whatever was the main thesis of which Kant was convinced by the reading of Hume, it was certainly closely connected with the latter's doctrine that whenever we think, the sequences of ideas in the mind are determined by the laws of association; in other words, that the imagination plays an important part in the generation in the individual mind of all knowledge and all belief, since the laws which were first found to govern sequences of ideas in imagining are on further investigation seen to govern all sequences in the mind whatever. Either this doctrine must be rebutted by logic, or a new logical doctrine must be found consistent with the essential truth of this new psychological teaching. According to Kant, the first line of attack is impossible; the second is therefore the only one open to logic.

This, briefly stated, is the general position. We must now investigate the matter more closely. Just why was it, we must ask, that Hume's teaching, which was after all admittedly psychological and based on psychological investigation, was fatal to the old logic? We have seen in the last chapter that Hume had himself swallowed much of the teaching of the old logic, and that it was for this reason that he himself usually leapt to the conclusion that his doctrine involved utter

[1]Locke had inaugurated the same doctrine, but had not driven the points home. Berkeley had turned his main attention to the application of the method of empirical psychology to the problems of our perception of space. Hume is the first to focus direct attention on a psychological investigation of the nature of *thinking*. Kant, of course, thought Hume's application of the method to be of far more vital significance than Berkeley's.

and complete scepticism. But we have not yet determined with sufficient exactitude just what it was in his system which involved scepticism. Was he right in thinking it absolutely destructive of the possibility of knowledge? Or can it be maintained that it is essentially sceptical only on certain assumptions—assumptions which can be shown to be unnecessary?

These were the questions which Kant asked himself; and a clear definition of the general standpoint to be adopted is essential to keeping a clear head through the working out of the detail of the new logic. Fortunately in the Preface to the Second Edition of the *Critique of Pure Reason*, as well as elsewhere in the work, where he lays aside for the time his use of technical logical terms, Kant has given us some indication of what he considered his general position to be as against Hume. That is to say, he has himself given us considerable help toward discovering why he thought the fundamental problem a logical one, and why he formulated it in the particular terms, 'How are synthetic *a priori* judgments possible?' After all, Kant, like other philosophers, had first to make up his mind what the fundamental problem was in general; then he had to decide what particular investigation he should undertake in order to throw some light on the answer to it; then he had to state his general problem correctly in the accurate, technical terms germane to his particular investigation. All this preliminary work is as important as, and in general more liable to error than, the particular investigation conducted. Fortunately, as has been said before, Kant has given us more indication than have most philosophers as to how his mind worked in these all-important preliminaries.

I do not propose to point out here the mistakes

made by Kant in the orientation of his general position, or in the translation of his main questions and theories into the terms of technical logic. I am certainly not primarily concerned here to vindicate or to criticise Kant in detail. What I wish to do is to follow the method of Kant in pointing the way which was bound to be taken by subsequent logic, if it was to maintain itself after Hume had established the right of psychology to put forward a psychological theory of thinking. In doing this I shall be following what I believe to be the line of Kant's own thinking. But I do not wish to argue this point, but to exhibit the position for its own sake and on its own merits. It would be wrong, however, not to state that the method I am using is wholly Kant's method; and it would be foolish to neglect the opportunity of throwing the nature of that method into a clearer light by referring to Kant's use of it. In his Preface Kant tells us what he conceives his problem to be, and in what he thought his answer consisted, in ordinary, non-technical language—language which can be immediately understood by readers of Descartes' *Meditations* or of Locke's *Essay*. Here he tells us, for instance, that he proposes to try the revolutionary hypothesis that in being known objects 'must conform to the nature of the mind'; that the mind only understands in Nature what it has introduced into Nature in accordance with its own plan; that, in order to face his difficulties he has had to 'destroy knowledge in order to make way for belief'; and so on. Then having indicated in general terms what his problem is and what his answer is, he proceeds to state his problem—the same problem, of course, as he thinks—accurately in technical language. He distinguishes between analytic and synthetic judgments, and asks 'How are synthetic

a priori judgments possible?' He says that in order to do this we must go beyond the old logic and found a new transcendental logic, showing how the mind in judging introduces a transcendental element into its representations: and so on. In working out all this Kant no doubt made many mistakes, which he may or may not have gradually corrected himself as he went along. But in my opinion he followed the only method which could possibly be successful in initiating any fundamental change in logic; and, taking hints from him all along the line, I shall now seek to follow the same method.

Just why then, we ask again, were the doctrines of Hume fatal to previous theories of knowledge? Strictly speaking, I think, Hume's view is not fatal to the existence of immediate intuitive knowledge. He puts forward no theory as to the origination of our 'distinct perceptions.' It is certainly not his view that any given perception has its nature through and through determined by previous perceptions. As far as his argument or the results of his analysis go, each distinct perception *might* be a clear and distinct immediate apprehension, after the manner of Descartes, of a reality, apprehended just as it is without modification or distortion of any kind. It might be so. Rightly regarded, Hume's view does not prove that there are no such things as immediate apprehensions. He himself waives the point, though he often speaks, of course, of 'distinct perceptions' as if they were immediate apprehensions in this sense. What he does show is that knowledge of a world—whether of a physical world, of a spiritual world, or of any kind of a world—cannot simply *consist* of 'distinct perceptions.' Though no doubt the point had been missed by previous philosophers, neither one intuition or

immediate apprehension, nor a series of intuitions, can in itself constitute knowledge, properly so called. Knowledge proper presupposes a connecting and relating of these distinct intuitions; and in all instances which we should recognise as knowledge such connexions and relations between distinct perceptions can readily be found. Now Hume has a special theory, derived, so he claims, from empirical observation of the working of the mind, of how this connecting is done. In a word, he has shown that knowledge does not consist merely of intuitions, but requires some mental operations upon these intuitions; and he has his own theory of the nature of those operations.

This is where he impinges upon the traditional logic. The logic offers or presupposes—it is difficult to say which—an account of one such operation, *viz.* inference; and its account is incompatible with the conclusions of Hume.

Let us first consider the general lines of Hume's account; for, as we shall see, it is only its general nature which concerns us in making up our minds about the standpoint necessary for logic. Hume recognises, as we have said, that we have our moments of intuition; in other words, that moment by moment we have our distinct, flash-like perceptions. In these perceptions we receive simple 'impressions,' which are capable of repeating themselves in the mind as 'ideas.'[1] Now what are the rules, he asks himself, governing the occurrence and re-occurrence in the mind of these ideas? Obviously[2] the same ideas occur again and again in our consciousness. What is it that

[1]The language is vague because Hume had not squarely considered the point. He ordinarily thinks that all our ideas are exact copies of our impressions, only slightly less vivacious.

[2]I do not think it *is* obvious, but I think Hume normally thought it was.

determines the order of their sequence? In the attempt to give an answer to this question, he first analyses the working of the imagination. Here, he says, while at first the ideas seem to follow one another quite by chance and free of rule, further investigation shows that they obey the laws of association. But what, he then asks himself, of the other processes in the mind? What happens when we are *arguing* or *proving* something? Psychological analysis shows, he declares, that here, too, the ideas follow one another in accordance with the same laws of association as in the process of imagining. Wherever there is process in the mind, that is wherever ideas follow one another, the *order* of the following is determined by the laws of association. The distinctive *nature* of the ideas which follow are not, of course, so determined. On Hume's view the nature of any particular idea which occurs and recurs is never in the least affected in itself by the place it occupies in a series of ideas. It is his whole point that the character of an idea is entirely independent of its place in the series, so that no analysis of its nature can show anything whatever about its relations to other ideas. An idea is such that it either occurs or does not occur; it cannot occur, in whatever context, in a modified or changed condition. All that can be modified or changed on recurrence is the order of sequence of ideas; and this order of sequence is determined by the laws of association.

Now this view of Hume's, given thus in outline, is at best an extremely crude and obviously uncompleted psychological theory. Yet taking it as it is, in spite of its mistakes and in spite of its incompleteness, Kant claimed in effect to be convinced by it of two things. First, that it had made good in principle a thesis which was fatal to the traditional logic as it

stood. Secondly, that any purely psychological approach to the study of the nature of thinking must inevitably result in scepticism, so that only a new logic could save the situation against psychology. That it should be possible to be convinced of two such sweeping and far-reaching conclusions by reflection on such a crudely sketched psychological theory is, of course, a very remarkable thing, and in itself is the measure of the outstanding thoroughness and balance of judgment with which Hume had worked out the philosophical background of his position, and had exhibited the procedure adopted and the general principles involved. These general principles he threw into such a high light that Kant was enabled to perceive the essential conclusions which were bound to follow, no matter what particular refinements might be introduced in the elaboration of the detail of the system. Hume exposed exactly what he was doing in a way that, for instance, Hartley and James Mill did not. And it was this greatness of Hume as a philosopher, as opposed to any virtues he had as a psychological analyst, which, as we can now see, gave Kant his opportunity. It is because, thanks to Hume, the judgment which was forced on Kant seems to be essentially sound, and seems to have been in principle borne out by the subsequent development of psychology, that it is worth while to investigate the matter more closely.

To take the first point first, Kant was convinced that Hume had made good in principle a thesis which was fatal to the traditional logic as it stood. This he phrased to himself by saying that Hume had shown once for all that thinking is *synthetic*, and that the old logic had no account to give of synthetic thinking. Logic had only dealt, according to Kant, with ana-

lytic thinking; whereas, as Hume's analysis of the causal principle had shown, all the thinking of the sciences is synthetic. So a new logic is necessary to deal with this.

Now what is meant by saying that thinking is synthetic? And can it be maintained that the traditional logic can give no account of synthetic thinking? Here Kant initially put his readers, and to some extent himself, off the point by the stress which he laid on his distinction between analytic and synthetic *propositions*.[1] But the point seems to be this. Hume may or may not be right—let this be waived for the moment as a detail—in maintaining that the laws governing the sequences of ideas in the processes which we call inferring and the processes which we call imagining are the same, but he has certainly drawn attention to an important resemblance between inference, as we find it in the sciences, and imagining, *viz.* that both are synthetic; that is, both involve the presence of

[1]The point is a complicated one. In his distinction, in the Introduction to the *Critique of Pure Reason*, between analytic and synthetic propositions, Kant explains in effect that he means by synthetic a proposition in which something over and above the apprehension of the concept of the subject is necessary to make possible the predication in the proposition. Now this 'something over and above' *might* be a new direct apprehension or intuition, as Kant sometimes thinks it is in the case of geometrical propositions. Such propositions would be better called 'syngnotic', or some such word, since there is no '*putting* together' involved at all, but rather an *apprehension* of togetherness. But in the case of the judgments of physics, Kant genuinely thinks that a 'putting together' *is* involved, and not just an apprehension or intuition of togetherness. It is this 'putting together' which he really means by synthesis. In the Analytic, Kant normally means by a 'synthetic' proposition a proposition which really involves a putting together by the mind in accordance with rules. Of course, as I have already said *ad nauseam*, to be consistent Kant would have to argue in the end that all judgments, not even excluding geometrical judgments, are synthetic in this sense. But that is not what he says in the Aesthetic. And his distinction between analytic and synthetic propositions in the Introduction is misleading.

non-intuited connexions between ideas which have themselves been derived from intuition. Neither inferring nor imagining simply consists in the receiving of intuitions. Neither of them are possible without intuitions; but both of them involve the doing something with intuitions, and that doing is not itself intuiting. In neither thinking nor imagining does the mind perceive or intuit connexions between its perceptions or intuitions; in both it arranges ideas given in perception in a certain order, in accordance with certain rules; it does not perceive or intuit that order in the ideas or between the ideas. Hume's investigation is so far convincing that it shows that in all experience we both are given something and do something to that which is given. This applies as much to inferring as to imagining. Not only, moreover, do we do something to the given, but we do something which is not necessitated or forced upon us by the intrinsic nature of the given. This has no doubt always been obvious enough in the case of imagining. But Hume has forced us to see that even in inferring the arrangement of the ideas given is not legitimised by an analysis of the given ideas; we do not find within the ideas something which was there all along to be found, necessitating that they should be put together in just this way and in no other way. An examination of any argument which turns on causal connexion will convince us of this. What we do is ourselves to put ideas together in certain ways, without control either by any intuition of connexion or by any analysis of the ideas to be connected. No doubt they can be put together rightly or wrongly, but the fact remains that they are always *put* together, and by us. And whatever it is which determines how they are put together, it is never simply analysis or simply intuition.

Thus it is possible to distinguish two fundamental theses within the doctrine that thinking is synthetic, though the two are, of course, closely bound up with one another. The first is that knowledge cannot consist of a mere series of distinct perceptions or intuitions, but involves some putting together of the given in perception or intuition. The second is that this putting together is not controlled by intuition or analysis. If the putting together is controlled by intuition,[1] it is not properly a putting together at all; it is not a connecting, but a perception or intuition of connexion; that is to say, what at first appears to be an operation by the mind turns out really to be one or several more distinct intuitions—thus knowledge is still represented as a series of intuitions, or perceptions, which the first thesis declares it cannot be. If on the other hand the putting together is alleged to be controlled by analysis,[2] this view does, it must be admitted, represent the putting together as a real putting together, *i.e.* a synthesis; but it represents it as a synthesis forced on the mind by the discovery under certain conditions of certain characteristics within the ideas, which necessitate that the ideas concerned can be put together in one way, and in one way only. This view, though *a priori* it may look a possible view considered as an account of a possible piece of mental mechanism, is shown to be inadmissible as an account of inference by Hume's examination of the working of the causal principle. Thus we are left with the con-

[1]This is the view of Descartes, for instance, and of Cook Wilson, both of whom would allow, I think, that it means that inference must ultimately be reduced in some way to intuition or immediate apprehension.

[2]This must be the view which Kant is attributing to the traditional logic when he says that it treated thinking as analytic. I have argued elsewhere that it was not held by Aristotle, or by Descartes, or by Berkeley.

ception of thought as a synthesis which really is a synthesis; a putting together which is neither intuiting or analysing, nor controlled by intuition or analysis, but a spontaneous activity of the mind, essential to any knowledge which can properly be given that name.

It is now clear, I think, that the doctrine that thought is synthetic does not depend at all on the acceptance of Hume's special view of the nature of our 'distinct perceptions,' or indeed of any particular view of their nature. No doubt Hume was as a matter of fact still thinking of distinct perceptions rather as momentary awarenesses of mental images; and it has seemed to some critics that to show that an analysis of perception does not confirm this view of the nature of momentary awareness is automatically to deprive of their real sting all the difficulties put forward by Hume. But this is to underestimate the importance of his teaching; it is to fail to distinguish between the special results of his detailed analyses and the generalised doctrines of which he became convinced in the course of conducting those analyses. Hume conducted a special analysis of our knowledge of causal relations on the basis of a special view of the nature of immediate awareness in sensation. But as a result he then put forward the generalised view that the mind does not perceive connexions between its distinct perceptions, though in all our knowledge we assert or imply such connexions. It is in effect as the author of this generalisation that Kant treats Hume with such respect. He, too, regards the problem of our knowledge of causal relations as central. But having once seen that thinking is synthetic in this connexion, he goes on to notice that the same is true in geometry, arithmetic and mechanics, as well as in theology and

morals. And he thus writes his logic on the basis of the acceptance of the view that all thinking which contributes to our knowledge of reality is synthetic.[1] Knowledge, he says, is certainly not possible without both intuitions and conceptual activity; concepts without intuitions are obviously empty, intuitions without concepts must obviously be blind—a mere blind play of images, less even than a dream. This generalisation Kant treats as standing on its own basis, not depending on any special view of the nature of intuitions. As a matter of fact, intuition is a very broad and general word for Kant, covering a good many types of immediate perception within our experience. He thinks the mind is capable of receiving sensuous intuitions, intuitions of a pure non-sensuous spatial manifold, a unique intuition of space as a whole, and he discusses the possibility of intellectual intuition of the Cartesian type. Of all these kinds his generalisation holds true. Of whatever type of intuition he may be speaking, intuitions without conceptual activity are necessarily blind. Nobody, he thinks, after reading Hume can possibly think that knowledge consists simply of an intuition or of a series of intuitions. Intuitions must on any view be such that they must, by some agency or other, be gathered and put together if they are to become knowledge.

This is why Kant is never primarily concerned in his logic to attack directly Hume's view of the nature of 'distinct perceptions.' He is firmly convinced that on any view a synthesis of the given in perception is

[1]It is true that Kant speaks as if there were some thinking which is analytic, of which the traditional logic is supposed to give a final account. But as the argument goes on it becomes more and more clear that this concession is an empty one. It becomes more and more obvious that the transcendental logic is taking all thinking as its proper province, and the alleged analytic thinking becomes the merest *caput mortuum*.

necessary to the possibility of knowledge; and it is to the problems to which the necessity of this synthesis gives rise that he primarily turns his attention. Any contribution he has to make as regards the nature of the given in perception is made only in passing, and is confined almost exclusively to such general observations about the given, considered as material for synthesis, as his analysis of the nature of the activity of synthesis entitles or even requires him to make. Kant can seldom if ever be found attempting to examine, as a psychologist might and as Reid for instance did, the nature of passive awareness, or of the nearest state to pure passive awareness which can be fixed in actual experience. His own line of attack is different. If it be granted that the mind in addition to perceiving or intuiting has to *do* something with its perceptions, how can the results of its activity have any claim to be called knowledge? This is a problem which remains, whatever view be taken of the nature of the intuitions concerned.

As possible answers to this question, there were two alternative views in the field: that which Kant attributes to the old logic, and that of Hume. Of the former almost enough has been said already. Probably a sounder interpretation of the best in the Aristotelian logic would represent it as holding a doctrine like that of Descartes and Cook Wilson, which denies that judgment and inference considered as apprehensions are activities at all; to think is not to connect, but to apprehend or intuit a connexion. This view reduces knowledge to a series of intuitions, and is, as we have seen, inadmissible to Kant for that reason. But Kant prefers to attribute to the old logic, perhaps for immediate historical reasons, perhaps simply because he thinks the view is obviously true, the recognition that

judgment and inference really are activities on the part of the mind; but the only activity allowed for, he says, is that of analysis. Now *either* analysis simply makes possible the perception or intuition within the whole analysed of what was not perceived before; in which event the so-called knowledge achieved is simply the intuitings or perceivings, the activity of analysing being merely a condition necessary to make the intuitings possible, and not serving in any way to hold the intuitions together and make them into what could properly be called knowledge, as Kant understands it. *Or* the analysis necessitates and includes within itself as one activity a synthesis; that is, analysis reveals internally within the ideas analysed characteristics, the perception of which necessitates that the ideas analysed be put together or synthesised in certain external relations, and no others; that is to say, the analysis of a certain idea necessarily carries with it a synthesis of that idea with other ideas—as the analysis of certain parts of a dissembled machine might enable us to put those parts together and assemble the machine. I do not see how any such view as this can reasonably be attributed to the traditional logic. But in any case this view also is rendered inadmissible as an account of the activity involved in judgment and inference by Hume's examination of our knowledge of causal relations. The analysis of A does not reveal either B or the causality of B as contained within A. This is therefore not the true explanation of our coming to know that A is the cause of B. And, as we have seen, Kant comes to recognise that this is tantamount to saying that it is not the true explanation of any judgment or inference whatever.

So far Kant repudiates the old logic. We must now consider the theory put forward by Hume as an

answer to the same problem. How do the ideas given in perception or intuition come to be put together to make knowledge as we know it? All we can do in this matter, says Hume, is to notice what does actually occur in our experience and to detect the general laws which underlie what actually occurs. Now what seems to happen is this: that under certain conditions the ideas attract one another without the necessity, as far as we can see, of any agency external to the ideas to compel them to do so, much as in the physical world the atoms attract one another without the necessity, as far as we can see, of any agency external to the atoms to compel them to do so. We do not see any reason why this should be so, either in the mental or in the physical world. There is no reason known to us *a priori* why atoms should attract one another, nor why, if they do so, they should attract one another in accordance with just these laws and no others. All we can say, according to Hume, is that if we look closely at our own experience or at the physical world, as the case may be, we see that this attraction does occur, and occurs in accordance with these laws. All our believings, all our so-called knowings, are found on analysis to be simply sequences of ideas which have arranged themselves in that particular order of sequence in accordance with the laws of association.[1]

[1]I pass over the paradox involved in offering this view as a plain blunt statement of what anybody may observe to occur in his own mind. If ever there was a highly imaginative theory, difficult if not ultimately impossible to verify by actual observation of phenomena, surely this is one. Actually Hume has translated a theory *mutatis mutandis* from physics to psychology, and has somehow induced himself to think that he is simply observing with an open mind obvious facts in his own experience! But such criticism is out of place here. Kant wishes as always to refute *any view of this general kind*, however well stated and perfectly elaborated in detail, not to produce mere *ad hominem* criticisms of detailed imperfections in Hume, as he considered the British critics did.

It is true that this explanation involves us in giving much the same account of the generation of beliefs that are commonly accepted as knowledge and of beliefs that are accepted as illusions; it also gives the same account of that very belief itself that these are knowledge and those are illusion! In other words, it becomes inadmissible to draw a sharp distinction between knowledge and mere belief, as we are accustomed to do. It is possible no doubt to distinguish between normal beliefs, which normally occur in normal people under normal conditions and are therefore to be found pretty generally among mankind, and abnormal beliefs which occur rarely and under abnormal conditions. But that is all; it is to this that the distinction between knowledge and belief must be reduced. True, such a view will seem to most people to be scepticism. But according to Hume that cannot be helped. This explanation of our experience must be accepted on the credit of careful observation of what actually does go on in the mind. And though at first sight it looks as though our psychological enquiry has driven us to a hopeless scepticism, when we become more accustomed to its conclusions we can see that it is not as bad as that. For many of our opinions, though they cannot be claimed to be true, are 'at least satisfactory to the human mind' and stand the test of its 'most critical examination.'[1] Only we have now thrown more light on the process by which the mind comes to be satisfied.

In all this Hume seems to be inviting us to take up in regard to logic an attitude something like this: For all these centuries logic has been giving an account of certain operations, which as a matter of fact never went on in any human mind, but which, if they could

[1] Cf. *Treatise*, I. iv. § 7.

go on, might give rise to something which might fairly be called knowledge, in the ordinary sense of that word; only it gave an account of these operations as actually occurring in the mind. Now at last a little careful empirical investigation has shown us that nothing of the sort ever does occur; what actually does go on is quite different. Let us therefore abandon these futile speculations about operations which perhaps might occur, and about a kind of knowledge which perhaps might find existence, in other kinds of minds, but which are never to be found in any human mind; and let us rather seek patiently to observe what does actually go on in our own minds, and what kind of knowledge we do actually find ourselves achieving. Let us, in a word, abandon as an impostor logic with its futile theorising about a supposedly ideal, but actually chimerical, type of knowledge, and let us patiently and humbly observe the growth of our real human knowledge by the methods of empirical psychology.

Kant, of course, does not accept this attitude. He allows that Hume has in effect made good points, and that logic as it stands cannot survive the implied criticism. But he does not believe that Hume's own method can give a sound account of the nature of knowledge; he maintains indeed that empirical psychology in itself can only issue in scepticism. He thinks that the science of logic, though it has far to go, has been working along the right lines; and the only hope for philosophy is that logic should set its house in order, give the necessary ground to Hume, and rebuild itself, cutting its losses. So far from destroying logic, Hume has finally demonstrated its vital necessity, and above all the necessity of distinguishing it once for all in all its integrity from the psychologist's empirical study of mental phenomena.

It should be admitted that in this matter Hume had himself met Kant more than half-way. Hume often, if not always, remembered that his sceptical principles applied to his own psychology. After all, what does Hume's attack on knowledge ultimately amount to? If we say that we are certain of the truth of some statement, as for instance that two and two make four, he would have us notice how in certain cases certainty is generated in the mind; and he shows us that for all that we can tell, certainty may well have been generated in this manner in all cases; and he challenges us to show reason why this should not be so. Such arguments are very disturbing; but, as Hume himself has told us, they are not conclusive. Hume cannot on his own principles demonstrate to us what will produce certainty in our minds, or even what has produced it in some particular given case. He does not *know* what causes certainty, any more than he knows what causes anything else. Even in psychology, he has learned not to seek that will-o'-the-wisp, the intelligible; he only aims at noticing the invariable. He simply shows that certain repetitions of experiences are followed by a remarkable certainty of belief. He cannot prove that there is no other factor involved in the generation of this belief; he can only say that he cannot find anything else.

Now according to Kant, Hume is here drawing in his horns more than is really necessary when the object of study is the nature of thought itself; he is at once too modest in his method of approach and too dogmatic in his conclusions. Kant feels that at any rate within limits the nature of thought as such must really be intelligible to thought itself; though he allows that this is not the case with experience taken as a whole. In studying our own actual experience we

must proceed as Hume proceeds, with the whole apparatus and method of empirical science. This doctrine is, as we shall see, vital to the central argument of the *Critique of Pure Reason*. But if we limit ourselves to the study of certain pre-conditions, necessary to the possibility of any experience, we may still hope to discover an intelligible structure within experience; here, at a price, we may find the intelligible, and not merely notice the apparently invariable, in the manner of Hume. This is the task of logic. And it is only by performing this task, Kant believes, that we shall be enabled to descry knowledge, properly so-called, within experience, and to throw light on its nature.

But, as we have said, this can only be done at a price. Though Hume has not demonstrated the superfluity or impossibility of logic, he has shown that some important concessions must be made from its original standpoint. He has drawn attention to certain characteristics within experience, unnoticed or insufficiently emphasised before, which logic, in investigating the pre-conditions of that experience, cannot afford to neglect, for the good reason that the old logic had, through lack of attention to them, assumed features in experience which were incompatible with them. We must now examine more closely the nature of the concessions which logic has to make.

If we examine for a moment Descartes' argument, we shall easily see that he is making assumptions about the nature of the mind and of its experience which Hume has shown to be inadmissible; and we shall readily recognise, I think, that he is in essentials adopting in this regard the only attitude contemplated by logic before the time of Kant. In approaching his task in the *Meditations*, Descartes reminds himself

that he has made many false inferences in the past, and has thus been led into many false beliefs. But he thinks that by a certain method, by the constant application of a certain discipline, he can avoid such false inferences in the future. He assures himself that his mistakes in the past—which were certainly his own fault, since God would certainly not have made him such as to be incapable of avoiding error—must have been due to his mind being distracted from pure thinking through the influence of his passions and of the senses generally. He therefore decides to take precautions which will ensure that he shall not be so distracted on the present occasion. He waits until he is of middle age, when his passions are no longer unduly obstreperous, clothes himself in a comfortable garment, seats himself in a room of comfortable temperature, arranges not to be interrupted, and so on. That is to say, he clearly thinks that the possibility of acquiring knowledge depends solely on the avoidance of all sensuous distraction, since then his mind will function for a period simply as pure reason and will produce knowledge. He believes, moreover, that the application of his famous *method* will enable him to achieve successfully this psychological feat.

Thus it is Descartes' view that normally all sorts of sensuous influences distract us, and so we make mistakes; but that if only we could wholly prevent ourselves from being thus distracted, errors would be avoided and knowledge achieved. On this view there are two distinct kinds of process which go on in the mind at different times: the normal ordinary process, in which the sequence of ideas is influenced by passions and by sensuous stimuli, and which issues in mistaken beliefs; and a rare process, achievable only by a difficult discipline, in which the sequence of

ideas is *wholly* unaffected by the passionate and sensory factors which influence the normal sequences, but is governed by other rules—the laws of pure thought exhibited by logic. No doubt Descartes thought it extremely difficult to ensure the occurrence in the mind of processes of the latter kind, and no doubt he thought that success was rarely achieved. But the point is that he thought that it could be done, and that the possibility of knowledge entirely depended on our succeeding in doing it. In this case he was clearly making explicit the assumptions underlying the traditional logic, which certainly regarded itself as laying bare the principles governing real thinking, and admits no doubt but that men actually occupy periods of time inferring in accordance with these laws, such inference constituting the whole of their experience for the time being.

Now Hume drew attention to the fact that empirical psychology knows nothing of this hard and fast distinction between two such kinds of mental process. It finds that there are rules of the same general kind determining the sequences of ideas in the mind whether we are imagining or are apprehending in inference; always and under all circumstances ideas follow one another in accordance with the same kind of rules. In other words, if knowledge depends on the production of a process in the mind in which the ideas follow one another purely in accordance with the so-called laws of thought, then it depends upon the achieving of a psychological miracle, which just cannot be done. This point, according to Kant, logic must grant. Here it is no use kicking against the pricks. No doubt Hume has not exhibited with final correctness the laws which do actually govern sequences of ideas in experience, but this at least he

has shown—that there are no moments in the history of the mind when those laws, whatever they are, are wholly in abeyance. As Kant puts it to himself, all our experience is imaginative; whatever are the rules governing the activities of the imagination, those rules are always operative in all our experience. When we perceive, the mind is imagining; when we write poetry, the mind is imagining; when we make a judgment or go through a scientific proof, the mind is imagining. As a matter of fact we can see, according to Kant, that without imagination these things would not be possible; but in any case empirical psychology shows us that in actual experience the imagination is always at work. There are no moments of time in which the activity of imagination is in abeyance; there are no actual sequences of ideas in which the order of sequence is not determined by the rules which govern the imagination. To be convinced of this we need not wait upon a final and complete psychological account of the nature and working of the imagination. Hume's own account, crude and unsatisfactory as it is, can assure us of this, that knowledge cannot depend on the possibility of the occurrence in the mind of a period of real experience consisting of pure thinking in accordance with the pure laws of pure reason: the possibility of knowledge cannot depend on our keeping the faculty of imagination completely inoperative. There can be no such experience in the mind, and it serves no purpose for logic to speak as if there were. This is the primary lesson which Kant learned from Hume about the general nature of experience; and his learning of it played a determinant part in fixing the structure of the new logic.

Now this means that logic is not itself the first-hand study of real experience as such, however necessary

it may be as a preliminary or propaedeutic to the study of some real experiences. In distinguishing between knowledge and fantasy, apprehension and imagination, it is not definitively distinguishing between different real experiences. There are no periods, or even moments, of real experience in which the whole experience consists wholly of pure intuiting or pure inferring, as Descartes thought there were or might be—as, indeed, we may safely say all logicians before Hume believed or assumed. To them the defence of logic against the sceptic involved the defence of this position. The notion that this position could be surrendered and the essential integrity of logic yet maintained was a new notion in Kant, though no doubt it may seem to have become a commonplace long since. But by making this concession, Kant and the logic which follows him are for better or for worse committed to the difficult and precarious view that logic is analysing not experience itself, but certain *forms* of experience—forms which are to be found in all experience at all times, not *ways* of experiencing or *kinds* of experience, in the sense that among a number of selected experiences one will be found to be distinctively of one kind, another of another. This new view,[1] of course, has its own difficulties; it is not easy, for instance, to see exactly what is meant by a 'form' of experience, and a single false step will lead us, by way of speaking of activities which can never be found taking place in any individual mind, to the worst and most engulfing of Absolutes. But, difficult or not, this is the path to which Kant's logic was certainly committed by his understanding of Hume.

[1]In a sense, I suppose, logic was always committed to this view by its very nature as logic; but the traditional logic had not been forced to make its standpoint clear, nor, as we have seen, did it recognise its implications.

This is only another way of saying that logic repudiates the method of psychology as a way of solving the problems of logic. But in doing so it finds itself bound to allow to psychology the last word in its own sphere—in particular with regard to the time-series in the experience of individual minds. It is the business of the empirical psychologist to determine the rules which underlie the sequences of mental states in real experience, and to his pronouncements the logician as such can have nothing to say, except that he may offer the general criticism of method, and of the competence and limitations of method, which logic must offer in the case of any and every scientific enquiry. Logic must admit that its own investigations throw no light on the actual order of sequence of ideas in actual experience; for it is dealing with forms and not with actualities. When the logician says that one thing presupposes another, that one activity is necessary to the possibility of another experience, he must admit unreservedly that these statements have no temporal implications, and that about temporal sequences in the mind he has nothing to say. This does not necessarily mean, of course, that logic allows that temporal sequences are an easy matter to determine or to understand, and are readily discoverable and explicable by empirical analysis, so that empirical psychology is bound to be right in the matter. But it does mean that logic can have no properly logical ground for asserting authoritatively that experiences *must* follow in a certain order, and thus dictating as it were *ex cathedra* to the empirical analyst—a claim which logic has too often arrogated to itself in regard at least to those periods in our waking experience when we are said to be 'thinking.'

It must be freely admitted that this drawing in of its horns by logic—its recognition that it is not analysing real experiences as such, but is examining the nature of pure reason considered as a conditioning form of real experience—has made it difficult for logic to envisage clearly just what its own subject matter is. If you admit, as the Kantian logic does, that the so-called ' activities' and 'operations' you are examining have never occurred as real experiences in any mind, it is more difficult for you to keep a sure and firm hold upon your subject matter than it is for the psychologist, who can always find his by simply scrutinising everything that is going on in his own mind in any given moment or moments. And that is why logic is forced to lay such stress on method; it is only by the disciplined application of method that logic can confine itself to its own subject matter. In particular it is only by rigorously holding on to its own method that it can keep itself differentiated from psychology. If it relaxes its hold at all, it will at once be in danger of speaking of the operations and activities with which it deals as if they were real experiences—a mistake of which, if we follow Kant, the study of Hume should have cured it once and for all, and which, if committed, can only involve it in the very scepticism which it exists to destroy.

CHAPTER VI

KANT'S THEORY OF JUDGMENT

In facing the problem of the judgment, Kant is, according to his own account, primarily concerned with the synthetic judgment, especially the *a priori* synthetic judgment. It has long been recognised, however, that his general view in the end requires him to hold that all judgments are synthetic in his sense of the word, and also that no judgment is wholly *a priori* or wholly *a posteriori*. In the long run, in so far as he keeps in touch with the facts in his enquiry, in analysing what he calls synthetic *a priori* judgments he is analysing judgment as such, and in doing so is paying special attention to two features which all judgments as such possess. This he tended more and more to realise himself. It is therefore necessary to pay close attention to these early distinctions in order to be able to understand what his mature view regards as essential characteristics of all judgment.

In the first place it must be recognised that on Locke's view all judgments are, according to Kant's terminology, synthetic. This is obviously so, and has been always recognised to be so, in regard to the judgments which represent sensitive knowledge (which Locke himself calls 'judgment'). Here the predicate is asserted of the subject, not by virtue of an analysis of the subject, but by the direct perception that this predicate attaches to this subject. This, as we have said, has always been recognised; on Hume's view, it is

allowed,—and on this side Hume is the follower of Locke—all thought is synthetic. But with regard to Locke's account of intuitive and demonstrative knowledge the point has not been so clearly accepted. Locke says that this kind of knowledge, which is the only knowledge strictly so-called, proceeds by the perception of agreement and disagreement between our ideas; not, that is, by the analysis of one idea which is the subject, but by the immediate intuition of a relation between two ideas. At times at least Descartes held the same view. He held that in mathematics every judgment requires a fresh *intuition*. This is to represent judgment not as analytic, but as synthetic.[1] Yet both Descartes and Locke represented these judgments of mathematics as having the exact and universal character which Kant attributes to *a priori* judgments. That is to say, both Descartes and Locke represent the judgments of mathematics as, in Kant's terminology, synthetic *a priori* judgments.

Thus when Kant asked, How are synthetic *a priori* judgments possible?—Descartes and Locke might both answer, By intuition. Just as synthetic *a posteriori* judgments are rendered possible by specific acts of sense-perception, so synthetic *a priori* judgments are rendered possible by specific acts of non-sensuous intuition. Now as regards the judgments of pure mathematics, Kant himself seems on the whole to accept this answer in the Transcendental Aesthetic of the *Critique of Pure Reason*. Here he adds nothing, except to make the doctrine more explicit and self-

[1]Of course, this view does not represent mathematical judgments as 'synthetic' in the special sense in which Hume, and ultimately Kant, exhibit the causal judgment as synthetic. But it does represent them as synthetic in the sense in which Kant is using the word in his distinction between 'analytic' and 'synthetic' propositions. Cf. *supra*, p. 95, note.

conscious, and to draw from it certain new conclusions about the nature of space and time, which do not concern us at the moment. But this is not the problem which he is attacking in the Analytic, when he gives his deduction of the categories. Here he is considering primarily the judgment of physics, which he regards as both synthetic and *a priori*, and yet differing from the judgment of mathematics. This difference is seen to lie in this, that physics is not intuitive, it is discursive.[1] The judgments of physics are *synthetic* and *a priori*, but not intuitive. How are such judgments possible?

It will perhaps be well to say again at once, that the results of Kant's enquiry into this matter make it impossible for him ultimately to hold on to the view of the mathematical judgment given by Descartes and Locke, and by himself in the Aesthetic. He is forced in the end to admit that the characteristics he is discovering in the judgment of physics are characteristic of all judgment. Kant's analysis of the judgment of physics gives the beginnings of the Idealistic theory of the judgment.

In recognising that the judgments of physics are *a priori* but not intuitive, Kant made a point of first-class importance in the development of logic. Of course, it took him some time fully to understand his own point, and even longer to see clearly its implica-

[1]On Kant's considered view, what is meant seems to be something like this. The thinking of mathematics of itself enables us to *answer* our questions; *e.g.* in $2 : 4 :: 6 : x$ our thinking enables us to determine x, i.e. $x = 12$. In physics, on the other hand, our thinking gives us a formula which enables us to *search in experience* for the answer to our question, and (presumably) to recognise it if we find it. The reasoning of physics is just as 'universal' and 'necessary' as that of mathematics, but instead of giving us truth it guides our search for truth. Clearly this view needs development in detail (cf. especially *infra*, pp. 293 seqq.); but this general indication of its nature is sufficient, I think, for the argument here.

tions. At first he seems to have believed in a pure physics, which lies at the basis of physics proper and consists of one or two intuitive *a priori* propositions: but it is clear that there are compelling reasons for abandoning this view. In regarding the judgments of mathematics as intuitive, Descartes, Locke and Kant had meant that each single statement was intuited, that is, that it was by intuition apprehended as on its own merits just certainly and timelessly true; whatever else might be true or false, whatever might turn out to be the implications of the given statement, the statement itself was certainly true. Now whether or not they were right in thinking that the judgments, or some of the judgments, of mathematics are of this kind, it is certain that the judgments of physics are not. There is no single proposition of physics but the history of science has shown that it must from time to time be reconsidered, modified and restated—and then only provisionally so. Yet Kant could not admit that these judgments were wholly *a posteriori* and empirical, as Locke thought; for if this be maintained, it is impossible to avoid the conclusions of Hume, and these obviously do less than justice to physics. It seems then that there are in physics *a priori* statements, which are yet not intuited in the sense in which the propositions of mathematics are alleged to be intuited. It is of these judgments that Kant seeks to give an account. To logic Kant's enquiry is of importance because of the light it throws on the nature of judgment as such. As we shall see, Kant's conclusions are such that, if he is right about physics, he must abandon his belief in intuitive judgments in mathematics, and offer his new view as an account of all judgment. But this will become plain in the sequel.

Kant approaches his problem by asking himself

how it has come about that physics has at last finally achieved 'the sure way of a science.' The physics of Galileo and Newton he regards as an essentially new science, unknown to the world until recently. By what inspiration was this step accomplished? It has sometimes been pointed out that modern science is distinguished from that of previous ages by the extreme carefulness and the exhaustiveness of its observation, and by the meticulous accuracy of its measurement. But this is not the point fastened on by Kant. He rather seeks to determine how it has come about that so much has been made of all this observation, how it is that accurate measurement has come to be so valuable. His suggestion is that the secret of success lies in this—that the modern scientist in his observations approaches nature not as a pupil, but as a master, asking questions and seeking to make nature answer them. He knows exactly what he wants to know, and he looks for an answer to that question and that alone, and goes on patiently observing and experimenting until he gets his answer. He even uses his ingenuity to choose suitable moments, convenient viewpoints and satisfactory backgrounds, in order to be able to observe just what he wants. No doubt the patience of his observation is important; but it is not the essential thing. Purposeless observation is no more valuable for being patient and meticulous, as the history of many a science has surely demonstrated. The essential thing is that the enquirer should know just what he wants, having, as we say, thought it out beforehand. It is this 'thinking it out' in which Kant is interested—a thinking which does not give an intuitively certain, true answer about the universe, but whose value lies in the fact that it makes observation and measurement valuable. Kant implies that it is possible not to approach

nature in this way: previous physics had not exploited this new method, and modern physics gained its distinctive success by doing so. This thinking, not being intuitive, Kant calls discursive: and it is the judgments which make up this thinking that Kant is examining in the Transcendental Analytic. How can this faculty produce statements which are not *a posteriori*?

We now know definitely what faculty Kant is examining. He calls it the faculty of 'judging,' and from his analysis as a beginning has sprung the whole Idealistic theory of judgment. Now this may be all wrong; it may be that this faculty is not the faculty of judging, but something quite different, though a real faculty. But for the moment it will be well to waive this question and simply consider Kant's account of this faculty taken in itself—that is, the faculty by which the scientist does the 'thinking' which makes his observation, measurement and experimenting significant and valuable. We may then afterwards determine whether Kant is right in calling it the faculty of judging, and the Idealistic logic is right in developing its theory of judgment from these beginnings. Certain it is that this faculty does not produce intuitive knowledge; it produces something which the scientist accepts or rejects—a hypothesis which may be true or false. Yet though the thinking does not guarantee the *truth* of the hypothesis it produces, it is for all that essential and valuable; that is, it guarantees *something*. Unless this faculty is at work, scientific knowledge is not attained; its working must therefore be scrutinised, remembering always that it is certainly not an intuitive faculty.

How, then, are synthetic, *a priori* non-intuitive judgments, such as the judgments of physics, possible? Kant's answer is that they are only possible to

a spontaneously active mind, which has a certain character and unity of its own. And on further analysis it is seen that if Kant is right about this, the same mind could not in the nature of the case be capable of intuitive judgments, in the sense in which the judgments of mathematics had been thought to be intuitive. If, as Kant urges as the result of his analysis of physics, judging is essentially a spontaneous activity informed through and through by the intrinsic nature of the mind which judges, that mind being itself a unity, then no judgment can be intuitive in precisely the old sense. If the mind has achieved success in physics in just the way that Kant alleges, then it could not have achieved the knowledge of mathematics attributed to it by the old view.

From the very beginning of his discussion Kant lays great stress on *unity*. Judging is itself a unifying act. By this he means that when we judge we *make* a unity. According to Kant the old logic had missed or ignored this essential feature of judgment. It is true that the formation of certain concepts involves a unifying activity, and it is perhaps compatible with the old logic to recognise this. But the activity of forming by abstraction a concept which may serve as a predicate and the activity of asserting a predicate of a subject are not the same activity; the unity of a concept or predicate and the unity of a judgment are not the same unity. It is the unity of judgment which Kant wishes to stress. He is right in urging that the only activity recognised in previous modern philosophy was the activity involved in forming general ideas. Here the rationalists would not have allowed the existence of activity, though the empiricists would. But both rationalists and empiricists so far accepted the traditional logic as to regard the mind

as led by the nose, as it were, by its general ideas in the rest of the process of coming to know. In all this the mind was thought of as passive. They were none of them prepared to allow that, granted the notion of the subject and the notion of the predicate, further activity is involved in asserting the predicate of the subject. They missed the fact that judging is itself an activity.[1] Yet according to Kant it is only by recognising this that the method of physics can be understood.

As regards the old logic, the point is perhaps worth further elaboration. The indifference to judgment as an essential activity of mind may be clearly seen as an inheritance from Socrates—or at least as derived from a natural interpretation of the implications of the Socratic method. When Socrates went about convincing himself of the ignorance of himself and of other people, he did so by showing that everybody used words without knowing what the words meant or what they meant by them: that is, they could not give any clear account of what the words meant without involving contradiction. He took it for granted, and his hearers took it for granted, that this difficulty must be overcome *before* there could be any advance in human knowledge. It certainly did not occur to him or to his critics, as it did to Berkeley, to admit the justice of this criticism of the use of scientific terms, and to defend it, maintaining that it is only by recognising this handicap and yet boldly going ahead that science can advance and the meaning of the terms in question become gradually clearer. The whole emphasis was laid by Socrates on the defini-

[1]Attention is drawn to the existence of this faculty of 'judgment' by Locke; but he entirely fails to see the revolutionary significance of his view.

tions, or the final clearing up of the meaning of concepts. Every effort was to be made to ensure that no use was made of terms which could not be 'defined' in this technical sense. From this position it was but a small and natural step to take it for granted that this matter of definition was the whole battle; that if we only used words whose meaning we could define we *could not* make a false statement—its falseness would be patent on the face of it. If we defined our predicates, we *could* not assert them wrongly of subjects. The taking of this step is seen to be implicit in the doctrines of the old logic. If we look after our predicates, it says in effect, our statements will look after themselves. Thus the act of asserting a predicate of a subject—which Kant calls judging—slips into the background, as not being in need of special scrutiny.

From this humble position Kant rescues the judgment, and places it in the limelight, once and for all as far as the Idealistic logic is concerned. The activity of judging, he urges, is the fundamental act of the mind; it is here that is to be found the root both of knowledge and of error. The activity of forming empirical concepts—if it can rightly be called an activity at all—is derivative; concepts are formed, in so far as they are formed, by series of judgments and ratiocinations; so that the activity of forming a concept is the activity of making a series of judgments and ratiocinations. The judgment is the fundamental unit of the mind's activity.

Judgment then, which is the vital thing, is not an analysis of concepts, since the concepts themselves are arrived at only through series of judgments. Nor is it intuitive, at any rate in the case of physics. What, then, is it? Certainly it is an act—it has taken the place of abstraction (which was demolished by

Berkeley) as *the* vital act in knowledge. This at first is all we know of it, that it is an act. But if it is an act, it is the act of an agent, and must be through and through informed by the essential nature of the agent. Thus Kant asks himself, Of what nature must be that agent, whose acts are the judgments of physics? And he seeks by arguing from the nature of the structure of physics to determine what must of necessity be the nature of the mind which made that structure. From his point of view it is right and proper to talk of 'structure' and of 'making,' for he thinks of thinking as a spontaneous activity, of judgment as an act.

This attitude obviously involves a complete break with old theories of knowledge. On the old theory 'knowing' was entirely distinguished from 'acting' or 'doing': while it might be admitted that certain actions often accompanied the state of knowing, and even that without these actions certain specific knowledge or apprehension was not possible, yet the acting was entirely distinguished from the apprehending, and was regarded as preliminary to it—an act was indispensable to knowledge, but not part of the knowing as one indivisible action. Thus in apprehending the mind was not doing or making anything, but simply being affected by an object. New knowledge was in the end gained wholly by direct apprehension—either intuition of some kind or sense-perception—in which the mind was affected, not affecting. In so far as the mind was active in analysis, this did not bring new knowledge: it was simply the analysis of old apprehensions, arranging old knowledge in a new order. Thus knowledge, being pure affection, was determined wholly by the nature of the object, not at all by the nature of the mind. While desires, volitions and even opinions were recognised to be largely deter-

mined by the nature of the mind, apprehensions were not. The object was apprehended just as it was: in getting itself apprehended and understood by the mind it made no concessions to the nature of mind, so to speak. Knowing or apprehending was not an act, but a passivity or affection. Furthermore, since it seems that what is known or apprehended is apprehended as formulated or stated, even to 'formulate' or 'state' what was apprehended was regarded as a passivity or affection. Perhaps it would be fairer to say that no distinction was drawn between apprehending and formulating or stating the apprehension,[1] though, of course, the statement might or might not be made aloud. In any case, to apprehend a particular fact as expressed in a statement or proposition was regarded as a passivity or affection, having no activity included within it, though it might involve some particular activity as a necessary preliminary.

This old view of knowing or apprehending as wholly passive had much to be said for it. It goes against the grain with everybody to accept the Kantian view that to know is to 'judge,' and that judging is an act, *doing* something. We are all prepared to admit that we have something to do with the making of our 'judgments' (in the ordinary application of the word) or 'opinions.' We admit this as obvious in the case of false judgments or false opinions. But to represent all scientific knowledge as judgment we feel is a different matter. When we know, we know things as they are—so we are accustomed to think: indeed this is what we mean by knowledge. We do not make things what we know them to be; nor do we make ourselves know them to be such rather than such. What they are, that we know, or should know if we

[1]Cf. *infra*, pp. 242-8.

knew, and making has nothing to do with it. It is certainly a common view that all knowing is direct apprehension, intuiting or perceiving—a passivity, not essentially involving an activity of any kind.

We must remember, however, that Kant is investigating physics and the alleged knowledge of the physical world which physics gives us. And he is maintaining that this knowledge is not direct apprehension. The statements of physics, he says, are judg ments, and judging is activity. Waiving for the moment the question as to whether our knowledge of mathematics is direct apprehension, can this be maintained of physics also? As we have already seen, it cannot. There is no statement in physics which is not from time to time modified and restated: yet who shall say that physics is not acquiring new knowledge? Kant therefore puts forward the view that in physics knowing is judging, and that judging is an act which like other acts is determined as regards its form by the nature of the mind: thus it is certainly not wholly determined by the object, as the old view maintained it to be. The form of judgment is determined by the intrinsic nature of mind: and it is from this point of view that we must go on to develop a sound theory of judgment.

It may seem that this is a dangerous view; for if it be admitted that knowing, like acting, is determined as to its form by the nature of the mind which knows, it may seem that the specific characteristics of knowledge are denied at one blow. It is commonly admitted that particular actions are at least in part affected by character, and character is affected by the whole of a man's experience. And it would seem that the Kantian view will be forced to maintain that what a man comes to know at any given moment is determined, not solely

by the object before him at the moment, but also by the whole of his past experience. Where then is gone the universal and exact character of scientific knowledge? It seems that the view must admit that knowledge is as personal as action; and thus that it cannot stop short of extreme scepticism.

Whether the Kantian view can in the end preserve itself from this disastrous outcome, it is at the moment too soon for us to attempt to determine. Certain it is that neither Kant nor the writers of the great Idealistic logics have developed it to these conclusions. This has been left to the psychological writers of more modern times—Kant and the Idealists being always very critical of psychology. They recognised from the outset that the universal and exact character of scientific knowledge is a fact which cannot be denied, but must be explained: only they reject the old explanation in terms of direct apprehension—whether non-sensuous intuition or sense-perception. It has to be explained compatibly with the recognition that discursive thinking is an active operation which plays an essential part in knowledge, and that being active it must be informed by the nature of the mind which thinks. No doubt physics is knowledge of a physical world, but for all that it must be remembered that mind has imprinted its own character on the structure of that body of knowledge which is physics, and that that structure has affected every single statement contained in that body of knowledge. Paradoxical as it may seem, the Idealistic logic has set itself the problem of maintaining that in apprehending we are spontaneously active, and yet that our knowledge is knowledge of a world independent of the knower. Recognising this as the problem, Kant draws a conclusion very different from that which was drawn by the psycho-

logical writers, and which might at first sight seem to follow from his premises: and he seeks to show that the contention that scientific knowledge is universal and exact and of an independent real world is, in any sense in which it is sound, perfectly compatible with the view that thinking is a spontaneous activity, dependent for its form not on the nature of the object, but on the nature of the mind. In doing this he works out further his account of the nature of the judgment, by developing his celebrated doctrine of the Transcendental Unity of Apperception, to a consideration of which we must now turn.

CHAPTER VII

THE TRANSCENDENTAL UNITY OF APPERCEPTION

As has been said before, Kant lays great stress on *unity* in knowledge. He says again and again that judgment introduces unity into our experience. This accords well with his view that judgment is an act, for it allots to the faculty of judgment something to do. As we have seen, it is the act of judgment proper which introduces this unity, not the process of abstraction by which predicates are said to be formed—as was maintained by the view which Berkeley attacked. Now when Kant lays all this stress on unity, to what is he referring?

According to Kant geometry is a unity—a unified body of knowledge. It represents space as a unity. The judgments of geometry are not merely a collection or aggregate of statements, methodically arranged. They form a systematic body of knowledge; they are a unity in a sense in which a mere collection or aggregate of propositions is not a unity. This is an important point, and Kant is quite right. Similarly physics is a unity, and represents the physical world as a unity—not, that is, as a mere aggregate or collection of bits, but as a systematic unity, in which every part is essentially related to every other part, and no part would remain the same if its relations to other parts changed. The same applies to the particular statements which go to make up the body of know-

ledge; they form a system of knowledge, a unity. Again every man's own experience taken as a whole is a unity. It is not a mere aggregate of isolated and independent bits of experience; it is not just a number of integral self-contained experiences, loosely hanging together like onions on a string. Every fresh experience is assimilated to form part of his experience as a systematic whole. Any supposed experience which was not so assimilated would disappear as if it had never been; it would be no experience which could be called his. There are no unassimilated pieces of experience: it is an essential characteristic of mind that it must absorb everything into a systematic whole—not a mere methodical collection, arranged on some haphazard principle, but a real unity.

Kant attaches importance to all three of these unities,[1] and each one plays a due part in the working out of his logical theory. How do these unities come about? In regard to the first, the unity of geometrical science, Kant usually gives an old-fashioned answer; but it is necessary to insist clearly on this view of his in order to distinguish it easily from the more characteristic Kantian account of judgment, which he gives in connexion with the other two. The propositions of geometry form a unity, Kant says, because the mind intuits space as a unity: geometry is intuitive in this sense, that space is intuited as a unified whole, and every part of space is intuited as a part of the one space which is a unity. This is a matter of direct immediate apprehension: every statement in geometry represents a direct apprehension. Thus Kant's account of geometry is this—Our knowledge of geo-

[1] *i.e.* the unity of geometrical knowledge, the unity of physics, and the unity of the whole experience of any individual person. Corresponding to the first two are objective unities, the unity of space and the unity of what Kant calls 'nature,' the object of physics.

metry is a systematic unity because space is a unity, and is directly apprehended by us to be a unity, and every part of it is directly apprehended by us as a part of that unified whole. This view is old-fashioned, because it represents the unity in geometrical knowledge as due, not to the nature of the mind, but to the nature of the object, *i.e.* space—which is not given its characteristic unity by our judgments, but has it independently and is intuited by us to have it. This view places Kant's metaphysics in great difficulty in regard to space, since it forces him, in spite of the obvious difficulties, to distinguish in respect of their independent reality between space on the one hand and bodies in space, or 'nature,' on the other; but this does not concern us here. In any case, we shall see in the sequel that Kant ought to have reconsidered this view of geometrical knowledge[1] in the light of his doctrine of the Transcendental Unity of Apperception. It needs to be mentioned here in order to emphasise what Kant's characteristic view of judgment was not.

Kant thus made a dying attempt, as it were, to explain the unity of geometry in terms of intuition or immediate apprehension. He makes no similar attempt in regard to the other two unities. He does not maintain, or seek to maintain, that when the physicist represents the physical world as one *world*, having a systematic nature of a certain specific kind, he does this by intuition because he intuits or immediately apprehends it to be so. And here Kant seems to be right. It is perhaps possible to maintain that when geometry appeared as a science, the whole of it was worked out at one blow correctly: in which event it might be

[1] I have discussed elsewhere (v. *infra*, pp. 296 seqq.) an alternative view of geometry, which may perhaps have been entertained by Kant. But I think the one indicated here was really his view in the Transcendental Aesthetic of the *Critique of Pure Reason*.

maintained that the man who worked it out was working by direct apprehension of the real nature of space. His statements would then fit into a unified system automatically just because the space whose nature he was apprehending bit by bit was itself a unity—that is to say that the statements, though representing single apprehensions one by one, would fit into a system without modification, without indeed any effort whatever on the part of an active mind to make them do so, because each statement represented a direct apprehension of a bit which was a bit of one space, a systematic unity. In this process of apprehension, there would be no certain trace of an active mind at all. It is just possible to offer this as an account of geometry, because we are accustomed to think of its propositions as absolutely and timelessly true—perfectly true and perfectly correctly stated.

No one, however, would venture to say this of physics. Yet the statements of physics at any moment of its history form a systematic unity; physics always represents the physical world as one world, and it has an explanation of the way in which the parts fit together within it to make a systematic whole; the conclusions of physics are always systematic and a unity, and it is essential to the progress of the science that they should be so. Yet nobody thinks that this system of statements represents the unity of nature *as it is*. It is therefore not possible to maintain that the systematic unity of physics is due to intuition. It may perhaps be maintained that space is intuited by the geometer to have the particular systematic unity he attributes to it: but nobody could say that nature is intuited by the physicist to have the particular type of unity which he attributes to the physical world. The account which Kant gives of geometrical know-

ledge cannot be given of physics, once it is allowed that its statements must always form a systematic unity. If Kant can maintain this, he has shown that the judgments of physics cannot be intuitive.

It is now possible to see what Kant means by saying that the act of judgment *introduces unity*. He is maintaining that the essential thing in physics is that all statements must go to make up a systematic unity: this is the lesson of modern physics. It is the business of the faculty of judgment to see to it that the statements made are systematic in character; it is *not* its business to see that the statements are true. They may be true or they may be false, but they must be systematic. It is just because the mind has a faculty which is able to ensure that statements are systematic that the advance of physics has become possible. The physicist does not attempt to accept or reject each single proposition taken in itself; he does not simply examine it by itself alone and expect to intuit its truth or falsity. He rather proceeds to work out its implications, and he finds that to accept any single statement is to accept a whole view of nature; the statement carries with it by implication a complete unified systematic account of the physical world; this he works out and holds clearly in his mind before he attempts to go to nature to observe; thus he goes not as a pupil, but as a master, forcing nature to answer his questions. He himself chooses at what point he will test his systematic account; he then chooses a favourable moment, constructs a suitable background, etc., etc. But it is not this actual test with which we are primarily and directly concerned; we are analysing the *thinking* which goes on as a necessary preliminary to the test. Here, as we have seen, what is essential to the physicist is that he should have a clearly worked-

out systematic account. What is required of his propositions is that they should fit into a system: it is not required of them—it is no use to require it—that they should be necessarily true. But it is required that they should be such as to have implications. This, then, according to Kant, is the work of the faculty of judgment: that it makes propositions which have implications, each single judgment carrying with it by implication a whole system of judgments, giving an account of the universe as a unity. Granted this faculty, it can be explained how modern physics has advanced as it has; without it, we should have either to maintain that the propositions of physics are intuitive and certainly true as they stand, or to accept Hume's account of science, which involves scepticism. Neither of these courses is admissible to Kant.

The analysis of physics has thus made it clear that there are judgments which carry with them whole systems of judgments, and yet are neither intuitive nor certainly true. It is clear that the mind is capable of making judgments of this kind—judgments which may be true or may be false, but certainly have systematic implications; and logic must take account of the fact that the faculty of judgment works in this way, at least in physics. How is this act of judgment possible?

In giving his answer to this question, Kant proceeds to examine the method of physics more in detail; he investigates with some accuracy how it is that physical science comes to give a systematic account of the universe—that is, how it makes the advance from a more or less methodically arranged collection of particular observations and measurements to a systematic conclusion. Yet though he spends some care over this empirical analysis of the

actual procedure of the physicist, Kant claims to be giving a theory of judgment as such. This comes about in this way. He first seeks to gain a hint from his special investigation as to how the scientific mind does actually work: he then generalises from this about how mind in general works;[1] then, finally, he tries to prove that it is only by working in this way that certain results—*e.g.* certain triumphs of physical theory—could possibly have been achieved. It is this last argument which is important from the logical point of view, because it is by this alone that he seeks to prove that what he is putting forward is a genuinely logical theory of judgment.

Be that as it may, and whatever be the order of procedure by which Kant arrived at his view, that view seems to be as follows. Of what kind, he asks, must the mind be if it can ensure that its judgments have a systematic character? It can only do this, he answers, if the faculty of judgment is a faculty of rules; if in judging the mind is bound by certain rules which it cannot break—not merely general rules, contingently forced upon the mind by its experience, like the 'gently persuading' laws of association of Hume, but absolutely inflexible universal laws which can never in the nature of the case be broken—a condition which can only be fulfilled if the laws in question are laws of the essential constitution of the active nature of mind. The faculty of judgment *must* be a faculty of rules, because only so could it produce the results which it does produce, *viz.* statements which necessarily fit into a systematic whole. If the mind in its activity necessarily and universally obeys a rule, we

[1]As a matter of fact, he is often unnecessarily obscure because he gives his conclusion straight away in an extremely general form without explaining from what he is generalising, though there are often indications of this somewhere in the neighbouring context.

can then see, says Kant, that its judgments must be bound inescapably by their form to a systematic unity; then we should expect the mind to gain such knowledge as it does gain by constantly systematising its experience—and this was what we had to explain.

At this stage, as has been indicated before, Kant seems to have gained some insight as to the real meaning of this somewhat formal and general view by considering the special case of physics. Reflecting on the case of 'the philosopher who was asked the weight of smoke,' Kant emphasises that the essential thing to notice about his thinking, is that he is throughout universally bound by the principle that in all change something remains quantitatively the same before and after. Universal adherence to this principle makes all the philosopher's statements consistent, and forces his account of the universe into a systematic unity. Kant draws attention to two other fundamental laws, beside the law of conservation, which operate in the same way—the law of causality, and the law of action and equal and opposite reaction. Kant himself gives insufficient attention to the relation between these laws—*e.g.* as to whether they are all reducible to one law, or whether, though irreducible, they can all operate simultaneously and co-operatively without disturbing the systematic unity of experience. He shows considerable awareness of the presence of a problem here, but gives insufficient attention to determine the answer. But this does not, for the moment, concern us. What is to the point here is that when Kant speaks of the mind as being universally bound in its activity of thinking to keep an inflexible rule of its own, and as thus achieving systematic unity in its judgments, he illustrates this to himself by the part played by the law of conservation in determining

the unity of physical theory. If the physicist allowed himself a single infringement of his fundamental law, his science would be in chaos until he replaced that law by a new one which was universally obeyed. Only at the cost of universal obedience to a principle can systematic unity be secured.

But it must be remembered that this reference to physics provides no more than an illustration. It may be true, and no doubt it is true, that physics works in this way. It may be true that science generally can only achieve a systematic theory by universal adherence to a single principle; and if it is true it is an important contribution towards the understanding of the method of science. But, granted all this, it might yet be maintained that here is no more than a trick on the part of the scientist, used by him because it has been found to be useful, and that there is no ground for maintaining that it is part of the essential nature of the mind's activity whenever it thinks. And it is this which Kant seeks to prove it to be. Kant has to show that he is giving no mere empirical account of the working of the mind of the physicist, but a demontrated exposition of the essential nature of mind.

And yet even at this stage we must be careful not to do less than justice to Kant's achievement. If he has shown no more than that the scientific mind must work like this to produce scientific knowledge, he has at least thereby shown that mind in itself is *capable* of these things. He has thus made use of the results and achievements of the sciences as evidence of the existence in the mind of faculties and capabilities which his predecessors had not allowed the mind to have. And this is an important step in logic: it has shown that there is more in thinking than a mere series of direct apprehensions, and that discipline, or continu-

ous and universal obedience to rules, is an essential feature of some thinking; and further that the mind is capable of such discipline—even though it has not yet been shown that the mind in all its thinking from beginning to end necessarily works in just the same way, in principle, as the physicist has been forced to work in order to achieve his results. Furthermore, it may be said that the ordinary man is not likely to press this latter point against Kant. The ordinary man is as a rule quite prepared to allow, with Descartes and Locke, that the thinking of physics is thinking at its best, and that the mind must have been put through all its paces in achieving the works of 'the incomparable Mr. Newton.' So that he will think little harm done if the thinking of physics is taken as representative of thinking in general, and logic allows itself to be indebted to an analysis of scientific proof.

But it is to the credit of Kant that he himself did not uncritically accept this point of view. He carried his investigations further. It is here that the third kind of unity to which we referred early in the chapter becomes important. Kant's view is that a self is not a self unless the whole of its experience is rounded into a unity; I cannot recognise a particular experience as my experience unless on scrutiny I can see that it is inextricably bound up with the rest of my experience, and that without it other particular experiences could not have been mine, nor could my experience as a whole be what it is. My recognition therefore of myself as a person continuously existing through time is only possible through my recognition of my whole experience as a systematic unity. Furthermore, if I carefully scrutinise any particular momentary experience, I shall see that it could only be just exactly the

experience it is because I am I—because the whole experience into which it has to fit in becoming an actual experience is precisely this and no other. I can thus only determine the nature of the object by also determining the nature of myself: and when I say the nature of myself in this connexion, I mean precisely this systematic unity of experience of which this particular new experience has to become an integral part in becoming my experience at all.

Any new awareness which did not fit into this unity of experience, would be, according to Kant, 'a mere blind play of representations, less even than a dream': certainly no such awareness could, on his view, be recognised by me to be *my* awareness. When I recognise a particular experience to be mine, I do not do so by any immediate intuition, or by pure memory, or by demonstration arguing from the intuited nature of the universe, or of God, or of myself—there is no intuition concerned in the matter at all. I simply recognise it as an essential part of my experience as a unified whole. If this was not part of my experience, then none of it was my experience, and I have no ground for believing in the existence of any such person or thing as this 'I.' Thus my very consciousness of myself is only possible because my mind has this faculty of necessarily, because of its own nature, binding its whole experience into a systematic unity. Without the activity of this faculty we should have no consciousness of self, and no consciousness of objects—and our whole experience would thus be a mere blind play of representations less even than a dream. And this it certainly is not.

Thus Kant seeks to prove that the Transcendental Unity of Apperception is through and through the most fundamental and essential thing about the know-

ing mind. As to the ultimate value of his argument, I have always found it impossible to make up my mind. On the psychological level there is no doubt a great deal to be said for the view. An essential demand on the part of the mind for the systematisation at all costs of its experience is empirically verifiable; and questions in regard to personality and continuous identity are no doubt commonly solved by us and by the psychologist in this way. No doubt each one of us has a view of the world as a whole which determines his actions and reactions; and no doubt this world-view both is modified by new experiences, and also itself determines our understanding of new experiences. If our view, as a unity, is constantly and unduly upset by every fresh experience, so that we at once re-systematise our past experience in the light of the new, we show weakness and lack of balance in one direction; if our previous world-view has so firm a hold upon our minds that we misapprehend what is before our very noses and plain for all to see, we show weakness and lack of balance in the other direction; if we fall half-way between these extremes we show intellectual strength of mind, sane judgment and a sound capacity to learn from experience. But in all these cases alike the determination of the mind to systematise seems to be an essential feature of its very life. This feature is there to be seen in everybody: in the philosopher certainly; in the other-world fantasies of a Mary Rose, obviously; in the sceptic it is not far to seek; in the madman, in whom all the facts of his experience have to be squared with the fact that he is Julius Caesar, or that sticks and stones are people, or whatever it may be; and certainly not least in the plain, blunt man who refuses to believe anything which is not warranted by the facts which he himself

observes. In all alike the need of the mind for system is there to be seen, and it seems to be clear that this activity of systematisation goes very near to the roots of its life.

Thus empirically speaking there is a good deal to be said for the view that this characteristic, which Kant found to be essential to the thinking of the physicist, is a fundamental and necessary characteristic of all thinking. But Kant, of course, is seeking to maintain more than this. In the case of physics, as we saw, though he gained a clear view by an empirical analysis of the actual working of the mind of the physicist, he sought to prove his view that physics, as a resultant triumph of the human mind, could not be what it is unless the mind worked in this way. Therefore, he concluded, the mind *must* work in this way. So now, in maintaining his view of all thinking as such, he seeks to maintain that our experience taken as a whole *could not be* what it is unless the mind in all its experience worked like this. It seems to me that in the case of physics, Kant's transcendental argument is successful, but that in the case of our experience taken as a whole it fails. At least, it does not prove all that he wishes it to prove.

As we have seen, Kant wishes to prove that my whole knowledge of myself as a self is only possible through my consciousness of my systematising activity; that is, this activity must be the very essence of the life of the self. It is certain that this is to Kant no mere by-product of his general view; it was not merely a conclusion which he uncomfortably embraced because of the exigencies of his general argument. It was certainly his own real and considered judgment, because the effects of it on his views of the nature of the moral life are so obviously fundamental. But as

regards the *proof* of it, it is highly doubtful whether in this connexion the transcendental argument can carry conviction at all. When used to explain particular parts or features of experience, it is a method of great value. Kant's use of it in his analysis of the method of physics shows it at its best. Again, Kant uses it extremely effectively in the section on the 'Analogies of Experience,' when he argues from the possibility of the distinction drawn by us between an objective and a subjective time sequence within experience. But to attempt to apply it to the whole question of our knowledge of self seems dangerously near to applying the categories of the understanding to the Unconditioned, and using the method of physics in metaphysics. In any case the argument carries no conviction to me. I think the view itself is possibly sound; but I do not think it possible to establish at one blow in this way that it must be so.

But again it is important not to be unfair to Kant. In these passages he is speaking of the empirical self, as existing in time. It is probably true that in recognising myself as an enduring self, I can only do so by distinguishing myself from objects, and in this process the systematisation of experience is essential. But I am not sure that my knowledge of the very existence of myself can be proved to be absolutely dependent upon this. Kant no doubt is relying on Hume's demonstration that there is no intuition of the self, and is, as generally, taking Hume as read. But I am not sure that he is right to do so. Granted that he thought this, I think his explanation of the way in which we apprehend the self is brilliant, and supported by many facts of experience. But I do not think that his account can be thus at one blow proved to be the one and wholly adequate explanation.

In a word, my chief objection to Kant's account is his unwillingness to attach any importance in knowledge to any kind of direct apprehension. This was no doubt partly due to a natural swing of the pendulum. Descartes had tended to explain thinking as a series of direct intellectual intuitions, Locke and Berkeley in terms of a series of direct sense-perceptions; so that it would not be altogether surprising if Kant in emphasising the discursive nature of thinking went to the other extreme and over-emphasised it to the exclusion of all direct apprehension whatever. In regard to physics, and perhaps in regard to the sciences generally, there is much to be said for his view. Certainly the separate propositions of physical science do not represent separate intuitions. Further, when the scientist fits his phenomena into a system, it is doubtful whether there is any intuition or direct apprehension of any kind to control his system-building: he simply goes on worrying at them until they do all fit into a system—any system. Here we may fairly say that it is the essential nature of the mind at work demanding system at all costs, and satisfied with any all-inclusive system. It is, to say the least of it, very doubtful whether it can be maintained that the physicist in a privileged moment intuits the physical world as a unity, and then in his more laborious workaday moments tries to build up a systematic account which is true to this intuition. More probably he works, as Kant says, blindly, with the sole aim of simply achieving an inclusive unity.

But it is one thing to admit this of physics, or even of science generally, and quite another to admit it of the whole of human experience from top to bottom. If it be true that we form a unified conception of our universe by which we act and react, it would seem

that in some minds at least this world-view is forced to conform *absolutely* to inspired intuitions of the nature of God and of His world, received in privileged moments. It may perhaps be that moments of great aesthetic experience neither help nor hinder the great physicist in his thinking *qua* physicist; but it is surely not obvious that it is so in the case of speculation about God, about the self, and the moral life. Here it may be that in building our systems, we are not merely keeping the rules and seeing that they are really systematic, but more than this are building towards some more or less clearly apprehended unity revealed to us in a moment of vision. It may be that this is not so; it may be that the achieving of system is the beginning and the end of all thinking. But I cannot think that Kant has proved it must be so. Moreover, it should be urged that Kant himself is neither a Plato nor a Hegel; he is a careful and disciplined thinker, achieving by hard toil every step he takes; he does not show the inspiration and prophetic zeal of the great seers. Plato's insight is always ahead of what he can argue and prove, and he always represents it as being so; witness, for instance, the account of the Idea of the Good in the *Republic* and Diotima's speech in the *Symposium*. But Kant makes no such claims; and it is perhaps partly for this reason that his account of thinking allows no absolute influence or control to any kind of direct apprehension.[1]

But in the anxiety to be fair to Kant, we have wandered a little from our proper road. We sought to show that Kant put forward a certain theory of thinking, which seems to be a fair account of the method of physics, as a theory of all thinking: we have now

[1]We shall see later that he underestimates the importance even of sense-perception.

been investigating his attempt to show at one blow by a transcendental proof that this *is* the essential nature of all thinking. In this I think he fails. He may be right in his general theory of thinking, but his transcendental proof fails to prove him right: or so it seems to me. It was necessary to go over this ground in order to be fair to Kant—to show that he put forward carefully thought out grounds for thinking that his work was not merely a critique of physics or even of scientific method, but a true *Critique of Pure Reason.*

We may now return to our proper task, which is to show that it is essentially Kant's theory which is developed in the Idealistic logic, to determine just what form that development took, and then finally to offer some criticism of its success. In the Idealistic logic, in effect, Kant's theory and its possibilities for development are on trial. Can it, when its implications are worked out in detail, give a more satisfactory account of thinking than the traditional logic? In asking this question we are far from Kant's own point of view. We do not accept his theory of judgment, as he did, as a certainly sound account, demonstrated transcendentally, so that all that has to be done is the working out of the details. We rather consider it as a tentative hypothesis, and seek to determine whether in the hands of the Idealistic logicians it has so far developed as to be able to give a satisfactory account of the essential nature of thinking.

CHAPTER VIII

THE JUDGMENT IN THE IDEALISTIC LOGIC

THE fundamental mark of a judgment is that it is essentially true or false. To judge, which is, as we have seen, the fundamental cognitive activity of mind, is to assert something which is essentially true or false. It is not the business of the faculty of judgment as such to assert what is true, but what is true or false. An analysis of judgment then will not directly throw light on the nature of truth as distinct from falsehood; it will not in itself help us to distinguish true judgments from false judgments. It will, however, throw light on the nature of truth to this extent, that since only judgments can be true, it is necessary to understand the nature of judgment in order to apprehend the nature of truth.

Now in making the two assertions of judgment—first, that it is true or false, and secondly, that it is the fundamental cognitive act of the mind—the Idealistic logic is at once differentiating itself from all pre-Kantian philosophy. It was recognised before Kant that opinions are true or false; and if to 'judge' means to state an opinion, then to judge is to state something which is true or false. But the propositions in which the old logic was primarily interested were statements not of opinion, but of knowledge. These propositions were, of course, thought of as necessarily true: and they were supposed to represent a state of mind distinct in kind from that of opining, *viz.* knowing or

apprehending. In attempting to throw light on the nature of human knowledge, logic gave its primary attention to these, and these were essentially true, representing a state of mind essentially distinct from opinion—knowing and not opining. Thus in treating *all* statements as representing one fundamental activity of mind, *viz.* judging, and in allowing judgments to be in their own nature not true, but true-or-false, the Idealistic logic is seen to be making a clean break with the traditional logic. We have already tried to explain how this revolt came about, and we shall return to the question of the justification of it in a later chapter.

At any rate the point is that in the Idealistic logic, judgment *is* true-or-false. It will at once be asked, how can an activity which produces statements which may be true and may be false be regarded as a vital activity in the process of knowledge? What aim can logic have in analysing the working of such a faculty? Surely it is the business of logic to distinguish sound thinking from false thinking, or, more strictly, thinking from that which is not thinking but masquerades as such: so that it might appear to be this very distinction between truth and falsehood which is the business of logic.

Yet, on further reflection, it is possible to represent the Idealistic position in a reasonable light. We may allow that there are sequences of ideas which are not thinking but masquerade as such, and that it is the business of logic to determine the nature of thinking, strictly so-called. It may be consistent with this, even so, to assert that the activity of thinking produces assertions which may be true or may be false, and also that this activity is essential to the possibility of knowledge. It may be that certain statements, *e.g.* scientific

statements, require for their making a certain disciplined activity of mind, and yet, though so disciplined, they may not be necessarily true. And if scientific thinking is of this kind, there may still be, distinct from these, impostor sequences of ideas, which masquerade as scientific thinking, and need to be shown up by logical investigation. Furthermore, it may be urged, as we have seen, that such scientific thinking is a vital and essential step in coming to knowledge. The results of thinking would then be recognised to be true-or-false, and yet the discipline of thinking would require logical investigation. Judgments would be, not essentially true, but essentially true-or-false, and yet it would be the business of logic to investigate the judgment.

This, as we have seen, seems to be the rationale of the Idealistic position. Thinking, it says, may be as sound as it can be made: it may obey its own discipline so that logic can find no fault with it, and yet the statements which represent its conclusions or any step in its argument may be false. This the plain man would probably admit at once of scientific thinking; if so the Idealist is simply going further and asserting it of all thinking as such.

Is the logic then not to be interested in the distinction between truth and falsehood? Can it not help us at all to distinguish between true judgments and false judgments? This is a very difficult question to answer. Does the logical analysis of the nature of thinking throw any light on the nature of truth as distinguished from falsehood? It is obvious that all logical writers, like all philosophers, are essentially and fundamentally interested in the nature of truth; and no doubt their views in this regard will emerge in the course of their writing. But the answer to the question seems to

be that the logic is not *primarily* interested in the distinction between truth and falsehood. It is primarily concerned to vindicate the importance of thinking in the growth of knowledge, and to determine exactly the nature of the contribution made by thinking. Since, as we have seen, it is a theory of thinking which was grounded in an analysis of the thinking of the physicist, and since that thinking, without being in any way bad thinking, has produced conclusions which have turned out to be false, and in no case has produced a conclusion known to be true, the problem of truth has come to be shelved for the time being while the nature of thought is investigated first. No doubt the logic makes a tacit compact with itself that it will take up this final and most fundamental point after it has cleared up its immediate problem; and no doubt it presumes that it will be in a better position to do so. How far it has kept this implied compact with itself, and how far the method of shelving the ultimate question for the time being has justified itself in practice, we shall seek to determine later.

It may perhaps, however, be worth while to observe here that this point of view has been to some extent shared by all logic. Presumably logicians have never been able to deny that false statements are possible, and have from time to time been made, even in regard to subjects about which the truth has been apprehended and is therefore apprehensible. As we have seen, the old logic had in the end to rely on some kind of direct intuitive apprehension to explain the knowledge of truth, and this intuition had to be taken as infallible. The business of the processes of thinking investigated by logic was not to apprehend truth themselves, but to give the faculty of intuition a fair chance. If we used only definable terms, we should at

once recognise, *i.e.* intuit, a false statement to be false and a true statement to be true. The intuition itself, being immediate, had no discipline, and there was nothing about it for logic to investigate. Thus even in the old logic the distinction between truth and falsehood was the work of a faculty of intuition, to which in itself logic had nothing to say. The difference is, as we have seen before, that the old logic assumes that single statements can be intuited in themselves to be true, and that the Idealistic logic thinks that this is not so.

Be that as it may, the Idealistic logic does allow that judgments may be true or false; that a false judgment may be as truly a judgment as a true one. It insists that the characteristic mark of judgment is not that it is true, but that it is essentially bound to other judgments—that when you make one judgment you are asserting a whole system of judgments: and it works out its whole theory of judgment and inference on this basis. In the last resort, of course, being Idealistic, it believes that knowledge is possible, and its view of judgment has to be reconciled with this. It strives therefore to show what part the faculty of judgment, granted that judgments are not necessarily true, plays in the birth of knowledge in the soul.

The fundamental idea is that thinking is systematic, and that in achieving system it is not reproducing or copying an intuited unity, but producing a unity of its own. There seems to be a great deal to be said for this view in the case of physics, and that is where Kant got the idea. How can the mind produce system? Certainly it must do so, because it is only by so doing that scientific knowledge is acquired.

Actually it seems to be done in science by universal obedience to a rule: the obedience must be universal,

otherwise thinking just fails to be systematic. The mind in its thinking binds itself to *e.g.* the law of causality: particular scientists may interpret this law in different ways, but so long as they remain rigidly true to their own sense of it their thinking necessarily achieves system. So, at least, the Kantian analysis says. It is not maintained, of course, that the mind can at will invent for itself new rules, by the keeping of which it can make systematic judgments. On the contrary, it is taken for granted that there are a limited number of such rules, and that in determining what they are we are throwing important light on the essential and fundamental nature of mind. These rules are deduced by a transcendental argument from the nature of scientific knowledge considered as a finished product.

The particular nature of these rules and their number does not concern us here; but their existence, and the fact that they play the part in thinking which they do, are of vital importance. We are taking it that the mind achieves unity simply by obeying some fundamental rule, like, for instance, the law of conservation or the law of causality. What, then, must be our theory of judgment?

In the first place it seems clear enough that, if the mind is to produce a system in accordance with a rule of its own, and if it is *necessarily* to do so—*i.e.* if whatever the material, a system *must* be produced—then the parts cannot be just *given* as they are to appear in the system. If the parts are just given and remain *as* given, then either they are parts of a system or they are not; that is to say from the point of view of the mind, either they are intuited to be part of a system or they are not—and that is the whole matter. There is then no question of the *production* of a system, as

the Idealistic logic maintains. The mind cannot be guaranteed to produce system unless it is allowed some freedom to modify the parts. If the system is produced by the mind, the parts cannot be guaranteed to appear in the system as given to the mind.

This means that the terms of the judgment cannot be ideas as given; they cannot be, nor can they correspond to, realities directly apprehended. When I say 'This tree is green,' I may appear to be asserting something of a real chunk of reality, or to be asserting a relation between two chunks of reality; but on the Idealistic theory of judgment this is not the case. On the Idealistic theory of judgment I am essentially asserting a whole system of judgments of reality, and it is this character which makes the judgment a judgment. In asserting greenness of this tree I am fitting the whole of my experience into a unity—and if it will not fit, it has to be made to fit, since that is the nature of the mind. Now if the parts will not go into a unity, and if the mind will not, because it cannot, give up its demand for unity, something has got to give way. If the unity actually is achieved, as seems to be the case, it is obvious that it is the nature of the parts which have given way. They must, to say the least, have been slightly modified to make them fit. On no other terms can the possibility of system be explained.

The logic of this argument seems to be impeccable; and as we have seen, there seems no reason to doubt that the mind sometimes works like this in the sciences —and also in madness.[1] But the point is, will such an account do as an account of judgment, the essential activity of mind? Is it true that in judging the mind

[1]The adaptation of particular experiences to fit in systematically with one central idea is no doubt most *obvious* in some cases of lunacy. But this does not mean that it is not in principle characteristic of all experience whatever.

is essentially achieving unity in this way, or must we look elsewhere for the essential characteristic of judgment? We are seeking to answer this question by examining the theory of judgment which on this basis the Idealistic logic is forced to put forward.

If judging is essentially system-building, it is impossible to maintain that the terms of the judgment represent realities apprehended. It might be possible to build pieces of reality as given into a heap or aggregate of some kind; but it would be impossible to build them into a system—unless it so happened that by fortune or divine control you were building them into a system on the very self-same principles on which they are actually systematised in reality; that is to say, the mind would be determined in its thinking by the very principles of the actual constitution of the universe. If you insist that the activity of mind in thinking is a spontaneous activity, this would mean an absolutely thoroughgoing assumption of pre-established harmony. But if any such view is to be maintained, the natural account to give would be that the mind was *apprehending* a system in thinking, not building it. The Idealistic logic, of course, has repudiated this view. According to the teaching of that logic, the system achieved by thinking is not essentially true just because it is thought, but may be true or may be false, like the carefully thought-out systems of the sciences. There is therefore no warrant for assuming either the existence of a pre-established harmony, or that the mind in all thinking which is really thinking is *apprehending* the systematic nature of the universe.

Thus if judging is the essential activity of mind in cognition, the terms must be subordinated to the meaning of the judgment. When we say 'the sum total

of energy is conserved,' it cannot be maintained that the notion of conservation is a ready-made, completed, definable notion independent of and prior to this judgment, and introduced into this judgment thus ready-made and without modification. When we abandon the belief that weight is conserved, or that motion is conserved, and assert that energy is conserved, we modify our notion of conservation. The point is more obvious still when we go on to say, as we surely must if we believe in the principle of evolution, that in the passage from father to son something is conserved; though it may fairly be maintained that the same formal principle of conservation is being used here as well. Furthermore, in the first case taken, it is even more obvious still that 'energy' is a notion which is modified and developed in the judgment; and the same clearly applies to our notion of a 'sum total.' Our whole notion of 'quantity' is modified by the recognition that that which has quantity is energy.[1] These scientific judgments do not simply take a number of fixed and stable atoms or parts, represented by the terms, and just put them in new relations without changing their internal structure, as it were. The atoms are not stable; when put into new relations they are not what they were before. Whenever physics makes a fresh judgment about energy, the physicist's notion of energy is never quite the same again; it is developed and modified. Moreover, it is developed *by the judgment*; he does not modify his notion of energy

[1]It is surely clear that if we wish to understand what the physicist means by 'quantity,' we must bear in mind that he speaks not only of quantity of weight or mass, but also, for instance, of quantity of heat or of entropy. We may judge, of course, after investigation that his use of the term is confused, *i.e.* that he is calling two or more different things by the same name. But we can only come to this judgment if we can see clearly what the two or more things are, and can see that they are different.

and then make the judgment in view of, and as necessitated by, the change. The reverse is the case: he makes the judgment, and then seeks to determine the change in the notion of energy which this has brought about. He does this by working out the implications of the judgment. Thus in the words of Kant, 'a distinct concept is possible only by means of a judgment, and a complete concept only by means of a ratiocination.'[1]

Thus if we attach importance, as the Idealistic logic does, to the judgments of science, we have to abandon the axiom of the traditional logic that before we can make a significant judgment we must know the meaning of the terms, in the sense that we can define them. As Berkeley pointed out, this is by no means true of the judgments of science; and yet who will say that scientific judgments are not significant, or that human knowledge is not advanced by science?

Yet this position is obviously extremely difficult to maintain and work out in detail. But it will be best perhaps, before insisting on the difficulties, to examine the general lines of the attempt by the Idealistic logic to work it out. We shall be able to understand best what the Idealistic account has developed into, and how it has done so, by considering the main lines of Bradley's view.

If the terms used in judgment do not represent ideas as given in direct experience—that is, as given either in immediate sense-perception or immediate intuition; if they stand neither for independent realities or pieces of an independent reality, nor for ideas which copy or in some way correspond to pieces of reality; for what do they stand? The first thing to recognise is that the

[1]Quoted by N. K. Smith, *A Commentary on Kant's Critique of Pure Reason*, p. 181.

unit with which we are concerned is the judgment taken as a whole; the terms are not themselves unities nor do they stand for unities, they depend for their essential nature on the judgment. They are not on the other hand nothings; for it is obvious that, though the construction of a unity demands a certain flexibility in the nature of the parts, no unity can be made of parts which are nothings, having no nature at all. For judgment to be possible the meaning of the terms must have a certain flexibility; for the judgment to be significant and for reasoning to be possible that flexibility must be limited and the limits must be determined by rules. The old logic tried to explain the possibility of thinking in terms of rigid, stable conceptions, definable before reasoning began and remaining inflexible throughout. In the face of modern science, the Idealistic logic has abandoned this attempt, and, because of the flexibility and indefinability of fundamental conceptions, has taken as its unit not the concept but the judgment.

Thus in a judgment we are asserting something of reality. In effect we are not asserting a single characteristic or quality, but a whole systematic account; and not one only, but all the terms concerned have their meanings fixed by the requirements of the system. Thus even if reality is itself a system, if the system of propositions which I am asserting of it is wrong at any point, it is wrong at all points; and there can be nothing in reality to correspond exactly to any of my judgments, or to any of the terms of my judgments. If one of these judgments of mine asserts that A is B, its falseness does not consist in this, that while there is a part in the real system exactly corresponding to A and a part corresponding to B, A is not in the relation to B which I am asserting. Its falseness is, so to

speak, more radical than that; the truth being that there is nothing in the real system quite corresponding to either *A* or *B*, and therefore the statement is false all along the line. If thinking is essentially systematic, what determines the meaning of both *A* and *B* is the requirements of the system: so that if reality itself were a system, and there were nothing in it to correspond to *B*, or to the relation between *A* and *B* asserted by me, then there could be nothing in it to correspond to *A*. Thus in order to maintain that thinking is essentially systematic, it must be maintained that *all* the terms are flexible, and up to a point take their meanings from the judgment. In this respect and to this extent the judgment cannot take its meaning from them.

This is the point which Bradley seems to be seeking to clear up in his famous account of the use of ideas as symbols in judgment. In this account he is trying to separate and keep separate two questions which are essentially separable for the Idealistic logic. First, why are the particular ideas used in judgment the particular ideas that they are? Secondly, how comes it that judgments using these ideas can in any sense claim truth or falsehood in regard to an independent reality? For the old logic the answer to both these questions was the same. We use the particular ideas that we do because those ideas are received in direct apprehension of an independent reality; our judgments are true or false for the same reason. But on the view of the Idealistic logic the answer to the two questions is not the same: on this view thinking is systematic whether its conclusions are true or false. Therefore since we systematically think out false systems, the possibility of thinking cannot depend on our receiving ideas in direct apprehension of reality; what

is more, in the case of a false system *none* of the ideas, as we have just seen, can have been so received. Where then do the ideas come from? Separable from this is the question, How does it come to be significant to speak of such judgments as true or false? If the ideas are not forced on us in the apprehension of reality, how can we think of judgments which use such ideas as possibly true? This is clearly a separable question from the question, Just why do we use such and such ideas?

In speaking of ideas as symbols, Bradley is clearly seeking to keep these two problems separate, and at the same time to keep both sufficiently before the mind that neither can be forgotten. He is thinking of our minds as in judgment using symbols of their own to speak of a reality, which gets itself to some extent apprehended by us, but in doing so does not unfortunately provide us with the right symbols in which to speak of it. Though we have some real apprehension of the true nature of reality, and in speaking are appealing to a like apprehension in others, in our actual statements or judgments we are limited to terms which take their nature, not from the object apprehended, but from the nature of our capacity to apprehend. It seems thus that the mind in some way makes, not receives, its own symbols, and yet that these symbols still have a value as symbols. Being made by the mind, they can be manipulated and experimented with by the mind, always in accordance with the rules of their nature; and this fact, that in manipulating them the mind keeps these rules, seems in some mysterious way to give them value as symbols for expressing the nature of an independent reality. Kant seems to have thought it obvious how this might be so, but the Idealistic logic has not found it so easy.

The details of Bradley's account need not here concern us. We need not examine in detail how on his view we come to make for ourselves the symbols we use in judgment, nor how it is that the symbols are suitable to symbolise the real. What concerns us here is what Bradley is trying to do, not his success or failure in detail to do it. He is trying to show that what determines the actual judgments we make is the mind. Every judgment is in truth an answer to a question, and in order to answer our question we must always 'judge,' in the ordinary sense of the word. The actual question we answer, and therefore the actual judgment we make, is determined by the general laws of the mind and the particular mental context. No doubt judgment would not be possible without apprehension, but to apprehend is not the same as to judge, and the ideas used in judgment are not forced on us by the object apprehended, but by our own thinking.

I think the point will become clearer if we consider for a moment the particular case of the negative judgment. Take first a very simple case. Suppose that for some particular explainable reason I wish to know whether a particular motor-car is red. I go and look at the car and see that it is a bright blue, and I say, 'No, it is not red.' I say this simply because (1) I wanted to know, not what colour it is, but simply whether it is red, and (2) I have apprehended it to be blue. Without these two conditions the judgment would not have taken the particular form which it did take. Now consider a slightly different but important case. Suppose I caught only a glimpse of the car, insufficient to enable me to say what its colour was, but sufficient to satisfy me perfectly that it was not red—a quite real and common case. I may know enough about the conditions to know pretty exactly

what it must have looked like if it had been red; in that case, if it did not look like that, I say with complete confidence, 'No, it is not red.' If all I wanted to know was whether or not it was red, I am satisfied, for I know what I wanted to know. If, anticipating that it might be difficult under the circumstances to see just what colour the car was, and yet comparatively easy to see that it was not red, I have carefully arranged matters so that my whole point hangs simply on whether or not the car is red, then my observation is successful, even though I still do not know what colour the car is. And I deserve my success, because I have carefully arranged so that I am enabled by my experiment to make the very judgment needed to establish what I want to know, when if more had been expected my observation would have failed.

Now surely Bradley is in effect maintaining that this characteristic applies not to the negative judgment only, but to all judgment: not only to 'This car is not red,' but also to 'This car is red.' After all, why did I say that the car was red and not that it was fast, or pretty, or a saloon? I said it because that was what I was instructed to observe: exactly what I was to say was prepared for me beforehand—either it is red or it is not. It was simply left for me to say whether it was or was not. I was not asked to choose the most interesting thing to say about the car; nor to say as much as possible about the car; still less to give an accurate and exhaustive account of a whole momentary experience of mine. I was simply asked to say whether it was red or not; and it was explained to me clearly what was included under red and what not—this being accurately determined, of course, for the purposes of this judgment by the requirements of the theory under

test. Thus my judgment was determined as to 'yes' or 'no' by the immediate apprehension: otherwise in all other respects it was determined prior to the particular apprehension and independently of it. It is possible, of course, and only too easy, to ask questions of the observer which his observation does not enable him to answer. In that case he makes no judgment. It is the triumph of scientific method that it asks of the observer the right question, and sees to it that he is in the right position to make the necessary observation. Furthermore, it does not demand of him an exhaustive account of his experience: it does not say to him 'What did you see?' It asks, 'Either it was red or it was not red—which was it?'

Thus the observer is provided beforehand with the terms of his judgment, and these are defined by the theory which is being tested. Now one thing that happens in the advance of science is that the ' either—or' is sooner or later found to be inapplicable: the thing can neither be said to be red nor not red. The symbols must be discarded: fresh terms must be found. The old theory is seen to be false, not because it did not use its own terms impeccably in accordance with its rules, but because its 'either—or ' is no longer of any use. Fresh terms must be found so that the old procedure may continue. Thus the terms are seen in their true light as symbols, constructed to serve a certain purpose: when they are outworn, new ones must be made to take their place. Judgment is the act by which we at once use and modify these symbols.

Perhaps it will now be wise to turn and consider the matter from the angle of inference.

CHAPTER IX

INFERENCE IN THE IDEALISTIC LOGIC

In its account of inference, the Idealistic logic will necessarily lay stress on the active character of thinking. Inference itself will be regarded as an activity. It will not suffice that inference be regarded as a form of apprehension, which is made possible by certain activity as a necessary preliminary. It is not merely that inference is a form of apprehension in which, as it were, certain activity is necessary on the part of the mind to put itself and maintain itself in a position whence it can see or apprehend facts, which could not be apprehended except by means of that activity. It is not simply like climbing a hill to see a view, which cannot be seen without climbing the hill and therefore remains forever unseen by those who do not climb. In inference, according to the Idealistic logic, the activity is not so separable from the apprehension, even in the sense in which the climbing the hill is separable from the seeing the view. In a very real sense the activity determines what shall be apprehended; or at least determines the judgments which go to make the inference, and among them the judgment which is the conclusion of the inference.

It is to be noticed that even the old logic could allow the element of activity in inference, so long as that activity was regarded only as a necessary preliminary to the possibility of a direct apprehension. So long as the activity of the mind did not affect its

character as a *tabula rasa*, but simply presented it ready to receive an impression from the object, now brought into view by the activity, the traditional logic had no objection to the representation of inference as involving activity. The apprehension, it would maintain, is separable from the activity: what is apprehended is not made by the activity, nor is the mind's own capacity to apprehend it produced by the activity: the object was there to be apprehended all along, and the mind was capable of apprehending it all along; the object was simply opened to the view of the mind by the activity. The object is just the same, and the apprehension is just the same, as it would have been if it had happened to be possible without any effort or activity on the part of the mind at all. New knowledge is in the end gained in inference by immediate, direct apprehension, just as in the more obvious cases of immediate apprehension. That is to say, from the point of view of logic the activity, its discipline and its technique, are all, strictly speaking, irrelevant.

The Idealistic logic maintains, of course, that the facts of inference cannot be explained on this basis—this having been made abundantly clear by the examination of scientific method. Inference can only be explained if it is recognised that the activity essentially affects the whole process, and all the judgments which make the inference. The activity is actually conducting experiments with the ideas or symbols which are the terms used in judgment, altering the relations of those symbols, putting them in new relations, and *ipso facto* modifying the ideas themselves; and the whole process is exposed to the risks obviously incident to such experimentation, *viz.* that in experimenting with the ideas it may be destroying their value as

symbols—they may lose their capacity to 'symbolise' or 'refer to' a world beyond. The only weapon that the mind has against these risks, is that the experimentation is disciplined—it is done according to rules. It is the business of logic to determine these rules, and to enquire into their efficacy.

The general view underlying the Idealistic theory seems to be this, that when the mind makes a change in one of its ideas, this involves a change in the whole system of its experience; this means that changes are required in the other ideas to keep the system a system. Inference is the activity by which this is all worked out—by which the implications of any change of any idea are worked out and articulated. This working out is supposed to be governed by strictly universal and necessary rules, which it is the business of logic to discover. The theory is that in this operation the mind is not under control by contact with an external reality, but is simply controlled by its own rules; the mind is in a tunnel, as it were, in regard to reality. The question as to the likeness or otherwise of the system achieved to the external reality is for the moment left over to be dealt with later. And even when the logic comes to deal with this fundamental matter, it does not, *qua* logic, presume to ask '*Is* it like?' It simply enquires—'*Could* it possibly be like? Could a system made in this way possibly have any claims as regards truth?' But the time is not yet come for us to raise this question.

As we have seen before, this account probably seems to the plain man a fair enough account of thinking in the hypothetical method used in the sciences. If I maintain this, I must maintain that; and the determination of what I must consequently maintain seems to be a matter for inference. In these cases

the determination whether or not to claim truth for what you maintain seems to be separable from and subsequent to the determination of its implications. But in giving this account of inference the Idealistic logic is not simply offering it as an explanation of certain kinds of thinking, but of all thinking as such. All inference, it says, will be found on closer analysis to be of this kind. Inference as such is not an apprehension of truth; it is the working out according to rules of the implications of judgments which may be true or may be false. At least it is as such that at the outset the Idealistic logic seeks to explain it.

There is a view that false judgments have no implications—that on analysis they are found to imply nothing. On this view inference, being the apprehension of the implications of true judgments only, is held to be automatically the apprehension of the truth about reality. On this view, if inference results in a system of judgments, all those judgments are true: that is to say, reality is a system, *viz.* this system. This view is for the Idealistic logic put out of court by the analysis of modern science. We shall return to it later.[1]

There are, then, two points which need discussion. In the first place, can it be maintained that in inference the mind universally obeys rules of its own—rigidly and universally, that is, without exception, unaffected in regard to this part of its activity by any direct experience, intuitive or sensuous? In the second place, if inference can be shown to be of this kind, can it possibly be maintained that an activity of this kind could possibly play any part in the advance of our knowledge of reality—that is, is this view of inference compatible with the possibility of knowledge in any genuine sense of the word?

[1]Cf. *infra*, chh. xii and xiii.

To take the first point first, it need hardly be emphasised again that this is crucial. Here, as we have seen, is the central thesis of Kant's answer to Hume: on this point depends the new lease of life which was given to logic by the *Critique of Pure Reason*. Hume had, though reluctantly, denied universality and necessity in thinking. This according to Kant was a mistake, due to a confusion of thought closely connected with Hume's preoccupation with the causal principle and his insufficient attention to mathematics. For Kant and for the Idealists generally, the insufficiency of Hume's theory of belief is seen in just this, that it cannot give any satisfactory account of the elements of universality and necessity in thinking.

But why is it so certain that there is a universal and necessary element in thinking? As a matter of fact both Kant and Hegel take it for granted; they speak almost as if it showed a boorish lack of education or of taste to entertain the very idea of the contrary. Yet is it so obvious? Surely Hume was right to draw attention to the contingency and variety of the principles of thought; and to-day we have even more right than Hume had to be impressed with the essential changeableness and relativity of the most fundamental categories of scientific thinking. Is it possible to maintain the existence of universality and necessity in thinking, and still to do justice to this contingency, variety, and change, as emphasised by Hume and his followers? Can it be proved that categories which seem to us contingent and changing, are really contingent on a basis of necessity and universality, and that this basis of universality and necessity, which is alleged to give to our thinking such validity as it has, can be isolated and examined? No doubt the whole logic stands or falls on the maintaining of this

doctrine: unless this can be vindicated, its whole method is illegitimate, and its very subject matter—the necessary, rational basis of all actual thinking—disappears. Yet it must be admitted, I think, that this fundamental principle is not *obvious*. No doubt it is commonly taken for granted at the beginning; but a closer investigation of the Idealistic logic will show that the clouds of obscurity have rather gathered round this basic principle before the end.

It has already been said that Kant and Hegel for the most part talk as if the point were obvious or self-evident. Obviously there are universal propositions which are necessarily true; obviously there are universal and necessary rules or laws of thought. If asked whether these propositions and laws were not, on closer scrutiny, merely *generally* true and binding—but binding in such an overwhelming number of cases and with such exceptionless regularity in our actual experience that they *appear* universal, while in reality they only differ in degree from admittedly contingent and general laws—if pressed on this point, their reply was that these laws are in some cases obviously universal, in other cases obviously contingent and general. If Hume had reflected closely, says Kant, on mathematics he could not have made such a mistake. As a matter of fact Hume did reflect closely on mathematics, and he thought the propositions of geometry were contingent. And without doubt this general view, which denies universality, has gained ground considerably owing to the revolutions in the categories even of the most apparently stable sciences in the last few years. It is hardly reasonable to dismiss the point as obvious.

To be fair to Kant, it is possible, by looking beneath the surface, to find a genuine awareness of the

difficulty, and also some attempt to argue the point. Kant's mature view lays much stress on physics, and would not seek to close the argument about the presence of an element of universality in thinking by a simple appeal to geometry or algebra as providing instances of pure universal propositions. His mature view is that there is a universal element in all thinking, not only in mathematics; and it ultimately implies, as we have seen, that there is a non-universal element in all actual thinking, even in mathematics. And for so novel and controversial a view as this—that there is a universal element in *all* judgment and *all* inference—he naturally seeks to give some proof. He first argues that systematic unity is essentially characteristic of all thought—a point which had hitherto been missed. In actual fact, he argues, we do think of our experience as a systematic unity, and not as a methodically arranged aggregate of particular experiences. Whenever we think of anything, we always think of it as fitting in as a part of a systematic whole; we do not in fact seem to be able to *think* of it in any other way. Furthermore, our awareness of our selves is dependent upon this characteristic of thought; unless we thought of our experience as a unity we could not be aware of our selves as selves, nor distinguish ourselves from other selves. This granted, Kant proceeds to argue that such systematic unity would not be possible unless our thinking obeyed universal and necessary rules: if there were no rules, or if the rules were contingent and general, systematic unity would not be possible; exceptions to the rules could lie about in the mind, so to speak, and render experience a chaos rather than a system. Kant illustrates all this to himself, as we have seen, by reflecting on the case of physics—on the systematic character

of physical theory, and on the part played in the formation of physical theory by certain principles, *e.g.* the principle of conservation, the principle of reciprocity, etc. Deriving his view in this way from a consideration of physics, he sought to prove in general and absolutely that systematic unity is an essential characteristic of thinking as such, and that systematic unity is not in the nature of the case possible without universality and necessity. He thus sought to deduce his categories. But, as we have already pointed out, it is, to say the least, extremely doubtful whether Kant's proof succeeds. It is doubtful whether a proof of this sweeping and general character can be convincing: such arguing seems rather to have raised itself, as Kant elsewhere says of Plato's,[1] into so rare an atmosphere that it does not find enough resistance to its wings to enable it to maintain itself. Kant seems to have established an important point about the method of physics, and perhaps, with reservations, about the method of science in general. But it is doubtful whether he has done more than this, though he has himself made it clear that more needs to be done.

On this point, and in general, the Idealistic logic follows, slowly and painfully, a more detailed and pedestrian method. Does a close and detailed investigation of inference bear out the view that there are in it universal and necessary elements? Can it be shown in detail that underlying all this apparent contingency and change there lie universal, necessary and unchanging principles? Or at the least, can an adequate account be given of thinking which is compatible with such universality and necessity? And can it be shown that it is upon these elements that such validity

[1] *Critique of Pure Reason* (N. K. Smith's translation), p. 47.

as our thinking has depends? This is at any rate what the logic seeks to do. It does not proceed by first establishing this principle at the outset, and then, taking it as proved, build upon it as a sure foundation a whole detailed theory of thinking. Rather it assumes the principle, and seeks on that assumption to give an account of thinking which will be accepted as true to the facts. This is in itself a sound method, and it must be remembered that for the Idealistic logic it is inevitable. If our argument has been sound, the standpoint of the traditional logic was abandoned because its rules were not the rules of any real thinking. Thus by its very revolt the Idealistic logic automatically accepts for itself this test—that its rules will be found to hold of real thinking.

How, then, shall we detect and recognise this universal and necessary element? And what does the modern Idealistic logic in the end mean by universal and necessary? For after all it is not unlikely that in the development of its argument logic may have to draw in its horns somewhat, even if it does not abandon the essential principle. There is no smoke without some fire: and it is likely that the universal and necessary, as these were understood before the attack of Hume and his followers, have gone never to return. In what sense then can the Idealistic logic defend them? The point is a difficult one: but at least we have already noted one important concession. Here there is no question of the defence of necessary *truths* or universal *truths*. What is being maintained is that there are universal and necessary principles of thought. The position is well illustrated by Kant's 'Analogies of Experience': the principle of substance and the principle of causality are not alleged to be universally true, but to be universal laws of thought. The Ideal-

istic logic does not maintain (as Kant sometimes did) that these are *not* truths, but that the investigation of them as necessary principles of thinking is separable from the determination of the question of their ultimate truth, and must be undertaken first. The question of truth is more germane to the second problem in regard to inference, which we are to examine later. For the moment we ask, Does a detailed logical investigation of inference bear out the view—or at least is it compatible with the view—that there are universal and necessary laws of thinking? And what is meant here by universality and necessity?

The question of necessity lies at the root of the problem of inference. When we say that a certain conclusion follows from given premises, we mean that it necessarily follows—that no other conclusion is compatible with those premises. *A* is north of *B*, *B* is north of *C*, therefore *A* is north of *C*. If the premises are true, *A must be* north of *C*, as we say. We have not *directly and immediately* apprehended that *A is* north of *C*, as we perhaps directly apprehended that *A* is north of *B*. What we did was to apprehend that *A is* north of *C via* the apprehension that for certain reasons *A must be* north of *C*. What is meant by this '*must be*'? And can the assertion be defended?

Clearly the necessity referred to is not a necessary relation between successive states of mind. It is *not* meant that the making of the judgment '*A* is north of *C*' must necessarily follow on the making of the other two judgments, nor on the recalling of them. It is doubtful whether there is any moment in the history of a particular mind when the making of the judgment '*A* is north of *C*', though not yet achieved, is inevitable. Even if we did allow that there are laws rigidly determining the sequence of states or acts of

the mind, we have learned once and for all from Hume and subsequent psychologists that these laws would not be the laws of inference. To suppose that inference ever is, or corresponds point for point with, a sequence of real acts or real states in an individual mind, is to hand over the business of logic to psychology and to become a sceptic. Certainly we can never say that any individual who knows certain premises is bound to draw any conclusion. The necessity does not lie in the historical sequence of states of any individual mind.

Furthermore, the Idealistic logic, at least, does not understand this necessity to lie *in the facts*; the statement 'Therefore *A* must be north of *C*' does not mean that the *fact* of *A*'s being north of *B* together with the *fact* of *B*'s being north of *C necessitates A*'s being north of *C*. The Idealistic logic considers this necessity to be the same which lies at the root of admittedly hypothetical reasoning—*e.g.* if *A* is *B* and *B* is *C*, then *A* is *C*; it considers, that is, that the necessity is there, wherever it is, independently of whether the statement '*A* is *B*' states a fact, or even—as we have already seen in considering the judgment—of whether there are such things at all as *A* or *B* or *C*, outside and independent of my judgment. This point we have already referred to; and we shall return to it again in detail in the next chapter. What concerns us at the moment is simply to notice that, according to the Idealistic logic, the necessity in question does not lie in an independent, ready-made reality.

Yet if this necessity cannot be placed either in the mind or in the facts, why does the Idealistic logic not follow Hume and deny it altogether? In the first place, of course, because it believes that to do so is to involve inevitable scepticism—that is to say the Idealist

senses in advance that any theory of knowledge that can be erected by the wit of man under such conditions must seem to him no better than scepticism. And secondly because, in spite of all difficulties, he still thinks he can descry universality and necessity in thinking, although he admits that it cannot be quite the universality and necessity that was thought to be there before Hume wrote. He therefore approaches the task of vindicating these elements by disentangling them, knowing that if he even slightly overstates his case he courts destruction at the hands of Hume. Evidently it is a precarious business: but we may now proceed with it.

In ordinary life we distinguish between cases where a conclusion just follows from the given premises, and cases where it just does not follow, or at least is not seen by us to follow, and yet events seem to behave as if it did follow. We distinguish between cases where there is a necessary connexion between *A*'s being *B* and *A*'s being *C*, and cases where, though no necessary connexion is apprehended by us, yet every *A* that is *B* is also *as a matter of fact C*. This difference we ordinarily regard as a difference of kind, not merely of degree; in the one case we know there is a necessary connexion, in the other we do not know whether there is or not. The old logic regarded the presence of this necessary connexion as a sign or guarantee of the truth of the propositions connected; where the conclusion followed, it was alleged to be certainly true; where it did not necessarily follow it might perhaps be true, but it was not certainly known to be true. The Idealistic logic abandons the doctrine as regards truth, but clings to the distinction in terms of necessity; in some cases we apprehend necessary connexion, in others we do not—though it must not

be assumed that propositions which are recognised to be necessarily connected are therefore true.

But can even this distinction be maintained? Is there indeed a difference in kind between the two cases? Is it the fact that in the one case necessary connexion just is apprehended and in the other case just is not? Certainly there is a distinction *prima facie* between 'If this is an isosceles triangle, the angles at its base are equal,' and 'If this creature walks sideways, it is a crab.' But is it a distinction of kind, as alleged? Why in particular does the Idealistic logic think so? Some philosophers have thought that the fact is obvious—the one case is on the face of it different in kind from the other. But we know enough of the Idealistic logic by now to know that it cannot on its own principles ultimately appeal to obviousness or self-evidence in regard to the truth of a statement. Yet it is difficult to see to what else it can appeal in this matter. No doubt it is not satisfied with any theory of knowledge which can be produced on the contrary assumption. While it may admit that some arguments are in principle statistical, and that in such cases some links in the chain are stronger than others, having more observations and experiments to support them, it further asserts that there are other cases which differ in kind from these, where the links are firm and rigid and do not depend for their certainty upon the number of observations which support them. In a chain of argument which is partly mathematical and partly statistical, we do not consider *even for a moment*, it maintains, the possibility of the mathematical part being invalid. Here we are said to have a distinction of kind: I may doubt the *truth* of Euclidean geometry, but I cannot doubt its internal coherence, the necessity which binds its parts together into a

whole, so that if I maintain one proposition I must maintain the rest. Yet since the Idealistic logic cannot point to the obviousness of this, it cannot *prove* its own account; it can only put it forward as a hypothesis.

Considered as a hypothesis it appears not unpromising. The view that under certain conditions the mind can produce unitary theories, which are internally coherent, in the sense that the parts are bound together, not at all contingently, but necessarily—this view seems at first to be well borne out by the facts of physics. It will have to be admitted, no doubt, that there are theories, like the theory of Evolution, which are, both in common life and for the purposes of science, taken to be internally coherent, although the links are recognised to be not necessary but contingent connexions. But, it will be said, let us leave these for the present, and consider the other cases first. And for the sake of clearness let us take the case of mathematics, considering that is to say those physical theories in which all the argument and proof about internal coherence is mathematical. Here it is not maintained that the theories are *true*: it is simply maintained that the argument is coherent—if any single proposition is true they are all true, if any is false they are all false. The existence of physics shows, it is maintained, that thinking may have formal validity in this sense, without having real validity or truth. Thus the question of formal validity may be distinguished from that of real validity, and may be discussed separately.

Prima facie, then, on the evidence of physics, thinking may have *absolute* formal validity. Can logical enquiry support this view? If we may follow Bradley it would seem that it cannot. It is clear from the pre-

ceding argument that formal validity must be interpreted in the strictest and most absolute way, for only so can necessity and universality in thinking be vindicated as against contingency. Here the standard of formal validity is set by the traditional logic with its syllogism, obeying the law of identity. Bradley's conclusion is that no actual thinking, not even the thinking of physics, is formally valid in this sense; its conclusions cannot be represented as determined under the law of identity alone. Not even by representing thinking as hypothetical can it be represented as having absolute formal validity.

Thus the attempt to represent thinking as formally valid breaks down. Actual instances cannot be found of thinking in which universality and necessity can be traced unequivocally in this way, and the Idealistic logic must reconcile itself to this fact. Bradley shows himself to be seriously discouraged by this discovery, but it is doubtful whether he should be so. What it means is that the presence of universality and necessity in thinking cannot be demonstrated by pointing to instances where thought is *purely* universal and necessary. As we have seen the mature Kantian position would not have expected this to be possible. It would maintain that while the *a priori, i.e.* the universal and necessary, is present in *all* thinking, yet no thinking is *purely a priori*. Bradley's enquiry at least confirms this latter point; it does not refute the former. But to this we must return later.

In the meantime we must consider the second problem. Supposing that thinking had formal validity, supposing that it worked on universal and necessary rules, so that the conclusions drawn were absolutely the only possible conclusions on those premises, supposing that it could produce theories which were rigid

unities bound together on a basis of absolutely necessary connexions between the parts—could such an activity play a vital and essential part in the acquisition of knowledge, properly so-called? Supposing that thinking had formal validity, could it have real validity? If thinking is controlled by the laws of thought alone—and it must be if the operations of these laws are allowed to be universal and necessary—can it possibly have any part to play in the birth of knowledge of Reality?

This is a problem for logic which seems to be unavoidable if any attempt is made to take the discursive nature of thinking seriously. It might be maintained, as we have already seen, that while the progress of thinking is controlled by necessary laws, those laws are the very laws of Reality itself. On this view it might be argued *either* that thinking is controlled by its own laws, but that these laws are by pre-established harmony the same as the laws of Reality; *or* that thinking is controlled at every point not by laws of its own, but by the Reality thought about, and thus thought comes to be controlled by the laws of Reality. The former view we have already considered. The latter view, which seems to explain away discursive thinking by treating it as a series of direct immediate apprehensions of Reality, we shall examine in some detail in the next chapter. The Idealistic logic takes neither of these views, at any rate at the outset of its enquiry. Rather it asks, following Kant, the question: Since the laws of thought are not known by us to be anything more than the laws of thought, since they are certainly not known to be the laws of independent Reality, can it be maintained that by thinking we can come to knowledge of an independent Reality?

This question, like the first, was dealt with by

Kant, but in a somewhat sweeping and unconvincing manner. It does not matter, he seems to have held, that the objects of thought should have to conform to the laws of thought, provided those laws are universal laws, rigid, regular and without exception. It does not matter if in thinking of myself, for instance, I have to treat myself as something which I am not, provided that I misrepresent myself to myself, as it were, in accordance with inviolable rules. If the misrepresentation is done in accordance with rules which everybody knows, then nobody is deceived and no harm is done. But is this process which involves misrepresentation of any value? If it does no harm, does it achieve any good? Kant seems to have illustrated the point to himself by considering our knowledge of ourselves. When I think about myself, I treat myself as an object —that is an object in a world of objects governed by necessary laws: that is to say I think of myself as determined. Now being a moral being I do not believe that I *am* a determined object. Yet can it be maintained that I come by no new knowledge of myself by thinking about myself? We may easily add other illustrations. I may for certain purposes treat a circle or any curve as if it were composed of a number of very small straight lines: I do not believe it to be composed in this way, yet it would seem that I can gain knowledge of the curve by this method. Similarly I may for certain purposes treat a living organism as a piece of mechanism, though I do not believe it to be so, and thereby acquire fresh knowledge of the living creature.

Thus at first sight at least the hypothesis that thinking, though it obeyed laws which were not the laws of the independent Reality, might still, provided only that it *does* obey its laws, contribute to knowledge of

an independent Reality, does not appear a hopeless one. Moreover, at first sight at least, it appears to be the case that science does proceed by some such method. Certainly this view seemed satisfactory to Kant: he thought that what science appears to be doing in these cases is what all thinking always and necessarily does. He thought it possible for logic to determine what are the laws which thought obeys in this process, and thus to deliver us from 'transcendental illusion.' Even though objects do have to conform to the laws of thought, since logic can determine these laws, this conformity can do no harm, since we are so far not deceived about the true nature of the independent Reality. It is true that Kant got no further than this. He does not succeed in convincing us that the knowledge of Reality, to which our thinking contributes, is other than a very meagre and empty affair, and he became cautious and even discouraged himself in his ultimate pronouncements. But he did show that his own theory is *prima facie* a not impossible hypothesis.

This at any rate is the ground which the Idealistic logic has to cover again, with more care and in more detail. The failure of Kant to which we have just referred does not directly concern logic any more than it strictly speaking concerns the *Critique of Pure Reason*. It is not the business of logic to teach us First and Last Things: to play the seer, and sum up for us what we have ultimately learned Reality to be; though, of course, it is quite true that if logic disqualifies as knowledge all that we ordinarily believe to be knowledge, and then fails to point over and beyond it to something which may be regarded as true knowledge—if it has *nothing* to point to—then we must suspect that something has gone wrong with the

logic. But still strictly speaking it is not the business of logic to make good this particular deficiency in Kant. It *is*, however, the business of logic to go over the earlier part of the argument and see whether on close scrutiny it will hold water. After all, Kant has really provided little in the way of *argument*, except an illustration or an 'analogy,' as he would call it. His most important point is that science does acquire knowledge in this way, and therefore this is the part which thinking plays in knowledge. Even his statement of his illustration requires closer scrutiny.

Let us consider more closely the question whether the case of physics provides any argument for the view that formal thinking contributes towards the acquisition of fresh knowledge. In practice it appears that advance in physical knowledge comes by a combination of formal thinking and of observation by sense. The coherent, unitary character of a physical theory seems to be guaranteed by mathematics, which as we have seen is the strongest case of real inference: formal thinking alone can guarantee that the whole theory stands or falls together. To this question of coherence, it appears, in the case of physics at any rate, observation and experiment have nothing to say. Only when it comes to the question whether or not the coherent theory is a *true* account, the last word rests with observation. Is A to the left of B, or is it not? If it is to the left the theory is true, if not not. The whole matter of truth turns on a direct, immediate apprehension by observation. Suppose the theory to be accepted as true; the new knowledge has been arrived at by a combination of formal thinking and immediate apprehension.

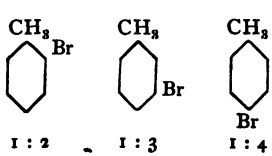
Now it is to be noticed that if the Idealistic logic took a hint from physics here, it might be expected to

maintain that in all thinking, as in physics, thinking in itself can guarantee nothing but formal validity or coherence, while the acceptance of a particular coherent theory as true depends, not on any disciplined discursive activity like thinking, but upon an immediate apprehension or intuition. It might fairly maintain that unless the theory has been fully thought out beforehand the intuition would not come: that intuition is essentially intuition of the truth of a previously thought-out, formally coherent theory. Thus knowledge would not be possible without disciplined thinking: but on the other hand discursive thinking could not of itself give knowledge, but only coherence or formal validity. If this were the case, the problem with which we are here concerned would seem to be solved. Thinking which obeyed its own rules might contribute to knowledge, because a formally valid theory, while it could not itself as a unitary theory be arrived at by immediate apprehension, either in one intuition or in a series of intuitions, might yet be accepted or rejected as a whole by an immediate apprehension.

Actually the Idealistic logic has not put forward any such theory. This is partly because it will have nothing to do with immediate apprehension. As we have seen in considering the judgment, it criticises the whole doctrine of immediate apprehension root and branch. Its whole account of thinking arose out of this criticism, and it would hardly be likely to fall back on a theory of immediate apprehension to round off its own doctrine of inference. To this point we shall return later. But a more serious objection to this theory is that it misses the essential problem of real validity. The theory has missed an important link in the chain. If a unitary theory, which is formally coherent, is the work of a disciplined activity obeying

basic acids, according to the number of side chains in the original molecule; thus $C_6H_4.C_2H_5.CH_3$ yields $C_6H_4(CO_2H)_2$, $C_6H_4.CH_3.CO_2H$ also yields $C_6H_4(CO_2H)_2$, &c.: but if a negative atom or group is introduced into the benzene derivative and the oxidation is then effected, the paraffin-radicle which forms the side chain nearest to[1] the negative atom (or group) is protected by that atom (or group) and does not undergo oxidation. Thus $C_6H_4.CH_3.C_2H_5$ [1 : 4] when oxidised produces $C_6H_4(CO_2H)_2$; but $C_6H_3.Br.CH_3.C_2H_5$ [1 : 2 : 4] produces $C_6H_3Br.CH_3.CO_2H$ [1 : 2 : 4]. So again $C_6H_4(C_2H_5)_2$ [1 : 4] oxidises to $C_6H_4(CO_2H)_2$; but $C_6H_3.C_2H_5.SO_2NH_2.C_2H_5$ [1 : 2 : 4] oxidises to $C_6H_3.C_2H_5.SO_2NH_2.CO_2H$ [1 : 2 : 4]; in the latter case[2] the C_2H_5 nearest to the negative group is protected, while the other C_2H_5 group undergoes oxidation to CO_2H. So also if 1 : 3 : 4, 1 : 4 : 5, or 1 : 2 : 4, dimethylnitroxylene ($C_8H_7.CH_3.CH_3.NO_2$) is oxidised, in each case the CH_3 group nearest to the NO_2 group is unchanged, and the other CH_3 group is oxidised to CO_2H; but if 1 : 3 : 5 dimethylnitroxylene is oxidised, both the CH_3 groups are converted into CO_2H groups: now in a 1 : 3 : 5 derivative the substituting groups are equally distributed; in the case before us each methyl group is situated in exactly the same position relatively to the NO_2 group[3].

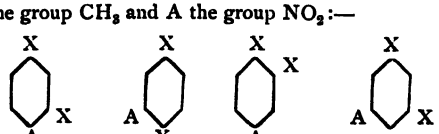
[1] 'Nearest to': compare the structural formulæ for the three methylbromobenzenes



the Br atom is said to be *nearer to* the CH_3 group in the 1 : 2 than in the 1 : 3, and *nearer* in the 1 : 3 than in the 1 : 4 compound.

[2] See Remsen and Hall, *Amer. Chem. Journal* **2.** 50; and Remsen and Noyes, *ibid.* **4.** 197.

[3] See E. Wroblewsky, *Ber.* **15.** 1021. Compare the following formulæ where X represents the group CH_3 and A the group NO_2:—



Again, when thiophene, C_4H_4S, is acted on by nitric acid the thiophene is completely oxidised; but when negative groups are introduced into the thiophene molecule the products react with strong nitric acid to produce nitro-derivatives[1]. Thus moniodothiophene, C_4H_3IS, yields nitriodothiophene $C_4H_2I(NO_2)S$; and dibromothiophene, $C_4H_2Br_2S$, yields dinitrodibromothiophene, $C_4Br_2(NO_2)_2S$.

82 From these considerations it would appear that the readiness to undergo this reaction or that, or, as might be said, the *chemical stability* of a molecule, depends largely on the balance of properties of the parts of the molecule, such balance being itself connected with the nature and relative arrangements of these parts. Many of the reactions cited in the foregoing paragraphs (80 and 81) may serve as illustrations of the meaning of the expression 'chemical stability', and of the conception of a dependence between this and the balance of functions of parts of the molecule; let one more illustration suffice.

The conditions under which an atom of hydrogen apparently fulfils alcoholic functions have been already summarised [pp. 168—169]. In some molecules the acid and alcoholic functions of the hydrogen atoms seem to be equally balanced, so that for some purposes the compound may be classed as an alcohol, for other purposes as an acid; thus, when an atom of hydrogen in the benzene molecule is replaced by the group OH, the product, phenol $C_6H_5.OH$, exhibits some of the properties of an acid and also some of the properties of an alcohol; e.g. an atom of hydrogen is replaceable by metal when the compound is acted on by an alkali metal or alkaline hydroxide, but not when it is acted on by an alkaline carbonate[2]. By replacing three hydrogen atoms in the phenol molecule, $C_6H_5 . OH$, by NH_2 and NO_2 groups, compounds are obtained which exhibit both basic and acidic properties; e.g. the molecule

[1] H. Kreis, *Ber.* **17**. 2073.

[2] In these actions phenol presents an analogy to aluminium hydroxide—

$$Al_2(OH)_6.$$

its own rules, how do we know that it is true or false as a whole? How do we know that it is not partly true and partly false? How do we know that we are not seeking to apply categories which are simply not applicable? How are we to know whether to frame another theory with the same categories, or to change our categories? How do we know that our theories are not *neither* true *nor* false, because they are framed in terms which do not apply? It is not just a question of mere acceptance or rejection by immediate apprehension. And if the immediate apprehension is to give more than acceptance or rejection, its character as immediate is surely lost: it must then be a discursive, disciplined, critical activity, that is to say it is or involves thinking. Then the work of thinking does not stop with the production of formal validity. The question of real validity is essentially part of the logical problem of inference.

Thus the Idealistic logic is forced to attempt to answer the question, Can a formally valid argument have real validity? Granted that inference obeys absolutely universal and necessary rules, can it be really valid? Here again it is forced to answer in the negative. It cannot be maintained that inference is either formally valid, or really valid. This double failure Bradley seems to regard as doubly discouraging. It is difficult to see why he should do so. Having decided that inference is never quite formally valid, why should he mind the discovery that if it were it could not be really valid? If he had found that an operation which was perfect formally could not even so contribute to knowledge, he might reasonably be expected to tremble at the imminent danger of an easy descent into scepticism. For the formal perfection of inference would have encouraged him to believe that in the recogni-

tion of that perfection he had *understood* the nature of inference through and through; and if such understanding brought with it the apprehension that this formally perfect operation could not contribute to knowledge of Reality, he might well conclude that there is little hope of knowledge. But as things are, he has found that neither is inference formally perfect, nor *if it were* could it give a knowledge of Reality which was really knowledge. Why should he see in this cumulative grounds for dejection? Surely he might rather have concluded that in the whole attempt to demonstrate the capacity of inference to contribute to knowledge by exhibiting the formal perfection of particular actual inferences, he was barking up the wrong tree. He might then have asked himself whether, on the fundamental principles of the Idealistic logic, he would have expected particular actual instances of scientific reasoning to show a pure formal perfection. Had he done this, he must have answered, I think, that he would not have expected it. But to this point we shall return.

CHAPTER X

THE COHERENCE THEORY OF TRUTH

THE theory of Truth as Coherence in effect abandons the distinction between formal and real validity. While it is perhaps difficult to see what else the Idealistic logic could do after Bradley, it must be admitted that this looks perilously like going back on the whole position, and abandoning the ground hardly won for logic by Kant. It tends to bring thinking under the operation of the general law of evolution; and in the end it seems to stultify logic, properly so-called, altogether.

The Idealistic logic, as we have seen, tried to save logical validity as a subject-matter for the investigations of logic, by divorcing it from truth, and leaving over the question of truth to be considered separately. In taking this step it took a hint, as we have seen, from the method of physics, largely because it was due to the success of physics that it had become clear that there could be no formal or logical test of truth. In physics it seemed evident that straight thinking could not of itself give truth, since it often produced a theory subsequently found to be false, even though there was nothing the matter with the thinking. The case of physics also showed, however, as Kant saw, that there could be no apprehension of truth *without* straight thinking. Thus it still seemed as important as ever that straight thinking should be made possible and recognisable, and there was an essential task for logic to perform in investigating this matter; though logic

was now investigating not the apprehension of truth itself, but an activity, namely thinking, which is essential to the possibility of the apprehension of truth.[1] Thus the Idealistic logic has the advantage of apparently being able to delimit with some definiteness the sphere of its own enquiry.

The Coherence theory seems ultimately to go back on this distinction. It denies in the end that any theory can be coherent without being true; it maintains that any theory which is discovered to be untrue is in the end seen to have been incoherent. This means that any 'thinking' which does not give truth is only partially coherent, that is, it is not coherent. It seems fair to express this by saying that 'thinking' which does not give truth is only partially thinking, that is to say that strictly speaking it is just not thinking. Thus on this view it is the business of thinking to give truth, because truth is coherence and coherence is truth. Thus the wheel has turned full circle, and the Coherence theory has gone back on the very distinction by means of which the Idealistic logic made a fresh start. In doing so it has, I think, put logic out of business again.

A short investigation of the Coherence theory will show that this is the case. The Coherence theory follows the Idealistic logic in stressing systematic unity as the fundamental and essential feature of thinking. In thinking we construct a whole, and every part has its nature determined by the whole. There are no propositions which represent immediate apprehension; there are no 'facts' which are immediately known, no judgments which are immediately recog-

[1]As I have tried to show elsewhere, the difference in this respect between the Idealists and Aristotle's logic is found in the last analysis to be more apparent than real.

nised to be true. We cannot know one truth until we know the whole truth. Each judgment is essentially one part of a system of judgments; and the whole system stands or falls together. Either it is all true or it is all false. Thus the first business of thinking is to make judgments which do make a whole, and this is what thinking is competent to do: the laws of thinking will be seen to have been arranged to that end. By thinking we can produce judgments which are coherent.

So far we follow the regular course of the Idealistic logic. But here we come to a difficulty. What exactly is meant by 'coherence'? What are we to say of those systems which appear by all rules to be perfectly coherent, but which are as a matter of fact known or believed by us to be false? Let us take an instance, as usual from physics. What are we to say of the Newtonian system? This seems to be good mathematics; quite as sound mathematics, if not as complicated, as Einstein's; but it is nevertheless not believed to be true. The Coherence theory, teaching that truth is coherence, must maintain that if Newton's theory is not true, then in spite of appearances it is not coherent; while if Einstein's theory is true, it is coherent. In this case there must be, in spite of appearances, a difference *in coherence* between the two systems. Not only is the one true and the other false; the one is just coherent, and the other just not; the one is the product of sound thinking, the other not.

It is to be noticed that the Coherence theory takes no account of the popular distinction between the Newtonian and Einsteinian view in terms of *comprehensiveness*. The popular view is, no doubt, that both theories are perfectly coherent in themselves, being worked out in each case by mathematics, but that the

one is more comprehensive than the other: the one embraces all the known facts, while the other does not. The Coherence view follows the Idealistic logic in having no use for 'facts' in this connexion. It maintains, as we have seen, that our acceptance of facts as facts depends upon our systematic theory, and not *vice versa*. For this reason a capacity to comprehend 'facts' cannot ultimately be accepted as a test of the truth of a systematic theory.

There is no reason, I think, why the Coherence view should not attach importance to this capacity to explain facts on a certain level. Indeed it is evident that in giving some account of the actual order of discovery of new truths in science, some importance must be attached to this point. No doubt it may be the case that the enquirer abandons a particular theory and formulates a new one, because he *believes* certain facts to be facts, certain propositions to be true, and sees that this could not be so on the old theory. A particular genius may have a remarkable flair for 'facts' in this way. Logic may reasonably allow this, I think, just as it might, if necessary, allow that a particular theory might not have been formulated if at a certain moment an apple had not fallen on Newton's head. These matters in regard to the history of theories, or, if you like, the history of scientific discoveries, it may leave with unconcern to the psychologist and to the historian of science. But when it comes to the matter of proof, to the reasons for ultimately accepting or rejecting any theory as *true*, then the Coherence view is bound to insist that it is the recognition of coherence and incoherence, and that alone, which matters. Only a true view can be truly coherent; only that view which is truly coherent is true; and it is known to be true because it is recognised to be truly coherent.

Thus the Coherence view holds that the advance of knowledge is ultimately secured by thinking alone, and proceeds by a kind of natural dialectic from a less coherent theory to a more coherent theory, then to a still more coherent theory, and so on. No doubt the particular scientific theory which holds the field at any given moment appears at the time to be perfectly coherent; and no doubt it seems at the time to depend on what from the logical point of view is an irrelevant accident that the theory comes to be abandoned. At the time it is abandoned on suspicion, as it were, and not because it is known, or can be proved, to be false. But for all that the truth is, according to the Coherence doctrine, that after the new theory is articulated, the old one is eventually seen to be actually incoherent; and it is for this reason that it is finally relegated to the limbo of outgrown errors. Thus from the point of view of logic there is no test of thinking but thinking; false thinking is recognised to be spurious, not ultimately because of any external test such as the capacity to explain alleged facts, but simply because in the end it is recognised to be intrinsically not thinking. And this is how we proceed to knowledge. Gradually through a series of systematic theories, each rejected because it is not coherent, we approach, driven on by the internal necessity of the mind's demand for coherence, *i.e.* for pure thinking, nearer and nearer to that pure coherent system which is truth. Looking backward, we can see that the change from system to system is, to the eye of reason, not a series of random substitutions, but a real development moving always in one direction, a process self-fulfilling and self-fulfilled, whose natural end is pure coherence or absolute truth.

Part of this view seems to be plausible enough. The

history of science, for instance, may appear, if a sufficiently sweeping view be taken, to represent itself as a series of changes of theory, which turn out to be steps in a continuous development. One theory is not simply substituted for another; the later in a real sense grows out of and transcends the earlier. It will not be found, however, that the course of scientific advance will conform to such a scheme in detail as easily and neatly as might be supposed. There are pages in its history which fit in better with some such scheme as the Hegelian dialectic of opposites. Still probably no one is disposed to doubt that in some fundamental sense scientific knowledge advances not at random, nor by aggregation, but by development or growth, and that logic must reckon with this fact. This would not, however, be so readily admitted in other spheres. It is not obvious, for instance, that our knowledge of moral values has developed since the days of Plato or of St. Paul. And no one has successfully represented the history of philosophy as a continuous development. But it is hardly to our purpose to press this point here.

What concerns us here is rather this. Can it be maintained on logical grounds that coherence walks hand-in-hand with truth; that the theory which is truer is more coherent, and only the whole truth is coherent in the strict sense of the word? Can this be shown to be even plausible as a logical theory? Certainly the view gives rise to difficulties when it is applied to physics and to the part played by thinking there. Is it supported then by logical arguments strong enough to overbear these difficulties? Idealism has always since the days of Plato shown the courage to fly in the face of appearances, and again and again it has proved justified in doing so. But it has never rested satisfied with merely explaining its reasons for

abandoning the more ordinary views which seem to conform to appearances. It has always sought in addition to represent its own account as being on closer analysis an intrinsically plausible, even if not finally convincing, explanation of the apparent facts. Can it do so here?

At first sight at least the Coherence doctrine is strongly reminiscent of an old theory, which found favour in the days before Kant. We all have a tendency, derived perhaps from old Chinese puzzle days, to believe that if the parts have been fitted so as to make a whole at all, they must have been fitted correctly. We take it that they simply would not make a whole unless they were rightly fitted. If after struggling for hours with the numerous and varied parts of a clock spread all over the table, we at last succeeded in getting them all back inside the clock-case, and the clock would go, we should take it for granted that we had fitted the parts in correctly, *i.e.* as the maker of the clock intended them to be fitted. We should take it absolutely for granted that there were not two or more ways of making a clock that would go with those self-same parts. Therefore if the clock goes, we must have fitted in the parts correctly. Now, as we have already seen, Descartes and the pre-Kantians generally thought in this way about the universe. They took it for granted that if all the particular facts fitted nicely into a whole with no parts left over, then those parts would be fitted as God fitted them, and the universe would be understood. If it could be seen that the facts now known would together with one more fact make up a complete and perfect system, they would have taken this as proving that that extra fact was certainly a fact. If everything that we could observe went together to make a work-

ing system, this would show that we had apprehended Nature rightly. If everything that we have observed can be fitted into a coherent account, then we have got hold of the truth. What we must do meanwhile is to go on patiently collecting the parts until our system is complete!

Now this is a crude view, and was easily riddled with criticism by Kant and the Idealistic logic. Kant showed that the fact that observed facts fit into a system does not prove any such thing. He showed that thought can itself produce systems, simply by working in accordance with rules, and that it is its essence to be governed by such rules. Since therefore thought proceeds by system-making, and thinking is essentially involved in the recognition of facts as facts, it is essential to the very nature of a recognised fact that it should fit into a system. Thus the fact that facts fit into a system is of no avail to prove that the system represents the truth. The old view, as we said, was a crude view. But the Coherence view, which we are now considering, is not a crude view. It comes after the Idealistic logic, not before it. It is indeed developed out of this logic, and agrees with it in repudiating the one piece of doctrine that made the old view plausible, namely that particular facts could be apprehended separately as facts. If this latter view could be maintained, if it were really the case that all the parts of the system could be apprehended singly one by one with certainty and exactitude, then, provided that all the parts exactly fitted *as they were*, and each part could be seen to be exactly and in detail fitted to play the part allotted to it, it might reasonably be maintained that under these conditions it was at any rate highly probable that in being arranged into a system those parts had been arranged into the only possible

system, the right system. But if you deny the possibility of apprehending the nature of the parts singly and separately, you have denied the very thing which makes the theory reasonable. Yet while denying this, the Coherence theory still maintains that there is only one really coherent system, namely the truth.

It is evident that there is one noticeable difference between the old theory and the new, though it is doubtful whether this difference marks an essential advance from the point of view of logic. Descartes, and the pre-Kantians generally, would no doubt have accepted an account of the world as a *mechanical* system, whereas to-day no one would accept such an explanation. This certainly means that the notion of a mechanical system has been rejected as an adequate account of the universe, and there must have been some reason for this rejection. But can it be said that mechanism was abandoned because a mechanical system was recognised as in any sense intrinsically unsystematic or incoherent? Does anybody object to mechanical systems *qua* systems? Is there any element of indeterminacy to be found in them? Is there any lack of perfection or completeness in the necessity which binds the parts? Or are we in this connexion driven back to something on the lines of the popular explanation, which says that mechanism was rejected simply because it failed to fit the 'observed facts'? This explanation, as we have seen, is not admissible for the Coherence theory.

Actually, of course, mechanism has always been regarded by the human mind as the acme of intelligibility. It has always been thought that in a mechanical system there could not be any place for the slightest element of unintelligibility or indeterminacy of any kind, and the most persistent and determined

efforts on the part of philosophers to find a niche for freedom in a mechanical universe have not availed to prove the contrary. In a mechanical system everything is determined to the last jot; everything is in essence knowable, and the nature of everything is necessarily connected with the nature of everything else. Such a system seems to be the one type of unity which is wholly knowable by the mind; its whole nature, however complicated, can be thought out by pure thinking alone; it is such that from one datum the whole can be completely inferred by the mind's capacity for *a priori* inference. If we cannot infer within the limits of a mechanical system, under what conditions can we infer? This has always been taken by all logic, including the Idealistic logic, as providing the instances *par excellence* of inference properly so-called.

It is true that if this is so, and yet mechanism is rejected as an explanation of the universe, we seem perilously near to having to reconcile ourselves to admitting that the universe is ultimately unintelligible, or at least is less intelligible than it would have been had it been mechanical. This conclusion has as a matter of fact quite commonly been drawn, and it operated powerfully for a very long time to drive scientific theorists to hold on to mechanism. In biology, for instance, to repudiate mechanism has been in fact to admit that changes are unpredictable, and to accept with 'natural piety' constant sequences and constant conjunctions which are in no way seen by us to be 'necessary' or 'intrinsically inevitable.' In this way biology has come in the course of time to deny such determinate necessities in nature; not simply to assume that they are, temporarily or permanently, hidden from us, but to allege positively that they are

not there. Biology seeks to show, of course, that in spite of the absence of these determinate necessities, nature is still in *some* sense systematic and intelligible to us. That is to say it tries to represent an organism, which is just not a mechanical system, as an intelligible unity, and a process of development, for all its element of indeterminacy, as an intelligible process. But it is doubtful whether it has got very far along this road, if we judge, as we do judge, by the standard of intelligibility set by mechanics.

In physics the situation seems to be more definite. Here also the rejection of mechanism is closely associated with the alleged discovery of a principle of indeterminacy in nature. Here again, if, as is the case, this is taken as a ground for a *final* rejection of mechanism, it means that this indeterminacy is thought to be really there in nature, and not simply that actual principles of determination have not yet been discovered. This conclusion, that an element of indeterminacy is *really there*, has been drawn by many physicists, and much has been heard of it in recent years. But it would be wrong to draw the hasty conclusion that this admission is accepted by the physicist as meaning that nature is unintelligible. Obviously this could not be the case. It might appear to the plain man that an element of indeterminacy must mean that the sequence of events is undetermined, unpredictable and unknowable, regularity of behaviour being thus a pure contingency, which happens as a matter of fact to be a great convenience for practical life. If there is a moment when it is simply not determined in nature whether A or B will happen, it might seem difficult to see how nature can be thought of as reasonable or understandable. But this is not the conclusion drawn by the physicist; he does not regard the system con-

taining this indeterminacy as therefore unsystematic or unintelligible at all. If he had thought this he would never have allowed himself to be driven to admit the existence of indeterminacy; indeed, so long as he thought this, he did not admit it. He can, or thinks he can, grasp such a system with his mathematics, though his formulae are more complicated than those required for a mechanical system. For the mathematician, the advance from a system, in which under certain circumstances a certain event is necessarily bound to happen, to a system, in which under the same circumstances there is a determinate degree of probability of that event's happening, is only a change of complexity.[1] Both the system where necessity rules and the system where probability rules are intelligible; that is, in both cases the laws of the system can be expressed mathematically, prediction is possible by mathematical calculation, and what the mathematician predicts is just as correct. In the second case, of course, the prediction is not of a determinate event, but of a relative degree of probability; but this probability is not thought of as a mere opinion about an actually determined event, but as itself a fact in nature. Thus it seems that it would be premature to say that to abandon mechanism is necessarily to abandon all hope of rendering the world intelligible. The physicist himself does not so regard it; and, as we have seen before, it is no part of the legitimate claim of modern logic that it can of itself lay down the law in the matter.

But even if we grant this without further argument; even if we allow that a system containing a certain element of indeterminacy may be, as the mathe-

[1]At least this seems to be implied by the possibility of a mathematical theory of probability, and of its application to physics.

matical physicist alleges, an intelligible system, there seems to be no ground whatever for saying that it is *more* intelligible than a mechanical system; and this is what the Coherence theory would require us to say. Even if we grant that the laws of a partially indeterminate world can be comprehended by mathematics, there is no reason for saying that the calculations by which simple mechanics were worked out depended on bad mathematics, whose arguments simply did not follow. There is no ground for saying that arguments about mechanical systems were *incoherent.* Even in the case of Euclidean geometry, nobody has said that it was *unsystematic.* No doubt more assumptions are involved in it than had been thought; principles which were thought to be self-evidently true of physical nature are now regarded as pure assumptions —assumptions, moreover, which physics no longer makes about nature. But nobody thinks that within its assumptions it is not a perfectly coherent system; nobody thinks that its assumptions contradict one another or have implications that contradict one another, nor that they are insufficient wholly and exactly to determine the system. It has often been urged, of course, that there are other geometrical systems which are *equally* consistent and systematic; and this, if it is true, is obviously very important. It has sometimes been urged that some such systems involve *fewer* assumptions than the Euclidean. But it is not urged that the Euclidean geometry is not a system.[1] The fact is that those who have abandoned mechanism, and those who have rejected the view that the space in which physical events occur is

[1]Of course, in all this part I suffer under the disability of only being able to judge from popular books. But it is difficult to see what can be done about this disability, except not to forget it.

Euclidean, have themselves thought that they were doing so because those theories would not fit in with what they regarded as 'observed facts'; and it is difficult to see how this rejection can be explained in any other way.

It seems, then, that an investigation of the actual advances of science from one systematic theory to another does not support the underlying principle of the Coherence view. It rather confirms the popular view that rejected theories may have been perfectly consistent and perfectly clear-cut and intelligible; they may well have been neither self-contradictory, nor so woolly and indeterminate in their use of terms that it was impossible to say in the end whether they were self-contradictory or not; they were often as intelligible and as consistent as the theories which were accepted in their place. If, for instance, the world had been constructed on the mechanical model, it would have been quite intelligible. If physical objects had been disposed in a Euclidean space, this would certainly have been no bar to our understanding the physical world. Only observation has in some way eventually convinced us that the world just does not happen to have been made like that. So an intelligible explanation of the actual world is still to seek. This is undoubtedly the common view; and the investigation of the aspect of scientific advance which we have just been considering seems to confirm it.

How then does the Coherence view come to maintain that the difference between an accepted theory and a rejected theory, if science is really advancing towards knowledge, must ultimately be one of coherence? As we have seen, this doctrine proceeds out of the development of the Idealistic logic, which lays much stress on the examination of science at least in

this sense, that it works out its account of inference by the analysis of actual instances of reasoning, and in choosing its instances always regards pieces of scientific argument as *par excellence* examples. How, then, does the Coherence theory come to propound a view which our recent investigation of scientific method does not confirm? The answer seems to be that its thesis is the inevitable result of an intransigent doctrine about immediacy, an entire refusal to accept any kind of ultimacy in the apprehension of fact—an attitude which was itself in turn due to a genuine and careful analysis of the reasoning of science in an aspect which had received no attention from logic before. This is ground that we have already covered at an earlier stage of our argument. But we must now go over it again, with a special eye to the question whether this uncompromising rejection of immediacy is strongly enough founded to bear the weight of the superstructure which has been put upon it. Naturally we shall hope to find here some taint of exaggeration or over-statement, in that an aspect of thinking, which had hitherto been denied recognition, may have been over-emphasised, and made to do more work than a detached and dispassionate analysis need allot to it. As always, we must hope in the end to find a *via media*. For the moment, however, we must content ourselves with looking for indications as to where the Coherence theory may have been led into going too far.

Let us consider the point in general terms first. We have already seen that there is a natural and inevitable hostility between the view which emphasises the systematic nature of thought and the view that 'brute facts' are given. If it is an essential character of thinking that it produces system, then it must be allowed

a certain amount of freedom with the given. There seems no escaping this argument. If the given are themselves, as given, parts of a system, then what appears to be the making of a system by thought must really be nothing more than the apprehension of relations between the given parts; that is to say, the relations between the parts are as much given as the 'brute facts' which are the parts; to put it in other terms, inference is reduced to a series of immediate apprehensions, and is thus explained by being explained away. If, on the other hand, thinking really makes a system of the given, then the given must be susceptible of such modification as is necessary to make it possible for their inter-relations to be systematic. The first view, which has been rejected by the Idealists, we shall restate and reconsider at some length in a subsequent chapter. The second view has been adopted by the Idealists, and we have already examined the reasons for its adoption. The arguments in favour of maintaining that scientific thought proceeds by building systematic theories seems to be overwhelming; and the assumption that this is an indication that thought as such, and of its own essential nature, moves in the same way does not seem objectionable. The difficulty lies in explaining the movement from theory to theory, a vital point for the solution of the problem how system-building can contribute to knowledge of reality. If in vindicating the systematic nature of thinking it was necessary to deny that the given was unmodifiable, that is, to maintain that 'brute facts' cannot be given, it is not now possible to explain the rejection of an apparently consistent scientific theory by saying that it is found not to comprehend all the facts; for this would be to allow to the facts that brutal nature which was essentially denied at the

beginning. This argument seems ineluctable. The Idealistic logic chose at the outset between system and immediacy; and having committed itself to its choice for good reasons at the beginning, it could not go back at the end. If there can be 'brute facts,' then thought cannot be a system-producing activity; if thought is a system-producing activity, there cannot be brute facts. Therefore the Idealistic logic cannot maintain that a systematic theory can properly be rejected as untrue because it does not embrace certain facts. If the theory is untrue, it must in the end be unsystematic. Moreover, if it is recognised to be untrue, it must be so because it has been recognised to be unsystematic. *A priori*, by its own inexorable logic, the Idealist doctrine is driven to the Coherence theory.

Of course, the Coherence theory itself does not rest satisfied with such a sweeping, *a priori* argument. The Idealistic logic recognises that it must show at each point that its account of thinking will hold of actual scientific argument as we know it. Indeed it was for failure on this score that the traditional logic was rejected. So now the Coherence theory must show by detailed analysis that the sciences know nothing of immediately apprehended 'brute facts.' In seeking to do this it proceeds by the proper method of logic; that is to say, it examines judgments and ratiocinations as stated by science, and tries to show that the part played in scientific reasoning by judgments of fact shows that they are not taken to be statements of sheer knowledge of fact. What this argument comes to is this, that in the course of reasoning all statements of fact come to be *modified*. That is to say, scientific demonstration does not proceed by first stating certain known facts finally and once for all at the outset, and then drawing conclusions from the facts as stated. It

is part and parcel of the reasoning in scientific enquiry that the so-called 'facts' concerned are stated, and restated, and again restated—a process of modification which never ceases until the whole of truth is attained. In a word, this investigation of scientific reasoning is to demonstrate that for science at least all judgments are essentially corrigible.

It is not difficult, as we have seen in the course of our previous argument, to show that this is the case with judgments which state the fundamental principles of the empirical sciences—the 'total quantity of energy in nature is neither increased nor diminished,' 'perpetual motion is impossible,' 'nature makes nothing in vain,' 'nature makes no leaps,' and so on. It is obvious enough that these are all in a condition of being continually modified and reinterpreted, and from time to time radically restated. They cannot possibly be regarded, as stated, as fixed, inviolable, immutable, true statements which serve as the first premises of scientific inference. Analysis proves that the empirical sciences do not, explicitly and consciously at least, work on this method; and it is this fact which gave to the revolt from the traditional logic its vital strength. About these statements of first principles no more need be said here. What we are here concerned with is the so-called 'judgment of fact.' Proceeding from the analysis of universal judgments, like the statements of first principles just mentioned, the Idealistic logic has put forward a theory of judgment as such, *viz.* that judgments are essentially corrigible. We have now to determine whether a detailed examination supports this thesis in regard to judgments of fact in science. Can the judgment of fact also be shown to be corrigible?

CHAPTER XI

COHERENCE AND STATEMENT OF FACT

We may here take as crucial cases for the purposes of our investigation judgments of perception of the type 'This is red,' and judgments of immediate self-consciousness of the type 'I have a tooth-ache.' We need not worry, I think, about the historical judgment,[1] *e.g.* 'Caesar crossed the Rubicon in 49 B.C.', 'King Charles I died on the scaffold.' The other two types are more fundamental from our point of view. If a man allows that the judgments of perception 'This is red,' 'That looks like a haystack,' are provisional and corrigible judgments, he will hardly object to the same being said of the historical judgment, much of the evidence for which is statements of eye-witnesses.

It is worth remarking at the outset that in this argument we are throughout speaking of *judgments*, and of judgments alone. If any one wishes to contend that there are final, incorrigible, immediate apprehensions which are not and cannot be *stated*, and that the scientific thinker can be shown to take account of these, we are not concerned with his contention here and now. It may be that when I say 'I have a tooth-ache' I have a nucleus of immediate knowledge about my own state which determines my attitude in choosing between a number of statements offered to me as state-

[1]Of course, if it is desired to exhibit a clear instance of the human mind ratiocinating with statements which are all the time recognised as corrigible, the historical judgment is an excellent example to take; *i.e.* it is a good *favourable* instance for the theory.

ments of my condition. It may be that if a doctor says to me, 'It is not a tooth-ache, it is so-and-so,' I may be prepared to accept this as the truth; whereas if even a doctor says, 'No, you have no pain whatever,' I might unhesitatingly reject his statement as certainly untrue. Even so, however, a Socrates could perhaps easily convince me that my idea of pain is not so well-defined as to entitle me absolutely to reject even this as false. It may be, in a word, that, though I cannot find a statement which states my condition with absolute truth, this does not mean that I have no final immediate apprehension of my own condition. Actually, experience suggests that I have such immediate apprehensions enabling me to choose between more or less misleading and untrue statements about myself. But if there is any sense in all this, our argument here has nothing to say against such a view,[1] being concerned indeed with a previous question, *viz.* the question whether science will allow that a man's *statement* of his own state of the moment is ever true, and therefore final and incorrigible. Does science know anything of incorrigible *statements*?

Here it seems desirable to disentangle the question of reliability from the question of accuracy. It may seem at first sight that both the scientist and the ordinary man treat the initial, immediate statements of an observer as corrigible in respect of accuracy, but not, at any rate necessarily, in respect of truth. If I say of a particular substance 'It is blue,' this statement may no doubt be of no *use* to the scientist. It may be necessary to his purpose to know of exactly what shade of blue it is; and this I have not told him, and may perhaps not be able to tell him. But, it may be argued, though I have not told him what he wants to know,

[1]This view is further considered, *infra*, pp. 302 seqq.

viz. of what shade the substance is, I have certainly told him something, *viz.* that it is blue; also that what I have told him is true. Similarly, to take another instance, it may be necessary to him to know to the nearest fifth part of a second how long a time a certain moving body took to cover a given distance; but if I say that it took not less than a half a minute nor more than a minute, it may seem that my statement may be taken to be *true*, though it is useless. If this is really so, it must be possible to collect together a number of common-sense statements which are at least as certainly *true* as the statements of physics, the difference being one of accuracy. In that case the aim of physics is not to give us knowledge of a physical world of which we previously had nothing but more or less erroneous beliefs; its task would be to give more *accurate* knowledge, to add microscopic knowledge, so to speak, to the body of macroscopic knowledge which was there before and remains unaffected. Science would be allowing the statements of the careful observer to be always true, though often useless to itself; that is, to be corrigible in respect of accuracy but not of truth. The corrected statement would be no more true than the original. Strictly speaking, it would really be a further statement of a *new fact* not stated in the original. If I tell a detective who already knows a particular car to be blue that it is Cambridge blue, I am on this view, I suppose, telling a man who already knows one fact another fact which he does not know. The knowledge is equally knowledge in both cases, but the facts known are different. The case is the same if a man already knows that a certain distance was covered in more than half a minute but less than a minute and I tell him that the actual time taken was $55\frac{4}{5}$ seconds.

Let us accept this view for the moment for the sake of argument,[1] and press the point of reliability. Suppose we leave in the background the question of accuracy; should we accept both statements as true? It might be thought at first sight that the less accurate statement would be more likely to be true, coming from an observer. If I am asked to notice whether or not a train passes along a particular piece of railway line of which I can see half a mile, I am perhaps less likely to give a mistaken answer than if asked whether a spark has appeared at a given terminal. If asked to look and see whether the motor-car is dark or light in colour, I am less likely to be in error than if I have to determine whether it is blue or green. Thus the 'rougher' observations might be taken to be reliable, that is, the statements might be taken to be true, while the more accurate observations might be considered unreliable, that is, the statements might be untrue. In that case, any intelligent man, whether a scientist or not, would treat the latter statements as corrigible in respect of truth, and the former as not corrigible.

This point must be more closely investigated. Let us consider first the attitude of science to accurate observation. The examination is made easier for us by the fact that it is part of the technique of science

[1]It will be seen that I am not here concerned to discuss the question whether all these statements *may* be true; whether if it is a fact that the motor-car is Cambridge blue, it may equally and in the same sense be said to be a *fact* that it is blue. I am discussing whether these various statements are with equal reasonableness *accepted* as true; that is whether, when made by an observer, they are all equally statements of knowledge. In other words, I am not discussing whether that a thing is blue and that it is Cambridge blue can be equally *facts*; the discussion is confined to the question whether, in the case of a thing that is Cambridge blue, knowledge that it is blue is possible independently of the knowledge that it is Cambridge blue. No doubt the point under discussion has a bearing on the point which is not here under discussion.

itself to clear up the question of accuracy. It is part of the preparation of the background of an observation to determine within what limits the observation, if reliable, may be taken to be accurate. Science seeks to rely as little as possible on accuracy in the observer; in him it demands, as far as possible, only reliability. The question of accuracy is thrown back on to the previous preparation for the observation. In the ideal case, for instance, arrangements are made for a minimal difference of length in the object to cause a spark to occur, or not to occur, at a place under convenient observation, or something of the kind; the observer simply looks for the spark. He is not expected to notice the colour of the spark, its brightness, or anything else. If this *were* necessary to the purpose in hand, science would not regard the matter as clinched until it had gone one step further and so perfected the experiment as to make the further question, which then turned on difference of colour or brightness in the spark, turn now on whether or not there was a spark at all. This is the very business of experimental science; it will go on and on with the preparation of the experiment until it can make the conditions of the observation so favourable that the observer *cannot* (humanly speaking) make a mistake. It seeks to eliminate any need for accuracy *in the observer*, by making a point involving great accuracy turn upon a plain blunt unmistakable observation of 'yes' or 'no.' If the solution of a problem in the end depends upon a piece of close discrimination in the observer, then considered as an experimental science the enquiry concerned is in its infancy. This at least seems to be the lesson of physics. Broadly speaking it makes its sparks so big, if I may so put it, that nobody could miss them, and it records them permanently on a photographic plate

so that one may verify whether or not they occurred whenever one wishes. Thus for science in the end the question of discriminative accuracy of observation does not arise; it is the business of scientific method not to let it do so. The only question therefore is that of reliability. But does science treat observation under these refined scientific conditions as *absolutely* reliable?

It is probably not necessary to argue this point at length. The ordinary layman—and it is only as such that the logician can speak—is easily satisfied that it is no part of the method of science to attach *absolute* reliability to the record or statement of any one observation. Science evidently lays great stress all along the line on repeatability, and, in these days at least, is extremely undogmatic where observations are non-repeatable. Not only does it seek to make particular experiments repeatable, but it tries wherever possible, *e.g.* by photographic record, to make available repeated observations of the same experiment. This must mean that science takes it that there is a certain chance of a mistake *somewhere*, and that it does not regard its careful preparations as eliminating absolutely all chance of error. Moreover, it would be surprising indeed if the scientist had not learnt the lesson that, for instance, his eyes might deceive him. He knows well that statements which are made with perfect confidence by the ordinary eye-witness have frequently to be corrected, because his scientific knowledge tells him that as stated they cannot be true. If after being told that this is so the eye-witness looks at the object again, he will make a different statement. This will no doubt have a recognisable kinship with the first statement, but it will not be the same. Even if the process of re-observation of the same fact in the light of more and more knowledge is continued in-

definitely, there is no reason to suppose that misstatement could be *absolutely* eliminated. Moreover, experience shows that the dependence of the actual statement given by the observer on his own general knowledge produces not a constant and discountable error, but an unreliable and varying one. This is no doubt more evident in witnesses in a law-court than in scientific observers; but there is no reason to believe that the efforts of science in preparing for observations can do more than reduce the probability that the observer may be in error. There is nothing in the method to enable it to guarantee absolute success. The mere fact that science is glad to duplicate its observations is evidence that it recognises this. There is no ground for believing that science takes any statement of any observation under any condition whatever as absolutely incorrigible.

We may now turn to consider the less accurate observations of ordinary life. Can it be maintained that these, with all their 'roughness' and lack of accuracy, are as they stand to be taken as true, and therefore as absolutely final and incorrigible, as far as they go? Can it be maintained that while I may be mistaken about which of ten shades of blue is the colour of this book, I can apprehend with absolute certainty and reliability that it is blue, so that the 'rough' statement, 'This book is blue,' may be taken to be a true and absolutely incorrigible statement? To take a different instance, might it be the case that while the perception that a stick was exactly ten inches long might be at fault, I might be quite certain of the observation that it was less than a foot? Can I be *certain* by observation of the truth of a 'rough' statement, when I am not certain of the truth of an accurate one?

It is difficult to see how it is possible to maintain any such thing. In the first place there is the old difficulty which logic has always put forward. How can a man know what *A* is *not*, or that *A* is greater or less than *B*, unless he first knows what *A is*? If *A* is a period of time, how can he tell that it is less than a minute, unless he observes just how long it is? To know that it is less than a minute he must first know that it is, say, $55\frac{4}{5}$ seconds. If *A* is a shade of colour, he must first observe just what shade it is before he can know that it falls within a certain range of shades, *e.g.* the range of shades covered by the term 'blue.' It is difficult to see how a judgment of perception can be true without being accurate. If I apprehend immediately the quality of a thing, I must surely apprehend immediately that quality just as it is. I cannot apprehend *immediately* that it has a quality which falls within a certain range of qualities. Either I immediately apprehend a quality *exactly*, or it is not immediate apprehension. It seems impossible that there could be certainly true immediate judgments of perception, which though true are rough and not accurate.

Actually, no doubt, these rough statements of the type 'this is blue,' which appear to be simple statements of perception, must be arrived at by some more or less trustworthy process of inference or argument of some kind. If when looking at an object I am sure that it is blue, I must surely be apprehending its colour much more specifically than that, even though for some reason I do not put the more specific apprehension into words, but content myself with saying roundly that it is blue. Suppose a man to be looking with his own eyes at an object which I cannot see, and suppose that he tells me it is blue. If he cannot

tell me much more specifically what kind of blue it is, I shall surely feel extremely doubtful about his claim to see that it is blue; and if I have reason to think on general grounds that the object is not blue, I shall probably disbelieve him if he claims to be able to see that it is blue, but not able to see of what shade of blue. If that is so, a real statement of apprehension would not state 'It is blue,' but 'It is such and such an exact shade'; the statement 'It is blue' would imply, over and above the apprehension of the exact shade of the object, the further apprehension that the shade in question fell within a certain range of shades; that is, the statement 'It is blue' would represent the conclusion of an argument. It could not be certainly true unless the premise was certainly true; that is, its truth would depend on discriminative accuracy in the observation. Yet certainly no one would claim that his discrimination of the exact shade of a piece of silk was absolutely certain, nor even his perception that two pieces of silk lying side by side were of exactly the same shade. Such judgments would always be made provisionally, and would be recognised to be corrigible on other grounds. We have already seen that an advanced empirical science would never allow itself to attach weight to such judgments. Yet if the above considerations are sound, the alleged statements of perception of the kind 'It is blue' cannot be allowed to have *certainty*, if these have not.[1]

It is evident that the point must be pressed further. Clearly the above argument points towards a thoroughgoing rejection of the view that there are strictly

[1]Of course, if it is allowed that none of these statements have certainty, and it is asked whether a 'rough' statement, though admittedly not certain, is less *likely* as a matter of fact to be untrue, a host of entirely new considerations arise. But with these we are not here concerned.

speaking 'statements of apprehension,' or final incorrigible statements of apprehended fact. If in order to know from looking at it that an object is blue, I must have apprehended its own particular blueness—in ordinary experience blue objects are in almost all cases discernibly different *in respect of their blueness*—there seems to be necessarily an unbridgeable gap between what I apprehend and what I state. To take an extreme case, let us suppose that I am looking at a hundred blue objects, the blueness of each one of which is perceptibly distinguishable from that of each of the others. It is obvious that I cannot find, and shall not attempt to find, a separate name for the particular blueness of each, although with sufficient attention I can distinguish them all. The number of names I shall actually use in referring to their colour will depend on circumstances. If I tried to give a different name to every particular blueness which was distinguishable from others, it might turn out that every object is ultimately different from every other, so that each blue object must have a different name in respect of its blueness. This would be to defeat the whole purpose of naming and to make thought impossible. Actually, as we have said, it seems that whether or not I have a different name for every perceptibly different shade of blue, depends upon external considerations. In practice, of course, I do not. So the process of inference or argument of some kind already referred to, by which I decide whether the particular blueness of the given object comes within the range of shades of colour covered by a certain name, must always be involved in any statement of a perception of colour, however accurate, and not only in rough statements. However accurately I name shades of colour, there will always as a matter of fact be objects of discernibly

different hue which must be called by the same name. Perhaps it would not be impossible—I do not know—to have a different name wherever there is a discernible difference of blueness. Certainly we do not ever seek to do this in stating our judgments of perception. We rest satisfied with statements in which we do not state *exactly* what we have apprehended, but something rougher. And though the rougher statement must imply the existence of the more specific apprehension, the more specific apprehension is *never* stated. The quality which we state the object to have is something which it shares with the other objects to which we give the same name, though those objects differ discernibly from it and from one another, even in respect of the very quality which we are naming. The objects which we call 'blue'—and the same is true of 'navy blue' or 'royal blue'—differ perceptibly in respect of their blueness: and we must have apprehended the own particular blueness of each in order to be able to call it 'blue.'

If that is so, then in the making of these statements *something* must decide what term we shall use, whether, for instance, we shall say 'ultramarine,' or more vaguely 'bright blue,' or more vaguely still, 'blue'; and the deciding factor is certainly not the hue of the object apprehended nor, as a rule at least, the discriminative capacity of the percipient. The apprehension of the shade of colour of the object, may be the same whether I say 'ultramarine,' 'blue,' or 'not red.' In that event these statements are never 'statements of apprehension' in the sense of stating just what is apprehended; rather they are statements made 'on the strength of' an apprehension. And though each of these statements implies an exact and specific apprehension, that apprehension itself is *never* stated.

So that though the statement actually made, *e.g.* 'It is ultramarine,' involves thinking and is in some sense a conclusion, it is a conclusion from a premise which is not and cannot be stated. In other words, in all statement some process of this kind has gone on over and above the actual apprehending of something in the object—even in cases where at first sight the statement appears to be a pure 'statement of apprehension,' in the sense that the stating seems to be part and parcel of the apprehending itself. It seems reasonable enough to express this by saying that the statement involves an act of 'judgment'.

We have already seen that in a case where a man seeks to put a name to the exact shade of colour of an object at which he is looking, he certainly regards his statement as corrigible in the light of subsequent considerations. That is to say, there is certainly no special virtue of *certainty* in the first naming, given in the moment of apprehension. This is equally true whether the name used is relatively accurate or relatively rough. If he feels less confident in saying that a particular piece of silk is blue than in saying that it is of exactly the same shade as another piece, this is not because the latter statement has a greater certainty of immediate perception to support it, or has a superior claim to be called a pure 'statement of apprehension,' but simply because he has views, on the strength of his past experience, about the relative probability of his making a mistake in either case.[1] In other words, an analysis of statements of perception

[1]For instance, I myself should in all probability correctly determine, even in quite difficult cases, which two out of five given silks of four different shades of colour were of exactly the same shade; but experience shows me that the odds would in many cases be exactly even that I should be wrong if asked to say whether a particular shade was blue or green.

suggests that all these statements involve a process of 'judging' over and above the actual perceptive apprehension, and that the result of that judging, *viz.* the statement, is always corrigible.

After this, it is not necessary to say much about statements of the type 'I have a tooth-ache.' It is difficult to see why the same arguments should not apply here. It seems likely enough that we can immediately apprehend our own states, whatever else we can or cannot apprehend; and any sane man will take a lot of convincing that this is not so. But when it comes to making an absolutely true statement about my present state, that is surely an entire different matter; and it is with that that we are concerned. Here again, if I immediately apprehend my own state, I surely apprehend it as it is, *i.e. exactly* as it is; and any statement which is a rough description—*e.g.* 'I have a pain which is rather difficult to describe, but it is rather as if innumerable pins were being stuck into my leg'—is certainly not itself a statement of immediate apprehension, and therefore can lay no claim to finality and incorrigibility on that ground. Moreover, it seems that close analysis would lead us to press the same argument about any statement about my own condition, however 'accurate' it was intended to be. There seems to be a case for saying that I know in some sense the exact nature of my own pain at this moment; there seems to be no case for saying that I can now or ever make an absolutely incorrigible statement about it. My apprehension of my own state clearly enables me to make judgments about that state, but all those judgments are corrigible in the light of other judgments made on the strength of other apprehensions of other states of myself and of other things. It is surely clear that any

disciplined enquiry, whether by me or by anybody else, which seeks to determine exactly what is going on in my mind, will not allow that any one of my statements about my own condition, however reflective or however unreflective it may be, is essentially incorrigible. It would have to be considered together with others, and all would be corrected in the light of one another. As regards the relative trustworthiness of my own statements compared with, for instance, quasi-mechanical, experimental tests of my condition, there would, of course, be different opinions; but no scientific enquiry would allow an absolute incorrigibility to my statements about myself as they stand. With all its difficulties and dangers this is the only course which reason can pursue. There is no other rational method.

The preceding argument shows, I think, that a case can be made out for maintaining that statements of the types 'This is red' and 'I have a tooth-ache' involve judgment, and that as statements they are corrigible. Our general argument throughout has been that science does not and cannot regard any statement as ultimately incorrigible, because if it did the thinking which goes to produce the systematic theories, the making of which is vital to science, would be impossible. In this chapter we have been verifying this account in detail by showing, first, that science does in fact regard statements of these types as corrigible, and secondly, that an examination of the actual experiences concerned seems to show that the making of statements of these types involves thinking of the very kind which our previous argument has shown to be essentially systematic, *i.e.* the making of these statements involves what the Idealistic logic calls 'judgment.'

This analysis of actual experience—that is, the observation of what seems to be going on in my mind in a case where I say 'This is bright blue' as compared with what goes on when I say 'This is blue,' cannot itself, of course, be conclusive. For one thing, the process of 'judging' which seems to go on is entirely mysterious and inexplicable in its operation;[1] and it is obvious that in accepting the mysterious we can never be assured that it does not simply *appear* mysterious because we are misapprehending it. But though it cannot be conclusive, the argument makes it clear that the view that statement involves judgment can be shown in these cases to fit well with the apparent facts of experience. More than this we cannot expect from this kind of argument.

We may now roundly affirm our conclusion that it is impossible by an analysis of statements of fact of these kinds to refute the contention of the Coherence theory that statement involves judgment; and that, being therefore corrigible, a statement can never be taken to be pure statement of brute fact. The Idealistic logic was driven by its general theory of thinking to affirm that there *cannot* be statements of brute fact; we have now found that an examination of these particular statements of fact has produced a conclusion compatible with this doctrine.

We are now bound to turn our attention once more to mathematics. If statement in itself essentially involves judgment, as the Coherence theory must affirm, then mathematical statements, too, must involve judgment. But can it be maintained that the statements of

[1] I do not mean to suggest that the alleged experience of 'stating an apprehension' would be any less mysterious and inexplicable in operation. Cf. *infra*, pp. 242 seqq.

particular mathematical truths are judgments? Are there no 'brute facts' in geometry and arithmetic, no true incorrigible statements which represent apprehensions of fact once for all? Does any subsequent knowledge ever cause the mathematician to modify the statement that 'two and two make four'? It certainly seems that it does not. It can no doubt be maintained that all the statements of arithmetic, or all the statements of geometry, taken together form a *systematic* body of knowledge, and not a mere aggregate of single statements or single pieces of knowledge. But this is not enough to show that arithmetical thinking or geometrical thinking are systematic in the sense of the Idealistic logic. Can it be argued that the knowledge that two and two make four is not prior, as knowledge, to the knowledge represented by other statements in the system, which are set down later in the order of proof? Can it be shown that in geometry, as in physics, the statements of first principles are initial, provisional, corrigible statements, which need to be modified as more knowledge of space is acquired? Do they not rather appear to be final, incorrigible statements of apprehensions of single facts, apprehended by themselves alone and independently of any recognition of their place in the system? Does it not seem that, though the facts may themselves be included in a system, yet they are apprehended finally, once for all, each singly, one at a time? Does the progress of a proof in mathematics ever involve the correction or modification of its premises or of any statement within the proof? It certainly appears that it does not.

At this point, it seems to me, the Coherence theory in pressing its argument has taken an illegitimate step. Seeing that it cannot maintain that the *statements* of

mathematics are corrigible as stated, it goes one step further in its analysis and maintains that nevertheless the *meanings* attached to the statements are continually modified and corrected.[1] It points out that the statement 'Three times three equals nine' *means* something quite different to the expert mathematician and to the schoolboy, just as the statement that 'Caesar crossed the Rubicon in 49 B.C.' means something quite different to the historian and to the layman. The significance attached to the statement varies according to a man's knowledge of the context. The meaning is extended, modified, corrected by increasing knowledge. Thus the statements in question represent entirely different states of mind in the schoolboy and the expert. Even for the same man perhaps the same statement cannot bear quite the same meaning twice. A statement can properly be said to be true, to represent knowledge of reality, only when the man who makes the statement knows the whole system of truth. Thus while the statements of mathematics *seem* to be final and incorrigible from the beginning considered as statements, they are in a deeper sense corrigible in that their *meanings* are changing and developing by constant correction and modification.

Now it is certainly true that, in a common sense of the term 'meaning,' statements mean different things to different people, and to the same person at different times. It is to this fact, for instance, that statements owe their dramatic value. In a trial for murder, an apparently ordinary statement may because of the context 'take on' the most dreadful of 'meanings.' In the same context other statements, just as correct and representing facts intrinsically similar in kind, may

[1]Cf. Professor Joachim's argument, *The Nature of Truth*, pp. 90-6.

have no 'meaning' at all. It is also true, no doubt, that the mind of every man is always changing and developing, so that no state of mind is repeatable; that is to say, my state of mind to-day when I say that 'two and two make four' or 'King Charles I died on the scaffold' cannot be exactly the same as a whole state of mind as when I made these statements some time ago—and it may well be radically different. These truths may readily be granted. But what, we must ask ourselves carefully, have they to do with logic?

The final objection to the exploitation of these truths as an argument on the part of the Coherence theory to show that apparently incorrigible statements may in a deeper sense be corrigible seems to be this, that it cuts away the whole ground from the feet of logic by stultifying its whole method from beginning to end. Since the Coherence theory is entirely built upon a logical approach to the problem of knowledge, this is a serious matter.

As we have already seen, logic has a method of its own. That method is to proceed by the analysis and classification of statements and inferences, in the general belief that an examination of statements will throw light on the nature and limits of knowledge. As soon as you allow that a statement has in itself no meaning, since meaning may change without any change in the statement, then the examination of statements by logic must lose its value. In that event logic would have to investigate the mind of the mathematician and the mind of the schoolboy, by some other means over and above the examination of their statements, to discover whether their inferences are valid; for it is clear that until we know what their statements mean we cannot possibly know whether their proofs are really proofs. Since statements may mean dif-

ferent things at different times in different contexts, it is of no use examining their statements alone in order to discover what the professor and the schoolboy mean. Statements could in themselves at most indicate roughly within broad limits what the speaker might mean, and no amount of carefulness of statement could remedy this defect. Thus a statement could not in itself imply anything; what was implied would depend on what was meant. Correct statement is then of no importance for inference, since validity depends on relations between meanings, and there is no fixed dependence of meanings on statements. Suppose a man starts an enquiry with a certain premise, and later changes his mind with regard to the truth of that premise. So long as the change of mind is reflected in a change of statement, the ground is still firm beneath the feet of logic. Logic can tell with what kind of enquiry it is dealing; it can see, for instance, that it is not faced with one long demonstration from fixed premises, but with some kind of discipline which changes its premises from time to time. Logic can also notice if the scientist sometimes argues from the original premise and sometimes from the later; and it can insist that he always states explicitly which premise he is arguing from, and can raise the question whether the conclusion really does follow from that premise. It can thus by its own method gain some understanding of how the reasoning of science works, and even perhaps retain some authority. All this is possible, so long as it is granted that a statement has a meaning of its own, that every meaning has a correct statement, that it is only possible to fix a meaning and make it clear and unequivocal by stating it, and that therefore the correct statement of what is meant has a value in that it is necessary to valid reasoning.

As soon as it is allowed that a man may reason with statements, about which it is the last word that they have each of them, even in their correct usage, different meanings, and are continually developing different meanings, then the game is up for logic. There is then no discipline for valid reasoning left, and nothing remains for logic to investigate. Statement is of no importance to thinking, and an investigation of the statements concerned will throw no light on the validity of inference. In allowing that a statement has no fixed meaning of its own, logic signs its own death-warrant. Unless it is vital to straight thinking that differences of meaning should be reflected in differences of statement, then the examination of statements can throw no light on the nature of thinking and of knowledge, and logic must be abandoned. I forbear to press here the general argument[1] that to abandon logic is to embrace scepticism. I merely point out that in taking this step the Coherence theory is destroying the security of its own foundations.

The conclusion is that logic must take it that where there is no difference of statement there is no difference of meaning. Arguments which do not conform to this canon can have no claim to logical validity, and analysis of them by logic would serve no purpose. If such arguments arrive at sound conclusions, they do so *in spite of* the fact that they have no discipline, and the logician need not trouble himself at all on their score. Therefore in the case of mathematics the Coherence theory must rest its case on maintaining that all the *statements* are essentially modifiable and corrigible. As we have seen there seems to be no evidence to support this contention. That is to say, the analysis of the particular statements of mathematics does not

[1]Cf. *supra*, especially chapter v.

support the Coherence theory, as does, for instance, a similar analysis in the case of physics; and the principles underlying its own revolt have left the Idealistic logic no other argument.

Let us face this objection at its worst. The truth is that the analysis of mathematical reasoning does not support at all, from beginning to end, the Idealistic thesis that thinking is essentially systematic in nature. Indeed, up to a point it does lend itself, as we shall see presently, to the support of another view. Up to a point it seems compatible with the older view that facts may in some cases be apprehended one by one, independently of any apprehension of the connexions between facts; and that even where the apprehension of a fact depends upon the apprehension of its connexion with other facts, the earlier apprehensions are complete and final apprehensions, utterly independent of the later, and entirely unmodifiable and incorrigible as the result of the later apprehensions.

But must we therefore abandon the whole Idealistic position in logic? This is a large question, and I do not propose to attempt to dispose of it here. I simply wish to define the position. I have tried to show that the arguments by which the Coherence theory seeks to bring mathematical reasoning within the four corners of its logical theory are spurious. On the other hand, I have also argued earlier on that the attempt to give an account of mathematical proof first, and then to make all other reasoning conform to its type, broke down hopelessly. In the next two chapters I shall argue that a modern attempt to revise and re-write the old view in effect serves to emphasise this failure. I have argued that logic was bound to take Kant's step of turning to a dispassionate examination of the fundamental principles of

the reasoning of physics, unhampered by the prejudgment that it would turn out to be mathematical in essence. Logic also did well to assume that an analysis of the reasoning of physics would show up characteristics which are really essential to all thinking, though the emphasis on mathematics had allowed them hitherto to remain hid. So far we may say that it has done wisely. But we must admit that it has farther to go; and that it has not reached its self-appointed goal until it has given an account of thinking, within the four corners of which mathematics, as well as the empirical sciences, can be embraced. This it has not yet done.

Thus we are faced with two main failures, as signs of the incompleteness of the work of the Idealistic logic. Driven by its analysis of the fundamental principles of the argumentation of physics, it has put forward a general view of thinking which renders it incapable, as it stands, of giving a fair account *either* of the advance from theory to theory in physics and in experimental science generally, *or* of the nature of mathematical proof. Yet Idealism took the road that logic was bound to take in the face of the challenge of scientific method, and it must overcome its difficulties without abandoning that road.

CHAPTER XII

REACTIONARY CRITICISM: COOK WILSON

IT will be of great value to us, in our attempt to gain real insight into the essentials of the Idealistic logic, to pause at this point and consider Cook Wilson's view,—for this reason. Substantially Cook Wilson recognised, in my opinion, where the really essential differences lay between himself and the Idealists, and in clearly and unequivocally exposing these he forced himself explicitly to defend fundamental principles underlying the traditional position, which had as a rule hardly been stated previously, still less vindicated by argument. In other words, Cook Wilson, in criticising the Idealistic logic, does not essentially misrepresent it; he simply disagrees with it. It is true that he sometimes found it difficult to believe himself that he had represented it correctly; he sometimes seems to have thought that if the Idealists had stated their view as he states it, they must have seen it to be nonsense and have abandoned it. But in this, I believe, he was substantially wrong. In essentials they did hold the view which he attributed to them; only Cook Wilson could not see how anyone could hold such a view. This means that we have here, as nearly as we are ever likely to get it, a clear-cut and fundamental difference of opinion with a minimum of misstatement to exaggerate the difference or to confuse the issues. The value to us, if we wish clearly to understand the Idealistic logic, of a study of this quarrel about fundamentals is obvious enough.

It is true, no doubt, that the examination of Cook Wilson, because of the fundamental similarity of his view to that of Descartes, can only make us cover again the same ground which we travelled earlier in the argument, and repeat again the arguments which we advanced in examining the beginnings of Kant's logic. But the very fact that Cook Wilson, too, had studied Kant and the post-Kantian logic, and had rejected its main principles, means that he states his view with a difference from the logic of Descartes, a difference indeed which makes it such, in his opinion at least, that it can weather the storm of criticism from Hume. He thus provides us with an opportunity for re-considering our argument that the philosophy of Hume made it impossible once for all to hold any logical theory of this kind. Cook Wilson's logical view is far less revolutionary, that is, it is far nearer in essentials to the traditional position than is the Kantian logic. The question is, can Cook Wilson state his view in such a form as to evade the force of the arguments which caused Kant and the Idealists to revolt? Cook Wilson himself undoubtedly thinks that he can.

In the first place Cook Wilson lays supreme stress on 'apprehension,' where the Idealistic logic lays supreme stress on judgment. Ultimately Cook Wilson must explain all knowledge to himself in terms of 'apprehensions,' and the Idealistic logic must do so in terms of judgments. The reading of a very few pages will convince us once and for all that Cook Wilson does not mean by 'apprehension' what the Idealist means by 'judgment': nor are these two terms, though this is perhaps not so obvious, different names for the same thing. When the one speaks of judgment and the other of apprehension, the two philosophies

are not directly speaking of the same thing. The views with which these terms are associated, as they are usually stated, traverse one another rather than exactly contradict. They get hold of different ends of the stick, so to speak. Yet each can only understand the other by expressing the other's view in his own terms—when it seems to him to be absurd and silly. This is why the quarrel seems so often to be about words; each side in defending its own terminology is defending its whole view; it is trying to show that its own end of the stick is the right end to hold. It seems to me that Cook Wilson's analysis of his differences with the Idealist has perhaps done more than any other writing to show up these facts, and to make it possible to confront the two views squarely with one another, and to reduce their oblique or traversing differences to a clear-cut issue of straight contradiction. He was quite right in seeing that if once you let the Idealist talk about judgment, the game is up. Meanwhile the Idealist must, I think, return the compliment. If once you let Cook Wilson talk about 'apprehension,' there is nothing you can do with his view, except perhaps improve it a little in detail.

It is customary to explain the meaning of the term 'apprehension' in Cook Wilson's logic by drawing attention to the emphasis which he laid on the absolute nature of the distinction between knowledge and opinion. He protested against the use of the term 'judgment' in logic, because he rightly saw that it imperilled this distinction. In ordinary language the same form of words may represent either knowledge or opinion on the part of the speaker. 'That church tower is round,' for instance, may, according to him, express knowledge on my part; or the statement may be made by me when I am looking at the church from

such a distance or in such a light that I cannot be sure of its truth, but have simply formed the opinion that the tower is round. One and the same form of statement may thus represent either knowledge, or true opinion, or false opinion. There is a tendency in modern logic, Cook Wilson says, to speak as if in all these cases, where the same form of statement is or may be used, one and the same mental act is always involved, *viz.* the act of judging. He regards this as a grave mistake, since knowing and opining are absolutely different mental states with no single mental activity common to both. This mistake he considers to be the fundamental cause of most of the errors in the Idealistic logic. He further maintains that the Idealists were inadvertently misled into this mistaken view by simply taking it for granted without specific consideration that the use of the same form of statement necessarily indicated the presence in all cases concerned of a single common mental activity.

This last argument of Cook Wilson's need not seriously detain us. He only maintained it, I think, because he thought the Idealistic view to be an obviously wrong view, and he had to cast about for some explanation of how intelligent people could have come to hold such an obviously wrong view. Not seeing himself how they could think this if they had fairly examined the matter, he suggests that they took it for granted without explicit consideration; and he adds that the common use of language may well have led them to do so. The important thing for us is to try to grasp Cook Wilson's own point of view in order to understand how he came to regard the Idealistic position as obviously unsound—so obviously unsound that had these philosophers clearly recognised what it really was they must at once have abandoned it. The

reference to ordinary language should not be overstressed. In the end Cook Wilson probably attaches about as much and about as little importance to arguments from the use of language as do the Idealists.

As has been said, he takes his stand on the thesis that there is no single activity common to cases of knowledge and opinion. His view will become clearer, if we first consider the case of *false* opinion. In distinguishing this from knowledge we should say that in the case of knowledge we had apprehended the facts, whereas in the case of false opinion we had fabricated or invented something—drawing a distinction between knowing as being apprehending and false opining as being or involving fabricating or inventing. Of course, the forming of a false opinion is not regarded as pure inventing, for the opinion is based on some knowledge; known facts, as we commonly say, carry some weight with us in forming our opinion, even in cases where the opinion is afterwards found to have been false. But there is an element of invention in it; otherwise how could the false opinion come into being at all? On consideration, the same is seen to be true of all opinion, whether true or false. Unless there were present some invention or fabrication, the opinion simply would not have come into being; there would have been either apprehension, *i.e.* knowledge, or nothing. Certainly we may take it that the forming of an opinion, whether true or false, is not simply pure apprehending, as Cook Wilson understands that word. His point is that apprehension is apprehension and opinion is opinion: they are absolutely distinct, and every statement stands for either one or the other. He objects to the view that they differ in degree only; they differ absolutely and in kind, though opinion is dependent upon apprehension, in

the sense that it is not possible to form an opinion without some previous apprehension.

As regards opinion, there is little difficulty in discovering to what the word refers. Opining, or forming an opinion, is a mental process which takes time. It is no doubt difficult to give any satisfactory account of it, but at least we can easily catch ourselves performing the act and so attempt to determine what goes on when we do so. Also we can find any number of statements which certainly express opinions, and can examine them, classify them, and so on. But what are we to say of this 'apprehension,' which is absolutely different from opinion? What does Cook Wilson mean when he speaks of apprehension? Can we find mental acts or states which are apprehendings, as he understands that word? Can we find statements which are certainly statements of apprehension, in his sense of the term?

Evidently it is Cook Wilson's view that when we are apprehending we know that we are apprehending; we know that we are not *mis*-apprehending, that we are not forming an opinion, that we are not taking for granted, assuming, or anything else whatever. We are just apprehending, and that apprehending carries with it or includes the knowledge that we are apprehending. Furthermore, apprehension is thought of as apprehension of reality; what we apprehend is there to be apprehended independently of our apprehending it, and we apprehend it as it is. There is no question of there being a *correspondence* between what we apprehend and the reality; what we apprehend *is* the reality. It may be that there will turn out to be some problem of correspondence in regard to belief. If it is proper to distinguish, as it seems we must, between my believing and what I believe, I must certainly dis-

tinguish (obviously in the case of false belief, and consequentially in the case of true belief) between what I believe and the nature of the reality; and the question will then arise of the correspondence or lack of correspondence between these two things. But this problem does not arise in the case of apprehension. In this apprehension is distinguished from belief. What I apprehend is not something distinguishable from the nature of reality and comparable with it, for it *is* the reality.

It must be admitted that in all this Cook Wilson gives us neither a definition nor even a description of apprehension. But it is not, I think, impossible to see what he means. In the first place his view so far involves no distortion or straining of ordinary language. It may fairly be said that he uses the word much as we should ordinarily do if we tried to be strict in our use of it; and his distinction between apprehension and opinion involves nothing incompatible with our ordinary everyday views of the nature of that distinction. While then, as we shall see, the clearing-up of his view gives rise to grave difficulties, it would be disingenuous, I think, to say that we have no idea what he means at the outset. He can legitimately point out that though we may not be able to define apprehension, we presumably know what we mean when we use the term; and if he puts forward an account of it which is consistent with the implications of our ordinary speech, our proper reply is not that we cannot understand his account because it does not amount to a definition, but that the view—whether or not it underlies ordinary language—is on further examination found to be untenable. And this is what we shall in fact maintain. Cook Wilson is perfectly entitled, in my opinion, to talk about apprehension

without defining it or describing it, and to take it that everybody understands what he means. Whether or not he may take it without argument that there is such a mental state as pure apprehending, and whether or not there ever has been or ever will be such a thing as a pure apprehension—these are different questions.

Let us take it, then, that we have a sufficiently clear idea what Cook Wilson means by apprehension, and let us examine more closely his doctrine that certain states of mind are states of pure apprehending, and that certain statements are statements of pure apprehension. We shall see the significance of this doctrine more clearly, if we consider it over against the view which he is explicitly rejecting. All statements do not, he says, involve the act of judgment. Judgment, he maintains,[1] implies a period of doubt followed by a decision, and many statements are made without any such mental process.[2] Cook Wilson's statement of his point here is seriously faulty, but it is not impossible, I think, to see what he means. Suppose I look at a church tower in the distance and say, 'That church tower is square.' Suppose my companion says, 'No, it is not square; it is round.' I then look at it again, and, reflecting on the various conditions and using all my experience of past illusions and difficulties in determining the nature of distant objects, I finally pronounce, 'The tower is square.' Cook Wilson would

[1] *Statement and Inference*, vol. i. p. 92.

[2] It is surely clear that judgment neither is nor implies a decision. A decision, being essentially a decision to *do* something, is not true or false; it may, of course, imply a judgment about the facts of the case, and such judgment is true or false. But in drawing attention to a certain obvious kinship between judging and deciding Cook Wilson is certainly throwing into a clearer light an essential characteristic of judgment, which makes the use of the term in logic objectionable on his view.

allow that in this case the statement, 'The tower is square,' represents a judgment. Probably no one will object to this use of the term. Anyone who has had any experience of training himself to observe at a distance will readily admit that success at it requires experience, that it can to some extent be taught, that some people are much better at it than others, and that everyone is liable to make mistakes. In fact it clearly depends on that faculty which Locke, and as far as I know everyone else, calls judgment;[1] and in all the respects mentioned a judgment is very similar to a decision.

Now we come to the point. Cook Wilson no doubt allows that if I look at a church tower in the distance and pronounce that it is square, this is a judgment. But he holds that if I look at this paper on which I am writing and pronounce that it is white or that it has black marks upon it, this is not judgment, but pure apprehension—a difference of kind. Locke, of course, thought that both were equally the work of the faculty of judgment; he thought that all statements about sensible objects were judgments.[2] This view Cook Wilson deliberately and explicitly rejects. His considered doctrine is that the essential characteristics of judgment, which are obviously present in the case rather elaborately explained above, are *completely and entirely* absent from my discovery that this paper on which I am writing is white. It may perhaps seem that we are here attacking Cook Wilson over-crudely, in making his view stand or fall by what he maintains about two actual simple statements like these. But it is not so. His absolute distinction between knowledge and opinion, which is central to his whole position,

[1] *Essay concerning Human Understanding*, bk. IV. ch. xiv.

[2] *Ibid.* Cf. also bk. IV. ch. vi. § 13.

must stand by his ability to point to certain instances as clear cases of apprehension and to certain others as clear cases of judgment or opinion, and to show that these two kinds of instances differ not in degree, but absolutely. The merit of Cook Wilson is that he sees this. He knows that the maintaining of his distinction depends upon the examination of instances; that is, in effect it depends on his ability to produce instances of kinds of statement which do not involve judgment. One of the instances he gives is the statement that 'this paper is white and has black marks upon it';[1] another is the statement that 'two and two make four.' It is by the consideration of these instances that he is properly attacked.

I do not wish at the moment, however, to attack or defend Cook Wilson by examining these instances. I propose first to develop further some of the implications of his teaching that there are some cognitive acts of the mind absolutely distinct from and independent of acts of judgment, *viz.* acts of apprehension. We shall then be in a better position to see his view as a whole.

As we have seen, the Idealistic theory of judgment lays stress on the essential unity of all judgments, considered as forming one whole; that is, in the end it emphasises the unity and continuity of experience, and the determinant influence exercised by that unity and continuity on particular judgments. The word judgment is well chosen for this purpose. There is no doubt that, in the ordinary use of the word, judgments, like practical decisions to act, depend upon a faculty in a man which is affected by the accumulation of his experience, and which is, as a matter of fact, thought of as personal to the man. However rational he may have

[1] *Statement and Inference*, vol. i. p. 93.

been, the judgments of Pericles about political facts, like his decisions about policy, were essentially the judgments of Pericles, and they derived their value in the eyes of the ordinary man from the fact that Pericles was a man of judgment, and not merely from the fact that he conscientiously considered all the facts at his disposal. To the ordinary mind the statements of Euclid, giving answers to geometrical problems, were not judgments in this sense, and would not call upon the same faculty of judgment as would Pericles' answer to a question about the condition of Attica at a given moment. Euclid may or may not have been a 'man of judgment,' but on the ordinary view his 'judgment' in this sense was not involved in his statement that 'two straight lines cannot enclose a space.' There is no doubt in my mind, and I hope the preceding arguments have made this clear, that in exalting the faculty of judgment in logic, Kant and the Idealists are in essentials reversing the common opinion on this point. Their notion of judgment includes the essential features which are included in the common meaning of the word, and in calling the statements of Euclid judgments they are approximating them to the judgments of Pericles. The insistence that judgment is influenced by the cumulative effect on the mind of experience as a unity is essential, and in Bradley at least this makes it impossible ultimately to divorce acts of judgment from the time series. Even Professor Joachim says that the judgment that two and two make four is a different judgment in the hands of the advanced mathematician and in the hands of the schoolboy; it has a different mental background or context, which is inseparable from the judgment itself, and so on. The Idealistic logic means by judgment in essentials what the ordinary man

means by judgment; only it maintains that *all* statements are judgments, while Cook Wilson and the ordinary man think that many statements are not.

Cook Wilson's view is that when we say 'Two and two make four' or 'This paper is white,' those statements are not judgments; they are not determined by the whole force of our experience as a unity, as would be the judgment 'Civil war is at this moment imminent in Germany'; they represent independent, single apprehensions of single facts. If the facts are immediately apprehended, the apprehensions depend on, and are influenced in their intrinsic nature by, no previous apprehensions and no other experience whatever; if they are mediately apprehended, they depend on a limited number of previous apprehensions, and on those only. When we have an apprehension, the fact is what it is, and is apprehended as it is. When we *mis*-apprehend a fact, the whole unity of our experience is no doubt operative in determining the exact form which the misapprehension takes. But when we *apprehend* a fact, the nature of the apprehension is affected by nothing but itself, it is simply the apprehension of reality as it is. In this way apprehension differs in kind from misapprehension, and owes nothing to the alleged unity of experience.

Enough has been said to show that it is a vital point for Cook Wilson to determine the relation which any given act of apprehension bears to the previous acts of the same mind or events in that mind's experience. The theory of judgment, as we have seen, must ultimately lay stress on the continuity of experience and its effect on particular statements, and it is this and its implications to which Cook Wilson fundamentally objects. What, then, is his own view about the place of particular apprehensions in the time order of the

mind's experience? Is their nature affected by their place in the time-order? Do they themselves influence the time order? Or are they in their nature as apprehensions quite independent of, and unaffected by, all previous events in the mind, and such as not to affect or influence subsequent acts of the mind? This was the problem which Hume forced logic to face.

As we have already said, Descartes spoke as if in apprehending, *i.e.* in clear and distinct perceiving, the mind was totally uninfluenced by previous events in experience. He spoke, of course, as if it was extremely *difficult* to banish all effect of past experience from the mind and to promote in it that state of perfect receptivity which was necessary to the possibility of apprehension. But he spoke of it as possible. It could be achieved through unremitting attention to the application of his celebrated method. In a word, he thought it a possible though difficult task to promote in the mind apprehensions complete in themselves, totally unaffected by previous apprehensions or opinions; and he thought that the possibility of knowledge depended on the successful achievement of this task. But it must be admitted that he had rather taken all this for granted than thought about it. He did not closely ask himself whether the possibility of geometric proof depended on the apprehensions, however complete they might be in themselves, occurring in a certain *order*—the mind not being able to apprehend one thing unless it had immediately previously apprehended a certain other. That is, he did not press the question whether in the case of certain apprehensions, the apprehending was only rendered possible by the immediately past history of the mind. He rather takes it as obvious that this is so. But he speaks as if, while within these given sequences

the mind in apprehending is affected by its previous apprehendings, yet it is possible at other times for the mind to make a complete break and start afresh with a new apprehension, where in apprehending it is wholly unaffected by any past. That is to say he speaks as if the mind in some cases is affected by its immediate past, and yet in other cases is *totally* unaffected by its past; and he seems to have seen no difficulty in this. Hume by initiating the view that the order of ideas in the mind is always affected by the past experience of that mind, and that this affecting always occurs in accordance with the same rules, forced philosophers to attend to this difficulty. Cook Wilson seeks to preserve as against the difficulties raised by Hume a view very like that of Descartes.

In every act of thought, he says, we must recognise a two-fold aspect; one aspect is studied by psychology and one by logic.[1] In the first place an act of thought is an event in the life of an individual thinker: as such it is within a time-order, and is connected with all those occurrences, physical or mental, which contribute to the particular act occurring at the particular time—as, for instance, certain thoughts are suggested by looking at a memorandum. The rules which govern the occurrence of thoughts in this time-order are investigated by psychology. The second aspect of any given act of thought, says Cook Wilson, is simply the thinking as thinking about something, an apprehension of something, whether accompanied by a question or a conjecture about it. This aspect, *i.e.* the thought considered as apprehension, is the same whenever the thought occurs, and is wholly unaffected by that other aspect of the thought as an event. It is something complete in itself, wholly independent of

[1] *Statement and Inference*, vol. i. p. 51.

the time-order as such. This aspect is studied by logic, and neglected by psychology—reasonably so, on Cook Wilson's view, if he really means, as he seems here to say, that the two aspects are entirely irrelevant to one another.

I want here to try and neglect entirely details of statement. The passage is obviously a very vexed one textually, having evidently been constantly rewritten and added to by Cook Wilson: and it has always been obvious to everyone, I think, that judged by Cook Wilson's own standard of precise statement, these pages are seriously imperfect as they stand. This is no reason for omitting them from consideration; indeed it is, as far as it goes, confirmatory evidence that here is one of the places where the shoe especially pinches Cook Wilson. But it is a conclusive reason for not pressing as vital confusions or obscurities of detailed statement. I therefore wish, in spite of the obvious dangers of such a procedure, to try and make clear what in essentials Cook Wilson is wishing to say, and to argue that on this essential point he is taking back with one hand what he is giving with the other.

In the first place he quite sees that one thought commonly gives rise to another: that it is a matter for investigation whether or not this is always so, *i.e.* whether or not what occurs in the mind at one moment is determined to occur at that moment by what occurred in previous moments; and that it is the legitimate business of a science of psychology to attempt to discover what are the rules governing this determination of the time-order, whether the determination seems to be absolute or partial, and whether it operates all the time or some of the time. He also quite sees that, this being the case, logic must define its own relation to and difference from, its dependence on or

independence of, such psychological enquiry. But to this problem, which he sees to be a pressing one for logic, he does not give an unambiguous answer.

It is clear from the way in which he presents what he has to say that, at first at least, he thinks he can separate off two spheres of enquiry, one for logic and one for psychology, such that they are totally exclusive of one another, and that neither enquiry need strictly have anything to say to the other. Psychology deals with apprehensions considered as thoughts occurring in a certain time-order in somebody's mind: logic simply considers apprehensions as apprehensions of something, not being interested, nor needing to be interested, in what events preceded or succeeded a particular apprehension in a particular mind. This view Cook Wilson seems to maintain unequivocally so long as he is thinking to himself of what we may for the moment call 'immediate' apprehensions, as opposed to inferences. Certainly it seems to be an intelligible view. If you think, as Cook Wilson certainly thought, that I can 'apprehend' in a flash by looking at it that 'the fire is now burning brightly,' or that 'the shortest distance between two points on the surface of a sphere is an arc of the greatest circle,' then it is surely all of a piece with this view to hold that the *character* of such apprehensions, as apprehensions of fact, owe nothing to the previous history of the mind, though whether or not they *occur* at particular moments in the particular mind may depend on the previous occurrences in that mind. Considered as apprehensions they are what they are: they may or may not occur in your mind or my mind, depending on certain circumstances: but *if* they occur, they just occur as they are, in their own full and inviolable nature as apprehensions. The conditions which deter-

mine their occurrence or non-occurrence just determine their occurrence or non-occurrence, and that only: they are powerless to change their character as apprehensions in causing them to occur. The apprehensions can be taken or left, so to speak, by the particular mind: they cannot be distorted or changed in the acceptance. Thus we may distinguish between two separate enquiries in regard to apprehensions: first, the enquiry into what determines that a particular apprehension shall occur in a particular mind at a particular moment rather than at another moment or never at all: secondly, the enquiry into what determines that particular apprehensions, which may or may not occur in particular minds, have exactly the particular characters that they have, and what is their relation, considered simply as apprehensions, to other apprehensions. The first enquiry is the business of psychology, the second is that of logic: and studying, as they do, two different and mutually independent aspects of thought, the two enquiries should not overlap, nor contradict or dictate to one another in any way.

This view, as has been said before, Cook Wilson seems to put forward unequivocally when he is considering to himself instances of immediate apprehension. Within these limits there seems to be a great deal to be said for it, and it would provide an answer to Hume as far as it went. Hume does not prove that our 'distinct perceptions' are not apprehensions as far as they go: and his own special view of the nature of these 'distinct perceptions' is, no doubt, not worth very much. The sting in Hume, as we have seen, lies elsewhere. And in point of fact Cook Wilson, when he comes to consider inferences, which, of course, he thinks to be as much apprehensions as immediate

apprehensions are, has to modify his standpoint out of all recognition. For he is not prepared to admit that in those apprehensions which are inferences the time-order aspect has *no* bearing on the apprehention-aspect, if I may so put it. He is prepared to go a great way in this direction, but not far enough to arrive at a really clear-cut view, like that which he seemed to hold at first. So instead of saying that logic is not interested in the time-order, because the time-order has no bearing on the character of the apprehension considered as apprehension, he now says that logic and psychology investigate the time-order *in different ways*, a totally different view. After all, in the last resort, logic and psychology both now have to give an account, at any rate in certain cases, of *the same thing*, *viz.* the time-order of certain successions of thoughts in a particular mind; and obviously they may give conflicting accounts. Thus we still do not know where we are.

Let us investigate this matter a little more closely. The point is that, according to Cook Wilson, if inference is to be possible, certain apprehensions *must* be preceded by certain others. The apprehensions of the facts stated in the premises of an argument must precede the apprehension of the fact stated in the conclusion: only so can we get that deriving of new knowledge from old knowledge which is inference. It is true that he appears to be going back on this when he insists that inferring is a timeless process.[1] He says that the apprehension of the fact stated in the conclusion of an inference is inseparable 'as apprehension' from the apprehension of the necessitation of that fact by the facts stated in the premises; which apprehension of necessitation is itself in turn inseparable from

[1] *e.g. Statement and Inference*, vol. i. p. 53.

the apprehensions of the facts stated in the premises. All these various apprehensions, which have here been spoken of as if they were separate apprehensions following one another in time, in fact go to make up one indissoluble timeless apprehension, which is the inference. Thus inference is not really a series of apprehensions following one another in time. In distinguishing in logic between the various statements which represent the steps of an inference, we are investigating the order of parts within a whole, but not a time-order. In analysing inference, logic is not analysing the time-order. This seems to be Cook Wilson's considered view. Yet in spite of this he will not, when he is thinking of inference, go so far as to say that logic is not concerned with the time-order. He still thinks that it can be shown on logical grounds that certain apprehensions must precede others in the time-order of a particular mind: and therefore he will not relinquish the claim of logic to have the last word about the time-order of experiences in the mind, at any rate in certain cases.

If we ask why he holds firmly to this position, it is not easy to find a satisfactory reply. If it had been his view, as it certainly is not, that inference ultimately consists of a series of separate single apprehensions following one another in time, such that the later apprehensions are only possible if the earlier apprehensions have gone before, it would have been easy to see how some knowledge of the time-order of apprehensions in a particular mind might have been gained from logical considerations. But thinking as he does that inference is one indivisible timeless apprehension of the-facts-stated-in-the-premises-together-with-the-necessitation-by-the-facts-stated-in-the-premises-of-the-fact-stated-in-the-conclusion-together-with-the-

fact-stated-in-the-conclusion, why should he think that it can be proved on logical grounds that this elaborate and complicated apprehension, which is inference, *must* have been preceded in a given individual mind by certain other apprehensions, each of which is the apprehension of one simple fact? No doubt it seems likely enough that this is in fact always the case. But surely it is a point to be determined by an empirical investigation of actual experience; and I do not see why logic should be interested in the matter. If it is admitted that in analysing inference, logic is analysing an order of parts which is not a time-order—and this is Cook Wilson's view—I cannot see that logic can have *any* ground left for saying that the possibility of valid inference requires that in the mind which was inferring thoughts must have followed one another in a certain time order. In other words, Cook Wilson had no good ground for going back on his initial view that the time order is irrelevant to the logical order, and that logic and psychology are talking about different things, and, rightly regarded, should not overlap or contradict one another.

The fact remains, however, that Cook Wilson would not go so far as to say this: and this is an important consideration for the understanding of his view of the nature of apprehension. If he had, he would have seen, as he says unequivocally enough in some places, though he does not, I think, really mean it, that in speaking of 'apprehensions' logic is not speaking of *acts* of the mind at all, but of a certain character of actual thoughts or events in the mind: and this character of these thoughts, whatever it is, does not determine the time-order of the occurrence of the thoughts. As things are, Cook Wilson still speaks throughout as if apprehension was, so to speak, a real act of the mind

—a completely rounded, moment-filling activity, excluding from the mind for that moment all other activities whatever; and he maintains that these acts of apprehension, unlike the other thoughts or events in the mind, owe their character and nature as apprehensions not at all to the events which preceded them in the mind, though the fact of their occurrence they may in part owe to them. He is thus left with the psychological monstrosity of an event whose occurrence depends on its being preceded by certain other events, but whose nature is not in the least dependent upon the events whose occurrence made its occurrence possible and necessary. Cook Wilson still speaks as though 'apprehending' in his sense was a real experience, in which the *nature* of the experience was *totally* unaffected by the previous experiences of the mind which is apprehending—the apprehension 'is something complete in itself, wholly independent of the time-order as such and of anything which conditions that time-order as a mere time-order.'[1] Thus apprehending seems to be the merest accident to the mind in which it occurs, and an accident whose nature is bound to be the same wherever and whenever it happens. In spite of his apparent preparedness, in view of the insuperable difficulties of any other course, to separate psychology from logic, Cook Wilson ends by authoritatively imposing on psychology, on professedly logical grounds, a view of the nature of certain experiences, which psychology can only regard as monstrous.

One further point we must press in this connexion. Cook Wilson's logic seems to require him to hold that this experience, whose nature owes nothing to previous experiences or to any effect of previous experi-

[1] *Statement and Inference*, vol. i. pp. 51-2.

ences on the mind concerned, should, strictly speaking, be described, not simply as 'apprehension,' but as '*statement* of apprehension.' Statement of apprehension according to him is not judgment: considered as an experience it has all the characteristics which belong to the experience which we have hitherto been loosely calling 'apprehension,' as distinct from judgment. We must now examine the relation, on Cook Wilson's view, between apprehension and statement of apprehension.

This is a vital point. Admittedly logic is trying to throw light on the nature of thought and of knowledge by considering and examining statements or propositions. What we are doing in logic is not directly to analyse our 'apprehendings' or our 'judgings,' by observing ourselves closely when we apprehend or judge. This is especially clear in the case of Cook Wilson's 'apprehension.' If apprehending were a process, like wondering or reflecting, and we could recognise instances of it in our experience, we could no doubt find a technique for examining and analysing a few such instances with a view to throwing light on the nature of apprehending in general. But this is not what we are seeking to do in logic. Actually it is Cook Wilson's view, I think, that apprehending is not a process—this is true even of that apprehending which is called inferring—and therefore the method by which we examine mental processes is not open to us here. What logic does is to examine the nature of *statements* of apprehension.[1] No doubt its idea is to

[1]This is, of course, substantially true of the Idealistic logic also in its analysis of judgment. Perhaps the Idealist would not go so far as to say that judgment is not a process and therefore not open to psychological analysis. But certainly he would maintain that such analysis cannot in itself show up the specific characteristics which make it judgment, and make it capable of playing a part in the growth of knowledge.

seek to understand the nature of apprehension through and through. But what it directly and immediately examines is statements.

Now *prima facie* there appears to be a distinction between apprehending and stating what is apprehended. Moreover, in common experience, as we have noticed before, there often seems to be a real practical difficulty in stating just what has been apprehended, no more and no less—a difficulty which is perhaps especially urgent in philosophy. There certainly seem to be genuine cases where a man is quite clear about what he wants to say, but simply does not say it. In interpreting philosophers, for instance, we distinguish between inessential cases of mis-statement and essential mistakes of thinking. No doubt confused or faulty statement commonly betrays a confused state of mind. But is it quite obvious that a man who has really apprehended something simply *cannot* fail to state, and may not unwittingly mis-state, what he has apprehended?

As we have noticed before, it is difficult to keep straight about this question because of the complication introduced by the closeness of the relation between statement and communication. But it is vital that as far as possible we should deal with one difficulty at a time, and should therefore in logic steer clear of difficulties connected with communication. Any teacher knows that in trying to get a pupil to understand something he is from time to time trapped into over-statements and mis-statements, and few people think, I should imagine, that such things can be altogether avoided in teaching. Moreover, there are, of course, many occasions and many contexts where such mis-statements will not actually mislead, however much they ought to do so and would do so if

close attention were paid to what is actually said; occasions where the listener gets an accurate grasp of what was meant, perhaps without really noticing the strict significance of what was explicitly stated. Everybody knows that these things occur. We should often justify to ourselves over-statements and mis-statements, and certainly they often seem to be justified by success. But the important point is that, however justifiable they may be and however common in ordinary intercourse, they *are* over-statements and mis-statements. What they state is false; and what is true has not been stated, though it may have been communicated. We may allow that a man may sometimes only convey to another a fact which he has apprehended by a conversational process involving palpable over-statements. We may also allow that in the particular case a pure strict statement of the fact apprehended might have conveyed nothing to the hearer at all. But in that case the plain truth is that knowledge of the fact was not communicated by a plain statement of the fact, but by an elaborate device. This does not necessarily mean that the fact cannot be stated, nor that the hearer, when he has grasped the fact, would not recognise the plain statement of it to be a plain and correct statement. But it does mean that there are further difficulties involved in communication over and above the difficulties involved in making plain and correct statements of fact. These special difficulties of communication are not, I think, the concern of logic, and may be ignored by us. We are concerned with the difficulties, if any, involved in stating what is apprehended, not those concerned with making someone else really understand the fact that has been stated and recognise that the statement of it is exact and correct.

Cook Wilson might, I suppose, take one of two lines about the statement of apprehension. He might allow that there is a distinction between apprehending and stating what is apprehended; that it is possible to apprehend a fact without necessarily being able to hit upon the correct statement of the fact apprehended. He would then have to maintain, I think, that when the correct statement *is* hit upon, it is at once recognised as such without any doubt. Or, alternatively, he might disallow the distinction and maintain that to apprehend *is* to state; that what is apprehended is a fact stated in a proposition, and the apprehension of the fact carries with it, or includes, or is, the awareness of the proposition. On this view it is simply not possible, whatever the appearances, to apprehend without stating; if we cannot state what we have apprehended, then we have not apprehended. This does not mean, of course, that we must state things aloud; whether or not we make audible noises and attempt to communicate something to others has nothing to do with whether or not we have apprehended. But certainly apprehension involves making statements to oneself in some sense, or awareness of a proposition or statement.

Actually, I think, Cook Wilson on the whole takes the second alternative;[1] and in so doing he is agreeing with what we have seen to be implied in the Aristotelian doctrine of definition. He maintains that the

[1]The most important objection to the first alternative is, I suppose, that to divorce apprehension from statement in this way would be to represent statement as from the point of view of knowledge an unnecessary luxury. If our apprehension is complete without statement, why should we worry about the difficulties of statement, except, of course, for purposes of communication? It may seem to some that experience lends support to such a view, and that in all human enquiries much labour is lost in unnecessarily seeking for a correct formula to express what everyone has known all along, with-

stating of an apprehension is inseparable, and even perhaps indistinguishable, from the apprehension; that apprehending includes and involves the making of a statement to oneself and the recognition of the statement as a strict statement of the apprehension; and that this whole act is not a process which can be analysed into successive parts, but a unitary indivisible timeless act. On this view there is strictly speaking no such thing as trying to state what we have apprehended, nor as mis-stating what we have apprehended. If we have really apprehended we cannot mis-state. If we mis-state a fact or even 'cannot put it into words,' then we have not apprehended. When we say that we cannot express what we know, we should, strictly speaking, recognise that what we are trying to express cannot be knowledge; if we had apprehended something, the stating would be included in the apprehending. On this view, it would not be necessary to a thorough study of the nature and limits of knowledge and apprehension to give a correct account of what we are doing on those occasions when we should normally describe ourselves as 'trying to put into words what we know.' It would be interesting of course, to have the explanation of this, and it might well be the subject of a further and separate study. But such an enquiry is not necessary to logic, because without it we can see that these cases are not really cases of apprehension at all; here the distinctive act of

out anyone being a whit the wiser for the formula when found. But this view has for us the final objection that it is fatal to the claims of logic, *i.e.* the study of statements could then throw no light on the nature and limits of apprehension or knowledge itself, as logic seeks to make it do, but only on the nature and limits of the communication of knowledge—a very different matter. It seems essential to logic to maintain that knowing and stating or judging are inseparable and indistinguishable: to allow anything else is for logic to stultify its own enquiry.

apprehension, with which in logic we are concerned, has just not occurred. Apprehension considered as a state of mind or experience is entirely different in kind from all other states of mind or experiences, and the study of other states of mind or experiences is totally irrelevant to the study of apprehension. Furthermore, instances of apprehension can be distinguished at sight from other experiences at the outset of our enquiry, so that logic can proceed upon its way with sure step, never turning to irrelevancies. Knowledge is knowledge, and opinion is opinion; and logic will deal faithfully with knowledge before it passes on, if ever it does pass on, to consider opinion or anything other than knowledge. This is the true order. The greatest of all heresies is to suppose that the study of the formation of opinion can throw any light on the growth of knowledge. In truth it can throw nothing but the half-light of confusion, as it has done in the Idealistic logic. This at least seems to be Cook Wilson's view.

CHAPTER XIII

REACTIONARY CRITICISM: COOK WILSON
(Continued)

IT is now fully clear, I think, that the crux of the matter lies in this question—Is there such an experience as 'apprehension,' in Cook Wilson's sense of the word? I have tried to show what he means by apprehension, mainly by distinguishing it from judgment and opinion; and also to show that he regards these 'apprehensions' as real experiences, and not characters or aspects of experiences, nor elements in experiences. I now wish to ask—Are there ever moments when it is a fair description of the present experience of a particular mind to say that it is 'apprehending'? Are there any experiences which are as totally independent of other experiences in their essential nature as Cook Wilson thinks these experiences are. It is clear, I hope, from the whole course of the argument in this essay, why the Idealistic logic cannot accept such a view. But we may now attempt to state briefly the reasons which make Cook Wilson convinced of the existence of such apprehensions as real experiences, bearing in mind that he thought those reasons absolutely conclusive and of obvious validity as soon as stated.

If we press Cook Wilson as to what it is that convinces him that there is such a thing as knowledge absolutely different in kind from judgment or opinion, or in other words that there is such a real experience as 'apprehension' in his sense of the word, there seem

to be ultimately two lines of argument which he can and does take in seeking to give an answer. In the first place he can maintain that indubitable instances of such apprehension can be found in experience, and can point to such alleged instances. In the second place he can argue that unless there is such apprehension there can be no knowledge at all; that is, that we should be driven to utter scepticism. In regard to the first point Cook Wilson has a definite teaching, where Aristotle, as we have seen, had no clear doctrine at all. On the second point he is following the main underlying argument of Aristotle and of the traditional logic. The Idealistic logic contests both points.

I think we may take it that Cook Wilson regarded each doctrine as perfectly water-tight when maintained independently. The two support one another, but do not need one another's support. It is obvious on the face of it, he maintains, that certain statements express knowledge and not opinion; one has only to understand their meaning to see that they are certainly true, and are known at once to be true by everyone who understands them. Independently of this it can be shown, he thought, that unless there were some immediate apprehensions of this kind, there could be no knowledge at all. In other words, what is not knowledge, *e.g.* opinion, cannot develop into knowledge; knowledge must be knowledge all along from first to last, and that which is not immediately known must, if it is to be known at all, be derived from what is immediately known. The very possibility of knowledge shows that there must be such things as immediate 'apprehensions,' even if we could not lay our hands on any instances.

Let us take the first argument first. The great merit of Cook Wilson here is that he is prepared to give

actual instances, and to discuss the instances. He maintains that there are two kinds of statements which can be and are immediately known to be true; first, statements of the kind, 'A straight line is the shortest distance between two points,' 'Two and two make four'; secondly, statements of the kind, 'This paper is white and has black marks on it.' One has only to attend closely to the statement that two and two make four, he argues, to see that it is certainly true; no one who understood it could possibly doubt its truth. Not, of course, that it is the fact that I cannot doubt it which convinces me of its truth; rather it is because I know it to be true that I cannot doubt it. Similarly I have only to look at this piece of paper to *know* at once without any hesitation or possible doubt that it is white, and that it has black marks upon it. In this case, as in the case of the statement that two and two make four, my knowledge does not depend upon other knowledge. Whatever else may be true or false, these statements are true. My knowledge of them owes nothing to, and is independent of, my knowledge of or beliefs about other things. When I attend closely to the things I am talking about, I apprehend their nature, and state what I have apprehended. This knowledge is ultimate and immediate.

Now what is it that convinces Cook Wilson of all this? To answer this question we must take the two kinds of statement separately. Let us first consider the first kind, the universal propositions. Actually, I think, all the instances which Cook Wilson would give of this kind of knowledge would be mathematical; certainly he would be prepared to accept mathematical instances as typical. So we may put the question in the form—What is it that convinces Cook Wilson that the propositions of mathematics represent knowledge, in

his sense of the word? And in particular, what is it that convinces him that certain of the simple propositions of mathematics represent immediate 'apprehensions'? It will be remembered that the argument that these propositions *must* be immediately apprehended, because otherwise inference would have nothing to start from and the whole body of geometrical knowledge would be impossible, is for the moment disallowed as being the second form of argument, consideration of which is to come later. We are here considering what it is that makes Cook Wilson sure that, for instance, the statement that two and two make four is evidently on the face of it a statement of 'apprehension.'

First there is a consideration which I should like to call psychological. It has always seemed to me, I must confess, to be a very weak argument; but Cook Wilson, I believe, attached importance to it, and it must be mentioned. The argument is—and it can claim the support of Descartes, who like Cook Wilson was a mathematician—that *while* I am attending closely to the meaning of the statement I am *knowing* that it is true; and that if I try to make myself doubt it, so long as I attend closely I know that no real doubt raises itself in my mind; under those conditions I know that I know, I know that this statement at least is a statement of real knowledge. The difficulty which this position has to meet is, of course, the objection that people frequently think they know things which are demonstrably untrue. This objection can be met in two ways. Its fundamental thesis can be squarely denied; *i.e.* it can be maintained that people never in fact *think* they know. They either know, or else they know that they do not know. In that case 'I thought I knew,' as applied to something which is not true, must

really mean—'I behaved as if I had knowledge, though, of course, I cannot have known, and, moreover, I must really have known at the time that I did not know.' I must have been, as we say, 'taking it for granted,' and I must really have known at the time that my state was one of taking it for granted and not one of knowing. Cook Wilson seems, at times, to be adopting this position. Or, alternatively, one can admit with Descartes that it is easily possible to confuse opinion with knowledge and that in actual fact people almost always do so, and go on to maintain that it is possible to avoid this confusion by the unremitting application of a proper method. I have already made it clear that, for myself, I think that the first argument is unsound, in that Descartes was right in allowing that people in fact constantly confuse opinion and knowledge. The second argument gives the whole case away in allowing that my knowledge that this particular statement is a statement of knowledge is not immediate and self-sufficient, but depends upon something else, *viz.* my recognition that my undoubting conviction that two and two make four persists unimpaired after the proper method has been applied. In other words, I feel convinced that if my 'knowledge' had been spurious, it would have shown itself to be such by my feeling a doubt of the truth of the statement when I applied my 'method'; therefore, since no such doubt has appeared in my mind, I conclude that my 'knowledge' was not spurious, but is really knowledge.

The conclusion to be drawn from these considerations is that the thesis that when I make a statement like 'Two and two make four,' understanding what it means, I immediately know, without consideration of anything else whatever, that this statement is knowledge and not opinion, cannot maintain itself against

the objection that people in fact often think they know what is demonstrably untrue.

We may now turn to the second argument in support of the view that statements like 'Two and two make four' are expressions of immediate 'apprehension.' This argument seems to me to be a properly logical, as opposed to a psychological, argument. It is this—that these statements, while they are never proved, are always asserted as true, and nothing incompatible with them is ever asserted as true; they are never rejected in the light of subsequent knowledge, and never modified; they stand from first to last eternally immutable and unmodifiable. This argument may be called the argument from *incorrigibility*. It has been taken to prove that the knowledge of these statements does not depend on other knowledge; and since no subsequent knowledge ever causes them to be modified or corrected, there is nothing to lend colour to the view that the original 'knowledge' of them was not, strictly speaking, knowledge. Investigation of all the subsequent statements which express knowledge shows that all those statements are quite compatible with the simple, original propositions, exactly as they were stated at the outset. At the end and always these statements are reasserted as true in the same terms and in the same sense as at the beginning. Subsequent knowledge has added nothing to and detracted nothing from, nor caused me to doubt or modify, my original knowledge of the facts stated in these simple statements. It may therefore be taken that my original knowledge of them was, in the strictest sense of the word, knowledge.

Of this argument it may be said at once, I think, that it can be shown not to apply to any general propositions except those of mathematics, since all other

general propositions are in the end recognised to be corrigible. In the case of mathematics the argument is undoubtedly a very strong one. I argue elsewhere[1] that it is difficult to maintain in particular—in spite of good general reasons for thinking it to be the case—that the statements of Euclid are in any relevant sense corrigible; and within the Euclidean system itself there seems to be strong evidence to support the view that the axioms are apprehended once and for all at the beginning, and are not corrected or modified in any way in the light of the discovery of subsequent propositions. In other words, the simple propositions of mathematics have all the appearance of final, incorrigible statements. The argument that if they really are so, this proves that these propositions are statements of 'apprehension' in Cook Wilson's sense, is, as far as I can see, unobjectionable. In short, the argument from incorrigibility as applied to mathematical axioms, considered as instances of 'apprehensions,' seems to me to be irrefutable;[2] but it is inapplicable to other propositions.

We have now considered arguments in support of Cook Wilson's claim that certain general propositions are statements of 'apprehension.' We now turn to consider the same claim in regard to propositions of the kind 'This piece of paper is white, and has black marks upon it.' Again we must remember that the argument

[1]Cf. *supra*, pp. 214-21.

[2]I say that this argument seems to me to be irrefutable, rather than admit that it is convincing and proves its point, because it seems to me that on general grounds the conclusion is unlikely to be true. It seems to me to be unlikely, to the point of being incredible, that the mind should acquire its knowledge of mathematics in a manner *absolutely* different from that in which it gains other knowledge. And the irrefutability of this argument does not in itself amount to a proof of the thesis that mathematical axioms are 'statements of apprehension.'

that these statements of perceived facts *must be* statements of apprehension, because if they were not perception could never contribute anything to knowledge, is inadmissible here as being the second argument, which is to be considered later. Here we are concerned, not with the argument that this particular statement must be knowledge because statements of this kind are necessarily statements of knowledge, but with the reverse argument that statements of this kind may be statements of knowledge because certain stated instances—*e.g.* 'This piece of paper is white'—are obviously particular statements of knowledge.

Here again there is first the 'psychological' argument, *viz.* that when I perceive that this paper is white I apprehend a fact, and that knowledge that the apprehension really is apprehension—*i.e.* among other things final and infallible—is consciously part of the apprehending of the fact. I suppose that assent to this is a matter of experience, as with all psychological arguments. For myself I can only say that in my experience statements of perception are always asserted with more or less doubt and hesitation; never with an *absolute* absence of doubt.[1] Secondly, there is the logical argument from incorrigibility, *viz.* that an examination of all statements of knowledge shows that there is no other such statement which requires this one to be modified or rejected; that this statement stands and holds its own among all statements of knowledge as an original and final statement of truth. This argument is held to show that the statement 'This piece of paper is white' is an immediate and final 'apprehen-

[1]Cook Wilson would allow that the presence or absence of conscious doubt is relevant here: he even speaks as if the slightest hesitation in the making of the statement shows that the statement does not express knowledge. Cf. *Statement and Inference*, vol. i. p. 92.

sion' achieved by looking at the paper, and thus achieved once and for all independently of other apprehensions. Whatever else I may here and hereafter discover about the universe, it is a certain fact that when I look at this piece of paper I *know* it to be true that this piece of paper is white. As in the case of this argument I wish positively to maintain the opposite, *viz.* that an examination of science shows that all statements of perception, and indeed all singular statements, are essentially corrigible, I have included the discussion elsewhere.[1]

We have now considered what we represented as the first main argument in support of Cook Wilson's position, *viz.* the argument which seeks to show that there are such things as statements of 'apprehension' by pointing to indubitable instances in experience of such apprehensions; and we have concluded that, while it is not possible, as far as we can see, to prove that the simple statements of mathematics are not statements of apprehension in this sense, there cannot be allowed to be any other instances. We now turn to consider the second main argument, *viz.* that there *must be* such statements of 'apprehension' in real experience, because if there were not no human knowledge would be possible at all. This argument obviously turns on the analysis of the nature of inference, and maintains that unless there were ultimately some statements of 'apprehension' to serve as the premises for inference, inference would be impossible. It is necessary, of course, to the maintenance of the Idealistic position to show that this is not the case; that scientific knowledge does not include or depend on statements of 'apprehension,' and that it is not fatally

[1]Cf. *supra*, pp. 200-14.

the worse for this. But in this chapter we are not concerned to expound or attack this view of the Idealists. We are here considering the general argument, underlying Cook Wilson and the traditional logic, that it is evident that inference must be impossible, *i.e.* it cannot lead to knowledge, unless it starts from and is dependent upon original self-dependent apprehensions. This argument does not include, nor aim at including, an understanding attack on particular Idealistic doctrine. It is a quite general unconditional argument that *any* such view as that of the Idealists is bound to fail, because knowledge is certainly impossible unless there are some general principles, self-dependently and finally known at the outset, to serve as a starting point for inference.

In the Aristotelian logic, as we have seen, this principle is perhaps taken for granted, or taken as obvious as soon as enunciated, rather than defended by any argument. Cook Wilson, too, as a rule, I think, takes it to be self-evident, and cannot really understand how anybody can fail to see that it is so, or have any doubt of it. But he is for all that rather more critical and self-conscious in his acceptance of it than was the Aristotelian logic, because he knows that the Idealists do not accept it, and he knows, too, that there is some difficulty in representing much actual scientific argument as conforming to it. But it is not easy to see how Cook Wilson was able so thoroughly to guard himself against doubt, and to range himself wholeheartedly behind the traditional doctrine on this point.

So long as the syllogism held sway in logic there seemed to be, as we have seen, an *a priori* quasi-mechanical demonstrability about the principle that knowledge which is not immediate can only be arrived at by deduction from very general, simple premises

which are immediately known. In the sphere of mechanics, according to the ordinary view, we know prior to and independently of experience how a mechanism of a certain kind is bound to work, whether or not we have ever seen it working. Further, we think we can in the same *a priori* manner declare what is mechanically impossible, and also within limits determine by what mechanical means a given result must have been produced, if we simply examine the result.[1] In the same way there seemed to the syllogistic logic—and for the matter of that to Kant also[2]—to be an entirely satisfying *a priori* intelligibility about the working of inference, so that it seemed possible to see independently of any experience of its working in actual instances that it *must* work like that and *must* produce that result. It seemed to be evident that a process which worked in this way would be bound to produce knowledge and nothing but knowledge. And on the strength of this intelligibility it seemed permissible to go a step further and to pronounce that it was logically impossible for knowledge to be produced in any other way. All the processes of thinking, being supposed to be syllogistic, seemed to be so utterly intelligible *a priori*, that there seemed to be really no limit to the extent to which logic might lay down the law.

But as soon as the syllogism is rejected, and a view

[1]This common view, though Kant was taken in by it, as is shown by his claims for his Transcendental Method, is clearly unsound even in the sphere of mechanics. Though it is no doubt possible to show *a priori* that a given machine will not work or will not produce the results claimed for it, it seems to be impossible to prove *a priori* that a given result *cannot* be produced by mechanical means. We can only say that attempts to produce it have hitherto failed. But, as will be seen, it is not necessary to my argument to press this point.

[2]It was Kant, of course, who in passing exposed the similarity of the Aristotelian logic to mathematics in this sense.

like that of Descartes or Cook Wilson is accepted, the whole position is changed. Whether these thinkers would like us to say so or not, logic in their hands has dropped a great deal of its apriorism and has become largely descriptive—descriptive of the principles apparently underlying actual instances in geometry, physics, and so on. It no longer represents these inferences as *intelligible* on the mechanical model, but offers by means of critical observation what it claims to be a fair account of what goes on in such instances. With this change of attitude and method, there clearly ought to be a change in the claim of logic. It is true that the logic of Descartes and Cook Wilson, descriptive as it has become, still sits in judgment on the inferences whose principles it exposes in this sense, that it looks upon those inferences and sees that they are good. But a closer investigation will show that it no longer seeks first to show *a priori* of what kind an argument must be if it is to produce knowledge, and then to judge the actual arguments of geometry and physics by this standard. Rather it seeks primarily to understand the reasoning of geometry and physics, and then its judgment on the validity of this reasoning is made to depend on the question, not whether it can be seen that such reasoning obviously must produce knowledge, but whether there is any final reason why it should *not* be capable of doing so. The claim that logic can lay down the law *a priori* has thus almost entirely disappeared. This is quite clear in the Idealistic logic; it ought to be admitted in Cook Wilson, as we shall see if we examine his account of inference.

In giving his account of inference Cook Wilson follows Descartes in allowing to mathematics, and in particular to geometry, the centre of the stage; that is

to say, he determines his view of inference by an analysis of the nature of mathematical reasoning. Like Descartes he recognises that it is not even plausible to represent geometrical argument as syllogistic. Like Descartes, too, he maintains that when a geometrical proof is correctly set out, every statement represents a fresh intuition or simple apprehension; what is stated in any step in the proof or in the conclusion is in no sense a re-statement or re-formulation of what has already been stated in earlier steps. Each conclusion is the statement of a new fact newly apprehended, not the statement in another form of an old apprehension.

Now while each statement, whether of a step in the proof or of the conclusion, requires a fresh act of apprehension—a unique apprehension all to itself just like an axiom—these acts of apprehension, unlike the apprehension of an axiom, are only possible if preceded by the separate unique apprehensions in which the preceding steps were apprehended. Analysis of geometrical argument shows, according to Cook Wilson, that for the conclusion to be apprehended the steps in the proof must follow one another in a certain order. The truth of the conclusion can only be recognised if the previous steps have been carefully run through; at least it is only so that knowledge of the conclusion can really be knowledge. If we ever have any doubts—and it is allowed, I think, that we may in practice have doubts—of the truth of the conclusion, we must go through the proof again, and our doubts will be removed because we shall then re-apprehend the conclusion.

This dependence of the apprehension of the conclusion on its precedence by certain other apprehensions in a particular order does not mean, according to Cook Wilson, that the apprehension of the conclu-

sion is any the less a direct apprehension of reality. Every apprehension, on his view, is a direct and immediate apprehension of reality; if it were not, it would not be an apprehension. Strictly speaking, if Cook Wilson is right, there is no such thing as indirect or mediate apprehension. There is no question of there being any kind of floating apprehension, as it were, forced upon the mind, in the absence of the thing apprehended, by its having had certain previous apprehensions. When there is an apprehension, the object is always there to be apprehended, so to speak, and the apprehension is the direct and immediate apprehending of it. A so-called 'mediate' apprehension depends for its possibility on previous apprehensions, not in the sense that those previous apprehensions of themselves force it upon the mind without the presence of the object, but rather in the sense that I cannot apprehend that a particular rose is red unless I have previously apprehended what it means to be red. No amount of apprehension of what it means to be red will tell me that this rose is red unless I look at the rose; and no amount of looking at the rose will enable me to apprehend that it is red unless I know what it means to be red. The apprehension that this rose is red is quite distinct from the apprehension of what it means to be red, though the one apprehension depends for its possibility on the other. Similarly in inference the statement of the conclusion represents an apprehension of reality distinct from the apprehensions expressed in the premises, though it depends for its possibility on those apprehensions having immediately preceded it: dependent upon the past as it is, it is for all that a direct apprehension of reality. Its occurrence is made possible by the immediate past; its character as apprehension is affected not in the least

by the past, but is wholly dependent upon the immediately present reality of which it is the apprehension.

Now for the moment we are not concerned with the question whether this is a true account of geometrical inference. What concerns us is that it is a *descriptive* account, and is not, and cannot possibly be claimed to be, a manifestation of *a priori* insight into the way in which knowledge *must* grow. It certainly does not present us with an obviously intelligible working-model of reasoning, so to speak, so that prior to determining the question whether human inference does in actual experience work like this, we can see that a process of this kind, if it ever existed, obviously would produce knowledge, and not error or fantasy. The truth is that this account offers no explanation of, and throws no light whatever on, the *validity* of inference at all. It leaves the question of validity precisely where it found it. According to this view, the truth of each statement in an inference, whether of the conclusion or of one of the necessary steps, depends simply on the fact that the statement represents an immediate apprehension of reality. The investigations conducted by Cook Wilson's logic throw light on the conditions necessary for the possibility of the *occurrence* of these apprehensions; they throw no light on their validity, or, as he would say, on their nature as apprehensions. The fact that a certain experience, which is alleged to be an apprehension, can only occur when certain other experiences, also alleged to be apprehensions, have immediately preceded it has no bearing, on Cook Wilson's own showing, on the question whether any one or all of those experiences really are apprehensions. It certainly does not go to prove, for instance, that if one of them is an appre-

hension, then the rest are apprehensions also. It has literally and absolutely no bearing at all. When we come to consider what Cook Wilson has to say about validity, as distinct from what he has to say about the conditions necessary for the occurrence of those trains of thought which are believed to be valid inferences, we find that inference is represented as a series of direct immediate apprehensions, each of which apprehensions is in itself self-guaranteeing and includes within itself the apprehension that it really is an apprehension—just as is the case with the apprehension of an axiom, or of the perceived fact that 'this paper is white and has black marks upon it.' As far as our conviction of validity is concerned, the order of the statements in an inference has, on Cook Wilson's account, nothing to do with the case; when we make each statement we know that it is true because in making it we are directly and immediately apprehending reality. It is true that we could not now be having this particular apprehension unless the other apprehensions had gone immediately before. But, for all that, what convinces us of the *truth* of this statement, according to him, is the fact that in making it we are directly apprehending reality, not the fact that the other apprehensions went immediately before.

Thus Cook Wilson's real view is that to question the validity of inference is not a proper question at all; there is no real thought to correspond to such questioning. Knowledge is acquired by direct immediate apprehensions of reality, and by these alone. If a man doubts with regard to any one or all of these apprehensions, whether they really are apprehensions, all he can do is to put himself in the way of apprehending something again; he will then find, if Cook Wilson is right, that in the apprehending he has no doubts at

all. If anyone thinks that conviction in the moment of apprehending is not certain evidence that his apprehension is apprehension, then he is just a sceptic, and there is nothing else to be said. Certainly logic can do nothing to help him. It is of no use for him to appeal to other apprehensions to support his conviction of this one, for they are all in the same case. Knowing or apprehending is an ultimate, unique, unanalysable act. Sometimes, as a matter of fact, these acts occur singly, sandwiched in among other experiences of different kinds; sometimes they occur in series, several single acts of apprehending following one another immediately, the whole series being sandwiched in between other experiences of a different nature. Logic may study empirically the conditions under which apprehensions occur now singly now in series, but such study can throw no light on the question whether these apprehensions are really apprehensions, because they owe nothing in their character as apprehensions to their place in the succession of experiences. Logic never rises above observation and description, and is helpless in the face of such doubt. Unless apprehensions can be recognised as such and distinguished from other experiences before we start, the whole enquiry is impossible. Cook Wilson's study of the order of apprehensions in inference has not helped him in the least to recognise and distinguish apprehension from that which is not apprehension.

The conclusion of this argument is that Cook Wilson's analysis of inference cannot go to prove that there must be such real experiences as apprehensions in his sense of the word. It is true that he maintains that inference is nothing else than a series of apprehensions in this sense. But his analysis is powerless to prove it. Investigation of his view shows that he is

doing no more than offer a descriptive account of geometrical argument, which can only be accepted by those who agree with him that each apprehension in the series ultimately guarantees itself as an apprehension without reference to any other apprehension or to its place in the series; and further that he is throwing no light on the question of the validity of inference, in that he is explaining inference away by reducing it to a series of self-guaranteeing direct immediate apprehensions of reality.[1] In other words, to assure ourselves of the existence of apprehension as a real experience, we have to fall back always on the one fundamental argument that in certain instances we are *obviously* apprehending, and that there can be no real doubt on the matter. Cook Wilson's account of inference is only plausible if we accept this; it can provide no evidence in favour of its acceptance. By its divorce of the question of the order of statements from the question of the validity of those statements—a divorce which is vital to the doctrine of the integrity from influence by past experiences of apprehensions considered as apprehensions—this account of inference has denuded itself of any internal or essential structure whatever, and can claim no *a priori* blessing. It does not seek to justify inference as a mechanism, as an organism, or as anything whatever. It is no more and no less than a purely descriptive, and to logic utterly unilluminating, account of a certain experience, *viz.* geometrical argument, representing it as a series of states of a certain kind. Each one of those states is alleged to be a state of knowledge, not because it necessarily occurs in a certain place in the series—though if it occurs at all it can only occur in

[1]For this contention that the view in question explains inference by explaining it away, cf. *supra*, p. 97.

that place—nor for any other reason whatever, except that it just is a state of knowledge.

So far we have not raised the question whether Cook Wilson's account of inference is admissible considered simply as an account of geometrical reasoning. This question is relevant to our enquiry for this reason. No doubt it is true that if Cook Wilson's account is a mere description, and can claim no other support for itself than as a fair description of the experience in question, then it cannot possibly show that this is how all knowledge *must* grow, there being no other possible way; and it cannot be taken to be a proper account of inference as such. Yet, on the other hand, if it is a fair description, as far as we can see, of geometrical inference itself, it does at least make it impossible, I think, to prove that there are no 'apprehensions,' at least in geometry, even if it cannot contribute to prove that there are. If it is a fair description, then the examination of geometrical argument is compatible with the view that at any rate the statements in geometry represent 'apprehensions.'

Perhaps even this is an under-statement of the strength of the position. I have already said that it does not seem to me possible to argue that these statements are in any relevant sense corrigible. If it were now allowed that Cook Wilson has given an irrefutable description of geometrical reasoning, the case in favour of admitting 'apprehensions' in mathematics would be a strong one. The very fact that the statements of Euclid seem to be final and incorrigible makes Cook Wilson's view plausible. The natural explanation of the apparent fact that these propositions can be and are stated once for all at the first time of enquiry, and are never subsequently rejected

or modified by us, is that in their first form they are correctly stated; and the natural explanation of such correct original statement is that at the time we immediately apprehended the truth. This has always been the common view of geometry.

But can Cook Wilson's account be ultimately accepted as a fair description? Is inference plausibly represented as nothing but a series of immediate apprehensions of fact? Every statement is no doubt a statement of a single fact, but these statements are sometimes introduced by the word 'therefore', indicating that a recognition of necessary connexion between statements of facts is characteristic of inference. Thus at first sight we seem to have in inference, not simply a series of apprehensions of facts, but also a recognition of necessary connexions between apprehensions, upon which recognition the later apprehensions of fact depend. In view of this, can inference be regarded as simply a succession of immediate apprehensions of reality? Cook Wilson maintains that it can. According to him the necessary connexions in question are not primarily necessary connexions between statements, but necessary connexions between the facts stated. There are not necessities of apprehension, but only apprehensions of necessities. The facts stated are necessarily connected, we apprehend their necessary connexions, and these apprehensions of necessary connexions are as much immediate apprehensions of reality as are the apprehensions of the facts themselves, since the necessary connexions are as much real necessary connexions as the facts are real facts. Thus inference can be represented as a series of immediate apprehensions of reality.

So long as we consider a straightforward proof of a geometrical theorem, starting from an axiom and ending with a conclusion demonstrated to follow from

the axiom, this seems to be an unobjectionable description of the reasoning involved. Here it seems plausible enough to argue that what at first sight appears to be a necessary connexion between apprehensions is really an apprehension of a necessary connexion between facts. But what, on this view, are we to say of the use of hypothetical reasoning in geometry? What in particular are we to say of the *reductio ad absurdum* proof?

This proof, the validity of which as an argument no one seeks to deny, seems to depend on our ability to recognise necessary connexions between statements which, so far from stating facts, state what is palpably absurd; *i.e.* they cannot possibly be statements of apprehension of reality. Here the ordinary view is that while the statements which are asserted to be connected cannot themselves be statements of knowledge, the statement that they are necessarily connected does express knowledge. The necessary connexions seem to be just as much necessary connexions as those in the straightforward proof, and just as certainly apprehended: yet they cannot be necessary connexions between facts, because the statements apprehended to be connected are not statements of facts. Thus it seems impossible to maintain that the *reductio ad absurdum* proof is a series of simple immediate apprehensions of reality, in the sense in which the straightforward proof was alleged to be so. If this is so, and the *reductio* is still allowed to be valid, then its validity cannot possibly depend upon its being a series of immediate apprehensions. In that case the validity of the straightforward proof is no argument whatever in favour of *its* being a series of immediate apprehensions. Indeed these two kinds of proof have so much in common, that it is difficult not to believe that the

necessary connexions involved are of the same kind in both; and that since in the one case the inference does not depend for its character as inference on the connexion being a necessary connexion between facts apprehended, neither does it do so in the other. In that event we should argue that while it may be the truth that in some cases there are necessary connexions between *facts*, it cannot be the truth that inference as inference consists in, or *essentially* includes, the immediate apprehension of necessary connexions between facts.

It is not necessary, of course, for us to press this point here since, as we have seen all along, this is the angle of approach of the Idealistic logic. Mainly because of his conviction that all the reasoning of physics is conditional, Kant in effect led the Idealistic logic to pay attention primarily to hypothetical thinking, and to approach its whole account of the nature of reasoning with that primarily in view. Cook Wilson, on the other hand, first and primarily examines geometrical inference, which he sees no reason to believe to be hypothetical, and commits himself to the main principles of his doctrine about the nature of reasoning, before ever he considers hypothetical thinking at all.[1] Thus for him it is the crucial point to give a satisfactory account of hypothetical argument, just as no doubt it is the crucial point for the Idealistic logic to give a satisfactory account of the straightforward geometrical proof.[2]

Actually, it seems, Cook Wilson is bound by his own principles either to deny the validity of hypothetical thinking altogether or else to represent it as

[1] I have tried to explain elsewhere how the traditional logic came to neglect hypothetical thinking, and I think the same kind of considerations influenced Cook Wilson. Cf. *supra*, pp. 46-8.

[2] Cf. *infra*, pp. 292-302.

being somehow, in spite of appearances, a series of immediate apprehensions of fact. The first course—which would, I suppose, involve treating hypothetical thinking as being, unlike inference, a convenient practical device which, while theoretically unsound, happens not to give unsound results in practice—Cook Wilson rightly declines to take. The second position, as is admitted on all hands, has not yet been made good. Indeed Cook Wilson's own attempted solution of the problem only serves to show to what lengths he was prepared to be driven by his general view of inference as immediate apprehension. I do not think anybody has ever maintained that his thesis that the hypothetical statement 'If *A* is *B*, *C* is *D*,' really states my apprehension that 'the problem whether *C* is *D* is a case of the problem whether *A* is *B*' will serve his turn. Waiving the important question whether a necessary connexion between *A*-*B* and *C*-*D* necessarily involves that *C*-*D* is a case of *A*-*B*, it is surely evident that it is very odd doctrine for Cook Wilson to teach that the apprehension of a relation between problems is as much an apprehension of a real relation between realities as the apprehension of a relation between facts; that is, that problems about universals are real in the same sense as universals themselves are real, and that any problem that may present itself to me about this piece of paper and these black marks upon it is real in the same sense as the paper and the black marks. This is surely the thin end of a wedge indeed; and Cook Wilson would find himself faced by a remarkably full world of reality—a world in which a man who would not allow the reality of negative entities such as 'not-tigers' or 'not-beautifuls' could hardly feel at home. To press one argument only, if awareness of a problem is an apprehension of

the real in Cook Wilson's strict sense of the word, it is difficult to see how it can be maintained that opining or believing or postulating or assuming are not also instances of apprehending the real. Yet, as we have seen, the distinction between apprehension and opinion is vital to Cook Wilson, and fundamental to the whole argument of his logic.

In short, if it is possible to give a satisfactory account on Cook Wilson's principles of hypothetical thinking, and especially of *reductio ad absurdum*, it is a task which has yet to be achieved. While this deficiency in his logic is not to be pressed for more than it is worth—it is not difficult to find similar deficiencies in the Idealistic logic, *e.g.* its inability to account satisfactorily for the difference between mathematical and non-mathematical scientific reasoning—it yet constitutes, as things stand, a vital weakness in the defence of Cook Wilson's view of inference.

I wish to conclude from the preceding discussion that there are reasons against accepting Cook Wilson's view as a descriptive account even of geometrical inference. Even if it could be accepted as such, there is nothing about it, or about the method by which it is arrived at, to entitle Cook Wilson to say that all reasoning which produces knowledge *must* proceed in this way. If such an *a priori* contention is disallowed, since there is no empirical argument, which is even plausible, in favour of the thesis that scientific arguments other than the mathematical conform to this pattern, it is entirely inadmissible to argue that for inference to be possible there *must be* 'apprehensions' in Cook Wilson's sense of the word.

Thus we cannot accept either of the two main arguments we have considered in support of the

doctrine that there are such real experiences as Cook Wilson's 'apprehensions.' An examination of particular instances is not in itself convincing; nor is the argument from the possibility of valid inference; nor can it be maintained that the two arguments support one another, since, as we have seen, the second is really dependent on the first. If this is so, the proper course open to Cook Wilson—and he often at least recognised this—is not to argue the matter at all, but to maintain that no defence can be found because the position is too obviously sound to need defence; in other words, that when a man says he doubts the existence of 'apprehensions' and 'statements of apprehension' there is no real thought in his mind to correspond. It has already been made clear, I think, in the course of our discussion of the significance for logic of the teaching of Hume why this contention cannot be accepted.

CHAPTER XIV

CONCLUDING REMARKS

1. Introductory

In the preceding chapters we have traced the development of logic in the hands of the Idealists. In doing so we have laid stress both on a break or revolution in the tradition of logic and on an essential continuity. The logic which Kant revived after the *débâcle* brought about by Hume was still a logic, and not very different in principle from the old logic as understood by the greatest thinkers. Indeed, while the revolution did change logic, it did this primarily by making it, as it were, more self-conscious as logic; more conscious, that is to say, of the essential nature of its own enquiry as distinct from those of metaphysics or psychology. Logic was forced to look to itself more closely, and to make up its mind more accurately just what it was doing, and just how it was seeking to do it. Any illusions or misapprehensions that may have been abroad about it previously were rather due to the fact that philosophers had not directly thought about the nature of logic, than because there had been actual false reasoning. If too sweeping claims were made for the authority of the logician, they were granted without opposition rather than falsely vindicated. We must, however, allow due weight to the fact that they *were* thus taken for granted; and that a considerable battle had to be fought before logicians could be brought to abandon this high ground.

Undoubtedly men were very ready to believe that logic might be, or even must be, a thoroughgoing *a priori* science. Some of its simple principles seemed to be self-evident. 'In every statement there is something of which we speak, and something which we say about it'; so that in its simplest and most accurate form every statement must be thus stated—*S* is *P*. 'To understand a statement we must understand the meaning of the terms'; thus the understanding of terms must be *prior* to the making of statements; conception must be prior to judgment. 'If my knowledge that *A* is *C* depends upon my knowing that *A* is *B* and *B* is *C*, then I must have *known* that *A* is *B* and that *B* is *C* *before* I could know that *A* is *C*': thus there must be *knowledge* of some simple truths, which do not themselves need proof *before* there can be any proof. Again, 'All *A* is *B*, all *A* is *C*, therefore some *B* is *C*, is *obviously* sound argument: all *A* is *B*, all *A* is *C*, therefore all *B* is *C* is obviously *not* sound argument'; thus the mind has a capacity to tell what arguments are sound and what are not, when symbols are used, by scrutinising the mere form alone, without reference to the subject matter. Working on such principles as a basis, it seemed that a whole *a priori* logic could be built.

Yet as soon as we look at these principles closely, we see that it is difficult to state any one of them in such a form that it is indubitable. A consideration of a number of actual statements, as made, was bound to throw discredit on the doctrine that all statements can properly be reduced to the form *S* is *P*. Similarly experience does not confirm the view that the meaning of terms can in practice be understood as fixed before ever they can be used in judgment and inference: experience suggests that the meanings of terms

come to be fixed through a series of judgments and ratiocinations. As we have seen, too, it seems to be a purely empirical matter to determine whether the knowledge that *A* is *B* and that *B* is *C* must, as knowledge, precede in the mind of a particular knower the knowledge that *A* is *C*. Finally, the development of the sciences has inevitably discredited the view that those ratiocinations by which the knowledge of science is advanced can be tested, and approved as regards their validity, without any knowledge whatever of the subject matter of the particular science; and has encouraged the view that if analysis by symbols can throw any light on the question of validity, it can do so only if it is first known or assumed that certain types of actual scientific argument which are being reduced to symbols are certainly valid, independently of any reduction to symbolic form.

All along the line, as we have seen, the revolt from the claim of the old logic to apriorism has in the Idealistic logic been closely associated with an examination of instances of actual reasoning which are accepted as valid and as producing knowledge. In particular, in order to keep itself on undebatable ground, the Idealistic logic has confined itself to the examination of instances from established sciences. So long as in modern philosophy instances were primarily taken from pure mathematics—as a matter of fact, from geometry—the revolution remained incomplete and essentially unrecognised. As soon as it was recognised that physics was not itself pure mathematics and attention was paid to physics, the revolution soon became complete and self-conscious. Berkeley himself saw that it was characteristic of physics to argue with concepts, *e.g.* force, which could not be defined and were not through and through clearly understood;

and he himself accepted the conclusion that this might be true of all human reasoning. From this moment an attempt, along the lines of Kant's, to re-write logic was quite inevitable.

The position was, then, that an examination of actual reasoning had in some way thrown discredit on the fundamental principles in logic which had hitherto been accepted as *a priori* and self-evident. In general, such a step was, of course, bound to accompany the discrediting of self-evident principles generally. There was no real reason, as Hume and Kant showed, why the principles of the working of the mind should be any more self-evident than the principles of the working of physical nature. In particular, the self-evidence of the principles, and the intelligibility of the processes of reasoning, displayed by the old logic could not stand up to critical examination. The first stage historically was that philosophers became convinced that though the reasoning expounded by logic might be sound, the reasoning actually to be found in the sciences was certainly not of that kind; so that it seemed that while logic was concerning itself with a perfect reasoning which might be found laid up in heaven, all the reasoning on which our human knowledge actually rests fell outside its purview. But this was not the final standpoint of the Idealistic logic: this position would still imply that the human mind had *a priori* insight into what kind of reasoning would be sound if it existed, and what not: only it could and did frank as sound nothing but certain types of reasoning of which actual instances are never found. Thus the position would be—syllogistic reasoning is perfectly valid reasoning, only nobody as a matter of fact ever reasons syllogistically. Rightly understood, the Idealistic logic goes further than this along the road of revolution.

At first, philosophers were apt to take up a rather ill-defined attitude, such as is to be found clearly present in Kant and Hume. This reasoning of the type catered for by the old logic may be perfectly sound, they said to themselves, but no reasoning which is in any way *important* is of this kind. Some relations can no doubt be intuited, allows Hume, but never relations between *real existences*: arithmetic and algebra have demonstrations which are exact and not merely probable, but they do not give knowledge of real existences, and so cannot stem the tide of scepticism. This curious capacity of the human mind to argue *a priori* within a certain field may be allowed, but we need not concern ourselves with it, because it does not give any knowledge which can properly be called knowledge. The capacity is there, but it is of no importance; and logic need not worry about it very much. What logic is really concerned with is the arguments of the empirical sciences, by which knowledge of actual objects in nature and of the actual experience of actual minds is acquired.

The same kind of attitude is to be found in Kant. Analytic reasoning is obviously sound reasoning, he argues, but the reasoning of mathematics and physics and psychology is not analytic. It may therefore be allowed that the general logic is perfectly good as far as it goes; it holds good of all analytic reasoning. But it needs to be *supplemented* by a logical account of the synthetic reasoning of the sciences, for which its traditional system does not cater. Being interested in the argumentation of science to the exclusion of everything else, Kant was apt to leave it at that. It was tacitly understood that there was other reasoning, of which the traditional logic had given a complete *a priori* account. In fact, it was only because Kant did

not bother his head any further with the alleged reasoning of this analytic kind that he never explicitly exploded the general logic in a thoroughgoing manner. Analytic reasoning, though obviously sound, was of no importance; and there the matter was left. The same rather indeterminate attitude shows itself in Kant in a more important matter. As we have seen, Kant recognised a distinction between the reasoning of pure mathematics and that of physics. In his logic Kant lays stress in his own mind exclusively on that of physics. He never gives much attention to the special problems raised by mathematical proof in consequence of his general view of thinking, but leaves his account of geometrical reasoning in a very indefinite condition. This was because Kant did not effectively feel the *importance* of the problem. Mathematics did not give us knowledge of what Kant called *objects*, or of *Nature*. It therefore dropped into the background of his thoughts, and he never cleared up the position.

But it must not be taken that the Idealistic logic essentially occupies so woolly and indeterminate a position as this. It must be granted that the Idealistic logic has not developed a satisfactory doctrine about mathematical reasoning. But it need not content itself with maintaining that there are kinds of reasoning which the old logic can explain, but which are unimportant; nor even with maintaining that certain kinds of reasoning are obviously sound, though as a matter of fact no instances can be found of them. As we have seen, it can press its contentions further than that. Logic, in becoming more self-conscious about its own procedure, has come to see that the claim to frank certain kinds of reasoning as valid, independently of any examination of actual instances, must be disallowed. The principles of the old logic and

the mechanism of reasoning it displays are not only shown not to hold of actual scientific reasoning: the principles are shown to be not self-evident, and the mechanism to be not demonstrably satisfactory as a self-operating, knowledge-producing mechanism. This became clear to us when we examined Cook Wilson's attempt, in the light of the development of modern philosophy, to do the best that could be done for the essential principles of the old logic.

It is not necessary to spend further time on this point here. When we come to examine the alleged reasoning which proceeds from prior and independent knowledge of premises to knowledge of a conclusion—as we saw the insistence on syllogism is an inessential point—we are faced by one of two difficulties. *Either* the reasoning really is analytic, in Kant's sense, and the process of demonstration is represented as obviously doing nothing whatever to add in any way by any means to what is contained in the premises, the mechanism of the inference being such as obviously to guarantee that there is no such addition: in which event inference obviously does not contribute to knowledge, but all new knowledge comes by immediate apprehensions of the type of the apprehensions of the premises. *Or,* as Cook Wilson would maintain, inference itself depends upon and includes fresh immediate apprehensions over and above those stated in the premises, the claim to validity ultimately depending on the self-guaranteeing character of each immediate apprehension as it comes, and the mechanism being simply a technique for encouraging the *occurrence* of these apprehensions without in any way affecting their intrinsic *nature*, since there is no *intelligible*, but only a *de facto* dependence even of the occurrence—and *a fortiori* of the nature—of the apprehensions on the

mechanism. In that event, of course, all claim to *a priori* intelligibility in the *mechanism* of inference, considered as a knowledge-producing mechanism, has been given up. The logical study of inference has become nothing but an empirical examination of the technique which has been found to be successful in producing these self-dependent 'apprehensions.' Moreover, it is maintained that there is no way of acquiring new knowledge except by a fresh act of immediate apprehension—of which act logic claims to give no account, nor to provide any test for distinguishing genuine from spurious apprehension, on the ground that there is no need for logic to perform any such task. This seems to amount to saying that there is no need for logic to perform any task at all, since there is no task for it to perform.

Thus logic has in effect given up all along the line and for good reason all claim to apriorism in the old thoroughgoing sense. It has no claim to *a priori* insight into the principles of thinking or the validity of inference. It cannot lay down, once and for all, rules for all possible valid thinking. It must approach the thinking of science in a much humbler spirit, eager to see how it works and prepared to find that the manner of its working is different from what might have been expected. Approaching its task in this spirit, the Idealistic logic has been forced to recognise that there is much more spontaneous activity, much more 'making' or 'constructing', in scientific reasoning than one would have thought compatible with its playing a part in contributing to the growth of knowledge. It has therefore sought to show that, contrary to appearances at first sight, the two things are not incompatible; that the fact that the element of construction is through and through inseparable from

the whole activity of thinking does not render thinking incapable of contributing to knowledge.

Now it is quite clear that to attempt to prove any such thing still implies a claim to *some* kind of *a priori* insight into what kind of process can contribute to knowledge and what can not. Logic is still claiming an apriorism of some kind, to distinguish it from a mere naturalistic study of actual processes of thinking, and to give it still some authority. It has not, in intention at least, relinquished all claim to authority, but has only drawn in its horns a little. But the question inevitably arises—Can it occupy such a position as it has chosen? Must it not in the end claim all or nothing? Can it fairly seek to learn about the rules of thinking from a study of scientific argument and still claim a position from which to pass judgment on that argument—that is, to defend it against the sceptic on the one hand, and on the other to set limits to its validity, as the Idealistic logic has always claimed to do? Does not the empirical element in its method deprive it finally of all standing as a separate enquiry and all claim to authority?

This, as our argument has shown, is an unavoidable issue for logic. But it is a question which is better left to the end. There are one or two subsidiary points which have arisen in the course of our enquiry, and to which some reference must first be made.

2. The Idealistic Logic and Physics

In the first place, we have noticed that in turning to an examination of actual instances of scientific reasoning the Idealistic logic has from the beginning tended to concentrate its attention on physics; and it is only to be expected that this would be not without

its effect on the conclusions of the logic about the nature of thought in general. It is quite true, of course, that logic has to a large extent been on its guard in this matter, and its method is calculated to ensure to it some degree of success in its proper enquiry. It has sought, not simply to notice how the reasoning of physics does in fact proceed, but to gain from its analysis of physics, treated as a particular instance, some insight into the laws which must govern all thought, both in physics and elsewhere. But we must here pause to ask whether it has entirely prevented itself from being inadvertently biassed in any way by the fact that it was chiefly pre-occupied by instances taken from physics, and whether it did not perhaps take it for granted that physical thinking is essentially typical of all thinking in a more direct and thoroughgoing way than seems actually to be the case.

This question needs to be considered in two aspects, according to whether physics is distinguished from mathematics on the one hand, or on the other from such other disciplined enquiries as biology, anthropology, or history. Psychology must be considered later as a special case, because it obviously raises special difficulties of its own in regard to logic. As regards mathematics, we have already seen that it is an important question whether the Idealistic logic, with its eye on physics, has not put forward a general account of inference which will not readily square with the apparent facts of mathematical inference: and something more will be said of this in the next section. Here we shall briefly consider whether the Idealistic doctrine might not well have been modified to some extent if more attention had been paid to the disciplines of other enquiries.

In the first place it is clear that historically the fact

that attention was directed primarily to physics made it easier for logic to consolidate its position against Hume. There is no doubt that an examination of, for instance, the sciences connected with medicine (which seem to have been primarily in Locke's mind) or of history, is at first sight quite compatible with the doctrines of Hume or Mill. It is not immediately obvious that there are *universal* or *necessary* principles in these enquiries: it seems possible to explain the general principles which are actually propounded there as being merely general and therefore ultimately contingent, and as arrived at by some process of generalisation from particular observations such as an associationist theory might explain. That is to say, it seems, at least at first sight, that the ultimate basis of such knowledge as is gained in these enquiries is the apprehension of particular facts, and that the general principles propounded are only general, being generalised from particular statements about particular facts, which are taken as ultimate. Historically, at any rate, it was only seen that more than this was involved, when these enquiries were examined in the light of a previous analysis of physics. It was then seen that the full success even of these enquiries can only be explained if it is supposed that this 'generalisation' is really the work of an essentially systematising activity, working in accordance with fundamental laws of its own, which must be, not general and contingent, but universal and necessary. It was then also seen that the observation of fact is no more an *ultimate* basis for inference in these enquiries than in physics. But all this is in the first instance much more easily detectable in physics. There it is much easier to demonstrate the incompleteness of 'generalisation' or 'association' theories of thinking than, for instance, in history; and

certainly associationist theories flourished by primarily laying stress on these other enquiries.

So far the emphasis on physics by the Idealistic logic was all to the good. It was all to the good that in examining the thinking of other enquiries we should be led to look in them also for the underlying operations of a synthetic unity of apperception: by this means we were enabled to descry elements which an utterly unprejudiced analysis of them might well have missed, and usually did miss. But there is another side to the picture, which can best be seen, I think, in this way. There is an obvious difference between the systematic theorising of physics and that of, for instance, biology or history, which ought to be noted. Consider, for instance, a thoroughgoing 'evolution' theory as compared with a 'conservation of energy' theory. No doubt both of them essentially represent phenomena as forming some kind of systematic unity; each part has to be exactly what it is to the smallest detail in order to play its part in the whole; and there are no residual phenomena falling outside the whole. Biology no more than physics would content itself with an account of the world which represented it as unsystematic, or as systematic in part but with a residue. And every statement in biology, whether general or particular, is as clearly conditioned by the absolute need for the systematic representation of phenomena as it is in physics. So far there is no difference between them. But in biology nobody thinks that the linkings of the parts of a systematic theory have the *absolute* validity which they have in physics. In the latter, dealing as it does with quantities, and conforming to a fundamental law of quantitative conservation, necessary connexions, being apprehended by mathematics, can be really 'necessary' and 'abso-

lute'; moreover, as we have seen, they are treated as such by physics. No doubt we do not know whether certain conditions hold of the particles within a certain space; but *if* those conditions hold, then, for instance, the probability of collision can be determined *absolutely*. In other words, the hypothetical thinking by which systematic theories are worked out proceeds on a basis of connexions which are really 'necessary.' In biology or history, on the other hand, this is not the case: here the connexions between the various statements which go to make up a unified theory are not 'necessary' but contingent. The whole theory is much more loosely and imperfectly bound together; and this is always recognised to be so in those sciences themselves. If a physicist maintains that light is affected by gravitational forces when it passes near a body, he can put forward a number of consequential statements which he must *necessarily* maintain. He has then only to verify these statements in order to accept or reject his general thesis; he has no doubt that the particular statements *necessarily* follow from his general thesis, and therefore provide certain tests of that thesis. He needs no test of whether or not this experiment is a test of this theory. When, on the other hand, a biologist tries to discover whether mice in the third generation learn to react more quickly in certain ways to the ringing of a bell, he knows that in his argument to show that this is a test of a principle about the inheritance of acquired characteristics the links have by no means this utter certainty. Here it is not only that the mice may behave differently from his hopes, but he may be wrong in thinking that such and such behaviour would prove the inheritance of acquired characteristics. He has thus to face a double difficulty in his making and testing of systematic theories; and

he knows that this is so. Whereas the physicist, using mathematics as he does, need not doubt, or seek any test of, the hypothetical arguments by which he binds his theory together.

In stating this point I have spoken as if we were dealing here with an *absolute* difference; as if, that is, the connexions involved in working out a physical hypothesis were just necessary, and those in a biological theory just not necessary. As a matter of fact the point does not in itself concern us here. It will be our business in the next section to discuss whether the difference is an absolute one, or ultimately one of degree. What concerns us here is a rather different matter.

We have seen the Idealistic logic come to maintain that reasoning is essentially hypothetical; that when a conclusion necessarily follows from a premise there is always a guiding or controlling condition within which that necessity holds, and outside it not. We have also seen that this doctrine was closely associated with noticing how the inferences of physics required the governing assumption of the law of conservation and the law of reciprocity. It is true that these instances were only regarded as *analogical*. But in physics they seemed to be such good instances of the manner of working of the fundamental laws of thinking, that it was easy to forget to treat them as analogies and to come to regard them as *real instances*, and the laws in question *as they stood* as being fundamental laws of thinking. Thus it was easy to drop back into the pre-Kantian error of regarding physical thinking as being an actual manifestation in real experience of pure formal thinking—that is, an actual manifestation of the working of the pure fundamental functions of thought unmixed with any empiri-

cal element. It was thus easy for the logician to think that he could throw light on the formal nature of all thinking by the comparatively simple expedient of examining actual selected instances of real thinking which was purely formal in character. It is true that if the fundamental position of the Idealistic logic is rightly understood, this is a heresy, since the Idealistic logic arose to teach that *all* thinking has an empirical character on the basis of a certain *a priori* formal structure, and that the battle against scepticism does not require us, as the pre-Kantians supposed, to maintain that there are actual instances in experience of pure formal thinking. But the appearance that in physics the acceptance of certain fundamental laws enables physicists actually to form theories whose links are absolutely binding, being recognised by an *a priori* mathematical insight and owing nothing to empirical influence, has acted as a constant temptation to fall into this error. The appeal to physics to provide an illustration by analogy of how certain functions might be working under the surface to systematise all particular judgments, has tended to degenerate into an attempt to exhibit physics as an actual product of the pure unadulterated working of those functions—which would be to reduce physics in the Cartesian manner to pure mathematics, and to go back on the whole lesson which the Kantian logic was supposed to have learned from Hume. The ideal of human knowledge would be being regarded as pure *a priori* intuition owing nothing whatever to experience, and would be being recognised as actualised in physics—a position which Hume and Kant between them have shown to be absurd.

This point is an important one, because it affects the whole attitude and method of the logic. If physics

presents *an actual instance* of the production of an absolutely water-tight system of judgments simply by the application of certain rules—a system of judgments which may not, of course, turn out to be true, but which is absolutely water-tight as a system—then in order to determine the essential nature of thinking, logic has only to examine this reasoning as an actual instance. There is all the difference in the world between examining physical argument as an instance of pure reason and examining it as an *analogy* of the working of the purely rational faculties. To see in it some indication of the way in which the application of a category might produce systematic unity is different from seeing in it an instance of a pure principle of the understanding producing, entirely of its own motion, an actual system of judgments which is absolutely and finally water-tight as a system. The use of mathematics in the building of physical theories has, as we have seen, encouraged logic to look at physics in the latter manner. That is to say, it has encouraged logic to think that the application of rules alone can actually in real experience enable the mind to produce systems of judgments, in which the judgments are bound together with absolute necessity, with no empirical element whatever entering into the recognition of the necessary connexions. And the Idealistic logic approached its examination of inferences expecting them, and trying to make them, conform to this model. Necessary connexion, it said to itself, can never be unconditioned. The positive side of this was the thesis—Provided it is recognised that all thinking is within certain governing conditions, the necessary connexions involved are absolute and without any element of contingency whatever. This was taken to mean that, in any actual piece of reasoning, the particular statements con-

cerned were, under the limitation of a certain stated condition (*e.g.* the law of action and equal and opposite reaction), actually as stated bound together by absolute necessity. That is to say that in hypothetical reasoning that which was alleged to be necessarily connected might, as stated, be absolutely necessarily connected. Thus inference was approached with the expectation that absolute formal validity might be found in it divorced from truth: that the question whether certain statements are systematically connected must be settled prior to and independently of the question of their truth. The fact that system, though not, of course, truth, seemed to be produced simply by the application of rules made it look feasible for logic to state the rules which essentially governed the whole process. Actually the analysis of inference did not bear out this view; and, as we have seen, the Coherence theory in effect abandoned the distinction between what is formally systematic and what is true by identifying truth with coherence.

It is arguable that if more attention had been paid, for instance, to biology, all this would never have happened. Here, as in physics, the fitting of all the facts into one systematic account, for instance an evolution theory, is an essential characteristic of the science; and the giving an account of reasoning in biology must not ignore this. It is obvious enough that the formation of such a unitary theory could not be wholly produced in the mind, or wholly forced on the mind, by mere numbers of observations. Here, too, it seems evident that there must be functions of activity in the mind which are responsible for making its thinking take the form of system-building. Further, it seems to be implicitly the faith of the biologist that it is its character as system-building which makes the reason-

ing of biology capable of contributing to knowledge. Yet here there is no danger of thinking that a *purely* rational system-building activity can be separated off in actual experience, even for the purposes of logic, from all empirical influences. With the abandonment of mechanism in biology, it has become clear that no recognition of necessary connexions, however hypothetical, are here free from all empirical taint. Here the assertions of necessary connexion are obviously through and through dependent on the position of biological knowledge at the moment. Even if we waive all question of ultimate truth, and regard the statements concerned as being as hypothetical as may be, the statement, for instance, that a given change of environment is bound to produce a certain type of adaptation in an organism of a given kind, has, even as a mere assertion of necessary connexion, none of the absolute finality and independent certainty associated with theories which are built by the aid of mathematical reasoning.

This means that if certain mental functions are at work producing systematic unity in the thinking of science, those functions must be capable of working more under the surface, so to speak, than one might at first sight think from an examination of physics. That is to say, while they are undoubtedly there working to produce unity, there can not, at any rate in some sciences, be found actual instances in experience of their working free from all empirical taint. This must certainly not be taken to mean that they are not at work.

This doctrine, as we have just represented it, is fully consistent with the position to which Kant introduced the Idealistic logic. Logic was not to be concerned with giving an account of selected real

experiences, but of the forms or functions of thinking operating within real experiences. This is a point which needs to be further examined in a subsequent section. But it is clear enough already, that, if this is so, it is from one point of view salutary for logic, in pursuance of its general method of examining in its own way actual instances of scientific reasoning, to pay close attention to the thinking of biology or of history. When it concentrates on physics, it is in pressing danger, owing to the overwhelming part played in that science by mathematics, of regarding the reasoning of physics as an actual instance in experience of pure rational activity without taint, producing system by means of the originative, creative power of the principles of pure reason alone. In biology and history the synthetic function of reason can equally well be seen producing the same result, and for the reasons given there is less danger of falling into this pre-Kantian fallacy.

3. The Idealistic Logic and Mathematics

We must here return to a further consideration of mathematics. We have seen again in the last section that a special problem is raised for logic by mathematical reasoning, in that it seems to show a difference in kind from other thinking. Earlier philosophers would have got over this difficulty for themselves by tacitly taking it for granted that the mathematical was the true reasoning, and that the other disciplines would in the fullness of time come to conform to the mathematical type. This line of self-defence is obviously not open to the Idealistic logic, whose account of thinking owes its main revolutionary features to an emphasis on physics in its difference from mathe-

matics; so that for it the boot is on the other leg, the difficulty being to make mathematical thinking square with its general account. It is true that, as we have seen in the last section, the fact that physics so largely employs mathematics in the construction of its theories has to some extent improperly operated to prevent the Idealistic logic from giving full weight to its own essential principles. But this should not conceal the fact that in the Idealistic logic, as in Kant, insufficient attention has been given to the outstanding special case of mathematical inference itself.

The difficulty is due, of course, to the existence of a difference in *kind*. If this could be fairly shown to be in the last analysis a difference of degree, the problem would no doubt become manageable on the principles of the Idealistic logic. Let us first put it in Kant's manner. In the mathematical analogy $A:B::C:x$, the analogy determines x: in other analogies, it determines only the relation of C to x. From the mathematical analogy x can at once be discovered without any further investigation of anything whatever except the meaning of the terms; the 'philosophical' analogy only enables us to *look for x in nature, i.e.* to look in experience for something which bears the same relation to C as B does to A. This is the sense in which we are told to approach nature, not as a pupil, but as a master asking questions. We do not go to nature in search of x, knowing the full nature of x before we find it: we look for x, not knowing its nature, but guided by the knowledge that $A:B::C:x$. Thus the mathematical analogy enables us to determine x without any taint of empiricism in the process of discovery: the physical analogy simply gives us a 'principle' or 'rule' to guide an empirical search. Here there is clearly a difference in kind.

Now Kant and the Idealistic logic base themselves on the thesis that the thinking, by which we discover analogies of this type $A : B :: C : x$, does not give us a definitive knowledge of objects, but gives us something which is a necessary pre-condition of a definitive knowledge of objects. It gives us something which we must have before we can approach nature as a master asking questions, which approach is obviously necessary to the possibility of knowledge. This must be borne in mind in giving a logical account of thinking—that good thinking gives not truth, but something which is a necessary pre-condition for the attaining of truth. Thus thinking is not itself an intuition or series of intuitions of reality as it is, but an activity without which reality certainly cannot be apprehended as it is. This activity has been found to be systematic in essence: it is not intuition, or direct apprehension, but constructive activity in accordance with rules, such as to enable it to produce system. This is what it must be, because of the part which thinking is seen to play in science's contribution to knowledge of reality.

But the trouble is that this account does not appear to square with the facts of mathematical thinking itself. As we have seen, the signs of the presence of this systematic activity, where it is most easily recognised, are the interdependence of all judgments upon one another and the consequent corrigibility of all statements. These signs are not in evidence in mathematics. It does not seem that the synthetic unity of apperception is necessary to the apprehension of the final, independently apprehended necessities of mathematics. Yet in the last section we have seen that, while in essentials the Idealistic logic has developed its account of thinking by turning its back on mathe-

matics, it has misled itself in other respects by assuming thinking as such to have some of the very characteristics which mathematical thinking certainly appears to have, but which the Idealistic logic cannot really allow to any thinking at all. That is to say, in giving an account of analogies of the non-mathematical type, it tries to represent them as reducible to the mathematical type if once they are recognised to be *conditional*. That is, the mind is represented as capable of producing systems of the mathematical type *on condition*, these systems being known to be produced, and not intuited in reality, because they are produced prior to empirical verification and are often rejected. Thus the system must have been *produced*: and the logic asks itself—How can such a system, which *may* be true, be *produced*? And it answers that thought is such that it can produce absolutely systematic judgments by working in accordance with rules. Provided the statements are recognised to be governed by a condition, the necessities which bind them may be *absolute*. Analogical evidence for this is produced—*viz.* that the arguments of physics are *absolutely* valid within the governing condition of the law of conservation. And this looks all right, until we see that in the theory of evolution, for instance, the same essential characteristics of unity and system are shown, but the necessities are not *absolute*. The difference seems to be due to the fact that the physical theory is worked out by mathematics. Yet the Idealistic logic cannot make mathematical reasoning square with its account of thinking.

Thus it looks as if the Idealistic logic was wrong in trying to maintain[1] that mere obedience to rule could ensure that judgments should be *absolutely* syste-

[1]We have already seen that in its detailed account of inference it failed to maintain it.

matic, the connexions between the various parts of the system being absolute necessities, in the sense in which they are so in geometry. It should have maintained that this type of obedience to rule ensures the production of systematic unity in some way or other; when mathematical reasoning can be employed the unity is absolutely systematic, when it cannot it is only empirically and contingently systematic. That is to say, the Idealistic logic does not succeed in maintaining that inference is wholly and absolutely according to rule, provided only that it is under a governing condition; that is, that reasoning is absolutely systematic provided it is hypothetical. Such a thesis had some appearance of truth if physics alone was examined; but this appearance it derived from the fact that the reasoning of physics is overwhelmingly mathematical. But if the Idealistic logic cannot give a satisfactory account of mathematics, then it cannot attribute to thinking in general these very features of *absoluteness* which distinguish mathematical thinking from other reasoning: in other words, it cannot attribute to all thinking the very features which its own theory cannot explain. About mathematics the logician has been trying to have the best of both worlds.

But *is* it impossible for the Idealistic logic to give a satisfactory account of mathematical reasoning? We must now face this question for the last time. Let us first re-capitulate the reasons why it appears impossible. Let it be allowed that in, for instance, geometry it is difficult to say without qualification that the statements are *true*; that is to say, let us allow that a knowledge of geometry does not include or carry with it the knowledge that there is a three-dimensional Euclidean space in which physical objects are disposed. Geometry does not tell us, immediately and indepen-

dently of all other enquiry, that physical nature is *certainly* disposed in Euclidean space, and that therefore all other statements about physical objects must be not incompatible with this. So much ground we may certainly allow to the Idealistic logic in this connexion. When we come to speak in the last resort about the one world which is reality—and we may certainly allow that all statements which are true must be statements about one world or unity—then we have no independent certain knowledge of the spatial properties of objects. Our statements about the spatial properties of *objects* must be subject to the same give and take as other statements, in the interests of a systematic account of reality as one world or unity. In so far as the reactionary view includes the doctrine that knowledge of Euclidean geometry carries with it the knowledge that physical nature consists of bodies disposed in Euclidean space, it must be rejected utterly. Even Descartes did not think knowledge of geometry in itself carried with it the knowledge of the existence of geometrical objects.

So far the Idealistic logic need have no difficulty with mathematics. Its difficulty rather lies in the distinctive *absoluteness* of the systematic character of mathematical reasoning. There is no clear evidence that in working out what follows from the axioms in geometry, the mind is in any way system-building: there is no evidence of the underlying operation of any such thing as a synthetic unity of apperception, as we have represented it. It is true that Euclidean space is a unity, and that the statements of Euclidean geometry represent it as a unity. But there is no evidence here, as there is in biology or history,[1] of there

[1] I do not instance physics here for the reason explained above, *viz.* that on analysis it is found to be in a special position, because of its apparently exclusive use of mathematics in the building of its theories.

being any give and take reciprocally between statements in the interests of systematic unity. All the evidence is that, as the old logic maintained, the axioms and early propositions stand once for all as originally stated, and that the later propositions conform to *them*; *i.e.* earlier statements are not *in any degree* corrigible in the light of later knowledge. Similarly the absolute dependence of a subsequent proposition on an earlier seems to be recognised absolutely finally once for all, when it is recognised at all; and it does not wait upon, nor is it in any way corrected because of, the subsequent apprehension of further propositions and necessary connexions between propositions which is required for a knowledge of the whole system.

To sum up, there is no evidence in geometry itself that a knowledge of the system is in any sense prior to a knowledge of the parts, or even that the two are reciprocally dependent. The evidence is compatible with maintaining that knowledge of the parts is wholly independent of a knowledge of the whole, and that a knowledge of one part may exist and be *knowledge*, if knowledge of geometry is ever knowledge, independently of any knowledge of other parts. As far as the evidence goes, knowledge of geometry may quite well come by a series of direct self-guaranteeing apprehensions, which add no strength to one another and are indeed, as apprehensions, wholly independent of one another. There is no sign that geometry implies a discursive, controlling activity which makes, corrects and modifies statements in the interests of systematic unity. There is no sign that the statements of geometry are judgments, in the sense given to that term by the Idealistic logic.

It is true that, in view of what has been said above

about Euclidean geometry, it is difficult to see how geometry can be represented as just a series of *apprehensions*. It seems that it may be regarded as a *series* of cognitions, rather than as a discursive, unified, activity in which every act is reciprocally dependent on the others; in geometry each cognition has a certain self-dependence, as we have seen. But it is difficult to see what is the nature of these self-dependent unitary cognitions. They cannot be 'apprehensions,' in the sense in which we have been using this word in the previous chapter. They could only be 'apprehensions,' I think, if real objects were disposed in a Euclidean space, and the nature of that space were being directly apprehended in geometry. This, as we have said, cannot be maintained.[1] It seems that equally systematic bodies of statements can be made on the basis of hypotheses which are different from the axioms of Euclid; and it is the absolutely systematic character, common to these meta-geometries and to Euclid, which we have to explain.

It seems, then, that we have to this extent the same ground for saying here, as we said in the case of physics, that these statements are the work of some activity in the mind, *viz.* the fact that we cannot maintain that the statements concerned represent immediate, non-active 'apprehension.' But though the statements of geometry are systematic, there does not seem any ground for saying that the principle of the activity involved is simply the necessity for producing system. There is no sign in geometry that that which makes the earlier statements just what they are is simply the necessity of making them and the later

[1]Though Cook Wilson, of course, maintained it, and would not otherwise have taught that geometrical statements are 'statements of apprehension.'

statements all fit into a system. As we have seen, the earlier statements have rather the air of being laid down once for all on their own account, so that the rest simply have to square with them. Even if it were the case that the necessity that other statements must square with certain fundamental initial ones will necessarily ensure that all the statements are in the end systematic, it could not be said that the need for system determines all the statements. The initial statements are determined by something else, and the later statements are determined simply by the necessity for being consistent with the initial statements. This, at any rate, is what *seems* to happen in geometry. Even though we allow that the statements are the work of some activity of the mind, we cannot find in an analysis of geometry any support for the view that that activity is essentially *systematic*.[1]

We are left then, for a defence of the application of the Idealistic account of judgment to the mathematical judgment, with nothing but a general argument of this kind:—In other spheres thought proceeds by producing systems; certainly in mathematics the statements, which form as a matter of fact a systematic unity, are the work of an active function in the

[1]Kant was quite right in treating our knowledge of space as different from our knowledge of physical nature. He evidently hoped that by making space dependent upon the mind in a special sense—*i.e.* dependent upon the mind in a different and more thoroughgoing sense than the structure of 'Nature'—to explain the specially definitive and apodeictic character of geometry as contrasted with physics. He could then represent the statements of geometry as dependent, not upon a discursive controlling activity, but upon intuition: space is a real character of the mind, and in intuiting it we are intuiting a reality as it is; space is intuited as a unity, and there is therefore no need for any discursive activity to make the statements of geometry systematic. Obviously this view is incomplete, and, apart from this, it is rendered unsatisfactory, I think, by the existence of meta-geometries; but it shows an acute awareness of the difficulty.

mind; we may therefore take it that it is the essence of thinking to be systematic here also: a mind which is elsewhere active in the acquisition of knowledge can hardly, here and there in the course of its experience, be *wholly* passive, at least in the gaining of anything which can properly be called knowledge. I cannot find in the Idealistic logic any better argument than this,[1] though the point is a vital one seeing that the logic is putting forward an account of thinking as such. It is impossible, I think, to *disprove* this doctrine by an analysis of geometrical reasoning; but there is nothing in such an analysis to support it. On the other hand, as we have seen, the Idealistic logic must regard any development of the traditional view as unsatisfactory in face of the facts of hypothetical thinking in geometry.

It must be recognised that if we adhere to the Idealistic view, we are still left with the unexplained difficulty that in mathematics the actual system-building itself seems to be without empirical taint, while elsewhere it is not. This, as we have seen, is a very serious matter. The Idealistic logic sought to maintain that thought was essentially capable, by virtue of its own nature, of producing system: it forced itself to face enormous difficulties—*viz.* in explaining how a system-producing *activity* could play a part in the growth of *knowledge*—in order to base itself on this doctrine. The doctrine then turns out to be insusceptible of support in those cases where statements, as they stand, are recognised to be absolutely systematic, *viz.* in mathematics. On the other hand, the doctrine

[1] I do not mean to imply that it is an unsound argument. Only it is not convincing as it stands; it is too general and sweeping, like Kant's argument from the possibility of the unity of any experience which can be called mine. My point is that the Idealistic logic has not really contributed anything to implement this general argument.

seems to be almost inescapable in cases where the statements are recognised to be *just not* systematic as they stand, *e.g.* in biology, or history. The Idealistic logic in actual fact came to gloss over this difficulty largely because of its emphasis on instances taken from physics, which, owing to its overwhelming use of mathematics, is a misleading case.

Of non-mathematical judgments and reasoning, and of the sense in which they can be maintained to be systematic, we shall have more to say; for in this direction the line of development of the Idealistic teaching is more explicit. But the problem of the special nature of mathematical reasoning we must reluctantly leave as an outstanding, unsolved difficulty.

4. The Judgment of Perception

We now leave mathematical thinking—on whose special problems the Idealistic logic has tended, half-intentionally, to turn its back—and return to problems which fall directly in the main line of development of that logic. We have already seen that it seemed driven by its own essential doctrines to a thoroughgoing Coherence theory, which could allot no place whatever in the production of knowledge to direct apprehension of any kind, whether perception or non-sensuous intuition. This extreme doctrine seemed to be unsatisfactory, because an analysis of scientific method undoubtedly supports the view that a considerable part is played in the acceptance and rejection of scientific theories by particular observations, and because the logic has no satisfactory alternative explanation of the abandonment of one theory for another, or of one set of categories for another, if this common-sense explanation is disallowed. The Ideal-

istic logic is bound to pay attention in this matter to conclusions drawn from the analysis of scientific method, because it was in this very way that it came itself to revolt from the essential principles of the traditional logic.

In the course of our preceding argument we saw that there is much in scientific method to confirm the view that all 'statements of perceived fact' involve judgment; that it is impossible to make a statement of perception which does not involve the faculty of judgment, and with it the whole system-producing apparatus, on the necessity of which in the mind the Idealistic logic insists. This granted, it is difficult to avoid the conclusion that any statement of fact is through and through conditioned by the whole or system into which the act of judgment is essentially fitting the fact stated as a part. That being so, it is difficult to see how the whole or system could properly be rejected or transcended because of its alleged inability to comprehend any particular fact. On the other hand, it is impossible, as has just been said, to see how the rejection of systematic theories and hitherto used categories can be otherwise explained. Further, if the Coherence view is accepted, it must be admitted that the development of knowledge is being wholly explained in terms of generation by the mind's activity, with nothing but a courtesy *rôle* allotted to perception or immediacy of any kind. And this is surely unbelievable.

Here we certainly seem to have an impasse. It seems, on the one hand, that statements of perceived facts cannot be allowed ever to be incorrigible statements of apprehension, but are always corrigible judgments. On the other hand, it seems necessary to allow that perceived facts *in some way* play the part of absolutes

in the development of scientific knowledge; there must be an irreducible element somewhere in such perceptions, which is taken to be ultimate in the sense that it is rejected on no consideration whatever, but other things are rejected finally because of it. Yet if our previous argument holds, this irreducible element can never be *stated* as itself and irreducible, all the attempted statements being corrigible. We must now ask ourselves—Is there any reason why there should not be in perception such an irreducible element, which might play a part in the acceptance and rejection of theories, and perhaps more pervasively in the whole activity of judgment, even though there are no incorrigible, final statements?

It is no part of our present intention to conduct a close psychological investigation of what apparently goes on in the mind when we make a judgment of perception, and to attempt to demonstrate that such an investigation supports the view that there is an irreducible nucleus of sheer apprehension, in itself unstateable, but serving to determine our attitude to the various statements offered to us as statements of what we have apprehended. We have already seen that there are at any rate some experiences of which this is a plausible account of the appearances—the most obvious instances being when I am trying to describe a pain, or to explain what some unknown object in the distance 'looks like.' Certainly I shall not try to determine whether psychological analysis suggests that all statements of perception are ultimately of this kind. I rather wish, as usual, to attack the problem from the other end, and to ask whether there would be any insuperable *logical* difficulties in the way of maintaining such a view.

Broadly speaking, the objection of which I am think-

ing, and which would be fatal to any such view if it applied, is the same kind of objection as that which I have urged above against the Coherence view's treatment of the statements of mathematics. As soon as we begin to lay emphasis on anything within experience which may have a determining influence on the growth of knowledge without reflecting itself in *statements*, logic is in danger of cutting away the ground from underneath its own feet, and thereby fatally undermining all its own conclusions. If the truth or otherwise of a statement, or the validity or otherwise of an argument, depends on whether or not there has gone on in the mind something whose occurrence or non-occurrence does not and cannot reflect itself in, or in any way affect, the statements as stated, then any hope of discovering very much from an analysis of statements is clearly ill-founded. Such an analysis could give no valuable result unless supported by an examination by a different method of those processes or conditions which statements do not reflect, and which therefore logical analysis cannot reveal. It seemed to us above that the view that the statement $3 \times 3 = 9$ has no fixed meaning of its own, but must be allowed to have, in the proper logical sense of the word 'meaning,' different meanings at different times and in different contexts, was open to this fatal objection. We must now ask whether the doctrine under consideration at present must be rejected on the same ground. Actually we shall find, I think, that it is not incapable of evading this difficulty.

First we may encourage ourselves with the reflection that no logic can give an entirely complete account, intelligible from beginning to end, of the process by which new knowledge comes into being; it must always accept unexplained certain experiences

which may serve as the unit elements of its explanations. As we saw, the traditional logic supposed that there were immediate apprehensions which could be stated in a certain form, of which there could be no test and to which logic could have nothing whatever to say. Logic could discover how far a series of such apprehensions could carry us in the way of knowledge, and thus say something about the limits of human knowledge: it could also claim to show up spurious beliefs, but only by relying on the faculty of immediate apprehension itself—never by substituting some alternative mechanism to do the work of immediate apprehension and so testing that faculty, nor by breaking up the 'process' of immediate apprehension into parts and scrutinising whether the parts were properly arranged. The 'immediate apprehensions,' which were according to the old logic stated in the form *S* is *P*, were always bound to remain utterly mysterious experiences, forever unexplained. Moreover, it was not because the whole experience of stating an immediate apprehension was, if it existed, mysterious that the Idealistic logic abandoned the doctrine. It abandoned it because the analysis of statements and of the use of statements in reasoning gives us no reason to suppose that there are such statements of immediate apprehension.

Now it is surely clear that the Idealistic logic, too, must have its 'mystery,' which it must frankly accept as such. In view of its analysis of statements it is bound to become convinced that certain things must have gone on in the production of those statements, without being able beyond a certain point to represent to itself an entirely intelligible model or picture of the manner of their going on. We have already seen that the act of judging is ultimately a mysterious act. The

Idealistic logic has argued that the activity of judging obeys certain rules—it is essentially systematic—and that its obedience to those rules makes it capable, although it is an activity, of contributing to knowledge. But that logic may well allow, as in the hands of Kant, for instance, and of Bradley it normally does allow, that this obedience to rule is not the whole matter. It may surely be said, indeed, that in the case of the judgment of perception it is *obviously* not the whole matter. And we have represented it as initially a fundamental doctrine of the Idealistic logic—though as we have seen the thoroughgoing Coherence view goes back on this—that in one respect all judgments are alike, *viz.* that the necessity of obedience to rule is never wholly constitutive, but only regulative of particular judgments, there being a further element, *i.e.* an element of intuition or immediacy of some kind, within all judgment. In this event, as we have already argued, no statement ever *states* the immediacy, in the sense in which Cook Wilson thought it was possible to state an apprehension; but every statement is the work of the whole activity of judging.

If that is so, the Idealistic account of judgment allows for the existence, within the whole experience of judging, of an element of immediacy, which also, like the element of activity which is under the necessity of conforming to rules, plays its part in determining the character of the particular judgment. I do not therefore see any reason why it should be incompatible with the doctrines of the Idealistic logic to explain the whole experience of judgment along the lines already suggested in connexion with certain particular perceptual judgments about colour and certain particular self-conscious judgments about pains and pleasures. In these instances there seems to be a case,

on the psychological investigation of experience, for maintaining that the judgments necessarily involve a search in the mind for a form of statement which will properly represent the immediate cognition, and that the production of the statements offered for acceptance or rejection is the work of an activity which operates on systematic lines. As has been said before, I do not wish to try and show that the account which is here offered of these particular judgments can be shown psychologically to hold of all judgments. That is not my business here. What I do wish to maintain is that an account of this kind is not inadmissible on the essential principles of the Idealistic logic.

But, for all that, perhaps it is advisable here to pursue the matter a little further from a psychological point of view in regard to these particular judgments, in order to gain a clearer view of just what the suggested theory is. When I feel a pain, it certainly seems reasonable to maintain that I have knowledge of my own feeling. But when I try to make a true statement —any true statement—about my pain, it seems that all kinds of other knowledge become relevant besides this present awareness of my own pain. A person who has had little experience in this field may believe at first sight that in saying that he has a toothache he is saying no more than he knows; with a little more experience he may discover that a far closer discrimination than he thought of the exact nature of the pain is necessary to determine whether it is really toothache or not: he may even find that he has a pain which is actually indistinguishable from this one on occasions when he is convinced that it cannot be toothache. All the knowledge which is necessary to the making of a correct statement about his pain does not come to him automatically and necessarily with

the feeling of the pain. Though the pain of which he is speaking is his pain, all his statements may well be untrue as stated. Yet it is difficult to believe roundly that he has no knowledge of his own pain.

No doubt it will be urged that this incorrectness of statement is due to the fact that the speaker happens to be trying to state, not what he knows, but things that he does not know, *e.g.* the cause of his pain, or the condition of his bodily parts, which is not, of course, directly what he feels, but what he (wrongly in this case) concludes from what he feels. But this objection does not seem to help matters, since it does not seem possible under any circumstances to find any single statement which is a pure statement of knowledge about his own pain. When a man makes a significant statement about the *nature* of his pain as opposed to speaking of the *cause* of it, he does not even attempt to say what it *is*: he says that it is in a certain respect the same as certain other pains. It may well be that *in the feeling* this pain is distinguishable from the others which are said to be the same in this given respect: it may be that he is aware of this all the time, and that he never thinks for a moment that all these pains are exactly alike. It may be argued that he must know what each one *is*, in order to know whether they are all alike or different in a certain respect. But he never *states* or attempts to state, what any one of them *is*. He just says that they are very much like toothache, or that three of them are, and the remaining one is not, and so on. Moreover, he always knows that he might have discriminated more closely than in fact he did: and he may very well come to say, 'I cannot think how I can ever have thought the pain *A* was like the pain *B*,' and so on. If we ask why he asks himself whether the pain *A* is like the pain *B*, rather

than whether it is like the pain *C*, or indeed whether it is unlike the pain *B*—that is, why he asks himself whether *A* is *X* rather than whether *A* is *Y*—this seems to be determined by that very attempt to give a systematic account of his own experience on which the Idealistic logic lays stress. But if we ask what determines whether he shall say that the particular pain *A* is like the particular pain *B* in intensity, or unlike—that is, whether he shall say '*A* is *X*' or '*A* is not *X*'—then it seems plausible from experience to say that the answer is ultimately determined by his attention to his own feeling. On the other hand, there seems no ground for saying that simple attention to his own feeling can ever of itself alone provide him with a true statement about it.

As we saw before, the same seems to be the case if we analyse a perception of colour. We do not attempt to state exactly what a particular shade is discriminated to be, but we make a statement on the strength of our discrimination. The making of the statement seems to involve both systematic activity and attention to the immediate element in the cognition.

It may be said that these are special cases, and not typical of the making of statements as such. I do not think so; but, as has been said before, I do not propose to conduct a psychological investigation of judgments of all kinds along these lines. I simply point out that the Idealistic logic might on its own principles fairly accept some such account.

The grave objection is, I suppose, that it leaves the faculty of judgment a marvellous and mysterious faculty. That is to say, this faculty plays a vital part in knowledge in respect of an element in it, the working of which has not been analysed, and which can therefore not be subjected to test or discipline. In

regard to the systematic activity of the mind and the part played by it in judgment, something can be done in an attempt to discover the rules of its working; and logic has tried to do this. But with regard to this other element which seems necessary to explain the mind's acceptance or rejection of the statement '*A* is like *B*,' *viz.* the element of immediacy, no account of it can be given, and logic has no standing to question its authority.

In estimating the gravity of this objection, we must remember that even the traditional logic was in principle in the same plight. Even according to the traditional account, having fully understood the statement, 'A straight line is the shortest distance between two points,' and having satisfied ourselves that it states one thing only, and that clearly, we have still to trust some faculty of immediate cognition to tell us whether a straight line *is* or *is not* the shortest distance. Socrates, having cleared up the definitions offered by those he was questioning, as a matter of fact relied on some such immediate cognition on their part to tell them that these were *false* as soon as they understood them. If it is a clear and distinct and true statement that virtue is teachable, it is equally clear and distinct to say that 'virtue is *not* teachable'—clear and distinct, but false. Logic has always presupposed, though it may sometimes itself have forgotten this, some such immediate cognition, which is reliable but untestable, of which it can give no account, and to whose authority it has nothing to say.

It is true that on the view we are offering the mysterious and unexplained element appears rather more *complicated* than that presupposed by the traditional logic. Socrates supposed, I think, that if and when he arrived by the aid of his dialectic at the ac-

ceptable definition of justice, that definition would be just correct; indeed this is implicit in his conception of definition. He supposed, I think, that when he said 'justice is a harmony of *ABC*,' he would see that 'a harmony of *ABC*' just *was* justice; not that he was predicating of justice something which could also be predicated of some other things, which might be distinguishable from justice, and might even be distinguishable *as harmonies*. That is to say, he was thinking that in the true definition subject and predicate were identical, *i.e.* were an identity, not that he was subsuming the subject under a concept, under which other things also, different from it and from one another, might be subsumed.[1] It is difficult to see how he could think this; because unless what he predicates of justice is predicable of other things also, how can the definition be a significant statement? But *if* he thought this, it might make the thing look simpler. It may seem more reasonable to represent as the work of a faculty of *immediacy* a real recognition of identity, '*A* is *A*,' than a statement of the kind, '*A* is of the same colour as *B*, *viz.* ultramarine,' when this statement is recognised to have a sense compatible with the acknowledgment that *A* and *B* and many other things, which are asserted to be ultramarine, are distinguishable from one another in respect of colour. Yet this latter is the kind of thing which all 'immediate' judgments of perception seem to come to. Leaving aside the special difficulties about definitions, if the traditional logic presumed that the statement, 'This is ultramarine,' is a statement of apprehension

[1] I say this of true definition only, not of other true statements. In definition *per genus et differentiam* the predicate as predicated must be thought of as predicable of this subject only, and of nothing else whatever; otherwise the statement would not be a *definition* within the meaning of the doctrine.

of identity, it would seem that it deceived itself. Ultramarine is *not* the name of the particular shade of colour of this thing; it is predicated of a number of things which differ perceptibly from this thing in colour, and which have in common with one another and with this thing no perceptible identical character; it is predicated of them all simply because their shades of colour are recognised to fall within a certain range. Seen in this light the immediacy which the traditional logic presupposes is clearly not an apprehension of identity, nor anything like it; it is a far more complicated affair than that. The identification of the 'immediate' and the 'simple' has completely broken down.

Besides this, to be fair to the suggested Idealistic account, we must remember that the immediacy in question is not a whole experience which is wholly immediate, but an element of immediacy within an experience. There is another element in the experience, which works according to rules, and without which also the judgment of perception would not be possible. Of this element the Idealistic logic has been giving an account. Without it the faculty of immediacy would not be able actually to do what it is by its nature competent to do, and what nothing but itself can do. Logic has given some account of the formal principles governing the offering to the mind of statements for acceptance or rejection; of the accepting or rejecting of them it has nothing to say. So far this is like the 'midwifery' of Socrates, and the presuppositions of the Aristotelian logic. Only Plato and Aristotle suppose that the faculty of immediacy will *utterly* accept or *utterly* reject at one flash; and the Coherence theory, on the other side, finding no instances in experience of *utter* acceptance, concludes

that there is no immediacy. What I am here pleading for is an immediacy, which while it never utterly accepts, yet is not nothing. If it is allowed, as the Idealistic logic allows, that a man may come to a clearer recognition of the meaning of a statement—that when he comes to see new implications which he did not see before, this leads him to understand differently the meaning of the original statement—then I do not see why the reliability of the faculty of immediacy—that is, its claim to *be* an immediacy—should be impugned because it accepted the offered statement before and rejects it now. Indeed, under such conditions this is exactly what would be expected to happen. If I am asked, 'Are you sure that you have a toothache?' and I first reply, 'Yes, I certainly have'; and then later, having been convinced that it is more difficult than I thought to be sure whether a pain is a toothache or not, I correct myself and say, 'I am not sure that I have a toothache'—this change on my part does not prove that I have no exact immediate awareness of my own pain. Nor, if it is demonstrated that *any* statement I may make about my pain is ultimately corrigible, does this prove that I have no exact immediate awareness of my own pain; nor that such immediate awareness does not play a part in my acceptance as true, or rejection as false, of proffered statements about my pain.

I do not wish, however, here to attempt to go further in this matter than to say this—that the arguments of the Idealistic logic are not competent to refute the contention that there is an element of immediacy in knowledge, so long as it is not maintained that the faculty of immediacy can of itself alone contribute *statements* which are pure statements of knowledge, carrying the guarantee of immediate apprehension; and further

that the failure of the thoroughgoing Coherence theory to give a satisfactory account of the rejection of obsolete scientific theories, or of the abandonment of obsolete scientific categories, is itself evidence of this. If there is any truth in this contention, then a sound theory of scientific method should represent that method as a disciplined technique for exploiting this immediacy for the advance of knowledge; just as the Socratic 'midwifery' was a disciplined technique for exploiting a *νοῦς*, and Descartes' celebrated method for exploiting a 'natural light,' both of which were supposed utterly and finally to accept and approve the relevant clear and distinct statement, if such was laid, with the aid of the method, before them. It is no part of my intention to attempt to carry further the fulfilment of such an ambitious programme here and now. It is enough to show that the Idealistic logic, rightly regarded, cannot authoritatively rule such a theory out of court.

5. The Idealistic Logic and Psychology

The course of our argument has made it clear that logic depends for its very existence on showing that its subject matter is not real experiences, but elements in, or forms of, real experiences, which elements or forms can themselves never under any conditions become particular real experiences. In examining the laws of thought logic is not examining laws, mere conformity to which wholly and completely constitutes certain pieces of real experience, *e.g.* demonstrations in geometry. Rather it is examining the formal laws which play their part in the determination of the structure of all experience whatever. It seeks to show that there must be such underlying formal laws which are rigid

and universal, because otherwise certain features of experience just cannot be explained. However much it may be the case that actual general statements are general and for-the-most-part, and that in actual reasoning conclusions are joined to premises by links of the same imperfect nature, yet underlying this the reasoning must be based on a formal structure whose laws are rigid and universal, otherwise it could not contribute to knowledge: it could not possibly have that objectivity, *i.e.* that independence of the subjective, which is the least it must have to be called knowledge. Logic also seeks to show what these underlying universal laws are. But to show that they exist and to exhibit what they are, it does not seek to find actual inferences, whose special principles are universal, or to show the dependence of valid inference on universal laws by examining these cases. It should not expect to find any such cases: indeed, as we have seen in our discussion of mathematics, the existence of such cases, rightly regarded, would discredit its whole theory of inference. When it uses the analysis of particular inferences it can argue by 'analogy' only, after the manner of Kant.

If this is so, it should not be difficult to distinguish between logic and psychology, nor to prevent quarrels arising between the two enquiries. It may be freely allowed that logic takes many a hint from psychology, as in the various arguments from 'analogy,' to which reference has just been made. But it should never regard psychological investigation as providing good and sufficient *argument* in support of a logical doctrine. Actually, as we have seen, the Idealistic logic has always been extremely suspicious of psychology. But as it becomes more sure of itself and of the integrity of its own enquiry, it need not be so. Logic seeks to

discover certain forms within the process of experience determining the structure of that experience; these forms are, of course, as such, inaccessible to direct psychological observation. In estimating the exact part played by these forms in the development of actual experience logic actually argues by 'analogy.' What this means, as we have seen, is this: it selects an actual experience in which the formal element in question is most clearly in evidence, and examines the actual experience. On the basis of this, it pictures to itself, as it were, a kind of mechanical model of the working of a supposed activity which is purely formal, in order to gain a clear idea of the effect of the formal element in the whole actual experience. Strictly speaking, as we have seen, this is not an *argument*. It is simply part of the technique of the Idealistic logic for presenting a clear account to itself of how the formal element in real thinking *might* work, if it were capable of manifesting itself in experience in utter purity. The ultimate grounds of logic for positively maintaining that there is a formal structure within the experience of real thinking, and that by the means just referred to logic itself is throwing light on the character of that formal structure, are quite other. Of these we shall have something to say in the last section of this chapter.

In all this we are representing the Idealistic logic as taking up in essentials the same position as that occupied by Kant in his distinction between transcendental or objective deduction, and psychological or subjective deduction; only the details of the position have now, I hope, become more clearly articulated. The first kind of argument, which is the proper business of logic, is able, according to Kant, to stand upon its own legs; but it is well if the second supports

it. They are thus separate enquiries, which cannot, with ordinary integrity of discipline, be so arranged as to square with one another in their results. Logic can come to its own conclusions, without waiting to see whether the account given by psychology of such particular actual experiences as we should commonly call thinking are compatible with its conclusions. On the other hand, reflection on the conclusions of logic could never enable us to determine what *ought* to be the teaching of psychology in regard to these experiences. No doubt in the last resort the teaching of logic and the teaching of psychology must prove to be compatible. Actual experience must be represented by psychology to be such that the formal elements, of which logic gives its account, can be present in it as formal elements. But for all that they are separate enquiries, and neither of them, by using its own method or reflecting on its own conclusions, can tell what ought to be the conclusions of the other. It is vital to logic to maintain the essential integrity of the two enquiries: and we have seen that this is all of a piece with the best teaching of the Idealistic logic about the nature of thought. In an actual experience there are elements which determine the part played by that experience in influencing the subsequent experiences of that particular mind, as an individual; about these logic can, by virtue of its very method, have nothing to say. This field it leaves to psychology, whose problems of method are all its own and different from those of logic. On the other hand, there are elements in an actual experience which determine the part played by that experience in contributing to knowledge, *e.g.* in adding to our knowledge of physics, or of history; for the isolation and examination of these logic seeks to make its own method specially

adapted. Here psychology should have nothing to say.

But, as we have seen, it is vital to the Idealistic logic to maintain that there is only one experience, and that all experience is one. Unless this is the case, logic, arguing as it does from the possibility of unity, has no method left to it, and therefore no existence. Logic cannot allow that there are two *kinds* of real experiences: thinking or apprehending, which it is the province of logic to investigate, and other experiences, such as imagining or dreaming, on which empirical psychology may try its hand. It is clearly the business of empirical psychology, if it is to investigate any, to investigate *all* experiences after its own manner. The Idealistic logic teaches that unless its subject-matter is a unity, its method cannot be scientific. The truth must be, as we saw Cook Wilson set out to maintain at the beginning of his argument, that logic and psychology are examining different *aspects* of one and the same experience. And if there is anything in the argument of the Idealistic logic, if we may really take it that experience is a unity and may argue from that basis, this must mean that both aspects are there to be discovered in every moment of experience. Even in the moments of experience when I am demonstrating a geometrical theorem, logic may not steal my experiences as pure, unadulterated subject matter for itself, and keep out empirical psychology. It need make no attempt to do this, because the subject matter of logic is never a whole, real experience.

I do not think it is necessary here to attempt to give an exact account of the aspect of experience which is studied by empirical psychology. Indeed it would be premature, as well as presumptuous, to make such an attempt. As in logic, so in other disciplines, the ques-

tion of subject matter cannot be divorced from the question of method; and until the various schools of psychologists draw nearer to one another in the matter of agreement about the main principles of psychological method, it is obviously impossible for one who is not a psychologist to have very much idea just where the science stands. But it may well appear that, in view of what has already been said in the course of our argument, some effort ought to be made by the logician to clear up a little further the problems connected with the time-series in experience.

We have already seen that in meeting the situation raised by Hume, logic allowed the claim of psychology to determine the rules which govern the time-order of experiences in a particular mind. It allowed in effect that in this particular sphere there could be vindicated against Hume no criticism sufficiently radical in character to stem the flood of scepticism. In so far as the distinction between knowledge and illusion was based in previous philosophies upon the alleged existence within experience of privileged periods of utterly pure apprehension or utterly pure thinking, then Hume's teaching carried with it an unanswerable refutation of those philosophies. For such a defence of knowledge, as Cook Wilson recognised, nothing less would serve than to maintain an *absolute* difference of kind between the experiences within the privileged periods and the experiences of other times. The psychological investigation of experience shows that this cannot be maintained, and in the course of its argument evidently vindicates its right to pronounce on this particular point. So much ground logic had to give in taking up the cudgels on behalf of the claims of knowledge.

The question arises whether in so doing logic has given too much ground, so that it finds in the end that

it has left itself no firm standing at all. If logic relinquishes all claim to study the time-order of experiences in particular minds, it can only study thinking by examining an order of the elements within thinking which is not a time-order. This claim it expresses by saying that it is dealing with *formal* elements in thinking; and it seeks to do this by examining and classifying statements in order to discover the various possible *forms* of statements and the relations between these forms, *e.g.* the conditions under which a statement of one form can or cannot be necessarily connected with a statement of another form. This its method is calculated to enable it to do. It does not seek to show in its conclusion that a certain particular statement is not true, or does not follow from a particular premise, as, for instance, a biologist or a physicist would show this; it seeks only to prove that a conclusion of that general form can, or cannot, follow from a premise of this form. It does not seek to prove a particular biological or physical proposition in a manner in some way superior to that in which the biologist or physicist proves it; on the other hand, it does not quite accept such proofs just as they stand, and leave it at that. It seems rather to attempt to show that the physicist, for instance, is in effect taking himself to have proved rather more than a proof of this particular form is capable of proving—though there may be nothing, at least at present, in the particular work that the physicist himself is doing under his own particular discipline to draw his attention to this fact.

The prototype of such criticism by the logician is perhaps Descartes' teaching that while geometric proof is valid reasoning *par excellence*, it does not prove the existence of any object—a limitation in it

which a mathematician as such might in that day well have missed. This doctrine of Descartes amounts to saying that while the proof of, for instance, Proposition i. 47, is good proof, yet if the geometer, as may well be the case, understands the statement of the conclusion to assert or imply the existence of an independent world of bodies in Euclidean space, his premises do not support that conclusion. On the other hand, it is not, of course, the business of logic as such to supply a valid proof of the existence of bodies in space, or even an account of all the conditions which such a proof must satisfy. As Kant puts it, logic seeks a criterion, not of truth, but of a negative condition of the possibility of truth. Logic seeks, simply by attention to formal considerations, to insist on a proper attention being paid to the question of what kind of thing has been proved and what kind of thing has not; and its value[1] is due to the fact that, because of its special point of view, it is enabled to drive home to the scientific investigator points which the exigencies of his immediate situation do not compel him to notice, and even to some extent operate to preclude him from noticing.

The question arises whether by taking this ground logic can maintain itself immune from psychological attack, or whether the same considerations, which enabled empirical psychology in effect to drive the

[1]We must not be tempted to over-estimate the actual effect of logic on the sciences. While it is undoubtedly true that the less dogmatic claims, now put forward by many twentieth century men of science in regard to the final competence of human reason, under the scientific discipline, to give ultimate and complete truth, are in clear accord with the teaching of the Idealistic logic, this change of heart is, equally undoubtedly, to be attributed to developments within science itself. The twentieth century scientist has in some way become convinced *in the laboratory* that the nineteenth century scientist thought his ratiocinations proved more than can in fact be proved.

old logic from its more pretentious position, enable it also to make the present stronghold untenable. As has already been hinted, one obvious danger is that such a logic may find itself driven to subscribe to such a doctrine of an Absolute, as may bring it into conflict with the teaching of psychology all along the line. Is logic, by speaking of *forms* of thought, and of *formal activities*, bound in the end to seek to vindicate the possibility of knowledge by speaking of an Experience, which is the experience of no individual mind, but of some Absolute Mind, in which alone true knowledge is possible? If so, it is difficult to see how such a doctrine could fail to have implications about the nature and experience of particular minds, which must bring logic at once into conflict with empirical psychology again. But is it not the case that in relinquishing its claim to pronounce upon the time-order, logic is turning its back on the study of any real thinking by any particular mind, and is committing itself thereby to follow a road which must lead to a doctrine of the ultimate unreality of particular minds and of all their experiences root and branch?

This is a large question. But I do not think the outlook is hopeless. So long as logic really means what it says when it asserts that it is dealing not with real experience itself, but with *forms* of thought, I do not think it is by any means inevitable that it should slip into regarding these *forms* as themselves a real experience, every detail of which is determined wholly by formal characters. There is no reason why the notion of forms of thinking should be confused with the notion of a real thinking which is purely formal. There seems no reason why we should lapse into speaking of Real Thinking in an Absolute at all. We seem to be able to think of mechanical principles as

the formal principles of physical changes without thinking that there exists anywhere in nature a purely mechanical change; and we can increase our knowledge of mechanics on this basis, and such increase in knowledge will assist us towards an understanding of physical nature. We can recognise that artists strive after beauty, or that species strive after survival, consistently with recognising that in actual experience those strivings will manifest themselves as particular activities different in different cases, and even that the real activity may be unique in each individual case. When we say that they all conform to the general form of striving after beauty or striving after survival, we do not mean that there is a great super-individual, super-Platonic Striving, not after this beauty or that beauty, or this survival or that survival, but after the pure Form of Beauty or Form of Survival.

No doubt it is difficult to explain just what is meant by a *form*. Certainly it is impossible to define it in terms of anything else. But this is an old and unavoidable difficulty, not peculiar to any particular logical theory. There seems no reason to suppose that it is possible for any enquiry to dispense with the word, or with the distinction between the form and the real existences of which it is the form.

This latter distinction has, as we have seen, taken pride of place in the Idealistic logic over the distinction between form and matter. When we were considering the teaching of Kant, we saw that it was the essential inspiration of the beginnings of the new logic that a distinction between the form and matter of thought, which was beyond the competence of a psychological study of thinking, could properly be drawn by a method which concentrates on the form, in and for itself alone, and claims no corresponding

ability to produce any independent apprehension of the nature of the material of thought. This is just what the special method of logic was to enable it to do—to look upon the whole process and descry within it its formal character. Any attempt to conceive of, or to say anything about, a *matter* of thought as entirely independent of, or distinguishable from, the particular form it may take, has disappeared far into the background, as totally unnecessary to the purposes of logic, and probably of any other enquiry; while the form, as distinguishable from any actual existence in which it may be found, has come to occupy the whole picture. The essential character of a form is fixed in the mind of the enquirer by distinguishing it, not from a formless matter, but from the whole real existence of which it is the form.

No doubt the tendency we have noticed in the logician to confuse a form of activity with a supposed real activity which is purely formal in character, and to think that an argument which deduces the one proves the existence of the other, is, as far as it goes, a practical demonstration of an insufficiently clear recognition on his part of the true nature of a form and of the distinction in question. But this confusion is surely avoidable. As we have seen, the confidence which logic may reasonably have in its ability to avoid it rests on its consciousness of the competence of its own special method. This method, strictly followed, automatically prevents logic from straying into the field of psychology, and separates off for it its own subject matter. It is thus enabled to a large extent, like any other disciplined enquiry, to carry on its own work within certain limits without having at the moment any clear ultimate insight into the exact part played by logic in the whole scheme of human knowledge; and it may

reasonably expect that its understanding of the essential nature of its own objects will increase as its work advances. Thus when it comes to attempt to give an answer to those final questions, it may turn for its own guidance to an analysis of its own successful departmental activity. When it says therefore that its own subject matter is *forms* of thought, it does not claim to be affirming of itself something which is either lucid or self-evidently true; nor is it offering an advertisement of itself which can reach the comprehension of those who have no acquaintance with its own enquiry in detail. Rather, as the crowning phase of its own activity, it is taking stock of itself, reflecting on work which, up to a point, it has been enabled to carry on without such reflection, and attempting to give a considered judgment, resting on an insight gained in the course of long detailed activity, about what that activity is actually achieving. Our argument has shown that an ultimate account of what is meant by a form of thought is not a presupposition of the possibility of the beginning of logical enquiry, but is necessarily the last word to be written at the end of logic. The faith of the logician that he is ever moving along the high-road towards that last word, and not along a false track that leads away from it, rests, not upon a clear intuition of the goal of his journey, but on a well-founded confidence in his method of steering his course.

6. The Authority of Logic

We now come to the final question of authority. Has logic in its reformed condition any standing to give authoritative judgments about the validity of reasoning and the claim of human knowledge to be knowledge? We have seen that the Kantian logic set

out to give to science a defence against Hume's scepticism such as science was unable to provide for itself. With the writings of Hume it had become clear that the new science of psychology was going to treat knowledge as an experience like other experiences; and treating it as such, was going to study the conditions of its emergence as an experience in the same manner as it studied the conditions of emergence of any particular belief in any individual mind; and further was going to enquire how far the character of the particular experience which emerges is dependent —as in the case of belief it evidently is—on the conditions attendant on its emergence. Hume also made it clear that this enquiry was a perfectly reasonable enquiry; and that its investigations would show that there cannot be between such experiences as are commonly called knowledge and such experiences as may be called belief an absolute difference of *kind*, such as had previously seemed necessary to the refutation of scepticism. The Idealistic logic therefore looked in a different direction for a valid defence of knowledge.

It claimed to eschew the method of psychology altogether and to put in its place a method of its own. This method was to enable logic to take scientific thinking as it found it, so to speak, and to base its account of the nature of thinking as such on a careful examination of scientific argument as it is; and yet at the end of its enquiry logic was to be in a position to judge authoritatively the limits and validity of that argument. Logic was not to claim, as in the last resort the pre-Kantian logic seemed to claim, to give a thoroughgoing *a priori* account of what human thinking *must* be from beginning to end, *i.e.* to inform the scientist on *a priori* grounds to what principles any ratiocination of his must conform. It was to proceed

empirically, at least to this extent, that it was to recognise at the outset that scientific ratiocination is good reasoning, and was to discover the principles of good reasoning by reflecting on the said scientific ratiocination. But in spite of this empirical element in its method, it was still to have some authority in pronouncing about the *limits* of validity of that very argumentation, reflection on which enabled it to gain all the knowledge it has of the nature of thought.

Obviously the position of logic is not very clearly defined on the face of it. The question is whether our argument has put us in a position to clear the matter up a little further.

Let us first follow the practice we have adopted before and consider the matter in Kantian terms. Kant thinks that it is of no use to prove with Hume that physics is one long imposture from beginning to end, since nobody believes it. We must therefore take physics as we find it. We must recognise that it gives us knowledge of a natural order of events, and ask ourselves how such knowledge is possible. Clearly the answer must be dependent on what is meant by 'knowledge of a natural order of events.' Yet it seems that Kant feels that the determination of exactly what is meant by this phrase[1]—in other words, of just in what sense knowledge of physics is really *knowledge*—is what is achieved at the end of our logical enquiry, not something which can be set down as agreed at the beginning. What, then, is Kant doing? What is the method of his transcendental logic? I suppose there is only one possible answer to this question. Kant must be accepting a provisional answer to his question at

[1]The phrase itself is not Kant's, but is used here for the sake of brevity and clearness. Kant treated physics as being knowledge of 'nature,' and he regarded 'nature' as being an ordered system of changing objects.

the beginning, and then relying on his method *both* to make that provisional answer more clearly and accurately defined, *and* to provide reasons for its acceptance as a true answer. Moreover, this seems to be actually the case. When Kant says that he is not occupying the empirical, and ultimately sceptical, attitude of asking, 'Is knowledge of physics possible?', but is taking it for granted that it is so and asking, '*How* is knowledge of physics possible?', he is quite clearly himself thinking of 'knowledge' of physics as being something *less* than Descartes or Leibniz thought it was, but something *more* than Hume could allow it to be. No doubt at the beginning he had no very clear idea what in detail a 'knowledge' which fell between these two would be like—except that even at the beginning he thought that its statements must have a universality, and the connexions between its statements a necessity, which Hume could not allow; but he had a very clear idea, and an absolute conviction, that a satisfactory account of knowledge of physics must represent it as falling between these two. Then at the end of his enquiry he had, or might have had, a much clearer idea of what kind of thing such 'knowledge' might be—*viz.* a body of statements representing 'nature' as a systematic world of events, objective in the sense that everybody recognises it to be the same world. In the course of his enquiry it has become clear that the great triumph involved in the production of knowledge of physics is the achievement of a number of statements which form a systematic body of statements, and which are acceptable to everybody, even though in accepting them the mind has somehow to distinguish between subjective or private 'appearances' and objective or 'natural' events and objects. The triumph is that this distinction has been

effected in such a way as to render the 'objective' capable of being represented as a systematically unified world. Here we have a more articulated account of a 'knowledge' which falls between what the rationalists took knowledge of physics to be, *viz.* a point by point apprehension of an absolutely independent reality, and what Hume eventually declared it to be, *viz.* a series of beliefs about an absolutely independent reality, which are found on investigation to have no good claim *either* to be true of an independent reality *or even* to hang together as beliefs in anything but a contingent manner.

It is not our concern here to estimate how far this account of the nature of 'knowledge' is, even in the end of all, really clear or admissible. Our business here is to examine the method. Can the method enable Kant to perform the two-fold task already mentioned, *viz.* both to clear up in detail his initial hypothesis in regard to the nature of 'knowledge,' and to give reasons for accepting that hypothesis as a definitive account? The method is required, as we have seen, to give an *a priori* answer to the question, 'How is this "knowledge" possible?' In answering that question Kant has asked himself how particular instances of such knowledge have as a matter of fact been achieved, and takes many a hint from this empirical enquiry. But he is not supposed to be using these hints as arguments. Having taken a hint and passed it on to the reader, Kant is supposed to be demonstrating that such knowledge must in the nature of the case have been arrived at in such and such a way. For instance, having noticed that the argumentation of physics is governed by the law of conservation of energy, Kant is supposed to show that an attempt to give a systematic account of physical nature must, to be success-

ful, be governed throughout by one law asserting the (quantitative)[1] conservation of *something* permanent, or some such law. But considered as a proof, Kant's account must owe nothing to the fact that in process of discovery it owed much to reflection on the apparent method used by physics in actual practice. It is supposed to be an absolute, unconditioned demonstration that just this was necessary to the possibility of knowledge.

All this, of course, is familiar ground. We must now ask, looking back on the whole of his enquiry, whether Kant's method has enabled him to do what he was supposed to do. We may notice in the first place that while Kant has argued that a knowledge of necessary connexion is always conditional, or as he puts it, knowledge of the conditioned, his method implies that in logic we can acquire *unconditional* knowledge of necessary connexion, *viz.* that the application of universal principles by the mind to the given is unconditionally necessary to the possibility of 'knowledge' of a unified nature. This is, of course, an ominous sign. If his teaching that knowledge of necessary connexion is essentially conditional is to be logic at all, it must be maintained of thinking as such, not simply of the thinking of the physicist or of the psychologist. And if it is true of thinking as such, then Kant's own logical doctrine leaves him no loophole for hoping that the logician himself can discover what is *unconditionally* necessary to the possibility of knowledge.

[1] I put the word 'quantitative' in brackets, because it seems to me that the conception of quantity slipped into Kant's account of this principle improperly, owing to his preoccupation with physics. The pure formal principle of conservation of a permanent is more general than any principle of quantitative conservation. The biologist's account of change, for instance, presupposes that something is conserved from one generation to another, but not that something is quantitatively conserved.

The defence that logic is dealing with *mental* events and can for that reason perceive necessary connexions, as, for instance, the physicist cannot, has of course been implicitly demolished by Kant himself. Kant would certainly only allow to psychology the claim to discover conditioned necessary connexions. If therefore Kant can defend at all his claim to this kind of apriorism for logic, it can certainly not be on the ground that it is dealing with mind rather than with physical nature.

In fact it is quite clear that the claim of Kant's logic to its apriorism is closely bound up with its claim to be dealing with *forms* of thought. So long as we are content to deal with forms of experience, and not with actual experiences, Kant must claim, it is possible for us to find absolutely necessary connexions, in a manner which is not possible to the psychologist in his study of real experiences. We cannot argue *a priori* that such and such a particular person could not have had such and such a real experience unless he had had certain other real experiences before it—as, for instance, that he could not have understood a particular lecture unless he had previously studied mathematics. Such knowledge of the necessary dependence of present real experiences on past real experiences is essentially empirical and conditional. But we can argue from the fact of the production of a theory of a certain *form* that it must have been produced by a mind which throughout its activity was rigidly conforming to a certain formal principle. This insight into an *absolutely* necessary dependence of a certain form in the result on the conformity of the activity concerned to certain formal principles, is what logic claims by its own special method to give us.

I do not think that this modified claim can be ruled to

be inadmissible *a priori*. It is a quite consistent claim as far as it goes. There is nothing in it incompatible with the teaching of logic itself about the nature of the enquiry of physics, or of psychology. In its judgments on psychology the Kantian logic has certainly left open to itself some such differential treatment of logic as this. In showing that our knowledge of necessary connexions between actual objects and events, and of actual experiences, is always conditioned, the logic has not automatically precluded itself from teaching that a knowledge of necessary connexions between formal results and formal activities may be absolute. But if such a claim cannot be ruled out *a priori*, neither can it be vindicated *a priori*. It is not *obvious* that so long as we confine our attention to forms we can have unconditioned knowledge of necessary connexion, even though cursory reflection on mathematics has inclined many philosophers, Kant among them, to think that this was so. The only possible vindication of such a claim by logic must lie in the existence of unequivocal achievements by logic. To the examination of this claim to vindication by results we must now briefly turn.

Here at once we find ourselves faced again by the difficulties raised by the fact that logic has an empirical foundation. As we have seen, the attempts of the Rationalists to conform to the principles of the old logic were repudiated by the Kantian logic, not primarily because thinking of this kind evidently *could not* produce knowledge, but simply because the argumentation of science was not as a matter of fact thinking of this kind. No doubt it later became clear, as we have seen, that even the teaching of the old logic depended on an enquiry which was really more empirical in method than it had been thought to be.

But this development only served to emphasise the empirical foundation of all logic. *If* the thinking of science may be taken to be valid, then the effect of a certain formal discipline must be such and such. But since the recognition of necessary connexion here is conditioned by the assumption that scientific argumentation is valid, how can logic claim on the basis of such recognition of necessary connexion to give any judgment on the validity of scientific argumentation?

Evidently it can only do this by maintaining that in the course of this hypothetical enquiry it elicits in the mind of the enquirer an insight into the formal mechanism of thought which is ultimately independent of any hypothesis; *i.e.* that at a certain stage the recognition that if thinking is to be valid the working in such a way must be producing such and such a result is superseded by the definitive intuition that if thought is to be valid thought must work in such and such a way. That such categorical insight might supervene on conditional reasoning is, of course, denied by the Idealistic logic in connexion with scientific enquiries. Is there any reason to think that its existence must be admitted in the case of logic itself?

If our previous remarks about the nature of inference have been sound, there is no such reason. On the principles of the Idealistic logic we have been forced to regard all logical theories of inference as in the last resort more or less descriptive accounts of an operation, which, even considered formally, is ultimately mysterious. Having once appealed to the actual reasoning of science to support its new teaching against traditional doctrine, the logic can never entirely emancipate itself from constant dependence on such an appeal. No doubt it is true that, in return for

this support, it can by its own method defend scientific demonstration, in a way in which science itself cannot defend it, against the attacks of a positive scepticism based upon a psychological study of the nature of belief; and so far it is justified as an independent enquiry. But it does this, not by independently establishing a complete and final account of the nature of scientific reasoning, marking out once and for all the exact limits of its validity; but rather by demonstrating negatively, by the special method of logic, that there is more involved in that reasoning than can meet the eye of the psychologist, and by positively establishing that human reasoning has within it a formal structure which makes it not incapable of validity, that is, of contributing to a knowledge which is really knowledge, and not merely a more or less methodical construction of the imagination. No doubt the Idealistic logic set out with the more ambitious hope that it could finally exhibit in a wholly *a priori* way both the exact nature of this formal structure, and the exact manner and limit of the influence which that formal structure might exert in determining the character of the real experiences of which it is the form. But we have found no good reason for allowing that such hopes have been fulfilled. Indeed, rightly regarded, it is an essential part of the confessed task of the Idealistic logic to demonstrate that any claim to have fulfilled them must certainly be spurious.

But this in itself is enough. It leaves the revolution a revolution, and still allows logic to be logic, and to have a certain measure of authority, without impairing its standing as a living enquiry. Logic has reduced its claims a good deal since the days of Kant. But it still gives us against all forms of positive scepticism a bulwark which nothing but itself can provide.

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