III. *By* C. D. Broad.

I will begin my contribution to this Symposium by making some comments on Mr. Macmurray's paper. In his first section he claims to prove that it is impossible that the world should merely endure without alteration. It must undergo real change. His argument for this conclusion is in two stages. He claims first to show that consciousness would be impossible unless there were real changes in the Subject. Consequently, if an unchanging world were possible at all, it would have to exclude consciousness altogether. He then claims to show that it is equally impossible that a world without consciousness, if it could exist at all, could exist without changing.

The first stage of the argument is that consciousness would be impossible without apprehension of differences, and that apprehension of differences would be impossible unless differentiation of attention were possible. And differentiation of attention, it is assumed, would be impossible unless the Subject could attend now to this and then to that, or could at one time attend more to this and at another time more to that. I see no reason to accept this argument. We must distinguish between *differentiation* and *fluctuation* of attention. Attention might surely be differentiated even if it never fluctuated. I might always attend to A and to B, and might always attend with a certain one intensity to A and with a certain other intensity to B. It is not clear to me that recognition of differences would need differentiation of attention, even in this sense. I see no reason why I should not clearly distinguish a green patch and a squeaky noise, even if they were the only objects of which I was aware, and if I attended equally and perpetually to both. But, even

if differentiation of attention were essential to recognition of difference, I cannot see why fluctuation of attention should be essential. And it is the necessity of *fluctuation* which Mr. Macmurray has to prove.

The second stage of the argument appears to be that in an unchanging world there could be no interaction, therefore no kind of determination, therefore no principle of differentiation; and therefore that such a world would be a mere non-entity. No doubt a world in which there was no differentiation would be a mere non-entity, as Hegel has taught us at infinite length. But I do not see that a world in which there was no principle of differentiation would necessarily be one in which there was no differentiation. *E.g.*, what is the objection to supposing that the world might have consisted of an unchanging blue circle for ever inside an unchanging red triangle? Such a world would be differentiated. But, so far as one can see, there would be no principle of differentiation, if this means an assignable reason why the circle should be blue and the triangle red and the former inside the latter. Again, even if determination of some kind were essential, why must it be causal determination? If causal determination be defined as the determination of one change by another change in accordance with a general law, it is of course, clear that there could not be causal determination in an unchanging world. But there seems no reason why there should not be laws of co-existence in such a world, as there are in the actual world; *e.g.*, laws analogous to the rule that the flowers of monocotyledonous plants have triadic symmetry. The only important difference in this respect between an unchanging world and one in which change can take place is an epistemic difference. In the actual world we try to discover which factors are, and which are not, relevant to the production of a given effect by repeating our experiments on successive occasions and varying the factors one by one on each occasion. Nothing analogous to

this would be possible in an unchanging world. Hence any alleged law of concomitance which an observer might formulate about such a world might well contain irrelevant factors. But this epistemic difference seems to have no bearing on Mr. Macmurray's argument.

I cannot then admit that Mr. Macmurray has given any valid reason for his belief that time involves change, if by "change" is meant change of things with respect to their non-temporal qualities and relations. Of course, it is possible that time involves change, in the sense of change of things or events in respect of their purely temporal qualities or relations. Even of a world which was unchanging in the first sense it might be said that it and all in it is continually "growing older," and thus changing in the second sense. And this might distinguish it from a world of timeless universals, such as Plato's Ideas. I shall return to this point later. But it seems clear that this is not what Mr. Macmurray has in mind when he asserts that time involves change.

The second section of Mr. Macmurray's paper is devoted to showing that certain kinds of alteration which have commonly been called "changes" would not be enough to constitute "real change." By noticing what kinds of alteration Mr. Macmurray refuses to count as "real changes," we find, so far as I can see, that a "real change" must have the following characteristics. (1) It must be a change of intrinsic quality, and not merely of relational property. This seems to be the only ground for refusing to count mere change of spatial position as real change. When a body moves, there quite clearly *is* a change in its *relations* —to other bodies, on the Relationist view, and to points of Absolute Space, on the Absolutist view. (2) A quality must be manifested which has never been manifested before. This seems to be the only ground for refusing to count cyclic processes as real changes. (3) The manifestation of the new quality must,

in some sense which I do not clearly understand, be rationally explicable from what has gone before. This seems to be the only ground for denying that the theory of Emergence, if true, would involve "real change."

This part of the paper seems to me to be purely verbal. I cannot detect any reason, either in the facts themselves or in Mr. Macmurray's paper, why a world could not have existed in which there was change only of those kinds which he refuses to call "real change." In a world which consisted simply of qualitatively unchanging particles altering their mutual spatial relations by impact or gravitational attraction, there would be differentiation, and there would be causal determination. That the world in which we live is not of this simple kind I readily admit. But what Mr. Macmurray needs to prove is, not that such a world is not actual, but that it is not possible. And this, so far as I can see, remains completely unproven.

It is now high time for me to cease criticizing, and to say something positive for myself about time and change. I will begin by asking what kinds of term are changeable, and what, if any, are changeless. And I will consider the different senses in which different kinds of changeable term can be said to change. There are three kinds of term to be dealt with, viz., universals, events, and things. It would commonly be said that universals are unchangeable; that events can change only in respect of their temporal characteristics, but that in this respect they constantly and necessarily change; and that things can, but need not, change in respect of their non-temporal qualities and relations, whilst they necessarily and constantly change in respect of certain temporal characteristics. *E.g.*, the number 2 is eternally even and between 3 and 4; the Battle of Hastings cannot change in any respect, except that of constantly receding into the more and more remote past, though it necessarily changes in that respect; whilst my table may or may not alter its

non-temporal qualities or relations within the next five minutes, but will necessarily be growing continually older.

Change of Universals.

Let us consider the three cases in turn. (1) It is certainly untrue that universals are unchangeable in *all* respects. There are two, and, so far as I can see, only two respects in which they can and often do change. (*a*) The first fundamental respect in which a universal can change is in its relation to cognitive beings. The number 2 is sometimes an object of Smith's mind and not of Brown's, sometimes an object of Brown's mind and not of Smith's, and sometimes perhaps an object of no mind. (*b*) The second fundamental respect in which a universal can change is in respect to the particulars which it qualifies or relates. The characteristic of *dodo*-hood once applied to many particulars, and it now applies to none. The characteristic of *fly*-hood applies to millions of particulars in England in summer, and to few or none in winter. I think we may say that no universal can change in any respect which is not or does not involve either of these two variable relations to particulars. If universals have any intrinsic qualities, then it is nonsense to suggest that they could change in respect of these. And it is nonsense to suggest that any universal could change in respect of any relation to another universal which did not involve one of these two relations to a particular. When I think of red and of green, there does, of course, subsist between these two universals, the relation of being both thought of together by me. And this relation may cease to hold in course of time. But it is a derivative relation, compounded of certain relations of these two universals to a certain particular. Whenever we consider a relation between universals which is not, in this sense, derivative, *e.g.*, the relation of between which 3 has to 2 and 4, we see clearly that it is unchangeable.

Occurrences among Particulars.

(2) I pass now to changes of particulars. And I will begin with those changes which do not consist simply in the receding of an event into the more and more distant past or in the growing older of a thing. The changes which I am now to consider I will call "occurrences." Now, *prima facie*, it seems necessary to recognize the possibility of two fundamentally different kinds of occurrence. These might be called respectively "alteration" and "generation-or-annihilation." (*a*) Alteration takes place when a pre-existing particular which has been characterized by a certain universal ceases to be characterized by it and becomes characterized by another universal. It also takes place when a pre-existing particular continues to be characterized by the same determinable universal, *e.g.*, colour, but ceases to be characterized by a certain determinate form of it, *e.g.*, redness, and begins to be characterized by another determinate form of it, *e.g.*, blueness. (*b*) Generation takes place when a particular which had not previously existed comes into existence. Annihilation takes place when a particular which had previously existed goes out of existence. I think we may assume that no particular could exist for an instant without having some quality or standing in some relation to other particulars. So generation as well as alteration would involve a change in some universal. In both cases a certain universal begins to characterize a certain particular which it did not characterize immediately before. In alteration, this particular existed before and was characterized by *some* universal, though not by *this* one. In generation this particular did not exist before, and therefore was not characterized by *any* universal.

Now it is natural that men should have tried to simplify matters by getting rid either of alteration or of generation-and-annihilation. I will now consider the main ways in which such attempts at simplification have been made. (*a*) Those who have

wished to get rid of generation and annihilation have made the fundamental particulars either to be timeless or else to endure throughout the whole of time. Theories of this type have taken two radically different forms, viz., a pluralistic and a monistic one. (i) According to the pluralistic form there is a number of independent fundamental particulars, each of which endures throughout the whole of time. These can enter into and go out of various relations with each other from time to time. The appearance of generation and annihilation is then explained as follows. At a certain time a number of the fundamental particulars enter into certain characteristic relations with each other. The complex whole thus formed persists for a time, either through the same fundamental particulars remaining in the same mutual relations, or through their being gradually replaced by others which enter into the same relations with those that remain. In this way we have the appearance of generation, although really there is nothing but alteration. It is only complex particulars which are "generated" or "annihilated," and their "generation" or "annihilation" is really only an alteration in the relations of the fundamental particulars.

(ii) According to the monistic form of the theory there is a single fundamental timeless particular, viz., Absolute Space, in the substantival Newtonian sense. Finite particulars are simply finite regions of this Space. It follows at once, not only that no particular can begin or cease to exist, but also that no finite particular can change its spatial relations to any other. Consequently, on this form of the theory, no particular can move; whereas, on the first form of the theory, finite particulars can and do move. What is called "motion" is now just the successive pervasion of a continuous series of geometrically similar regions, either by the same determinate quality or by a continuous series of different determinate values of a single determinable quality. What is called "generation" would consist

in the fact that a certain region, which had not been pervaded by any quality, now begins to be pervaded by some quality, whilst it is bounded on all sides by a region which continues to be unpervaded by any quality.

I will criticize these attempts to dispense with generation before stating the alternative type of theory which attempts to dispense with alteration. In the first place, I see no *a priori* objection to the notion of timeless particulars or of particulars which endure throughout the whole of time. On the other hand, I cannot see directly that the fundamental particulars *must* be incapable of generation and annihilation. As between the pluralistic and the monistic forms of the present theory I definitely prefer the former. I do not know of any objection to the pluralistic form which does not apply equally to the monistic form. And there seem to be two objections to the monistic form which do not apply to the pluralistic one. First, even if we confine ourselves to physical things and events, the assumption of Absolute Space, in the substantival Newtonian sense, is much less plausible than the Relational Theory or the adjectival form of the Absolute Theory. It is surely an assumption to be avoided unless we are positively forced to make it. Secondly, we cannot of course confine ourselves to physical things and events, since the actual world obviously contains things and events which, whether they be physical or not, are certainly also mental. Now I do not see how the monistic form of the theory can deal with mental things and events at all. I cannot attach any meaning to the statement that a mental event consists of the pervasion of a certain region of Absolute Space by a certain mental quality throughout a certain period.

It might perhaps be objected that the pluralistic form of the theory involves the view that every mind persists throughout the whole of time, and that this is as serious a liability as the doctrine of Absolute Space which burdens the monistic form.

This objection, however, rests on the tacit identification of each mind that we know with one of the fundamental particulars of the theory. Now there is no need for this identification. All the minds that we know may be very complex wholes composed of certain fundamental particulars, suitably interrelated. If so, it is no more necessary that each mind should last throughout the whole of time than that each body should do so.

(*b*) We can now consider the type of theory which tries to dispense altogether with alteration and to manage with nothing but generation and annihilation. On this view the fundamental kind of occurrence is the generation of particulars which did not previously exist, and their subsequent annihilation. Each particular is generated with some determinate quality and in some determinate relation to other particulars which already exist. If there is to be no alteration, each particular, once generated, must continue to be characterized by precisely the same determinate form of the same determinable quality until it is annihilated. Could we allow a particular to change in respect of its relational properties during its existence? I think the theory could allow this in one sense but not in another. We could allow a particular to lose a relational property through the annihilation of another particular during its existence, and we could allow it to gain a relational property through the generation of another particular during its existence. But we could not allow it to alter any of its relations to any already existing particular; for this would be mere alteration, which the present theory seeks to avoid.

On this type of theory, as on the monistic form of the first type of theory, no particular ever literally moves. What is called "motion" will be the generation and annihilation of a series of successive particulars, identical with or similar to each other in their non-positional characteristics, and forming a series in respect of their positional characteristics. How will the theory deal with cases of apparent alteration? Instead of saying that a certain

particular x was characterized by q_1 up to a certain moment and by q_2 after that moment, it will have to deal with the situation as follows. It will say that at a certain moment a particular x_1, characterized by q_1, was annihilated, and at the same moment another particular x_2, characterized by q_2 and having certain specific kinds of resemblance to x_1, was generated.

Is there any conclusive objection to such a theory as this? I cannot at present see that there is. It is true that I find it easier to think of the alteration of pre-existing particulars in respect of their qualities and relations than to think of the generation and annihilation of particulars complete with qualities and relations which cannot alter in the course of their history. But this may be merely through the former notion being more familiar to me than the latter. There is indeed one difficulty which strikes me at first sight. If there be genuinely continuous change either of position or of any non-positional quality, there will, on the present theory, have to be literally instantaneous particulars. Now the notion of an existent which has temporal postion but no duration produces on me the same impression of artificiality as the notion of Absolute Space in the substantival Newtonian sense. Possibly this is a mere prejudice. But, even if it be not so, I doubt if the above objection is really fatal. For it does not seem necessary to admit that there really is continuous change. It is plain that there could never be conclusive empirical evidence for it, since we know that discontinuous change, if quick enough, presents the appearance of sensible continuity. And I do not know of any argument by which it could be proved that there must be continuous changes.

I may sum up this part of my paper as follows. Among possible occurrences we can in theory distinguish between the generation or annihilation of particulars and the qualitative alteration of pre-existing particulars. It may be that there really are both kinds of occurrence. But it seems possible to

save all the appearances by supposing either that all occurrences are of the first kind, or that they are all of the second kind. On the first supposition every ultimate particular is an Occurrent, which has been generated and will be annihilated, but which cannot alter any of its qualities, and can alter its relational properties only in a certain very restricted sense which has been explained above. On the second supposition every ultimate particular is a Continuant, which can never be generated or annihilated in the course of time, but which can alter its qualities and its relational properties from time to time. A variant of the second supposition, which would make every ultimate particular to be a region of Absolute Space, was rejected as being incompatible with the existence of mental things and events.

Changes of Temporal Characteristics.

(3) I pass now to those changes of particulars which are not occurrences. These are of two kinds. There is the change of an event from being future, through being present, to being past, and its gradual retreat into the more and more remote past. And there is the steady ageing of things which already exist and go on existing. This is the part of the problem with which Mr. Braithwaite's paper is mainly concerned, and I must now say something about his views.

I agree with him that we know by acquaintance, in favourable cases, the relations of simultaneity and succession, and that we can see by direct inspection that the latter relation is asymmetrical. In this connexion Mr. Braithwaite says a good deal about the specious present. I am not sure of its precise relevance, and I will therefore state very briefly what I think about it.

In the first place I do not understand Mr. Braithwaite's definition of a "momentary total experience." But the essential point in the doctrine of the specious present may, I think, be stated as follows. There is a certain characteristic which an object may

have at certain times. This may be called the characteristic of "being sensuously presented." This characteristic has various determinate forms which may be called "degrees of vividness." The facts about the finite duration of the specious present may now be stated in the two following correlative propositions. (*a*) A momentary event, occurring at a time *t*, can be sensuously presented throughout the whole course of an experience which begins at *t* and lasts for a time T. It is presented with steadily decreasing vividness in each successive later slice of this experience. (*b*) In a momentary experience, occurring at a time *t*, the whole course of an event which ends at *t* and began at *t*—T can be sensuously presented. Each successive earlier slice of this event is presented with less vividness in the momentary experience. I have no doubt that, by a little manipulation of the kind which Whitehead has made familiar, we could get rid of the notions of momentary events and momentary experiences in these two statements.

Now, supposing that this, or something like it, is what is meant by the doctrine of the specious present, what bearing has it on our present problem? I think it is introduced by Mr. Braithwaite primarily in order to show how we can be directly acquainted with the relation of before and after. I am not sure that it is essential even for this purpose. Provided we were directly acquainted at the same moment with events which stood in the relation of before and after it would not matter whether the earlier events were *sensuously* presented to us or not. *E.g.*, if memory were direct acquaintance with past events, it would suffice to make us acquainted with the relation of before and after in spite of the fact that remembered events are not *sensuously* presented.

I do not think that the finite duration of the specious present has any other bearing on the questions which we are discussing. In particular, I do not think that Mr. Braithwaite's solution of the difficulties which McTaggart raised about past, present,

and future depends at all on the finite duration of the specious present. The essence of Mr. Braithwaite's solution, stated in its simplest terms, seems to be as follows. Suppose I look out of the window, and say: "It is now raining." I intend to convey that rain is falling simultaneously with this statement that it is doing so. If I made a verbally similar statement on another occasion, I should intend to convey that rain was falling simultaneously with *that* statement. The second statement is another particular different from the first, though of the same form. Each statement is an object of direct acquaintance to me and to my hearer when it is made, and so in practice there is no ambiguity. I accept this type of solution of the difficulty which McTaggart raised.

But there is a positive as well as a negative side to McTaggart's doctrine of time. The positive part of his doctrine may be stated in two propositions. (*a*) The notions of past, present, and future are essential to time and are not analysable into other notions. (*b*) The notion of before and after involves the notion of past, present, and future. It is evident that either or both of these propositions might be true, even if the negative doctrine that every event would have to be past, present, and future, and that this would involve a contradiction, were rejected. Now, it does not seem to me that Mr. Braithwaite's solution of McTaggart's difficulty refutes the positive side of McTaggart's doctrine. If I say that it is now raining, I mean that rain is occurring simultaneously with my *present* statement. This statement is marked off from all other statements that I may make of the same form, simply because it is present, whilst they are past or future. Mr. Braithwaite's appeal from "now" to "this" does not help us. Certainly, "this" has the same kind of systematic ambiguity as "now." But by "this" I mean "what I am *now* perceiving or thinking about or referring to," and so "this" cannot properly be used to explain "now."

I feel in my bones that Mr. Braithwaite's theory of past, present, and future misses out something that is essential. And yet I must confess that I cannot state clearly to my own satisfaction exactly what it lacks. But, at the risk of talking nonsense, I will say this. Granted that there is a certain series of mental events which can be called "my experiences," then it seems to me that at any moment there is one of these which has a certain characteristic which some of them "have had and no longer have" and which the rest of them "will have but have not yet had." And I do not see how this can be accounted for, as I understand Mr. Braithwaite claims to do, by the unchanging relations between two series of unchanging events, one subjective and the other objective.

It still seems to me that, in spite of the difficulties that have been alleged against it, the view that new events literally "come into existence" and add themselves on to those which already exist is the one that does most justice to the facts. On this view, the present is the last slice that has been added to the sum-total of the existent; the past is what once had no successors, but now has successors owing to the sum-total of existence having increased by further becoming; and the future does not exist at all. I stated this doctrine in a rather confused manner in my *Scientific Thought*, introducing it as a way of avoiding McTaggart's difficulties. I am now by no means certain that it is either necessary or sufficient for the purpose of avoiding these difficulties. But I still wish to put it forward on its own merits; and I think that I could answer the objections which McTaggart has made to it in Vol. II of his *Nature of Existence*, though I have no doubt that he has pointed out real defects in my account of the theory. But this is neither the time nor the place to go into these matters.
