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The Mind and its Place in Nature

By

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SECTION B

Introductory Remarks

"If there's a screw loose in a heavenly body, that's philosophy; and if there's a screw loose in a earthly body, that's philosophy too; or it may be that there's sometimes a little metaphysics in it, but that's not often. Philosophy's the chap for me. If a parent asks a question in the classical, commercial, or mathematical line, says I gravely, 'Why, sir, in the first place, are you a philosopher?' 'No, Mr Squeers,' he says, 'I ain't.' 'Then, sir,' says I, 'I am sorry for you, for I shan't be able to explain it.' Naturally the parent goes away and wishes he was a philosopher, and, equally naturally, thinks I'm one."

(DICKENS, *Nicholas Nickleby*)

SECTION B

The Mind's Knowledge of Existents

Introductory Remarks

In this Section I am going to consider the knowledge which a human mind has of matter, of itself, and of other minds. Knowledge is a transaction with two sides to it, the mind which knows and the objects known. A critical discussion of the mind's alleged knowledge of anything should therefore help to clear our ideas both of the nature of the mind and its activities and of the nature of the objects which it knows. Thus, in discussing the mind's knowledge of matter through perception, we ought to learn something both of the nature of the mind as a percipient and of the nature and reality of matter. And, when we consider the mind's knowledge of itself and of other minds, we ought to learn something of the nature of the mind from two sides. Common-sense believes itself to know pretty well what mind is and what matter is, though it might have great difficulties in putting its beliefs into clear and consistent language. So far we have accepted these claims without question, and have discussed certain problems subject to this condition. We have now to pass from the level of enlightened common-sense to that of Critical Philosophy. By this I mean that we have to consider carefully the sources of our alleged knowledge of matter and of mind, and to see how far we can still accept the common-sense view of these two entities in the light of this additional information. Even if the common-sense view should not need

correction, it will certainly need careful and explicit *statement;* and, when stated, it may seem unfamiliar and even shocking to common-sense.

It would, I think, be admitted by every one that such knowledge as we have of matter is based on sense-perception and memory. Each man's sense-perception and memory are supplemented by communication with other minds which claim to tell him what they have perceived and remembered. Thus the problem of our knowledge of matter inevitably involves the problem of our knowledge of other minds. There is less agreement about the sources of our knowledge of other minds. But I suppose that every one would admit that a necessary, if not a sufficient, condition of such knowledge is that we should listen to the sounds and note the gestures of other human bodies. So the problem of our knowledge of other minds is in turn bound up with the problem of our knowledge of matter. The exact connexion between these two problems will have to be considered in some detail. There is, again, a lack of agreement about the sources of a mind's knowledge of itself. I suppose that every one would admit that memory is involved here as much as in our knowledge of matter. But, on the one hand, some people deny the existence of a mental activity, called "introspection," by which a mind observes itself or the events belonging to it. And those who admit the existence of this activity differ a good deal about its limitations; for some think that we can introspect both acts and states, whilst others seem to hold that we can introspect states but not acts. On the other hand, some people who admit the existence of introspection and give it extensive powers would hold that it is not the only or the main source of our knowledge of our own minds.

In any case we can see at once that the three problems are most intimately linked, and that no treatment of one can be satisfactory without a treatment of the rest.

I have already tried to show this linkage between the problem of our knowledge of matter and the problem of our knowledge of other minds. There seems to be an equally close connexion between the problem of our knowledge of our own minds and that of our knowledge of other minds. For, even if it be not the whole truth, it certainly seems an important part of the truth to say that our beliefs about other minds are based on analogies with what we know of our own. The other point which is already clear is that memory is involved in all three kinds of knowledge. Hence the divisions of this Section will be the following: First I shall treat *Sense-perception*, then *Memory*, then *Our Knowledge of our own Minds*, and then *Our Knowledge of other Minds*. The reader will remember that this division is necessary, because we cannot say everything at once, but that none of these four chapters is likely to be satisfactory when taken by itself.

CHAPTER IV

Sense-perception and Matter

In this chapter I propose to give a sketch of the problem of the mind's knowledge of matter through the senses. I shall necessarily be covering again ground which I have already been over in my *Scientific Thought*, and I must refer the reader to the Second Part of that book for a detailed statement and defence of my views on the subject. Here I shall be as brief as possible, and in consequence somewhat dogmatic. I shall, however, be approaching the problem from a slightly different angle, so that I hope that this chapter will not be mere vain repetition.

Perceptual Situations. Let us begin with something that every one, whatever his philosophical views may be, would admit to be a fact. Some people would raise doubts about the existence of physical objects, such as chairs, tables, bells, etc. Some people would raise doubts about the existence of selves or minds which perceive such objects. But no one doubts that such phrases as "I see a bell", "I feel a bell", "I hear a bell", indicate states of affairs which actually exist from time to time. People do not begin to quarrel till they try to *analyse* such situations, and to ask what must be meant by "I", by the "bell", and by "hearing", if it is to be true that "I hear a bell". When they do this they are liable to find that the only senses of "I", "bell", and "hear", which will make the statement true are very different from those which we are wont to attach to those words. If this should happen, it still

remains true, of course, that the phrases "I hear a bell" and "I see a chair" stand for real states of affairs which differ in certain specific ways from each other; but these states of affairs may be extremely different in their structure and their components from what the form of words which is used to indicate them would naturally suggest to us.

I will call such situations as are naturally indicated by phrases like "I am seeing a chair" or "I am hearing a bell" by the name of "Perceptual Situations". I take it then that every one agrees that there are such things as Perceptual Situations. Can we all agree to go any further together before parting company? I think we obviously can. (i) There are certain situations, which undoubtedly arise from time to time, which are indicated by such phrases as "I feel tired" or "I feel cross". I think that every one would admit that perceptual situations differ radically from these. Suppose we compare the situations indicated by the two phrases "I feel cross" and "I hear a bell". When we feel cross we are not feeling some*thing* but are feeling some*how*. When we hear a bell we no doubt are feeling some*how*, but the important point about the perceptual situation is that we claim to be in cognitive contact with some*thing* other than ourselves and our states. This claim is just as obvious in those perceptual situations which are commonly believed to be delusive as in those which are commonly believed to be veridical. The two situations "I am hearing a bell" and "I am seeing pink rats" agree completely in this respect, and both differ in this respect from the situation "I feel cross". I will express the difference between the two kinds of situation by saying that the one does and the other does not have an "epistemological object". The bell-situation and the pink-rat-situation both have epistemological objects; the situation indicated by "I feel cross" has no epistemological object. My motive in adding the qualifying word "epistemological" is that other-

wise some bright spirit will at once complain that the pink-rat situation has no object. What he really means is of course that there is no *ontological* object, corresponding to the *epistemological* object which the situation certainly has; *i.e.*, that the situation involves a certain claim which the physical world refuses to meet. I had better take this opportunity to anticipate another purely verbal objection which someone is sure to make. Someone is certain to say: "We don't really *see* pink rats, for there are none; we only *think* that we see them." To this I answer by admitting that words like "seeing", "hearing", etc., do, most unfortunately, introduce the "fallacy of many questions" like the barrister's query: "When did you leave off beating your wife?" The phrase "I see so-and-so" *is* taken in ordinary life to mean: "There is a perceptual situation of the visual kind of which I am subject. This has such and such an epistemological object. And there is a physical object corresponding to this epistemological object". If a second person has reason to believe that the third of these propositions is false, he will be inclined to say: "You are not really seeing so-and-so; you only think that you are seeing it". Now words like "seeing" and "hearing" are hopeless for our present purpose if they are to be interpreted in this way. I therefore wish it to be clearly understood that I shall depart so far from common usage as to say that a man *sees* a pink rat, provided he is subject of a perceptual situation which has a pink rat as an epistemological object and is of the visual kind, regardless of whether there is a physical pink rat corresponding to this epistemological object. With these verbal explanations I think that every one would admit that there are perceptual situations and that all perceptual situations necessarily have epistemological objects. Common language, though far from consistent, expresses the difference between the two kinds of situation in the following way: It tends to express a situation which has no epistemological object by the verb "to feel" followed by an adjective or adverb, such as "cross" or "crossly". It tends to express a situation which has an epistemological object by some special transitive verb, such as "see" or "hear", and by a substantive-name which, in an inflected language, would be put in the accusative case. In order to know what is the epistemological object of any situation it is only necessary to know the meaning of this substantive-word in the phrase which expresses the situation. In order to know whether the situation has an *ontological* as well as an *epistemological* object it is plainly not enough to consider the meanings of *words;* the question can be settled only, if at all, by a careful enquiry into the nature and connexions of *things*.

(ii) It would further be admitted by every one that not all situations which have an epistemological object are perceptual. (*a*) In the first place there are situations whose epistemological objects are such that no *physical* object could correspond to them, though ontological objects of a different kind might correspond to them. *E.g.*, the situation expressed by the phrase "I notice that I am acting spitefully" has an epistemological object. But, if there be an ontological object which corresponds to this epistemological object, it certainly cannot be any purely physical thing or event. It must be some process which is going on in my mind. I will say that the epistemological object of a situation which has such an object may be "of the physical kind", or "of the psychical kind", or possibly of many other kinds. It would be agreed, I think, that the epistemological object of any perceptual situation must be of the physical kind; and this simply means that, if there be an ontological object corresponding to it, it must be a physical object or event.

(*b*) It would further be admitted that a situation may have an epistemological object of the physical kind and yet not be a perceptual situation. Compare the two

phrases "I am hearing a bell" and "I am thinking of a bell". The epistemological objects of the two situations which are expressed by these two phrases are both of the physical kind; they might, so far as one can see, even be identical. But every one recognises that there is a deep difference between the situations. We should vaguely express one part of this difference by saying that in the perceptual situation we are "in more immediate touch with" the bell than in the thought-situation. This difference is indicated in speech by the fact that the phrase which expresses the thought-situation contains a preposition like "of" or "about" before the substantive-word which expresses the epistemological object of the situation, whilst there is in general no such word in the phrase which stands for the perceptual situation. I will express this difference by saying that a perceptual situation is "intuitive", whilst a thought-situation with the same kind of epistemological object is "discursive". Here again I suppose that every one would admit the distinction which I am drawing, though different philosophers would differ violently about the proper analysis of it. I do not wish to deny that there may be something intuitive in every thought-situation and something discursive in every perceptual situation. But I think that it is plainly true that what strikes us about the situation called "hearing a bell" is its intuitive character, and that what strikes us about the situation called "thinking about a bell" is its discursive character.

(*c*) We must next notice that there are situations which have an epistemological object of the physical kind, and are intuitive and not discursive, and yet would not be called perceptual. The most obvious examples are memory-situations. I may have a genuine memory of the tie which my friend was wearing yesterday. This situation has an epistemological object of the physical kind. And it is intuitive, in the sense in which seeing his tie would be intuitive and merely thinking of his tie would not be. But it is quite different from a perceptual situation. And one important difference, at any rate, is this. It is of the essence of a perceptual situation that it claims to reveal an object as it *is* at the time when the situation is going on; and it is of the essence of a memory-situation that it claims to reveal an object as it *was* some time before the memory-situation began. It is perfectly true that, when I see a distant star, this is an instance of a perceptual situation; and it is true that there is strong reason to believe that, if the situation reveals a physical object at all, it reveals it as it *was* long before the situation began. But this does not affect the truth of my statement. For it is certainly true that, so long as we remain at the level of perception and do not introduce inferences, the situation *does claim* to reveal the star as it now is; and, if it did not, it would not be a perceptual situation.

(iii) There is one other point which I suppose that every one would admit to be common and peculiar to perceptual situations. This is the fact that sensation plays an unique and indispensable part in them. I do not think it is possible to define "sensation". But it is possible to give illustrations which every one will recognise. Such statements as "I am aware of a red flash", "I am aware of a squeaky noise", and so on, are certainly sometimes true; and they express a kind of situation which is perfectly familiar to every one. Whenever such a statement is true, there exists a sensation. And it would be admitted that there cannot be perceptual situations without sensations. I think that it would also be admitted that sensations play a part in perceptual situations which they do not play in any other kind of situation. I will express this fact by saying that perceptual situations are "sensuous".

We may now sum up the points on which every one is really agreed, however much they may differ in their language, as follows: There certainly are perceptual situations; they are intuitive and sensuous and they

have epistemological objects of the physical kind, which are given as simultaneous with the situation itself. This is of course neither a definition of the perceptual situation nor an analysis of it; it is simply a set of propositions which are admittedly all true of perceptual situations and not all true of anything else. Does the agreement stretch any further than this? I think that it can be carried one step further. I think that every one is really agreed about the irreducible minimum of characteristics that a thing would have to possess in order to count as a physical object. Now it is agreed that all perceptual situations claim to reveal objects of this kind, for that is what we mean when we say that they all have epistemological objects of the physical kind. Let us then raise the question:

What do we understand by a "Physical Object"? The following marks seem to characterise anything that we should be willing to call a "physical object". (i) It is conceived to be a strand of history of reasonably long duration, as compared with that of our specious present, and possessed of a certain characteristic unity and continuity throughout the period during which it is said to last. A mere flash would hardly be counted as a physical *object;* a penny, if it has the characteristics which it is commonly believed to have, would count as one. (ii) It is conceived to be quite literally extended in space. It has some size and some shape, an inside as well as an outside, and it stands in spatial relations to other physical objects. Strictly speaking, we ought rather to say that each momentary cross-section of the history of the object has these characteristics, and that the nearer together two such cross-sections are in time the more nearly alike they will be in their spatial properties. It may happen, as a particular case, that all the momentary cross-sections of a certain physical object within a certain stretch of time are exactly alike in all their spatial characteristics. In this case we should say that, for this stretch of time, the object had

kept its shape and position unchanged. (iii) It is conceived to persist and interact with other physical objects when no one perceives it. "Being perceived" is regarded as something which happens from time to time to physical objects, but which is not essential to their existence, and makes no further difference to their qualities either at the time or afterwards. (iv) It is conceived to be perceptible by a number of different observers at the same time, as well as by one observer at various times. (v) It is supposed to combine a number of other qualities beside the spatio-temporal characteristics already mentioned. Some of these qualities reveal themselves in one way, others in another way; thus colour reveals itself to sight, hardness and temperature to touch, and so on. In order that a certain kind of quality may reveal itself to a certain mind it seems necessary that the body which this mind animates shall be gifted with appropriate sense-organs. Thus it is held to be quite possible that physical objects may have many qualities which are never revealed to us, simply because we lack the necessary sense-organs. If there be no things which have all these characteristics, there are, strictly speaking, no physical objects; and all perceptual situations are delusive. But of course there might still be things which literally possessed some of these characteristics and to which the rest could be ascribed in various more or less Pickwickian senses. In that case it would be a matter of taste whether we still said that we believed in physical objects; but it would be a matter of fact that all perceptual situations are delusive in certain respects. *E.g.*, if the ordinary scientific view, as commonly interpreted, were right, all perceptual situations would be delusive in so far as they claim to reveal objects which literally have colour, taste, smell, etc. But they would be veridical in so far as they claim to reveal objects which literally have shape, size, position, and motion. If Berkeley be right, all perceptual situations are delusive in every respect except

in their claim to reveal *something* independent of and common to percipients. This "something" will be the permanent habits of volition according to which God sends us such and such sensations on such and such occasions.

Analysis of Perceptual Situations. The typical linguistic expression for a perceptual situation is a sentence like "I see the chair" or "I hear the bell". This mode of expression inevitably suggests a certain mode of analysis for the perceptual situation. It suggests that it consists of me and the physical object whose name appears in the phrase, related directly by an asymmetrical two-term relation which is indicated by the verb. And this suggests that the admitted existence of the situation guarantees the existence of me and of the physical object. How far can this simple-minded view be maintained?

In philosophy it is equally silly to be a slave to common speech or to neglect it. When we remember that it represents the analyses made unconsciously for practical ends by our prehistoric ancestors we shall not be inclined to treat it as an oracle. When we remember that they were probably no greater fools than we are, we shall recognise that it is likely to accord at any rate with the more obvious facts, and that it will be wise to take it as our starting-point and to work from it. It is plausible to suppose that the perceptual situation which language describes by the phrase "I see a chair" does contain two outstanding constituents related by an asymmetrical two-term relation. But it is quite another question whether these two constituents can possibly be what is commonly understood by "me" and by "chair". Let us now consider this question, first as regards the object and then as regards the subject.

The Objective Constituent. Even if we had never had any reason to believe that some perceptual situations are delusive, this extremely simple-minded analysis

would need to be modified considerably. (*a*) It would be admitted that in any one perceptual situation I am never aware of the *whole* of the surface of a physical object, in the sense in which I do seem to be aware of a part of it. Nobody who was looking at a bell would seriously maintain that, at a given moment, he is aware of the far side and the inside of the bell, in the same sense in which he would claim to be aware of a certain part of the outside which is facing him at the time. And by a "bell" we certainly mean something which has a closed surface with an inside as well as an outside, and not merely a patch with indefinite boundaries. Thus the most we could say is: "The perceptual situation contains as a constituent something which is in fact part of the surface of a bell". (*b*) A similar limitation with regard to time must be put on the naïve analysis of the perceptual situation. By a "bell" we mean something of considerable duration; something which certainly may, and almost certainly does, stretch out in time beyond the limits of the perceptual situation in which I am aware of it. Now no one would maintain that the parts of the history of the bell which come before the beginning and after the end of a certain perceptual situation are "given" to him in that perceptual situation in the same sense in which the contemporary slice of the bell's history is "given". Thus we have no right to say that the situation, described by the phrase "I am seeing the bell" contains the *bell* as a constituent; at most we can say that it contains as a constituent a short event which is in fact a slice of a longer strand of history, and that this longer strand is the history of a certain bell. (*c*) It would be admitted by every one that a bell is something more than a coloured surface, more than a cold hard surface, and so on. Now, so long as I merely look at a bell, its colour only is revealed to me; its temperature or hardness are certainly not revealed in the same sense at that time. Similarly, when I merely touch the bell, only its

temperature and hardness are revealed to me; its colour is certainly not revealed to me in the same sense at that time. Once again then I have no right to say that the *bell* is a constituent of either of these perceptual situations. At most I may say there is a constituent which displays certain qualities, and that this same constituent has in fact other qualities which would be displayed under other conditions.

Thus we are forced to modify the first naïve analysis of "I see a bell" at least in the following respects: We cannot hold that this situation literally contains the bell itself as a constituent. The most we can say is that the situation contains me and *something* related by an asymmetrical two-term relation; that this something is in fact a part of a larger surface, and is also a short slice of a longer strand of history; that it has in fact other qualities beside those which are sensuously revealed to me in this situation; and that this spatially larger and temporally longer whole, with the qualities which are not revealed sensuously in this situation, is a certain bell. This whole is the epistemological object of the situation expressed by the phrase "I am seeing the bell". And, even if it be granted that there is an ontological object which corresponds accurately to the epistemological object, we cannot admit that *it* is bodily a constituent of the situation. The most that we can grant is that a small spatio-temporal fragment of the ontological object is literally a constituent of the situation, and that a small selection of the qualities of this fragment is sensuously revealed in the situation.

Now of course the existence of any complex whole entails the existence of anything that really is a constituent of it. There is no doubt that such situations as are described by the phrase "I see a bell" exist. And there is no doubt that the epistemological object of such a situation is something having all the characteristics which are connoted by the word "bell". If then the perceptual situation did contain as a constituent

something which accurately corresponds to its epistemological object, the existence of the former would guarantee that of the latter. But it is now clear that the situation does not and could not contain as a constituent anything that could properly be denoted by the word "bell". Hence the existence of the situation denoted by the phrase "I see the bell" does not suffice to guarantee the existence of a certain thing denoted by the phrase "the bell". It is plain then that there is involved in every perceptual situation another factor beside me and a certain spatio-temporally extended particular. This is the conviction that this particular something is not isolated and self-subsistent, and is not completely revealed in all its qualities; but that it is spatio-temporally a part of a larger whole of a certain characteristic kind, viz., a certain physical object, and that this whole has other qualities beside those which are sensuously manifested in the perceptual situation.

Let us call the constituent about which we believe these propositions "the objective constituent of the perceptual situation". And let us call this conviction which we have about the objective constituent "the external reference of the situation". I give it this name because it clearly points spatially, temporally, and qualitatively, beyond the situation and what is contained in and sensuously manifested in it. I will now say something more about the external reference of a perceptual situation.

The External Reference. (*a*) It would be false psychologically to say that we *infer* from the nature of the objective constituent and from any other knowledge that we may have that it is part of a larger spatio-temporal whole of a certain specific kind. It is perfectly evident that we do nothing of the sort. Of course we can talk of "unconscious inferences", if we like; but at most this means that we in fact reach without inference the kind of conclusion which could be defended by inference if it were challenged. (*b*) It would be false logically

to say that the beliefs which are an essential factor in a perceptual situation, though not reached by inference, could be justified by inference. I can see no way of validly inferring from the mere presence of an objective constituent, which sensuously manifests such and such qualities, that this constituent is part of a larger spatio-temporal whole which is not a constituent of the situation and has other qualities. It might perhaps be argued that, although this cannot be inferred with certainty from any one or from any number of perceptual situations taken separately, it might be inferred with probability from a number of such situations taken together and considered in their mutual relations. I shall go further into this question a little later in the chapter. But it is evident that, even if the general validity of such inferences be admitted, their conclusion would be something much less definite than the belief that the objective constituent of a perceptual situation is a spatio-temporal part of a larger whole which corresponds accurately to the epistemological object of the situation. Strictly speaking, the most that could be directly inferred from a study of perceptual situations and their mutual relations is that probably such and such a perceptual situation will be accompanied by such and such others, belonging to different observers; or that it will probably be succeeded by such and such other perceptual situations, provided I make such and such movements. The notion of persistent physical objects is logically merely a hypothesis to explain such correlations between perceptual situations; and the common-sense belief that the objective constituents of perceptual situations are literally spatio-temporal parts of persistent physical objects is logically one very special form of this hypothesis. It is tolerably obvious that the actual strength of our conviction that in perception we are in direct cognitive contact with literal spatio-temporal parts of a physical object, which corresponds to the epistemological object of the situation, could not be justified by inference. (*c*) Lastly, we

express the position far too intellectually, when we say that in a perceptual situation we are acquainted with an objective constituent which sensuously manifests certain qualities, and that this acquaintance gives rise to and is accompanied by a belief that the constituent is part of a larger spatio-temporal whole of a specific kind. We must remember that ignorant men, and presumably animals, perceive as well as philosophers; and we must beware of mixing up our *analysis* of the perceptual situation with the situation as it actually exists. It would be nearer the truth to say that, at the purely perceptual level, people do not have the special experience called "belief" or "judgment". To believe so and so at this level really means to act as it would be reasonable to act *if* one believed so and so, and to be surprised if the action turns out to be a failure. We automatically adjust our sense-organs in a certain way; we make incipient movements; and so on. These are of course accompanied by characteristic bodily feelings. Again, traces left by former experiences will be excited, and this may give rise to images. More often it gives rise only to vague feelings of familiarity and to vague expectations. An example of what I mean is provided if we see what looks like a heavy weight, but is really a hollow object made of skilfully painted cardboard. We generally do not have any distinct images of what it would feel like to lift such a weight; still less do we make explicit judgments about its heaviness. But, if we start to lift it, we shall find that we have automatically adjusted our bodies as it would be reasonable to do if we had judged it to be heavy. And the feelings connected with this adjustment will be part of the total experience of external reference. When we start to lift it we almost overbalance, and we feel our expectations frustrated, though these expectations were not really present at the time as distinct beliefs about the future.

I shall have to carry this analysis a little further

when I come to consider the subjective side of the perceptual situation, to which it more properly belongs. But it was necessary to ward off certain probable misunderstandings at once. To sum up: In all perceptual situations there is an external reference beyond the objective constituent; and, if you asked the ordinary man to make this reference explicit, he would say that the objective constituent is literally part of a certain physical object of larger size and longer duration, which possesses many qualities beside those which are sensuously manifested to him in the perceptual situation. It is in virtue of this external reference that the perceptual situation has the epistemological object which it does have; for the epistemological object just is this whole of which the objective constituent is believed to be a part. But it would be false psychologically to say that this belief is reached by a process of inference. For in fact we cannot detect any such process, and we ascribe perception to beings who would be quite incapable of making inferences of the kind required. It would also be false psychologically to say that this belief exists at the purely perceptual level in the form of an explicit judgment; we must rather say that the percipient adjusts himself automatically in ways that would be reasonable *if* he held this belief, and that the belief is represented at this stage by the bodily feelings which accompany these adjustments and by the feelings of satisfaction or frustration which arise according to the results of acting as if one held the belief. Lastly, it would be false as a matter of logic to maintain that this belief, in the precise form and in the actual strength in which it is held, could be justified by any known process of reasoning from any available premises.

So far we have used no argument which would not be equally valid if no perceptual situations were in the least delusive. But of course it is held that there are delusive perceptual situations, and that in some cases

the epistemological object is wildly different from the ontological object. The drunkard says that he sees pink rats, just as the sober man says that he sees a penny. And the former means by "pink rats" something which lasts beyond the duration of the perceptual situation, which could be felt as well as seen, which could be seen and felt by other men, which would eat corn and excite fox-terriers, and so on. We call this perceptual situation "delusive," because none of these expectations, which form an essential factor in the situation, are verified by the contemporary perceptions of other observers or by the subsequent perceptions of the drunkard himself. We must remember that, although no amount of perceptual verification can prove that the objective constituent of a perceptual situation *is* a part of a physical object of a certain specified kind, complete failure of such verification may make the contradictory of this almost certain. It may be doubtful whether there are such things as pennies, in the sense in which the unphilosophical teetotaller asserts that there are; and it may be doubtful whether the objective constituent of the situation which we call "the teetotaller's perception of a penny" is literally part of a penny, as he believes it to be. But it is practically certain that there are no such things as pink rats, in the sense in which the unphilosophical drunkard asserts that there are, when he is in the situation called "seeing pink rats."

Now the existence of wildly delusive perceptual situations, such as we have been describing, is important for our present analysis in several ways: (*a*) It supports the conclusion, which we have already reached independently, that language is a partly misleading guide to the analysis of perceptual situations. The perceptual situation, described as "I am seeing a penny," does seem likely to contain the penny as a constituent if we follow the guidance of the phrase. We have already seen that this cannot be literally

true, without needing to take into account the existence of delusive perceptual situations. But this is more glaringly obvious in the case of delusive perceptual situations. The drunkard says "I see a pink rat", just as the sober man says "I see a brown penny"; and, *mutatis mutandis*, they mean exactly the same kind of thing by their two statements. So long as we follow the suggestions of language, there is just as much reason for holding that a pink rat is a constituent of the drunkard's perceptual situation as for holding that a brown penny is a constituent of the sober man's perceptual situation. But this analysis *must* be wrong in the former case, since there is almost certainly no pink rat to be a constituent of anything. And, since there is no relevant internal difference between the veridical and the delusive perceptual situation, it is reasonable to suppose that in no case does a perceptual situation contain as a constituent the physical object which corresponds to its epistemological object, even when there is such a physical object.

(*b*) No doubt each perceptual situation does contain an objective constituent of a characteristic kind. And in each case this is bound up with the practical belief that this constituent is part of a larger and more enduring whole which possesses certain other qualities beside those which are sensuously manifested in the situation. The difference is that this practical belief, which goes beyond the present situation and its contents, is *certainly* wrong in the one case, whilst (so far as we have yet seen) it might possibly be right in the other. And there is absolutely nothing in the two situations as such to distinguish the case where the belief is certainly false from the case where it is possibly true. Now this cuts out an alternative which we have not yet refuted. We have indeed seen that the external reference of a perceptual situation cannot be regarded as a valid logical inference from the existence of the situation and the nature of its objective constituent. But, if there had

been no delusive perceptual situations, the following alternative might have been maintained. It might have been held that every perceptual situation is as such accompanied by an infallible revelation that its objective constituent is part of a larger and more enduring whole of a certain specific kind. All such situations certainly involve this claim; and, if there had been no reason to think that any of them are delusive, it might have been held that this is not a mere *claim* but an infallible *revelation*. So far as I can see, such a position cannot be maintained in face of perceptions of pink rats. The claim made here is of precisely the same kind as is made when teetotallers perceive pennies. And it is made just as strongly. Here the claim proves to be false. And, if it be false in *some* cases, it cannot be accepted as true merely at its face-value in *any* case. Of course, if we water down the claim enough, it may at last be put in such an attenuated form as to be invulnerable to all refutation. If we claim merely that the objective constituents in all perceptual situations are correlated in *some* way with *something* larger and more enduring than themselves, and that every variation in the former is a sign of a change of *some* kind *somewhere or other* in the latter, we can hardly be refuted. There is, no doubt, some such correlation between the objective constituent of the drunkard's perceptual situation and the alcohol in his stomach or something that is happening in his brain. But I think it is perfectly clear that perceptual situations do involve a more specific claim than this; and that, since this specific claim is certainly wrong in some cases and since there is no internal distinction between these cases and others, it may be wrong in all.

The Alternative Theories. So far I have granted that, in some cases at least, the objective constituent of a perceptual situation *may* in fact be literally a part of a larger external object of a certain specific kind, having other qualities beside those which are sensuously mani-

fested in the situation. I have shown only (*a*) that this object, as such, is never a constituent of the situation; (*b*) that this claim can never be accepted at its face-value, because it is certainly sometimes false in situations which differ in no relevant internal respect from those in which it might be true; and (*c*) that the claim cannot be proved to be true, as it stands, by logical inference from any premises which are available to us. It now remains to see whether we can hold that it is *ever* true. Let us confine ourselves for the present to visual situations. I think we can prove that in this case we are tied down to two alternatives, neither of which accords very well with common-sense. Either (*a*) the objective constituent of a visual situation does not have some of the properties which it seems on careful inspection to have, and does have properties inconsistent with these; or (*b*) the larger external whole of which it is a part is so different from what it is commonly supposed to be that it hardly deserves the name of "physical object". Of course it is possible that both alternatives might have to be combined. Let us now try to prove this.

A penny is believed by common-sense to be a round flat object whose size and shape are independent of the observer, his position, and his movements. A certain observer may move about, and may hold that in all the perceptual situations in which he is placed he sees the whole of the top of a certain penny. If he carefully inspects the objective constituents of these perceptual situations he will certainly find that they seem to be of different shapes and sizes. Most of them will seem elliptical and not round, and the direction of their major-axes and their eccentricity will seem to vary as he moves. Now, if these objective constituents are to be identified with different short slices of the history of the top of the penny, one of two views must be taken. (*a*) One alternative is to suppose that these objective constituents *really are* all round and all of one size, although

they *seem*, on careful inspection, to be elliptical and of various sizes and eccentricities. (*b*) The other alternative is to suppose that the penny is not of constant size and shape, as is commonly believed, but that it varies in these respects as the observer walks about.

Now the latter alternative might be the reasonable one to take if only one observer had to be considered, and only his successive visual situations. But in fact there may be a number of observers who can compare notes. They may agree that they are all seeing the whole of the top of the same penny. And, as we have said, it is certainly part of the notion of a physical object that it is capable of being perceived by several observers at once. Now suppose that one of these observers stands still, whilst another moves about. The objective constituent of the stationary observer's perceptual situation will seem constant in size and shape; the objective constituents of the moving observer's successive perceptual situations will seem to differ in size and shape. Evidently, if we suppose that these objective constituents really do have the characteristics which they seem to have; that the observers really are seeing the whole of the top of the same penny; and that the objective constituents of their respective perceptual situations really are identical with slices of the history of the top of the penny, we shall have to suppose that the penny *both* changes and keeps constant in shape and size during the same stretch of time. And this seems at first sight impossible. If you give up the view that two different observers can both literally see the same part of the same physical object at the same time, you have given up the neutrality and publicity which are part of the notion of a physical object. If you accept this publicity and neutrality, and identify the objective constituents of the various visual situations with the neutral and public top of the penny, you *must* hold either (*a*) that the objective constituents have certain qualities which differ from and are inconsistent

with those which they seem on careful inspection to have; or (*b*) that the top of the penny both varies and keeps constant in shape and size within the same stretch of time. The second alternative may seem impossible; but let us not rashly reject it, since the first is not very much more attractive.

A like result is reached if we consider a single observer in two different kinds of perceptual situation. A man may feel a penny, and at the same time move his head about whilst he continues to look at it. The objective constituent of the tactual situation seems on inspection to be constant in shape and size. Those of the successive visual situation seem on inspection to differ in shape and size. Now common-sense holds that it is the same surface which we see and which we touch; though certain non-spatial qualities, such as colour, are sensuously manifested only in one kind of situation, whilst other non-spatial qualities, such as temperature, are sensuously manifested only in another kind of situation. If we wish to keep the common-sense notion of physical objects, we *must* hold either (*a*) that the objective constituents of some perceptual situations have certain qualities which differ from and are inconsistent with those which they seem on careful inspection to have; or (*b*) that one and the same surface can vary and keep constant in shape and size within the same stretch of time.

I think that I have now proved that we are tied down to three alternatives, each almost as distasteful to common-sense as the others. (*a*) We may try to keep the common-sense view that the objective constituents of some visual situations are literally spatio-temporal parts of a certain physical object, which we are said to be "seeing". But, if we do this, we must hold either (*a*) that this physical object can be both constant and variable in its spatial characteristics within the same stretch of time; or (*β*) that the objective constituents of the visual situations can have qualities which are

different from and inconsistent with those which they seem on careful inspection to have. Or (*b*) we may drop the common-sense view that the objective constituent of a visual situation may be, and in some cases actually is, literally a spatio-temporal part of a certain physical object which we are said to be "seeing". I will now take these alternatives in turn.

(*a*, *a*) *Theory of Multiple Inherence.* It might be held that this alternative is so absurd that it is not worth discussing. Is it not a plain contradiction that the same part of the same thing should be at once variable and constant in size, round and elliptical, and so on? It seems to me that this is possible, if and only if what we commonly regard as pure qualities are really relational properties. We all know that the same man can be at the same time generous (to his family) and stingy (to his workmen). The only question is whether we could possibly deal with such propositions as "This is round", "This is elliptical", etc., where "This" is an objective constituent in a visual situation, in a similar way. Let us first state what characteristics the objective constituent of a visual situation seems on careful inspection to have. I think we may fairly say that it seems to be a spatially extended patch, having a certain determinate size and shape, situated in a certain determinate position out from the body, and now occupied and marked out by a certain determinate shade of a certain colour. Of course, the colour need not be uniform throughout the region; but this raises no question of principle, so I will assume for simplicity that it is uniform. We have then four things to consider: the apparent colour, the apparent shape and size, the apparent position, and the apparent date at which the colour inheres in the place.

Now it has been suggested that the objective constituent of a visual situation can be regarded as a certain region of physical space which is pervaded by a certain determinate shade of colour at a certain time, *provided that* we recognise that the relation of "per-

vasion" is of a peculiar kind. It must not be a two-term relation, involving only the pervading colour and the pervaded region, as we commonly suppose. It must be at least a three-term relation, involving the pervading colour, the pervaded region, and another region which we might call the "region of projection". Theories of this kind have been suggested lately by Dr Whitehead and by Professor Kemp Smith; and it seems to me that such a theory in a very crude form may be detected by a very charitable interpreter in the writings of Malebranche. I propose now to discuss it in my own way without further reference to the eminent men who have suggested it. I will call this type of theory "The Theory of Multiple Inherence".

The impression which it makes on me at the outset is that it can be made to work very well for secondary qualities, like colour, provided we raise no questions about shape, size, position, and date; but that it is more difficult to deal with these apparent characteristics of the objective constituents of perceptual situations in terms of the theory. Let us begin with colour. According to the theory the proposition "This is sensibly of such and such a shade of red" (where "this" is an objective constituent of a visual situation) *could not* be true if "this" were the only thing in the world, any more than "This is a shareholder" could be true if "this" were the only thing in the world. And by "could not" here I mean, not merely that it is *causally* impossible, but also that it is *logically* impossible. Red, on the present view, is a characteristic of such a kind that it cannot inhere in a place simply; it can only "inhere-in-a-place-from-a-place", and this relation, which needs such a complex phrase to express it, is simple and unanalysable. Now, supposing that this were true, it would be perfectly possible that one and the same region of physical Space should be pervaded at one and the same time by different determinate shades of red. For the minimum complete statement

about pervasion by a colour would be of the form: "The determinate shade r_1 inheres in the place s from the place s_1 at the time t". And this is perfectly compatible with: "The determinate shade r_2 inheres in the place s from the place s_2 at the time t". What *would* be inconsistent with the first proposition is the proposition: "The determinate shade r_2 inheres in the place s from the place s_1 at the time t". But there is no reason to suppose that this complication ever arises, so it need not trouble us.

It would now be perfectly easy to define a meaning for the phrase "s *is* red" without reference to any other particular place. We might, *e.g.*, define "s *is* red" to mean "From *every* place *some* shade of red inheres in s". This is no doubt only a first approximation to a satisfactory definition. For "every place" we should certainly have to substitute "every place that fulfils such and such conditions". But the general principle of the definition is obvious enough, and I do not think that there would be much difficulty in mentioning the conditions. The full statement would not, I think, differ very much from the following:—"s is physically red" means "From every place which is physically occupied by a normal human brain and nervous system in a normal condition and is near enough to s some shade of red sensibly inheres in s." The first condition is put in to deal with colour-blind men and men drugged with santonin; the second is put in to cut out complications about coloured spectacles, and so on.

The essence of the theory, so far as we have gone, is this: We must distinguish between the "sensible" and the "physical" inherence of a colour in a place. The former is the fundamental and indefinable relation; and it is irreducibly triadic, involving an essential reference to the pervading shade of colour, the pervaded region, and the region of projection. The latter is a two-term relation; but it is not ultimate, for it is definable in terms of the former. And the definition is of the

following kind: "R inheres physically in s" means "From every place s_n, which fulfils certain conditions C, some determinate form r_n of the determinable R sensibly inheres in s". With these definitions we could perfectly well maintain the common-sense view that a physical object cannot have two different colours at once, and yet admit that it does have different colours at once. We should simply need to clear up the ambiguities of our statements. The truth will be (1) that two different colours cannot *sensibly* inhere in the same place *from the same place* at once; (2) that two different colours cannot *physically* inhere in the same place at once; but (3) that different colours or different shades of the same colour can *sensibly* inhere in the same place from *different* places at once. Perhaps I ought to say a word or two in further explanation of the second of these propositions. To say that the same place was at once physically red and physically green would be to say that from every one of a certain set of places this place was sensibly pervaded by some shade of red, and that from every one of the same set of places it is at the same time sensibly pervaded by some shade of green. This, I suppose, would be admitted to be impossible. But it does not cover all that we mean when we say that the same place could not at once be physically pervaded by two different colours. Under this head we should also include, *e.g.*, two different shades of red as well as two different colours, such as red and green. This, however, raises no insuperable difficulty. We have defined the physical *colour* of a place in terms of the *colour* under which all the determinate shades which sensibly inhere in it from a certain set of places fall. It would be quite easy to define its physical *shade* in a similar way. We should say that a certain place was physically pervaded by purple if and only if all the shades which sensibly inhere in it from places which fulfil the required conditions fell within certain limits. If we were prepared to say that this place is physically

pervaded by scarlet it is certain that it would have to be sensibly pervaded from the *same* places by *different* shades of red. Since it could not be sensibly pervaded at the same time and from the same place by different shades of the same colour any more than by shades of different colours, it would be impossible for it to be at once physically pervaded by scarlet and by purple on our definitions.

So far we have been discussing a question which may be called "logical", in a wide sense, and certainly not "causal". By this I mean that we have simply been considering the question: "What formal characteristics must the relation of inherence possess if it is to be logically possible to hold that a number of different colours or shades of colour inhere at the same time in the whole of the same region of Physical Space?" The *causal* question is: "Under what conditions will such and such a colour inhere in such and such a place from such and such a place?" To this question I now turn.

In view of what we know of geometrical and physical optics and of the physiology of vision, I think that the following answer is *almost* certain. The *independently* necessary and sufficient *material* conditions for a certain shade of colour to pervade a certain external region from a certain region of projection are all contained in or are close to the region of projection. (I will explain in a moment why I introduce the qualifications which I have italicised.) The direction of the pervaded region is the direction in which a normal human being, whose body is in the projecting region, has to look, in order to get the objective constituent under consideration into the middle of his visual field; and this is known to depend simply on what is going on in the immediate neighbourhood of his eyes. When a number of people are said to be "seeing the same object directly under normal conditions", *i.e.*, without complications due to mirrors, non-homogeneous transparent media, and so on, their respective lines of sight intersect within a

fairly small determinate region. This is where the object is then said to be. But of course there often are mirrors and other complications, and we must be prepared to deal with the general case. When the medium is in fact non-homogeneous, or the vision is indirect, the place which is pervaded by a given shade of colour from a given region of projection is that place in which a suitable object *would* have to be put in order to present the same appearance *if* viewed directly and through a homogeneous medium. In actual fact nothing physically relevant may be going on in this region; this is the case with mirror images. If I look at the reflection of a luminous point in a plane mirror the region which is pervaded from where I am standing is somewhere behind the mirror; it is the place where a luminous point would have to be put in order to present the actual appearance, if viewed directly and without a mirror, from where I am standing. And of course nothing physically relevant is happening at this place behind the mirror. The direction of the place is determined by the direction in which the light enters my eye, *i.e.*, by physical events in the immediate neighbourhood of the region of projection. Its distance along this direction is presumably determined by traces left in my brain by past visual situations and correlated bodily movements in cases where the vision really was direct and through a homogeneous medium. Thus I am justified in saying that the position of the pervaded region is immediately determined by events in or close to the region of projection.

Next, the facts which make us ascribe a velocity to light, and particularly the fact of aberration, make it almost certain that the date at which a certain place is pervaded by a certain shade of colour from a certain region of projection is the date at which certain events are happening within the region of projection. When I look at a distant star a certain shade of colour sensibly inheres in a certain distant region of Physical Space

from the place which is physically occupied by my body, if the present theory be true. But we know quite well that the star may no longer be physically occupying this distant region; and that, whether it does so or not, the relevant physical events may have happened there hundreds of years ago.

Lastly, and in close connexion with this, we must notice that the particular colour and the particular shade of it which sensibly pervade an external place from a region of projection are almost certainly determined by specific events in the eyes, optic nerves, and brain which now physically occupy this region of projection. Facts about colour-blindness, about the effects of drugs like santonin, and of morbid bodily states like jaundice, make this practically certain.

I have now defended the statement that the *independently* necessary and sufficient *material* conditions which determine that such and such an external place shall be pervaded by such and such a shade of colour from a certain region of projection are physically present within or close to that region. I will now explain what I mean by the italicised qualifications in this statement. (1) The physical events within the region of projection of course have physical causes. Now a necessary condition of a necessary condition of an event may be called a "dependently" necessary condition of that event. There is every reason to believe that the pervasion of a certain region from a certain region by a certain shade of colour has generally *dependently* necessary conditions which are quite remote from the region of projection. When a certain place is pervaded by very similar shades of the same colour from all directions it is generally found that, on walking up to this place, tactual situations arise. And the objective constituents of these tactual situations are generally found to be closely correlated with the objective constituents of the successive visual situations which occur as we walk up to this place. We

say then that this place is "tactually occupied". And we have very good reason to believe that such a region is physically occupied by certain microscopic events which are remote and dependently necessary conditions of the pervasion of this region by such and such a shade of colour from places round it. These events determine by physical causation certain events in our eyes, optic nerves, and brains; and the latter events are the immediately necessary and sufficient material conditions of the pervasion of the external region by such and such a shade of colour from the region of projection which contains our bodies. This may be regarded as the normal case; and it is expressed in common language by saying that we are then "looking directly at a certain physical object through a colourless homogeneous medium". But of course this sweet simplicity, though normal, is not universal. Suppose that a number of people "see the same mirror image". Then there is a certain set of microscopic physical events in a certain region of Space; and these do constitute the common dependently necessary condition of the pervasion of a place behind the mirror by similar shades of the same colour from a number of different regions of projection. But the region which contains these physical microscopic events is remote from the region in which these shades of colour sensibly inhere; it is in fact as far in front of the mirror as the pervaded region is behind it.

Let us call the region which contains the common dependently necessary conditions "the emitting region". Then the position may be put as follows: In visual perception we have to consider an emitting region, a region of projection, a pervaded region, and a pervading shade of colour. The pervaded region is immediately determined by events in and near the region of projection. These events also determine immediately the pervading shade and colour. And they are themselves determined by microscopic events in the emitting

region. In the cases that arise most often in everyday practical life the pervaded region and the emitting region roughly coincide. But, in the case of mirror-images and the visual situations which arise when we are surrounded by non-homogeneous media, the pervaded region and the emitting region cease to coincide and may be very distant from each other. The pervaded region may then contain no physical events at all; and, if it does, they will be quite irrelevant. In such cases there will always be a purely optical peculiarity too, viz., that the pervaded region will never be pervaded from *all* directions by similar shades of the same colour. (Cf. the sudden change which happens in the visual situation when we go to the back of a mirror in which we have been viewing the image of a certain object.)

Just as we have contrasted the pervaded region and the emitting region, so we must contrast the "date of pervasion" and the "date of emission". Owing to the very great velocity of light these generally coincide almost exactly in the visual situations of ordinary life. But, when we are concerned with very remote objects, such as stars, the date of emission (which is *always* earlier than the date of pervasion) may precede the latter by thousands of years. In the phenomenon of aberration we have a most interesting case in which the motion of the observer of a very distant object, and the difference between the *date* of emission and the *date* of pervasion, cause a difference between the *place* of emission and the *place* of pervasion.

(2) I have now explained why I used the phrase "*independently* necessary and sufficient conditions". It remains to explain why I introduced the word "*material*" before "conditions" in my original statement. This was simply a precaution. I cannot be completely certain that the sensible inherence of such and such a shade of colour in such and such a place from a given region of projection *may* not have psychical as well as physical conditions. Since we cannot get a brain and

nervous system like ours working properly without a mind like ours, it is obviously impossible to be sure that the latter is irrelevant for the present purpose and that the former is sufficient by itself. And, beside this general consideration, there is a more specific ground for caution. I do not think that the determination of the position of the pervaded region can be completely explained without reference to the persistent effect of past visual and tactual situations and bodily movements, and the associations between them. Now of course these factors *may* now be represented simply by persistent and suitably linked material modifications in the brain and nervous system. But, on the one hand, these material "traces" are purely hypothetical effects of certain causes and causes of certain effects. And, on the other hand, even if they be *now* purely material, it may be that they could not have been formed *originally* without the action of the mind, at least in the form of selective attention. If this be so, we might still say that the *independently* necessary conditions for a certain colour to pervade a certain place from a given region of projection are all material; but we should have to recognise that the past action of the mind is a *dependently* necessary condition, just as much as the past vibrations of distant electrons.

So far the Theory of Multiple Inherence seems to have worked fairly well. But we have left to the end the hardest question with which it is faced. This is the question of "physical" and "sensible" shape and size. We know that different observers, who say that they are all seeing the whole of the top of the same penny, find on careful inspection that the shapes and sizes of the objective constituents of their respective visual situations seem to be different. We know that the same complication arises if a single observer moves about whilst he claims all the time to be seeing the whole of the top of the same penny. And we know that it also arises when the same observer claims to be

at once seeing and touching the whole of the top of the same penny. We have dealt with similar difficulties about shades of colour by suggesting that the relation of inherence between a colour and the place which it pervades is irreducibly triadic, and not dyadic, as has commonly been thought. But can we possibly deal with the difficulties about shape and size in the same way? Curiously enough, Dr Whitehead does not, so far as I know, discuss this point. Yet no theory can claim to be satisfactory which does not make some answer to the question.

At first sight it seems evident that we cannot deal with variations in the apparent shape of the same surface in the way in which we have been dealing with variations in its apparent colour. It seems obvious that the proposition "This is round" *could* have been true, even if there had been nothing in the world but this area. In fact the shape of a region seems to be an intrinsic quality of it; and it seems nonsense to talk of various shapes inhering in a certain region from various places. Plausible as this argument sounds, I believe that it is mistaken. I think that it overlooks a very important distinction, viz., the distinction between a "sensible form" and a "geometrical property". I shall first try to explain the difference between the two, and to show that they must be distinguished quite apart from the present problem. And I shall then try to show that the distinction enables us to apply the Multiple Inherence Theory to the question of variations of apparent shape and size.

Let us consider circularity, for example. I find it necessary to distinguish a certain geometrical property called "circularity" and a certain sensible form called by the same name, for the following reasons. The geometrical property can be *defined*. To say that a certain area is geometrically circular *means* that all the points on its boundary are equidistant from a fixed point. But, if I wanted to make someone understand

what I was referring to by the phrase "sensibly circular", it would be of no use whatever to offer this definition or any other definition. All that I could do would be to proceed by *exemplification*, just as I should have to do if I wanted to make him understand what I am referring to when I use the word "red". I should in fact have to proceed as follows: I might start by getting the man to look straight down on to a penny. I should then cut out geometrically circular bits of paper of various colours and sizes and get him to look straight down on them. I should also cut out bits of paper of the same colours and different geometrical shapes, and get him to look straight down on them. I should then say to him: "You notice that there was a certain resemblance between all the objective constituents of the first series of visual situations in which I placed you, in spite of the differences of colour, etc. And you notice that there was a certain unlikeness between every objective constituent of the first series of visual situations and every objective constituent of the second series. Very well; what I am referring to by the phrase "circular sensible form" is that feature which was present in all members of the first series and absent in all members of the second." In my view it is just as impossible to know *a priori* that a geometrically circular area, when pervaded by a colour and viewed normally, would have the sensible form called "circularity" as it is to know *a priori* that an area containing electrons moving in a certain way would be pervaded by a certain shade of red from a place occupied by a normal human body. Of course some *geometrical* properties are themselves indefinable, *e.g.*, geometrical straightness. But it remains a fact that *all* sensible forms are indefinable, whilst *many* of the geometrical properties which are called by the same name are definable. It is therefore certain that geometrical properties and the sensible forms which are called by the same names must be distinguished.

Let us now apply this conclusion to our present problem. When it is said that the shape of a region is an intrinsic property, and that it is nonsense to talk of it having such and such a shape *from* such and such another region, this is true only of geometrical shape. If an area is geometrically circular it is so intrinsically, and there is an end of the matter. But, since geometrical shape and sensible form must always be distinguished, it does not follow that the sensible form of an area is an intrinsic property of it. It may be that one and the same area is "informed" by one sensible form from one place and by a different sensible form from another place. The relation of "informing" may be irreducibly triadic, as we have suggested that the relation of "pervading" is. If this be so, it may be that it is only from one place or one series of places that an area with a certain geometrical shape is informed by that sensible form which has the same name as the geometrical shape. A like distinction will have to be drawn between geometrical and physical size. The geometrical size of a region will be an intrinsic property of it; but the sensible size may be a property which it only has from another region. It will of course be just as necessary to distinguish tactual form from geometrical shape as to distinguish visual form from geometrical shape. But there may be good reasons for holding that tactual form is a safer indication of geometrical shape than is visual form.

There is every reason to believe that the visual form which informs a certain external region from a certain region of projection is causally determined by events which are physically contained within the region of projection. The determining factors would seem to be the geometrical shape and size of the part of the retina affected by light, and traces in the brain and nervous system left by past visual and tactual situations. Here again it seems to me that we cannot be sure that the mind does not play an essential part, if not as an inde-

pendently necessary condition, yet perhaps as a remote and dependently necessary condition for the original formation and association of the traces.

I have now sketched and defended to the best of my ability the Multiple Inherence Theory. It is time to ask ourselves: "How much of that primitive belief which is an essential part of every perceptual situation would be left standing if we accepted this theory?" Under favourable circumstances, *i.e.*, when we should commonly be held to be seeing a not too distant object by direct vision through a colourless homogeneous medium, we could go thus far with common-sense. We could hold (1) that the visual situations of a number of observers who say that they are seeing the same object really do contain a common objective constituent, viz., a certain region of Space outside their bodies. (2) That this same region of Space is the common objective constituent of the visual and tactual situations of an observer who would be said to be seeing and touching the same object. (3) That this region really is pervaded now by those sensible qualities and informed by those sensible forms which each observer can detect by careful inspection in the objective constituent of his perceptual situations. (4) That this region really does physically contain a set of microscopic physical events (movements of molecules, vibrations of electrons, etc.) which are the *dependently* necessary conditions for the pervasion of this region by these sensible qualities from the places now occupied by the observers' bodies. This is as far as we could go in agreement with common-sense. We should have to differ from common-sense, even in the cases which are most favourable to its beliefs, in the following points: (1) It believes that the colours which it sees are quite literally spread out over the surfaces of the *physical objects* which it sees and touches. In view of the facts about mirror-images, etc., we can admit only that colours pervade certain *regions of Space*. The latter may or may not contain those microscopic physical things and events

which are the dependently necessary conditions of the pervasion of this region by this colour. Even when this is so, *i.e.*, when there is an emitting as well as a pervaded region and the two coincide, we cannot say that the microscopic events and objects have the colour; we can say only that the region which contains them is pervaded by the colour. (2) Common-sense believes that the pervasion of anything by a colour is a two-term relation between this thing and this colour. In view of the fact that the whole of the top of the same penny may appear brown to me and yellow to you, who have taken santonin, we cannot admit this. If we wish to hold that this one surface really is the common objective constituent of your visual situation and of mine, and that it really has the colours which it seems to you and me on careful inspection to have, we must hold that the sensible pervasion of a region by a colour is at least a three-term relation. It must involve an essential reference to a region of projection as well as to the pervaded region and the pervading colour. (3) Common-sense believes that the independently necessary and sufficient conditions for the pervasion of a certain region by a certain colour are contained in *that* region at the time when it is pervaded by this colour. It therefore holds that this region would be pervaded by this colour at this moment no matter what might be going on elsewhere. This cannot be accepted. The *independently* necessary and sufficient conditions for the pervasion of a certain region by a certain colour are *never* contained in the pervaded region and are *always* contained in or near the region of projection. It is true that, in favourable cases, the *dependently* necessary conditions for this pervasion may *have been* contained in the pervaded region; viz., when there is an emitting region and it coincides with the pervaded region. But, in the first place, there may be no emitting region at all. (Cf. the visual situations of dreams, or the case of the drunkard and his pink

rats.) Secondly, there may be an emitting region, but it may be quite remote from the pervaded region. (Cf. mirror-images and aberration.) And lastly, even when there is an emitting region and it coincides with the pervaded region, common-sense is always wrong about the date of the relevant physical events in this region. It always assumes that they are contemporary with the pervasion, whereas they are always earlier and may be earlier by thousands of years. The net result of all this is that there is the strongest reason to believe that no region would be pervaded by any colour unless some other region contained a living body with a suitable brain and nervous system functioning properly. To the question: "Are things really coloured?" we can make the following answers on the present theory. (i) Colour is not logically an *intrinsic* quality of anything. Its nature is such that it can pervade one place only from another place. We may express this by saying that it is a genuine characteristic, but that it is a "multiply-inherent" one. "To be coloured" is a characteristic which is logically of the same kind as "to be envied." (ii) Things are not coloured, in the sense that their colour is a primitive and causally independent characteristic of them; or in the sense that it is directly determined by their intrinsic characteristics. The colour which pervades a region is directly determined, not by the physical contents of that region, but by the physical contents of a different region. A certain region really is pervaded by a certain colour from a certain other region if and only if the latter contains a suitable brain and nervous system, functioning properly. I express this fact by saying that the colour of a region from a place genuinely pervades it, but is "causally adventitious" to it. (iii) A region may contain such microscopic physical events and objects that a certain shade of a certain colour *would* pervade it from any region which is near enough, *if* the latter were occupied by a normal brain and nervous system in

normal working order. I express this by saying that this region has such and such a "potential colour." (iv) If it be asked whether my previous statements imply that colours are "mind-dependent", I answer as follows. The pervasion of a certain place by a certain colour from a certain region of projection is *not* dependent on this colour being perceived by the mind which animates the organism that occupies the region of projection. *Nothing* depends for its existence on being perceived. But it is conceivable that the same events in the brain and nervous system have two effects, viz., that they cause a certain distant place to be pervaded from the region of projection by a certain colour, and that they cause the mind which animates the organism in the region of projection to perceive this colour. If this were so, the colour could not pervade the external place from the region of projection without being perceived by the mind which animates the organism in the region of projection. But it seems to me most unlikely that the bodily conditions which cause the colour to inhere are identical with the bodily conditions which cause the mind to perceive; and there is certainly no evidence for such a view. If the two sets of conditions be not identical, it is logically possible that a colour should pervade a place from a region of projection without being perceived by the mind which animates the organism in this region of projection. Whether this in fact ever happens is a question to be decided by empirical considerations. We must remember, however, that a colour might be in part mind-dependent without being dependent on the particular mental event of being perceived. As I have said, it seems to me likely that some of the remote conditions of the characteristics of the objective constituents of visual situations are mental; and it is quite possible that some of their immediate conditions are also mental. It is, *e.g.*, quite arguable that the sensible form and size and distance of objective constituents is in part

determined by our predominant interests and beliefs at the moment.

It is evident, then, that the Theory of Multiple Inherence, though it allows us to keep some parts of the primitive belief which is part of every perceptual situation, requires us to modify other parts very profoundly in the case of visual situations. We shall find that the other alternatives are equally upsetting to common-sense. To them I now turn.

(α, β) *Multiple Relation Theory of Appearing*. I shall be able to deal much more briefly with this and the third alternative, because I have brought out in the last section most of the important facts which must be recognised by *any* satisfactory theory. On *any* theory we must recognise that the independently necessary and sufficient conditions of the apparent characteristics of the objective constituents of perceptual situations are contained in or near the place occupied by the percipient's body; that there may be no external emitting region; that, if there is one, it may be remote from the region which these characteristics apparently pervade; and that, even if the two regions coincide, the date of apparent pervasion is later than the date of emission.

There is a close formal analogy between the present theory and the one discussed in the last section. Both of them have to assume a fundamental relation which is at least triadic. The Multiple Inherence Theory supposes that colours inhere triadically in places from places; and that sensible forms triadically inform regions from regions. The Multiple Relation Theory of Appearing assumes that, if a colour really did inhere in anything, it would inhere dyadically, as common-sense supposes. But it assumes a fundamental relation of "appearing", which must be at least triadic. Thus it assumes, as logically possible, two different kinds of proposition about characteristics like colour, shape, etc. One is of the form "This *is* red"; the other is of the form "This *looks* red from here". And, in order to

deal with the known facts, it has to assume that the objective constituent of a visual situation can seem from a place to have characteristics which are other than and incompatible with the characteristics which it does have. If the top of a penny literally has a certain colour dyadically, it can have only one shade of one colour. But it certainly seems to have a number of different shades of the same colour, and may even seem to have a number of different colours, from different places occupied by different observers. Hence, if a penny literally and dyadically possesses a colour, the colour which it *has* must differ from all but one of the colours or shades which it *seems* to have; and, it may differ from all of them. Whilst, if it does not literally and dyadically possess any colour, it is still plainer that it seems to have characteristics which it does not in fact have. The same remarks apply to shape, size, and position. On this theory then we may be acquainted in a perceptual situation with a spatio-temporal part of a certain physical object which we are said to be perceiving. But we learn only about the characteristics which it *seems* to have; and the more carefully we inspect the objective constituent the more we learn of its *apparent* properties only. And it is certain that it either does not actually *have* properties of this kind at all; or that, if it does, the apparent and the real properties can be identical only in one specially favoured perceptual situation. And there is of course nothing in any particular perceptual situation, taken by itself, to tell us that in it and it alone the apparent and the real characteristics of the objective constituent are identical.

Let us now consider the points of difference between this theory and the one which we discussed before. Both theories allow that, under suitable conditions, it may be true that there is a common objective constituent to the visual situations of a number of observers who say that they are "seeing the same object". Both allow that there is, under suitable conditions, a common

objective constituent to the visual and the tactual situations of an observer who says that he is "seeing and feeling the same object". And both allow, that, under suitable conditions, this common objective constituent may be literally a spatio-temporal part of the object which the various observers say that they are "seeing and feeling". But, at this point, each has to diverge from common-sense in a different direction. The Multiple Inherence Theory allows that the objective constituent really does have those characteristics which it seems on careful inspection by each observer to have. But it can allow this only by supposing that these characteristics inhere in the objective constituent in a way never contemplated by common-sense, viz., triadically. The Multiple Relation Theory of Appearing allows that, *if* the objective constituent did have such characteristics as it seems to have, they *would* inhere in it in the ordinary dyadic way which common-sense recognises. But it can allow this only by supposing that most, if not all, of the determinate characteristics which the objective constituent seems on careful inspection to have do not in fact inhere in it. And both theories, as I have said, have to depart altogether from common-sense when they pass from purely logical to causal considerations. The conditions which immediately determine what colour, sensible form, etc., the objective constituent shall *have* (triadically) on the first theory, or shall *seem to have* on the second, are contained in or near the place where the observer is, and not in or near the place where the objective constituent *is* on the first theory or *seems to be* on the second. And the remote and dependently necessary conditions, in many cases, are neither in nor near the latter place.

(*b*) *The Sensum Theory*. Poor dear Common-sense has not done very well out of the two types of theory which were constructed for its special benefit. Let us now consider the third possible alternative. This theory allows that the objective constituents of perceptual situations really do have all those positive characteristics which they seem on careful inspection to have. And it allows that these characteristics inhere in these objective constituents in the straightforward dyadic way in which common-sense supposes them to do. But, in admitting this much, it is then forced to depart from common-sense. It cannot admit that the visual situations of a number of observers, who say that they are "seeing the same object", contain a common objective constituent. It cannot admit that, when a man says that he is "seeing and feeling the same object", there is in general a common objective constituent to his visual and his tactual situations. And it cannot admit that, when we say that we are "seeing a certain physical object", the objective constituent of our visual situation is in general a spatio-temporal part of the physical object which we say that we are "seeing". On this theory, then, the objective constituents of most, if not all, perceptual situations *cannot* be spatio-temporal parts of physical objects. No doubt they are really extended; they really last for so long; they really have certain shapes, sizes, colours, etc.; and some at least of them stand in spatial and temporal relations to each other. But they are not, in any plain straightforward sense, in the one Physical Space in which physical objects are supposed to be; and between pairs of them which are connected with different observers there are no simple and straightforward spatial or temporal relations. The objective constituents of perceptual situations are, on this view, particular existents of a peculiar kind; they are not physical, as we have seen; and there is no reason to suppose that they are either states of mind or existentially mind-dependent. In having spatial characteristics, colours, etc., they resemble physical objects, as ordinarily conceived; but in their privacy and their dependence on the body, if not the mind, of the observer they are more like mental states. I give the name of "sensa"

to the objective constituents of perceptual situations, on the supposition that they are *not* literally parts of the physical object which we are said to be "perceiving", and that they *are* transitory particulars of the peculiar kind which I have just been describing. And I call the theory which assumes the existence of such particulars "The Sensum Theory".

The Sensum Theory is at once faced with the question: "What is the relation between the objective constituent of a perceptual situation and the physical object which we are said to perceive in this situation?" On the two previous theories it was possible to admit that, in favourable cases, the objective constituent of the perceptual situation was quite literally a spatio-temporal part of the perceived object. This cannot be admitted on the Sensum Theory; the relation must be less direct and more complicated than common-sense believes. On the Sensum Theory the proposition: "The physical object which I am now perceiving appears to have the determinate characteristic *c*" can be analysed up to a certain point. The analysis would run as follows. This proposition means: "There is a certain sensum *s* which is the objective constituent of this perceptual situation. This actually has the characteristic *c* which I can detect in it by inspection, and it has this characteristic in a straightforward dyadic way. And there is a certain physical object *o*, to which this sensum has a certain relation R which it has to no other physical object. In virtue of this relation the sensum *s* is said to be "an appearance of" the physical object *o*. When we say that several people perceive the same physical object *o* and the same part of it, we must mean, on this theory, that their several perceptual situations contain as objective constituents the sensa s_1, s_2, . . . etc., and that all of them are appearances of the same physical object *o*. It is plain that these analyses contain an unanalysed factor, viz., the relation R of "being an appearance of". About this relation we can say the

following things. (i) It is not the relation of spatio-temporal part to spatio-temporal whole. (ii) It is a many-one relation, *i.e.*, many different sensa can be appearances of one physical object, and even of precisely the same part of this object; but one sensum cannot, in this sense, be an appearance of several physical objects. There is a certain physical object and a certain part of it which can be called "*the* part of *the* physical object which has this sensum as an appearance". At this point the Sensum Theory can take one of two courses. It may profoundly modify the common-sense notion of physical objects; *e.g.*, it may hold with Berkeley that what are manifested by sensa are volitions in God's mind; or with Leibniz that what are manifested by sensa are collections of minds; or with Russell that the sensa which are objective constituents of perceptual situations are a small selection out of certain larger groups of interrelated sensa, and that these groups are the only physical objects that there are. Or, on the other hand, it may try to keep as near to the common-sense notion of physical objects as possible. The latter course leads to what I call the "Critical Scientific Theory", which is the tacit assumption of natural scientists, purged of its inconsistencies, and stated in terms of the Sensum Theory. According to which of these alternative views of the nature of physical objects we choose we shall take a different view of the relation R between a sensum and the physical object of which it is an appearance. *E.g.*, on such a theory as Russell's the relation R is that of class-membership. To say that *s* is an appearance of *o* will mean that *o* is a certain group of suitably interrelated sensa, and that *s* is one of this group. On such a theory as Berkeley's the relation R is that of one part of a total effect to the cause of this total effect. The total effect is all the sensa which would be said to be appearances of a certain thing at a certain time. The cause is a certain volition in God's mind.

Common-sense and the Three Types of Theory. We have seen in what respects the first two theories agree with the primitive beliefs of common-sense, and in what respects they differ from these. Let us now raise the same question about the Sensum Theory. It agrees with common-sense in the belief that the objective constituents of perceptual situations really do have, in a straightforward dyadic way, all those characteristics which they seem on careful inspection to have. But it has to assume that these objective constituents are particular existents of a peculiar kind, being neither mental nor physical. And, although it is possible for it to hold that there may be physical objects in the ordinary sense of the word, it cannot admit that the objective constituents of most perceptual situations are in fact spatio-temporal parts of them. It is thus faced with a problem which does not arise for the other theories; viz., to give some account of the relation between sensa, which are objective constituents of perceptual situations, and the physical objects which are supposed to be manifested by these sensa. In order to give a plausible account of this relation the theory may be forced to depart very far indeed from the common-sense notion of a physical object, as has happened in Russell's theory.

I think that it is now abundantly evident that very little can be done for common-sense. One theory requires a kind of inherence which shocks it; the second theory asks it to believe that the objective constituents of most, and perhaps of all, perceptual situations seem on careful inspection to have characteristics other than and incompatible with those which they actually do have; and the third theory insists that the objective constituents of perceptual situations are seldom if ever spatio-temporal parts of the physical objects which it claims to be perceiving, and presents it with a peculiar kind of existent which is neither physical nor mental but seems to have one leg in each

realm. And these results are not due to the wilful perversity of philosophers debauched with learning. They are conclusions to which we are forced most unwillingly by a careful consideration of those facts which common-sense ignores. I think we may say with perfect confidence that, whilst none of the philosophic theories may be true, the primitive belief which accompanies all perceptual situations is certainly to a very large extent false; and that there is not the faintest chance of rehabilitating it. If we reflect on the history and the probable prehistory of human perception, I think we can see that there is nothing in the least surprising in this fact. Perception must have grown up in close connexion with action; and the primitive belief which forms part of the perceptual situation is, on the whole, perfectly satisfactory for practical purposes. It is exactly the belief that a being would naturally reach if he ignored abnormal cases like mirror-images; neglected minor differences, such as we find on careful inspection, between the objective constituents of the perceptual situations of different observers who are said to be perceiving the same object by the same or by different senses; and knew nothing about the velocity of light or the part played in perception by his own brain and nervous system. Now, a being devoted to practical ends naturally would ignore comparatively rare cases, such as mirror-images and other optical illusions. He naturally would neglect the minor differences between the characteristics of various objective constituents, so long as they all guided him to the right place and enabled him to co-operate satisfactorily with his fellows, to avoid danger, and to get what he wanted. From the nature of the case he could not suspect the velocity of light, which needs the most delicate experiments to detect it and a stroke of genius even to think of it. And, as he always carries his brain and nervous system about with him wherever he goes, he would naturally tend to ignore the part which it

plays in perception ; just as a person who always wears glasses forgets that he has them on and that he could not see properly without them. These causes, which must certainly have operated in the development of perception, have produced precisely the kind of primitive belief which we might have expected them to produce. And, when we take into account all the factors which were ignored in the development of this belief, but which are none the less real, we naturally find that the belief is far too simple-minded to deal with the extremely complex situation. It is, therefore, in my opinion, simply waste of time to try to rehabilitate naïve realism ; or to regard it as any serious objection to a theory of the external world and our perception of it that it is "shocking to common-sense". *Any* theory that can possibly fit the facts is *certain* to shock common-sense somewhere ; and in face of the facts we can only advise common-sense to follow the example of Judas Iscariot, and "go out and hang itself".

We may now ask ourselves whether there is anything to choose between the three kinds of theory. (1) It seems to me that the Theory of Multiple Inherence, as stated, presupposes a doctrine of Absolute Space-Time, as a kind of fundamental stuff or matrix. It is quite certain that the objective constituents of perceptual situations are particular existents, and not mere universal qualities. And it is quite certain that, if objective constituents of visual situations are really situated where they appear to be, as the theory assumes, they are often situated in places which are not occupied by matter in any ordinary sense of the word. This is often true, *e.g.*, of mirror-images. Now, a mirror-image is as good a particular as the objective constituent of a more normal visual situation. Whence does it get its particularity? On the present theory we must say that it is a particular because it is a certain region of Space, pervaded from a certain other region of Space at a certain date and for a certain time by a certain shade of colour. Now

this surely presupposes Space-Time as a kind of omnipresent and eternal substance, every region of which is ready to be pervaded by some sensible quality from some other region. I do not of course suggest that this theory must suppose that Absolute Space-Time is the *only* substance in the material realm. The regions from which colours pervade other regions are occupied in a non-triadic sense by certain physical and physiological events and objects. And the emitting regions are also occupied in a non-triadic sense by electrons, atoms, molecules, etc., and their movements. It is not *necessary* for the theory to hold, *e.g.*, that an electron is just a certain region of Space-Time dyadically pervaded by some physical quality. But, whilst it is not necessary for the theory to hold that Absolute Space-Time is the *only* substance in the material realm, it *is* necessary for it to hold that Absolute Space-Time is *a* substance and that the particularity of the objective constituents of some, if not all, perceptual situations is the particularity of some particular region of Space-Time. This region is marked out by being pervaded by such and such a sensible quality from such and such a region of projection ; and a region thus pervaded and marked out is, on the present theory, that kind of particular which we call "an objective constituent of a perceptual situation".

Now, I do not for a moment suggest that a theory is necessarily wrong because it presupposes the doctrine of Absolute Space-Time as the common matrix of all objective constituents of perceptual situations. But I do think that such a theory starts with rather heavy liabilities, and I do suspect that it has not carried its analysis far enough.

(2) It seems to me that the Theory of a Multiple Relation of Appearing is liable to a similar objection. Suppose I hold up a finger in front of a plain mirror, so that I can see both the finger and the mirror-image of it at the same time. Then it is quite certain that the

characteristic colour of my finger *seems* to pervade the surfaces of two distinct physical objects, one in front of the mirror and the other at the back of it. It is also quite certain that the characteristic sensible form of my finger *seems* to inform two distinct physical objects. Now we have every reason to believe that only one physical object is appearing in this situation. It is therefore not enough for the theory to hold that some part of a physical object which is an objective constituent of a visual situation may seem to have a characteristic which it does not in fact have. It must also assert that what is in fact one physical object in one place may seem to be two physical objects in two places at some distance apart. Now one may admit that a certain particular might seem to have a characteristic which differs from and is incompatible with the characteristics which it does have. But I find it almost incredible that one particular extended patch should seem to be two particular extended patches at a distance apart from each other. There is of course no difficulty in holding that the same shade of colour and the same sensible form may appear to inhere in two places at once, and that one of these places is physically filled whilst the other is physically empty; provided you hold that colours and sensible forms seem to inhere, not in *physical objects*, but in *regions of Space*. The appearance of two particulars is then accounted for by the fact that there really are two particulars, viz., the two distinct regions of Space in which the same colour and sensible form seem to inhere at the same time. But this presupposes Absolute Space-Time as a substantial matrix whose regions are ready to appear to have such and such characteristics from other regions which are suitably filled. And this was the objection to the Theory of Multiple Inherence.

I think we must say then that, in view of mirror-images, aberration, etc., the Multiple Relation Theory of Appearing must hold *either* that what is in fact a

single extended particular can seem to be two distinct extended particulars at a distance apart from each other; *or* that sensible qualities and forms have the relation of "appearing to inhere in" to regions of Absolute Space-Time, and not to the surfaces of physical objects. The first alternative is difficult to believe; the second presupposes Absolute Space-Time, which is probably a sign of inadequate analysis.

(3) It is commonly objected to the Sensum Theory that it leaves the existence of physical objects merely hypothetical; that it introduces entities of a peculiar kind, whose status in the world and relations to physical objects, if such there be, are very difficult to understand; and that it involves a very odd kind of causation, which is almost creation out of nothing. In this section I shall content myself with showing that the Sensum Theory is in these respects very little worse off than the other two alternatives. It is no doubt true that sensa cannot be parts, in the literal and straightforward sense, of physical objects; and that, on most forms of the theory, the relation between the two is very indirect. As against this it must be said that the other theories have been found to involve Absolute Space-Time. Now I think that the Sensum Theory can dispense with this. The other theories need this because they require some kind of substance for sensible qualities to inhere in or to seem to inhere in. And, since in the case of mirror-images, etc., this substance can hardly be the surfaces of physical objects, there seems nothing left for it to be except various regions of Absolute Space-Time. Now the Sensum Theory starts with particulars, for each sensum is a particular having those sensible qualities and that sensible form which it seems on careful inspection to have. It therefore does not need to assume Absolute Space-Time, in the sense of a kind of substantial matrix whose various regions stand ready to be pervaded by various sensible qualities and informed by various sensible forms. It can accept a

relational theory of Physical Space-Time; and this certainly seems to me to be a point in its favour. It can start with the sensible spatio-temporal relations of sensa in the same sense-field or the same sense-history, and thus *exemplify* the general notion of a Space or a Space-Time of interrelated particulars. Then, by considering the correlations between sensa in different sense-fields and different sense-histories, and by taking account of the connexion of these with the movements of the observer's body, it can *construct* in thought the concept of a single Physical Space-Time. This Physical Space-Time will be the system of all *physical events* interrelated in the same *kind* of way as are sensa in a single sense-history. The relations in the two kinds of whole differ in detail, but there is enough analogy between them to justify us in regarding the world of physical events as a single spatio-temporal system having a certain kind of "geo-chronometry". This is the justification of the notion of Absolute Space-Time; but it is no justification for treating it as a substantial matrix, as the other theories have to do. I have dealt with the details of this synthesis to the best of my ability in my *Scientific Thought*, and I must refer the reader to the Second Part of that book for such justification as I can give for the above dogmatic statements.

Let us now consider the objection that the Sensum Theory makes physical objects entirely hypothetical, mere *Dinge-an-Sich*. I shall deal directly with this question in the next section. Here I shall merely consider whether the other theories are much less liable to the same objection. I cannot see that they are. I profess to have proved earlier in this chapter (*a*) that, even if there had been no delusive perceptual situations, it is certain from the nature of the case that no perceptual situation could contain literally as its objective constituent the physical object which we are said to be perceiving in that situation. (*b*) That the existence of totally delusive situations shows that the

objective constituent cannot *always* be even a spatio-temporal part of the physical object which we are said to be perceiving. Hence even this modified claim can *never* be accepted at its face-value, since it is made as strongly in the perceptual situations which are certainly delusive as in those which are not known to be so. (*c*) That, in view of the discrepancies which careful inspection discovers between the objective constituents of perceptual situations when one observer is said to be seeing and touching the same object or when several observers are said to be seeing the same object, even this modified claim *cannot* be true except on the very special assumptions of the Theory of Multiple Inherence or the Theory of a Multiple Relation of Appearing. On *any* view, then, the claims of the individual perceptual situation to reveal a certain physical object and to guarantee its existence must be attenuated to a mere shadow. And, when we come to consider in detail the two theories which are able to admit this attenuated claim at all, we find that the claim must be pared down still more; as I will now show.

If the Theory of Multiple Inherence be true, all that I can learn from a single perceptual situation is that a certain external region of Space, which may or may not now contain relevant physical events and objects, is at present pervaded by a certain sensible quality and informed by a certain sensible form from the place where my body now is. If I want to get any further than this; to know whether I am perceiving a "real object" or only an image; to know what spatial and other qualities I may ascribe to it in itself and apart from its relation to my organism; I must do this, if at all, by considering the objective constituents of a number of different perceptual situations belonging to myself and to others, and noting the relations between them. And the physical object which I then "know", and to which I ascribe these intrinsic characteristics, is logically (though not psychologically) just a hypo-

thetical entity postulated to explain and systematise these correlations. The position is precisely similar if we adopt the Theory of a Multiple Relation of Appearing. All that I can learn from a single perceptual situation is that a certain surface, which *seems* to be a spatio-temporal part of a physical object, *seems* to have such and such a shape, position and sensible quality. If I want to know whether it *is* part of a physical object; or what kind of physical object this is; or what shape, position and intrinsic qualities it actually *has;* I must do this, if at all, by the same method of comparison and correlation as on the Multiple Inherence Theory. The physical object which I am said to "perceive", and the properties which I ascribe to it, are again logically (though not psychologically) in the position of hypothetically postulated entities.

It is of course open to the supporter of the Multiple Inherence Theory to assert that there may be one specially favourable position (*e.g.*, when one is "looking straight down on a penny from the distance of most distinct vision") in which the geometrical shape and the intrinsic colour of the penny are directly revealed, instead of the colour which it has from a place and the sensible form which inheres in it from a place. And it is open to the supporter of the Theory of a Multiple Relation of Appearing to assert that there may be one specially favourable position in which the qualities which a physical object *has*, and not merely those which it *seems* to have, are revealed directly to the percipient. On such assertions I have the following comments to make. (i) They are in the highest degree unlikely. We are asked to believe that in one special position the physical, physiological, and psychical mechanism produces an utterly different result from that which it produces in all other positions, no matter how close to this specially favoured one. (ii) There is nothing in the nature of any perceptual situation, taken by itself, to reveal to us that it differs in this remarkable way from all the rest. The unique perceptual situation, if such there be, does not come visibly "trailing clouds of glory behind it". It would have to be discovered to have this property by comparing it and its objective constituent with other perceptual situations and theirs. (iii) It is just as possible, logically, for the Sensum Theory to make this preposterous claim as for the other two theories. It might assert that, from one specially favourable position, the objective constituent is literally a part of the physical object, and that the qualities which we detect in it are literally those of the physical object; whilst, in all other situations, the objective constituent is a mere sensum. I think I may fairly conclude that the objection that on the Sensum Theory the perceived physical object becomes a mere *Ding-an-Sich* applies with almost equal force, if it applies at all, to the other theories.

Let us now consider the objection that the Sensum Theory involves a very odd kind of causation, which is almost creation of particulars out of nothing. I will first show that the other theories also involve very odd kinds of causation. The Theory of Multiple Inherence involves instantaneous action at a distance. When a certain process goes on in my brain and nervous system a certain remote region of Space becomes pervaded by a certain colour from where I am. So far as we know this is an instantaneous process. The date of pervasion is identical with the date of the events in my brain and nervous system, though the pervaded place may be millions of miles from the region of projection. And nothing that may be physically occupying the intervening space is relevant to this process of pervasion; so that we cannot compare this action at a distance with pushing a distant body and making it move instantaneously by means of a rigid rod. There is in fact, so far as I know, no analogy elsewhere to the kind of causation which the Theory of Multiple Inherence

has to postulate. I do not make this an objection to the theory; but I do say that it is in no position to cast stones at the Sensum Theory for having to postulate an odd kind of causation. Exactly the same remarks apply, *mutatis mutandis*, to the Theory of a Multiple Relation of Appearing. Here processes in the brain and nervous system instantaneously cause certain qualities to seem to inhere in places where they do not in fact inhere; or else they make one distant particular seem to be two distant particulars.

I will now consider more directly the special objection to the Sensum Theory on the grounds of the peculiar kind of causation which it involves. The objection is that, if the Sensum Theory be true, physical and physiological processes *create* certain particular existents, viz., sensa, which do not form parts of the history of any physical object. Now it is said that we can understand that a process in one substance may cause a certain quality to characterise the next phase in the history of an already existing substance; but we cannot understand the kind of creation of particulars which the Sensum Theory requires. To this I answer (i) that there are certain forms of the Sensum Theory which do not involve this creative kind of causation but only a selective kind. According to some theories physical objects consist of groups of sensa, and a physical object is perceived when a certain sensum of a certain group becomes the objective constituent of a perceptual situation. On this type of theory the function of the physical, physiological, and psychical mechanism of perception is not to *create* sensa, but merely to *select* from a group of pre-existing sensa a certain one and to make it the objective constituent of a certain perceptual situation. I cannot, however, lay much stress on this answer, because I do not think that a purely selective form of the Sensum Theory is plausible in view of all the facts. I have explained my reasons for this in my *Scientific Thought*, and will not repeat

them here. (ii) The more direct answer to the present objection is the following. A sensum is not something that exists in isolation; it is a differentiated part of a bigger and more enduring whole, viz., of a sense-*field* which is itself a mere cross-section of a sense-*history*. Suppose, *e.g.*, that I am aware of a red flash. This is a differentiation of my total visual field at the moment; and my total visual field at the moment joins up with and continues my earlier visual fields, forming together with them my visual sense-history. The sense-history is a continuant; a kind of substance, though not a *physical* substance. And the new sensum is not an isolated particular, but an occurrent in this peculiar kind of continuant. Thus the causation involved in the Sensum Theory, though very different from physical causation, is not the sudden creation of a perfectly isolated and loose particular out of nothing. It is, to say the least of it, no odder than the causation involved in the other two theories.

The upshot of this discussion seems to me to be that, on the whole, there are no greater objections to the Sensum Theory than to the other theories, and that the other theories have no positive advantages over the Sensum Theory when carefully considered. And, as the Sensum Theory does not require to assume Absolute Space-Time as a pre-existing matrix, whilst the other theories apparently do, the balance of advantage seems to be slightly on the side of the Sensum Theory. It remains now to ask: "How much of the common-sense notion of a physical object can we keep; and with what degree of confidence can we believe that there are things which answer to the various parts of the common-sense notion of a physical object?"

In what Sense can we accept Physical Objects? If we consider the common-sense notion of a physical object we can divide it into four logically independent parts. (i) It is supposed to be more permanent than the perceptual situation. The latter is held to be transitory

as compared with the former. (ii) It is supposed to be public to a number of observers, and to be capable of exhibiting different aspects of itself to different senses of the same observer. (iii) It is supposed to be literally extended in Space, having a bounding surface of a certain geometrical size and shape, and standing in straightforward spatial relations to other physical objects. (iv) The objective constituents of the tactual and visual situations in which it is said to be perceived are held to be literally parts of its surface. We have seen reason to reject (iv). The first two are accepted by nearly every one. The average scientist who thinks about the matter accepts the first three and is in an inextricable muddle about the fourth. Berkeley, Leibniz, and Russell accept the first two and reject the rest. It is therefore reasonable to think that there is better evidence for (i) and (ii) than for (iii) and (iv); or at any rate that there is less to be said against the first pair than against the last pair.

The evidence for (i) is of the following kind. For long periods of time whenever I look in a certain direction I am aware of very much the same kind of objective constituent, *e.g.*, a visual appearance of my table. Now merely looking in this direction from this place is not a *sufficient* condition for this kind of objective constituent to appear. For sometimes (*e.g.*, when my room is being spring-cleaned) I may look in this direction with quite different results. On the other hand, looking in this direction from this place is a *necessary* condition, over long periods of time, for this objective constituent to appear to me. Now the point to notice is that I can fulfil this condition at quite arbitrary intervals, and that *whenever* I do so during a long stretch of time I am aware of the same kind of objective constituent. The natural interpretation of such facts is that there is another and relatively permanent necessary condition on which all these arbitrarily initiated perceptual situations depend, and that this

determines the likeness between their objective constituents. This conclusion is supported by three other sets of facts.

(*a*) When I am not in my room other people may be. And they tell me that they have had visual experiences very much like those which I have when I am in the room and looking in the right direction. This supports the view that there is a relatively permanent necessary condition, which is independent of my presence.

(*b*) I have continually certain kinds of experiences which I ascribe to my own body. Now other people tell me that my body appears to them in exactly the same way as any other physical object. And I have no reason to doubt this, because I know that their bodies appear to me in exactly the same way as other physical objects. I know from internal sensation that my body continues to exist when other people are not seeing or touching it; and I am told by other people that they have the same kind of evidence for the continued existence of *their* bodies when *I* am not seeing or touching them. I have not this kind of direct evidence about chairs and tables; but the analogies in other respects between them and human bodies make it reasonable for me to treat them in the same way. That is, they support the view that something which is *capable* of producing a perceptual situation with a characteristic kind of objective constituent persists, even when no such situation is *actually* being produced, because the other necessary conditions are not being fulfilled.

(*c*) If I look for some time in a certain direction, *e.g.*, "at my fire", as we say, I often find a slow and steady change in the objective constituents of the successive visual situations. If I go out of the room, and, on returning after some time, look again in the same direction from the same place, I shall again be aware of an objective constituent which in the main resembles those of which I was aware before. But there will be certain differences; and in general the differences are

such as would have been produced by a steady continuation of that process of change which I observed while I was formerly in the room. Nothing that I can detect in myself during the interval accounts for the difference between the last objective constituent before I went out and the first objective constituent after I again came in. So the natural interpretation is that the original series of objective constituents depended in part on a process outside my body, and that this process has gone on further during my absence.

I do not say that any or all of these arguments amount to a knock-down proof of the view that the objective constituents of perceptual situations are, in many cases, partly dependent on something outside the percipient's body and more permanent than themselves. But I do think that, if it be granted that this hypothesis has any finite initial probability, such facts and arguments do give it a very high final probability. And practically all philosophers have accepted this much of the common-sense view.

(ii) The second part of the common-sense view is that these relatively permanent and necessary, but not sufficient, conditions of perceptual situations are neutral as between different percipients. If this merely means that one and the same set of permanent conditions may co-operate with other conditions which vary from observer to observer, and may produce perceptual situations with correlated objective constituents, this is also highly likely. There are groups of contemporary perceptual situations whose objective constituents are so related to each other that they are all said to refer to the same external object. If we take the case of a number of observers who are said to be seeing the top of the same penny, we find the following correlations. All the observers are looking in such directions that, if they moved along them, they would run into each other at the same place. In the middle of each of their visual fields there is an outstanding patch. All these

patches appear to have some shade of brown; they appear to be of different sizes and to have different sensible depths in their respective fields. They appear to have various shapes, but all these shapes are projections of a circle. All the observers will be able to become aware of correlated tactual objective constituents, if they walk up to the place at which their lines of sight intersect. And, as they walk in these directions, each will pass through a series of visual situations; the total objective constituent of each situation will be a coloured field with a brown patch in the middle of it; the shapes of these patches will all be projections of a circle; and the successive patches of each series will be of diminishing sensible depth in their respective visual fields, and of increasing sensible size and clearness.

It is hard to resist the conviction that such groups of correlated perceptual situations depend on two factors. One is a relatively permanent condition, independent of the observers and their bodies. The other is a condition which varies from observer to observer and appears as the position and orientation of the percipient's body. Moreover, the factor in these perceptual situations which seems to be specially closely correlated with this common independent condition is the outstanding patch which is at the middle of each visual field. Suppose that all the observers stand and face as before, and that "the penny is replaced by a tennis-ball", as we say. Then there will be a simultaneous change in the outstanding central objective constituent of all these visual situations. Thus it seems reasonable to accept the second part of the common-sense view. It is reasonable to hold that the objective constituent in a perceptual situation is in many cases determined by two sets of conditions. One is specially bound up with the percipient and his body; the other is independent of percipients and their bodies. Either can vary without the other. Variations of the latter involve correlated variations in a certain part of the objective constituents

of a whole group of perceptual situations belonging to different observers. Variations in the former affect only the objective constituents of the perceptual situations of a single observer. When many people are said to "perceive the same object" we have a group of perceptual situations determined jointly by a *common* independent condition and by other conditions which vary from one observer to another. If this hypothesis starts with a finite initial probability, the facts surely give it a high final probability.

(iii) It remains to consider how far the facts make for or against the third part of the common-sense view; viz., that these relatively permanent and neutral conditions of groups of correlated perceptual situations are literally extended, having geometrical shapes and sizes, and having spatial relations to other things of the same kind. Up to the present all that has been established is equally compatible with the primitive beliefs of common-sense, with the theories of Descartes and the natural scientists, and with the speculations of Berkeley, of Leibniz, or of Mr Russell. For each of these parties admits that such groups of perceptual situations are jointly dependent on a condition, which is relatively permanent and neutral between the percipients, and a variable condition which is specially connected with each percipient. For common-sense this neutral and relatively permanent condition is an extended physical object, of which the objective constituents are literally spatio-temporal parts; the variable conditions simply determine *which* part shall be the objective constituent of a particular perceptual situation. For Mr Russell the neutral and relatively permanent condition is a whole group of correlated sensa; and the variable conditions simply determine *which* member of a certain group shall be the objective constituent of a certain perceptual situation. These two views thus agree in making the variable conditions purely *selective;* everything that could become an objective constituent of a

perceptual situation exists already, and the variable conditions simply select a certain part or a certain member from this pre-existing whole and make it the objective constituent of a certain perceptual situation.

The Cartesian, the Leibnitian, and the Berkeleian theories may be called *creative;* for, as usually stated, they assume that the objective constituents do not exist out of the perceptual situations. They assume that, when both sets of conditions are fulfilled, a sensum of a certain kind arises in a certain place in a certain sense-field; but that, when the variable conditions specially connected with the observer are not fulfilled, no sensum of this kind exists. And of course, on every theory except that of Descartes and the scientists, the relatively permanent neutral conditions of groups of interconnected perceptual situations are extremely unlike physical objects, as conceived by common-sense. One cannot say, in any literal sense, that God's habits of volition, or a colony of unintelligent monads, or a group of interrelated sensa, have geometrical shape, size, or position.

Now I have argued that we can never be sure that the objective constituents of perceptual situations *are* literally parts of physical objects, as conceived by common-sense; and that we can be practically certain that they *are not* in most cases. The question then is: "Does there remain any reason for accepting the third proposition of the common-sense view of physical objects when we have rejected the fourth proposition of this view?" Descartes, Locke, and the scientists do reject the fourth and accept the third. The question is whether this is reasonable. Certain general arguments have been brought against the reality of spatial qualities and relations. If these were valid *nothing* could literally have shape, size, or position. It would follow that nothing like the common-sense view of physical objects could possibly be true. But, in the first place, all these arguments seem to me to be plainly fallacious. Secondly,

if they be valid at all, they must apply, not only to the supposed persistent and neutral conditions of perceptual situations, but also to the objective constituents of these situations themselves. If there be some internal contradiction in the very notion of spatial qualities and relations it will be as impossible for the objective constituents of perceptual situations to have these qualities or to stand in these relations as for anything else to do so. Now the objective constituents of visual and tactual situations certainly *seem* on careful inspection to have shapes and sizes, and to stand in spatial relations to other contents of the same sense-field. Thus anyone who accepts these general arguments against the reality of spatial qualities and relations must be prepared to hold that we are mistaken, and enormously mistaken, about the *objective constituents of our perceptual situations* as well as about their *neutral and persistent conditions*. It is not merely a mistake about details, as it would be if something which was really round seemed to be elliptical; it would be a mistake about a fundamental determinable characteristic which seems to belong to the objective constituents of all visual and tactual situations. As I have said, the arguments against the reality of spatial characteristics seem to me plainly fallacious; but, if I could see nothing wrong with them, I should still venture to think it much more likely that an argument is invalid, though it seems to me sound, than that the objective constituents of visual and tactual situations are unextended, though they seem to have shapes, sizes and positions. For I know from sad experience that I can be taken in by plausible but fallacious arguments, whilst I have no reason to think that the objective constituents of my tactual and visual situations could seem to have shapes, sizes, and positions if they were really unextended. It seems to me then to be practically certain that the objective constituents of certain perceptual situations do have spatial characteristics. It is therefore *possible*

that their persistent and neutral conditions may also have these characteristics. The only question is whether there is any positive ground for believing that they do in fact have them.

The only way to answer such a question is to study carefully and in detail the nature of objective constituents and their correlations. In the notion of Physical Space we must distinguish two factors:—(*a*) the general conception of a Spatial whole having contents of various shapes and sizes at various places in it; and (*b*) the special character and contents which are ascribed to Physical Space. I have no doubt that the general conception of a spatial whole springs from our acquaintance with visual fields. Here we do have an extended whole of simultaneous parts; these parts, viz., variously coloured outstanding patches, do visibly have various shapes and sizes, and do visibly occupy various positions within the whole field. The visual field then is *a* spatial whole with which we are acquainted in sense-perception, and it is the *only* spatial whole of any importance with which we are acquainted. The physical world, as a spatial whole, is conceived on the analogy of the visual field. Bodies are analogous to outstanding coloured patches. They are conceived to have shapes and sizes, as these patches visibly do have them; to occupy various positions in Physical Space, as these patches visibly occupy various positions in the visual field; and to be capable of moving about within Physical Space, as some of these patches visibly do move about within the visual field.

Given the general conception of a spatial whole, many alternative theories about its detailed structure and contents are possible. Our beliefs about the detailed structure and contents of Physical Space are based on experiences of sight, touch, and movement, and on the very complicated correlations which these are found to have with each other. Experiences of movement are interpreted spatially by analogy with the

visual field and the visible movements of coloured patches within it, and by means of the correlations between the former and the latter. Conversely, the general conception of Physical Space, which is based on our acquaintance with visual fields, is filled out and specified in detail by our experiences of movement. The hypothesis that what appears to us as external objects and what appears to us as our own bodies are extended and stand in spatial relations, in the sense explained above, accounts for the correlations between objective constituents of perceptual situations and for their variations as we move about. And it is difficult to see that any alternative hypothesis which does not logically reduce to this one will account for such facts. About the minuter details of the physical spatio-temporal order there is room for much diversity of opinion and for much future modification and refinement, as the facts adduced by the Theory of Relativity show. But this much seems to me to be practically certain, viz., that the nature and relations of the persistent and neutral conditions of sensa *must* be interpreted by analogy with visual sensa and their relations in the visual sense-field; and that they *cannot* be interpreted by analogy with thoughts or volitions and their relations within a mind (as Berkeley held), or with the relations of minds within a society (which, to put it very crudely, was Leibniz's view).

Thus, with suitable interpretations, I accept the first three clauses of the common-sense belief about physical objects. The fourth clause I have to reject, for reasons which I have tried to make plain in the earlier part of this Chapter

The Status of so-called "Secondary Qualities". It is of course part of the common-sense view that physical objects literally have colours, temperatures, etc. This is a logical consequence of the view that the objective constituents of perceptual situations literally have the sensible qualities which they seem on inspection to

have, and that these objective constituents are literally parts of the surfaces of those physical objects which we are said to be perceiving. If we drop the fourth clause of the common-sense belief it still remains *possible* that the neutral and persistent conditions of perceptual situations literally have *some* colour and *some* temperature. And the colour and temperature *might* be identical with those of the objective constituent of *one* specially favoured perceptual situation. Is there any positive reason to believe that this is in fact true? I do not think that there is. It does not seem to be possible to account for the correlated variations in the *shapes and sizes* of visual sensa without assigning quasi-spatial qualities and relations to the permanent conditions of these variable appearances and to the things which manifest themselves to us by bodily feelings. But, so far as I can see, it is neither necessary nor useful to ascribe to these permanent conditions anything analogous to the *colour* and the *temperature* which we find in sensa. It has been found more expedient to correlate the colours and temperatures of sensa with certain kinds of motion of certain kinds of microscopic parts of their permanent conditions. It is practically certain that the *independently* necessary and sufficient conditions of the colour and temperature of the objective constituent of a given perceptual situation are events within the observer's own body; *i.e.*, within that relatively permanent object which is manifested to himself by a mass of bodily feeling, and to others through certain characteristic visual and tactual sensa. But, in non-delusive perceptual situations, these bodily events are physically determined by certain motions of certain particles in an emitting region; so that these external physical events are the *dependently* necessary and *common* conditions of the colours and temperatures of the correlated sensa of a whole group of observers who are said to be "perceiving the same external object". Provided we are dealing with non-delusive perceptual situations

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The Status of so-called "Secondary Qualities". It is of course part of the common-sense view that physical objects literally have colours, temperatures, etc. This is a logical consequence of the view that the objective constituents of perceptual situations literally have the sensible qualities which they seem on inspection to

have, and that these objective constituents are literally parts of the surfaces of those physical objects which we are said to be perceiving. If we drop the fourth clause of the common-sense belief it still remains *possible* that the neutral and persistent conditions of perceptual situations literally have *some* colour and *some* temperature. And the colour and temperature *might* be identical with those of the objective constituent of *one* specially favoured perceptual situation. Is there any positive reason to believe that this is in fact true? I do not think that there is. It does not seem to be possible to account for the correlated variations in the *shapes and sizes* of visual sensa without assigning quasi-spatial qualities and relations to the permanent conditions of these variable appearances and to the things which manifest themselves to us by bodily feelings. But, so far as I can see, it is neither necessary nor useful to ascribe to these permanent conditions anything analogous to the *colour* and the *temperature* which we find in sensa. It has been found more expedient to correlate the colours and temperatures of sensa with certain kinds of motion of certain kinds of microscopic parts of their permanent conditions. It is practically certain that the *independently* necessary and sufficient conditions of the colour and temperature of the objective constituent of a given perceptual situation are events within the observer's own body; *i.e.*, within that relatively permanent object which is manifested to himself by a mass of bodily feeling, and to others through certain characteristic visual and tactual sensa. But, in non-delusive perceptual situations, these bodily events are physically determined by certain motions of certain particles in an emitting region; so that these external physical events are the *dependently* necessary and *common* conditions of the colours and temperatures of the correlated sensa of a whole group of observers who are said to be "perceiving the same external object". Provided we are dealing with non-delusive perceptual situations

and with normal human observers whose bodies are in a healthy state, we can drop the independently necessary conditions out of account, and confine our attention to these dependently necessary and common external conditions. This of course is what the physical theories of colour and temperature do. Naturally such theories are incomplete, since they presuppose the fulfilment of conditions which are not always fulfilled. But, when we try to complete them we have to do so, not by ascribing a physical colour or temperature in a literal sense to the external conditions, but by considering the structure and processes of the observer's body. Thus, whilst it is not impossible that physical objects may literally have colours and temperatures, there is not the slightest reason to believe that they do. It is of course quite easy to *define* a Pickwickian sense in which a certain physical object may be said to have a certain physical colour. I have already done this in treating the Multiple Inherence Theory, and it is perfectly easy to give a similar definition, *mutatis mutandis*, on the other two theories. But this is quite a different thing from saying that a physical object literally has a certain colour, in the sense in which the objective constituents of visual situations have colours.

I do not know that I have ever seen a satisfactory definition of the terms "Primary" and "Secondary" Quality. It will therefore be of interest to try to give one. I suggest the following definitions. "A Primary Quality is a determinable characteristic which, we have reason to believe, inheres literally and dyadically in some physical object in some determinate form or other." "A Secondary Quality is a determinable characteristic which certainly inheres or seems to inhere literally and dyadically in the objective constituents of some perceptual situations in some determinate form or other, but which there is no reason to believe inheres literally and dyadically in any physical object." A primary quality may, but need not, inhere literally and dyadically in some objective constituent. On these definitions, colour and temperature are secondary qualities, if I am right about their status. Shape, size and position are primary qualities which inhere literally and dyadically both in the objective constituents of perceptual situations and in their relatively permanent conditions. Electric charge, magnetic properties, and so on, are primary qualities which inhere literally and dyadically in physical objects, but do not (so far as we know) inhere in the objective constituent of any perceptual situation.

Before ending this section it will be interesting to see just where Locke and Berkeley were respectively right and wrong, on our view, about primary and secondary qualities. Berkeley was right against Locke when he said that nothing could possibly be *merely* extended and movable. (Though Locke, to do him justice, never maintained anything so silly as the proposition which Berkeley refutes.) This may be expressed by saying that, *if* spatio-temporal characteristics be primary, they cannot be *the only* primary characteristics. Whatever is extended must have *some* other characteristic, which is capable of covering an area or filling a volume as colour and temperature do in sensa. But Berkeley was wrong in thinking that this "extensible characteristic", as I will call it, must be colour or temperature or some other quality which literally and dyadically inheres in sensa. It might be mass or electric charge. Again, Berkeley was right in so far as he held that there is just as good reason to deny that the determinate shapes and sizes of sensa inhere literally in some permanent object, which we are said to be "seeing", as to deny that the determinate colours or temperatures of sensa literally inhere in such objects. But Locke was right in so far as he held that there is positive reason to hold that the determinable characteristic of extension inheres literally and dyadically in physical objects as well as in sensa, whilst there is no reason to believe that the determinable characteristics of colour and temperature inhere

literally and dyadically in anything but sensa. And so Locke was right in thinking that we can and must distinguish between primary and secondary qualities, and he was right in assigning extension and motion to the former class, and colour and temperature to the latter. Both these great men were thus expressing important truths; but they both expressed them imperfectly, because they failed to notice certain important distinctions which we, who have the advantage of standing on their shoulders, are able to see.

The Subjective Factors in Perceptual Situations. I have been considering the belief, which forms an essential factor in every perceptual situation and constitutes its external reference, from a logical and epistemological and not from a psychological point of view. By this I mean that I have been concerned with the propositions believed and not with the act of believing them. I have tried to state clearly what these propositions are; to consider which of them are certainly false and which of them are possibly true; and to adduce and appraise the evidence which can be submitted in favour of the latter. I propose to end this chapter by an attempt at further psychological analysis of the perceptual situation. The remarks which I shall now make are to be regarded as a continuation of the analysis which was begun and carried a certain length in the sub-section on *External Reference*. I there warned the reader of the following points. (i) That the belief which constitutes the external reference of a perceptual situation is not in fact *reached* by inference, even if it can be *defended* by inference on later reflection. (ii) That, psychologically, it can only be called a "belief" by courtesy. We can only say that a man in a perceptual situation acts, adjusts his body, and feels certain emotions; and that these actions, adjustments, and emotions are such as would be reasonable *if* he were explicitly making such and such judgments, which he

does not in fact make as a rule at the time. The bodily adjustment itself is of course no part of the subjective factor in the perceptual situation; but it is impossible to make these adjustments or to start to perform these actions without producing certain characteristic modifications of bodily feeling. These modifications of bodily feeling and these emotions *are* an essential part of the subjective side of every perceptual situation. We have now to see whether we can carry the analysis any further.

A reflective observer, considering one of his own perceptual situations after it has ceased, or considering a contemporary perceptual situation in which he is not personally concerned, would probably propose the following analysis for it. (i) An objective constituent, having certain sensible qualities and forming a differentiated part of a wider sense-field. (ii) A subjective constituent, consisting of a mass of bodily feeling, emotion, etc. (iii) The fact that this objective constituent is intuitively apprehended by the percipient. (iv) The fact that the percipient, who intuitively apprehends the objective constituent and who feels the emotions and bodily feelings, has certain non-inferential beliefs about the objective constituent which go beyond anything that is intuitively apprehended in the situation. I believe this analysis to be substantially correct, though the fourth factor in it is expressed in terms which do not strictly apply to anything so primitive as the perceptual situation but are borrowed from higher cognitive levels. I have already discussed the first factor *ad nauseam*, and I have already given my reasons for wishing to modify the statement of the fourth. What I want to do now is to explain what I suppose to be involved in the intuitive apprehension of the objective constituent and in the quasi-belief about it. I think that the two are probably very closely connected.

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propositions: "This is a red round patch in a visual field" and "This red round patch in a visual field is intuitively apprehended by so-and-so". Even if as a matter of fact there are no such objects which are not intuitively apprehended by someone, it seems to me to be perfectly certain that it is *logically* possible that there might have been. (I have argued earlier in the chapter that it is also *causally* possible, but it is not necessary for our present purpose that this should be so.) Since it is logically possible that the same sensum should sometimes be intuitively apprehended and sometimes not, or that it should sometimes be intuitively apprehended by A and not by B and at other times by B and not by A, it seems plain that the characteristic of being "intuitively apprehended" is a relational characteristic; *i.e.*, that it consists in the establishment of a certain asymmetrical relation R between the sensum and something else. The question is: "What is this relation, and what is this something else?" A theory has been put forward by the persons who call themselves "New Realists", which would provide a simple answer to this question if it could be accepted. It has also been suggested by Mr Russell, and is therefore worth a degree of attention which it might not otherwise have deserved.

So far as I can understand the theory it comes roughly to this. All the visual sensa of which it would be true to say that A intuitively apprehends them belong to a certain visual field. And of all sensa which belong to this visual field it would be true to say that A intuitively apprehends them. Hence the two properties of "being intuitively apprehended by A" and "belonging to a certain visual field" are logically equivalent. Moreover, the relation of a sensum to a sense-field is asymmetrical. It is then suggested that really we have not two different though logically equivalent properties, but a single property with two different names. To say that "The visual sensum *s* is

intuitively apprehended by A" *means* the same as to say that "The visual sensum *s* belongs to a certain visual field f_A." If this were true, the "something else" to which a sensum is related when it is intuitively apprehended would be a certain sense-field; and the asymmetrical relation of being intuitively apprehended would be that of a part of a sense-field to the sense-field as a whole.

It seems to me perfectly certain that this theory is false. (*a*) No one would admit that a sensum which was part of a sense-field which is not intuitively apprehended would itself be intuitively apprehended. Hence we can hold that "to be intuitively apprehended" and "to belong to a sense-field" *mean* the same *only* if we admit that it is *logically* impossible for there to be a sense-field which is not intuitively apprehended. Now it is quite plain that there is no more logical impossibility in the existence of an unapprehended sense-field than in the existence of a single sensum which is not intuitively apprehended. Hence "to be intuitively apprehended" and "to belong to a sense-field" *cannot* mean the same. (*b*) A visual sensum, a tactual sensum, and an auditory sensum may all be intuitively apprehended by the same person at the same time. They certainly do not all form parts of any one sense-field. Hence, to be intuitively apprehended by a certain person cannot be the same as to form part of a certain sense-field. Still, it is no doubt true that there is *some* relation between those sensa which would be said to be intuitively apprehended by the same person, which does not hold between sensa which would not be said to be intuitively apprehended by the same person. Might it not be suggested then that the theory is right in outline, though incorrect as originally stated? We may admit that "to be intuitively apprehended" is *not* the same as "to be united with certain other sensa so as to form with them a certain sense-field"; but might we not suggest that it *is* the same as "to be united with certain

other sensa by a certain relation R"? R might be a quite unique relation, incapable of further analysis or definition; but it would have to have the following properties. (1) It must be logically possible for a set of sensa which are not all parts of a single sense-field to be related to each other by the relation R. (2) R must be such that two sensa, each of which is related by R to *some* other sensa, need not be related by R to each other. For there are sensa which are intuitively apprehended by A and not by B, and there are sensa which are intuitively apprehended by B and not by A. The modified theory then comes to this. There is a certain relation R which binds certain sensa together into mutually exclusive groups. To be intuitively apprehended means to be a member of some group of sensa bound together by the relation R. Let us consider this theory in its modified form.

So long as the theory is content to regard the relation R as absolutely unique and peculiar I do not think that it can be positively refuted. The moment it attempts to identify R with some familiar relation, such as compresence in a sense-field or a direct relation of simultaneity, it is plainly false. It is obviously logically possible, *e.g.*, that a set of sensa should be directly simultaneous with each other and yet that none of them should be intuitively apprehended. But, although I cannot refute the theory so long as it is willing to take R as absolutely unique and peculiar, I think I can prove that it fails to account for a certain obvious fact so well as alternative theories, and that the motives which led to it are connected with an erroneous belief. This I will now try to show.

(*a*) If the theory be a complete account of the facts, the unity of a set of sensa which are all intuitively apprehended by a certain person is wholly a "unity of system" and not a "unity of centre". I shall have to consider these two types of unity in greater detail when I consider the unity of the Self. At present I will

content myself with saying that a family of brothers and sisters is an example of a unity of centre. The relations which they have to each other are due to the fact that they all stand in a common relation to something (viz., their parents) which is not itself a member of the set. The points on a straight line constitute a pure unity of system; they are just directly related to each other by the relation of "between", and this relation does not depend in any way on their all being related by some common relation to something which is not a member of the set. Now it is perfectly certain that we all believe, to start with, that the unity of a set of sensa which are all intuitively apprehended by the same person is a unity of *centre* and *not* a pure unity of system. That this is so is proved conclusively by language, and by the extreme air of paradox which the opposite view continues to present even when we admit that it is logically possible. It is certainly a fact then that, *if* the unity of a set of sensa intuitively apprehended by the same person be in fact a pure unity of system, it nevertheless *appears*, and goes on appearing, to be a unity of centre. This fact must be recognised and accounted for on any adequate theory of the subject. Now my objection to the theory under discussion is that it utterly fails to account for this appearance. We must remember that every unity of centre is *also* a unity of system. If x, y, and z all stand in a certain unique relation S to a certain term t there will be an unique, though derivative, relation between x, y, and z. For x will have to y the relation R of "being both of them terms which stand in the relation S to t". And, since S is unique, R will be unique. Thus it is quite possible that what is in fact a unity of centre might appear to be a pure unity of system, especially if the "centre" t were such that it is hard to detect and easy to overlook. But there is no reason whatever why what is in fact a pure unity of system should appear to be a unity of centre. Hence it seems to me that the theory

under discussion is quite incompetent to explain a most striking and perfectly indubitable fact. I should therefore consider it absurd to accept such a theory unless there were insuperable objections to the alternatives or great advantages in itself. These claims would be made for the present theory; but I believe that they have no justification, as I will now try to show.

(*b*) The objection which supporters of this theory make to the opposite view is that the latter involves a "Pure Ego" to be the "centre" which generates the unity. And it is supposed that a "Pure Ego" is so disreputable that no decent philosopher would allow such a thing in his mind if he could possibly help it. I shall have to deal with the alleged indecency of the Pure Ego in a later chapter; here I will merely say that the objection is quite irrelevant because there is no need whatever for the unifying centre to be a Pure Ego. It might be, and I believe is, a mass of bodily feeling. Of course, later on, questions must be raised about the "ownership" of this mass of feeling; and then we might find that the Pure Ego Theory explained the facts better than any other. But, so long as we are merely concerned with the intuitive apprehension of sensa, it is perfectly ridiculous to try to frighten us into the theory under discussion by threatening us with the Pure Ego as a kind of bogey which can be exorcised only by a course of "New Realism".

(*c*) I think that the advantage which is claimed for the theory is that it is "naturalistic". This, I think, means roughly that it claims to be able to deal with mind without introducing any new and unique entities or relations. I have already shown that the opposite theory has no immediate need of any very mysterious special entity, such as a Pure Ego. There should be nothing very trying, even to the most sensitively naturalistic mind, in a mass of bodily feeling. And I claim also to have shown that the theory cannot dispense with an unique kind of relation. If you identify the

relation R with any familiar relation it is perfectly obvious that "to be intuitively apprehended" does *not* mean "to be a member of a group of sensa interrelated by R". On the whole, then, it seems to me that there are grave objections to the theory under discussion and no advantages to outweigh them. I therefore reject it, and accept the common-sense view that when a visual, tactual, or auditory sensum is intuitively apprehended it stands in an unique kind of relation to something which is not an auditory, tactual, or visual sensum. And I believe this "something" to be the mass of general bodily feeling of the percipient at the time.

The quasi-Belief about the Sensum. I am inclined to think that the quasi-belief about the objective constituent, which is the fourth distinguishable feature in a perceptual situation, consists in the fact that certain *specific* bodily feelings (connected with the automatic adjustment of the body), certain emotions, and certain feelings of expectation, are related in an unique way to the apprehended sensum. These are causally dependent on the traces left by past experience. When a sensum of a specific kind is intuitively apprehended certain traces are excited; these arouse certain emotions and induce certain bodily adjustments which are accompanied by specific bodily feelings. They may in addition call up certain images; and, even if they do not do this, they may evoke a more or less vague feeling of "familiarity". These "mnemic consequences" of the apprehension of the sensum do not just coexist with it; they immediately enter into a specific kind of relation to it, which I do not know how to analyse further. And these "mnemic consequences" in this specific relation to this intuitively apprehended sensum constitute the quasi-belief about the sensum, which gives the situation its specific External Reference. Any situation constructed of such materials in such relations, *ipso facto*, has such and such an External Reference. This

is the best analysis that I can offer at present of the typical perceptual situation.

It raises one interesting question. Can there be pure sensation without perception? Let us see exactly what this means on our theory. A pure sensation would be a situation in which a certain sensum, *e.g.*, a noise or a coloured patch, was intuitively apprehended, but in which there was no external reference. Now, on our theory, we should expect perception to melt into pure sensation by insensible degrees; we should expect the latter to be an ideal limit rather than an observable fact; and we should expect it to be unstable and transitory, if it happens at all. If the mass of feeling be highly differentiated and certain specific parts of it be specifically related to a certain sensum, we shall have a clear case of a perceptual situation with a definite external reference. If, on the other hand, the mass of feeling be little differentiated, and the apprehension of the sensum fails to excite traces which cause specific modifications in the mass, we shall have a situation which approximates to pure sensation, since its external reference will be very vague. And the same result would happen, even if the mass of feeling were differentiated in the way suggested, provided that for some reason the differentiated parts failed to enter into the proper relation to the apprehended sensum. It seems to me that when we are looking at something with interest our awareness of the sensa towards the edge of the visual field approximates to pure sensation for the first reason. And, perhaps, when we are looking for something and discover afterwards that it was staring us in the face all the time, our awareness of the sensa connected with it approximates to pure sensation from the second cause.

The Categorial Factor in Sense-Perception. One more point remains to be raised. I have said that, when the quasi-belief which is an essential factor in all perceptual situations is formulated in abstract terms, it may be

summed up in certain propositions which I have stated and criticised. I rejected the fourth of these, and defended the first three by an inverse-probability argument. But, as a matter of psychology, I asserted that the belief in them was not in fact reached in this way. And, as a matter of logic, I asserted that the argument gives them a high final probability *only* if they start with a finite initial probability. Here then are certain propositions such that every one acts *as if* he believed them, and inevitably goes on acting as if he believed them, no matter what theoretical doubts he may feel about them while he is reflecting on them. It is certain that they do not appear self-evident on reflexion; that they cannot be deduced by self-evident steps from premises which are self-evident; and that they cannot be defended by probable reasoning except on the assumption that they have a finite initial probability. I call such a set of propositions a set of "Postulates". Between them they "define" a certain general concept, viz. the notion of a Physical Object. For a physical object just is something that answers to these postulates. A general concept which is defined in this way by a set of postulates such as I have been describing, I call a "Category". From the very nature of the case the notion of "Physical Object" cannot have been derived by abstraction from observed instances of it, as the notion of "red" no doubt has been. For the objective constituents of perceptual situations *are* not instances of this concept; and it is only in virtue of these postulates that we can hold that they are "parts of" or "manifestations of" instances of this concept. The concept is not "got out of" experience until it has been "put into" experience. It is best described as an innate principle of interpretation which we apply to the data of sense-perception. At the purely perceptual level "to apply the principle" simply means to act and to feel as it would be reasonable to act and feel if we explicitly recognised it and

interpreted the data of sense in accordance with it. It is only at the reflective level that we can state in abstract terms the implications of what we have all been doing all our lives.

Summary and Conclusions. In this chapter I have been concerned with two very difficult questions: "What may we believe about our own bodies and about the external world?" and "What is the mind really doing when it is said to be perceiving a material object?" On the first point I have reached the following tentative conclusions. (1) We may believe that there are relatively permanent objects which literally have shape, size, and position; which stand in literal spatial and temporal relations to each other; and which literally move about in Space. (2) We may believe that some of them are animated by minds; and that any one of them which is animated by a mind manifests itself to that mind in a peculiar way, viz., by organic sensations. Nothing manifests itself in this way except to the mind, if there be one, which animates it. (3) We may believe that physical objects, whether animated or not, manifest themselves in a variety of ways to minds which do not animate them. And we may believe that a single physical object may manifest itself at the same time in the same or in different ways to a number of minds animating bodies in various places. (4) We may believe that, by comparison of the objective constituents of various perceptual situations and by reflexion on their correlations, we can determine with high probability the shape, size, and position of the physical object which manifests itself in this situation. And with somewhat less certainty we can determine important facts about its microscopic structure and the movements of its microscopic parts. (5) We must believe that a physical object has other properties beside its purely spatio-temporal ones. It must have at least one quality which is capable of literally covering an

area or filling a volume; and it may have many such. (6) We may *not* believe that the objective constituents of perceptual situations are literally spatio-temporal parts of the physical objects which we are said to be perceiving in those situations; or that in general they have the same determi*nate* spatial characteristics as the sensa by which they manifest themselves. (7) We have no reason to believe that physical objects have the same determi*nable* sensible qualities as the sensa by which they manifest themselves. (8) We may *not* believe that the shape, size, spatial position, date, or sensible qualities of a sensum by which a certain physical object manifests itself are *directly* determined by this physical object or by processes in it. On the contrary the *independently* necessary and sufficient conditions of all these characteristics of the sensum are within the region occupied by the percipient's body. At best the external physical object and the processes in it are remote and *dependently* necessary conditions of the sensum and its characteristics. (9) We have, therefore, to recognise a peculiar kind of trans-physical causation, according to which the occurrence of certain events in a certain brain and nervous system determines the occurrence of a sensum with such and such a shape, size, position, and sensible quality, in a certain sense-field of a certain sense-history. (10) We have to admit that certain characteristics of certain sensa are probably not completely determined by physical and physiological events in the body of the percipient; but are in part determined, either directly or indirectly by events in the mind which animates this body.

On the second point I have reached the following tentative conclusions. (1) The perceptual situation contains two constituents, one objective and the other subjective. (2) The objective constituent is a sense-field with a certain outstanding sensum. (3) The subjective constituent is a mass of bodily feeling, together with certain specific emotions, muscular

sensations, feelings of familiarity, images, etc. (4) The latter are produced through the excitement of certain traces by the apprehension of the sensum. (5) The sensum is apprehended by entering into a certain specific relation with the general mass of bodily feeling. (6) The situation has a certain specific external reference in virtue of a certain specific relation between the apprehended sensum and its "mnemic consequences" in the way of feeling, etc. (7) It seems likely that pure sensation is an ideal limit, which is approached as the external reference grows vaguer and vaguer, rather than an observable fact. (8) The notion of Physical Object cannot have been abstracted from the data of sense. It is a Category, and is defined by Postulates.

CHAPTER V

Memory

THE word "memory" is highly ambiguous, even when it is not being used in admittedly paradoxical and uncommon senses, as when people talk of "racial" or "ancestral" memory. I call such uses of the word paradoxical because even those persons who hold that in performing an instinctive action we are "remembering" similar actions which were performed deliberately by our remote ancestors would have to admit that, in the ordinary sense of "remembering", we certainly do not remember the actions or thoughts of our ancestors. Even apart from these odd senses of "memory" it is quite certain that the word covers a number of very different acts. We talk of remembering a set of nonsense-syllables; of remembering a poem; of remembering a proposition in Euclid, though we have forgotten the words in which it was expressed when we originally learnt it; of remembering past events; and of remembering people, places, and things. To remember a set of nonsense-syllables is merely to have acquired the power of repeating them at will; and remembering, in this sense, seems to be no more an act of cognition than is the act of riding a bicycle or of swimming. To remember a proposition of Euclid is no doubt to perform a genuine act of cognition; and the same is true of remembering events, persons, and places. But the first kind of act has an abstract and timeless object; whilst the second has a concrete particular object which exists in time. Presumably then the memory of propositions is something quite different from the memory of mere sentences, on the one hand,