7. *Time Is Not Real*

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John McTaggart (1866–1925) was a British philosopher who defended a variety of metaphysical idealism (that is, he believed reality consisted of minds and their contents). Like many turn-of-the-century philosophers, he was influenced by Hegel's idealism. McTaggart argued that space, time, and material objects, as we ordinarily conceive them, are not real. He believed they are misperceptions of spiritual entities. Though McTaggart's idealism has had few followers, his argument against the reality of time has been widely studied. He distinguishes two ways to think about time: we can view time either as a series of pasts, presents, and futures (what he calls the "*A* series") or as a series of events standing in earlier-than or later-than relations (the "*B* series"). McTaggart claimed that the *B* series does not capture the essence of time, namely, change. So for time to be real (for there to be real change), the *A* series must be real. Then McTaggart argues that time cannot be real because the *A* series leads to logical difficulties. McTaggart's position is doubly challenging. If one believes time is real and the distinction between the past, present, and future is the essence of time, then one should try to rescue the *A* series from the logical problems McTaggart claims to find. If, on the other hand, one believes time is real and adequately represented by earlier-later relations, then one must defend the *B* series from McTaggart's charge that it pictures a universe devoid of real change.

It will be convenient to begin our enquiry by asking whether anything existent can possess the characteristic of being in time. I shall endeavour to prove that it cannot.

It seems highly paradoxical to assert that time is unreal, and that all statements which involve its reality are erroneous. Such an assertion involves a departure from the natural position of mankind which is far greater than that involved in the assertion of the unreality of space or the unreality of matter. For in each man's experience there is a part—his own states as known to him by introspection—which does not even appear to be spatial or material. But we have no experience which does not appear to be temporal. Even our judgments that time is unreal appear to be themselves in time.

Yet in all ages and in all parts of the world the belief in the unreality of time has shown itself to be singularly persistent. In the philosophy and religion of the West—and still more, I suppose, in the philosophy and religion of the East—we find that the doctrine of the unreality of time continually recurs. Neither philosophy nor religion ever hold themselves apart from mysticism for any long period, and almost all mysticism denies the reality of time. In philosophy, time is treated as unreal by Spinoza, by Kant, and by Hegel. Among more modern thinkers, the same view is taken by Mr Bradley. Such a concurrence of opinion is highly significant, and is not the less significant because the doctrine takes such different forms, and is supported by such different arguments.

I believe that nothing that exists can be temporal, and that therefore time is unreal. But I believe it for reasons which are not put forward by any of the philosophers I have just mentioned.

Positions in time, as time appears to us *prima facie*, are distinguished in two ways. Each position

is Earlier than some and Later than some of the other positions. To constitute such a series there is required a transitive asymmetrical relation, and a collection of terms such that, of any two of them, either the first is in this relation to the second, or the second is in this relation to the first. We may take here either the relation of "earlier than" or the relation of "later than," both of which, of course, are transitive and asymmetrical. If we take the first, then the terms have to be such that, of any two of them, either the first is earlier than the second, or the second is earlier than the first.

In the second place, each position is either Past, Present, or Future. The distinctions of the former class are permanent, while those of the latter are not. If *M* is ever earlier than *N*, it is always earlier. But an event, which is now present, was future, and will be past.

Since distinctions of the first class are permanent, it might be thought that they were more objective, and more essential to the nature of time, than those of the second class. I believe, however, that this would be a mistake, and that the distinction of past, present, and future is as *essential* to time as the distinction of earlier and later, while in a certain sense it may, as we shall see, be regarded as more *fundamental* than the distinction of earlier and later. And it is because the distinctions of past, present, and future seem to me to be essential for time, that I regard time as unreal.

For the sake of brevity I shall give the name of the *A* series to that series of positions which runs from the far past through the near past to the present, and then from the present through the near future to the far future, or conversely. The series of positions which runs from earlier to later, or conversely, I shall call the *B* series. The contents of any position in time form an event. The varied simultaneous contents of a single position are, of course, a plurality of events. But, like any other substance, they form a group, and this group is a compound substance. And a compound substance consisting of simultaneous events may properly be spoken of as itself an event.[1]

The first question which we must consider is whether it is essential to the reality of time that its events should form an *A* series as well as a *B* series. It is clear, to begin with, that, in present experience, we never *observe* events in time except as forming both these series. We perceive events in time as being present, and those are the only events which we actually perceive. And all other events which, by memory or by inference, we believe to be real, we regard as present, past, or future. Thus the events of time as observed by us form an *A* series.

It might be said, however, that this is merely subjective. It might be the case that the distinction of positions in time into past, present, and future, is only a constant illusion of our minds, and that the real nature of time contains only the distinctions of the *B* series—the distinctions of earlier and later. In that case we should not perceive time as it really is, though we might be able to *think* of it as it really is.

This is not a very common view, but it requires careful consideration. I believe it to be untenable, because, as I said above, it seems to me that the *A* series is essential to the nature of time, and that any difficulty in the way of regarding the *A* series as real is equally a difficulty in the way of regarding time as real.

It would, I suppose, be universally admitted that time involves change. In ordinary language, indeed, we say that something can remain unchanged through time. But there could be no time if nothing changed. And if anything changes, then all other things change with it. For its change must change some of their relations to it, and so their relational qualities. The fall of a sand-castle on the English coast changes the nature of the Great Pyramid.

If, then, a *B* series without an *A* series can constitute time, change must be possible without an *A* series. Let us suppose that the distinctions of past, present, and future do not apply to reality. In that case, can change apply to reality?

What, on this supposition, could it be that changes? Can we say that, in a time which formed a *B* series but not an *A* series, the change consisted in the fact that the event ceased to be an event, while another event began to be an event? If this were the case, we should certainly have got a change.

But this is impossible. If *N* is ever earlier than *O* and later than *M*, it will always be, and has always been, earlier than *O* and later than *M*, since the relations of earlier and later are permanent. *N* will thus always be in a *B* series. And as, by our present hypothesis, a *B* series by itself constitutes time, *N* will always have a position in a time-series, and always has had one. That is, it always has been an event, and always will be one, and cannot begin or cease to be an event.

Or shall we say that one event M merges itself into another event N, while still preserving a certain identity by means of an unchanged element, so that it can be said, not merely that M has ceased and N begun, but that it is M which has become N? Still the same difficulty recurs. M and N may have a common element, but they are not the same event, or there would be no change. If, therefore, M changed into N at a certain moment, then at that moment, M would have ceased to be M, and N would have begun to be N. This involves that, at that moment, M would have ceased to be an event, and N would have begun to be an event. And we saw, in the last paragraph, that, on our present hypothesis, this is impossible.

Nor can such change be looked for in the different moments of absolute time, even if such moments should exist. For the same argument will apply here. Each such moment will have its own place in the B series, since each would be earlier or later than each of the others. And, as the B series depends on permanent relations, no moment could ever cease to be, nor could it become another moment.

Change, then, cannot arise from an event ceasing to be an event, nor from one event changing into another. In what other way can it arise? If the characteristics of an event change, then there is certainly change. But what characteristics of an event can change? It seems to me that there is only one class of such characteristics. And that class consists of the determinations of the event in question by the terms of the A series.

Take any event—the death of Queen Anne, for example—and consider what changes can take place in its characteristics. That it is a death, that it is the death of Anne Stuart, that it has such causes, that it has such effects—every characteristic of this sort never changes. "Before the stars saw one another plain," the event in question was the death of a Queen. At the last moment of time—if time has a last moment—it will still be the death of a Queen. And in every respect but one, it is equally devoid of change. But in one respect it does change. It was once an event in the far future. It became every moment an event in the nearer future. At last it was present. Then it became past, and will always remain past, though every moment it becomes further and further past.[2]

Such characteristics as these are the only characteristics which can change. And, therefore, if there is any change, it must be looked for in the A series, and in the A series alone. If there is no real A series, there is no real change. The B series, therefore, is not by itself sufficient to constitute time, since time involves change.

The B series, however, cannot exist except as temporal, since earlier and later, which are the relations which connect its terms, are clearly time-relations. So it follows that there can be no B series when there is no A series, since without an A series there is no time.

We must now consider three objections which have been made to this position. The first is involved in the view of time which has been taken by Mr Russell, according to which past, present, and future do not belong to time *per se*, but only in relation to a knowing subject. An assertion that N is present means that it is simultaneous with that assertion, an assertion that it is past or future means that it is earlier or later than that assertion. Thus it is only past, present, or future, in relation to some assertion. If there were no consciousness, there would be events which were earlier and later than others, but nothing would be in any sense past, present, or future. And if there were events earlier than any consciousness, those events would never be future or present, though they could be past.

If N were ever present, past, or future in relation to some assertion V, it would always be so, since whatever is ever simultaneous to, earlier than, or later than, V, will always be so. What, then, is change? We find Mr Russell's views on this subject in his *Principles of Mathematics*. "Change is the difference, in respect of truth or falsehood, between a proposition concerning an entity and the time T, and a proposition concerning the same entity and the time T', provided that these propositions differ only by the fact that T occurs in the one where T' occurs in the other." That is to say, there is change, on Mr Russell's view, if the proposition "at the time T my poker is hot" is true, and the proposition "at the time T' my poker is hot" is false.

I am unable to agree with Mr Russell. I should, indeed, admit that, when two such propositions were respectively true and false, there would be change. But then I maintain that there can be no time without an A series. If, with Mr Russell, we reject the A series, it seems to me that change goes with it, and that therefore time, for which change is essential, goes too. In other words, if the A series is rejected, no proposition of the type "at the time T

my poker is hot" can ever be true, because there would be no time.

It will be noticed that Mr Russell looks for change, not in the events in the time-series, but in the entity to which those events happen, or of which they are states. If my poker, for example, is hot on a particular Monday, and never before or since, the event of the poker being hot does not change. But the poker changes, because there is a time when this event is happening to it, and a time when it is not happening to it.

But this makes no change in the qualities of the poker. It is always a quality of that poker that it is one which is hot on that particular Monday. And it is always a quality of that poker that it is one which is not hot at any other time. Both these qualities are true of it at any time—the time when it is hot and the time when it is cold. And therefore it seems to be erroneous to say that there is any change in the poker. The fact that it is hot at one point in a series and cold at other points cannot give change, if neither of these facts change—and neither of them does. Nor does any other fact about the poker change, unless its presentness, pastness, or futurity change.

Let us consider the case of another sort of series. The meridian of Greenwich passes through a series of degrees of latitude. And we can find two points in this series, S and S', such that the proposition "at S the meridian of Greenwich is within the United Kingdom" is true, while the proposition "at S' the meridian of Greenwich is within the United Kingdom" is false. But no one would say that this gave us change. Why should we say so in the case of the other series?

Of course there is a satisfactory answer to this question if we are correct in speaking of the other series as a time-series. For where there is time, there is change. But then the whole question is whether it is a time-series. My contention is that if we remove the *A* series from the *prima facie* nature of time, we are left with a series which is not temporal, and which allows change no more than the series of latitudes does.

If, as I have maintained, there can be no change unless facts change, then there can be no change without an *A* series. For, as we saw with the death of Queen Anne, and also in the case of the poker, no fact about anything can change, unless it is a fact about its place in the *A* series. Whatever other qualities it has, it has always. But that which is future will not always be future, and that which was past was not always past.

It follows from what we have said that there can be no change unless some propositions are sometimes true and sometimes false. This is the case of propositions which deal with the place of anything in the *A* series—"the battle of Waterloo is in the past," "it is now raining." But it is not the case with any other propositions.

Mr Russell holds that such propositions are ambiguous, and that to make them definite we must substitute propositions which are always true or always false—"the battle of Waterloo is earlier than this judgment," "the fall of rain is simultaneous with this judgment." If he is right, all judgments are either always true, or always false. Then, I maintain, no facts change. And then, I maintain, there is no change at all.

I hold, as Mr Russell does, that there is no *A* series. (My reasons for this will be given below.) And, as I shall explain, I regard the reality lying behind the appearance of the *A* series in a manner not completely unlike that which Mr Russell has adopted. The difference between us is that he thinks that, when the *A* series is rejected, change, time, and the *B* series can still be kept, while I maintain that its rejection involves the rejection of change, and, consequently, of time, and of the *B* series.

The second objection rests on the possibility of nonexistent time-series—such, for example, as the adventures of Don Quixote. This series, it is said, does not form part of the *A* series. I cannot at this moment judge it to be either past, present, or future. Indeed, I know that it is none of the three. Yet, it is said, it is certainly a *B* series. The adventure of the galley-slaves, for example, is later than the adventure of the windmills. And a *B* series involves time. The conclusion drawn is that an *A* series is not essential to time.

I should reply to this objection as follows. Time only belongs to the existent. If any reality is in time, that involves that the reality in question exists. This, I think, would be universally admitted. It may be questioned whether all of what exists is in time, or even whether anything really existent is in time, but it would not be denied that, if anything is in time, it must exist.

Now what is existent in the adventures of Don Quixote? Nothing. For the story is imaginary. The states of Cervantes' mind when he invented the

story, the states of my mind when I think of the story—these exist. But then these form part of an *A* series. Cervantes' invention of the story is in the past. My thought of the story is in the past, the present, and—I trust—the future.

But the adventures of Don Quixote may be believed by a child to be historical. And in reading them I may, by an effort of my imagination, contemplate them as if they really happened. In this case, the adventures are believed to be existent, or are contemplated as existent. But then they are believed to be in the *A* series, or are contemplated as being in the *A* series. The child who believes them to be historical will believe that they happened in the past. If I contemplate them as existent, I shall contemplate them as happening in the past. In the same way, if I believed the events described in Jefferies' *After London* to exist, or contemplated them as existent, I should believe them to exist in the future, or contemplate them as existing in the future. Whether we place the object of our belief or of our contemplation in the present, the past, or the future, will depend upon the characteristics of that object. But somewhere in the *A* series it will be placed.

Thus the answer to the objection is that, just as far as a thing is in time, it is in the *A* series. If it is really in time, it is really in the *A* series. If it is believed to be in time, it is believed to be in the *A* series. If it is contemplated as being in time, it is contemplated as being in the *A* series.

The third objection is based on the possibility that, if time were real at all, there might be in reality several real and independent time-series. The objection, if I understand it rightly, is that every time-series would be real, while the distinctions of past, present, and future would only have a meaning within each series, and would not, therefore, be taken as absolutely real. There would be, for example, many presents. Now, of course, many points of time can be present. In each time-series many points are present, but they must be present successively. And the presents of the different time-series would not be successive, since they are not in the same time.[3] And different presents, it would be said, cannot be real unless they are successive. So the different time-series, which are real, must be able to exist independently of the distinction between past, present, and future.

I cannot, however, regard this objection as valid. No doubt in such a case, no present would be *the* present—it would only be the present of a certain aspect of the universe. But then no time would be *the* time—it would only be the time of a certain aspect of the universe. It would be a real time-series, but I do not see that the present would be less real than the time.

I am not, of course, maintaining that there is no difficulty in the existence of several distinct *A* series. [Later] I shall endeavour to show that the existence of *any A* series is impossible. What I assert here is that, if there could be an *A* series at all, and if there were any reason to suppose that there were several distinct *B* series, there would be no additional difficulty in supposing that there should be a distinct *A* series for each *B* series.

We conclude, then, that the distinctions of past, present, and future are essential to time, and that, if the distinctions are never true of reality, then no reality is in time. This view, whether true or false, has nothing surprising in it. It was pointed out above that we always perceive time as having these distinctions. And it has generally been held that their connection with time is a real characteristic of time, and not an illusion due to the way in which we perceive it. Most philosophers, whether they did or did not believe time to be true of reality, have regarded the distinctions of the *A* series as essential to time.

When the opposite view has been maintained it has generally been, I believe, because it was held (rightly, as I shall try to show) that the distinctions of past, present, and future cannot be true of reality, and that consequently, if the reality of time is to be saved, the distinction in question must be shown to be unessential to time. The presumption, it was held, was for the reality of time, and this would give us a reason for rejecting the *A* series as unessential to time. But, of course, this could only give a presumption. If the analysis of the nature of time has shown that, by removing the *A* series, time is destroyed, this line of argument is no longer open.

I now pass to the second part of my task. Having, as it seems to me, succeeded in proving that there can be no time without an *A* series, it remains to prove that an *A* series cannot exist, and that therefore time cannot exist. This would involve that time is not real at all, since it is admitted that the only way in which time can be real is by existing.

Past, present, and future are characteristics

which we ascribe to events, and also to moments of time, if these are taken as separate realities. What do we mean by past, present, and future? In the first place, are they relations or qualities? It seems quite clear to me that they are not qualities but relations, though, of course, like other relations, they will generate relational qualities in each of their terms.[4] But even if this view should be wrong, and they should in reality be qualities and not relations, it will not affect the result which we shall reach. For the reasons for rejecting the reality of past, present, and future, which we are about to consider, would apply to qualities as much as to relations.

If, then, anything is to be rightly called past, present, or future, it must be because it is in relation to something else. And this something else to which it is in relation must be something outside the time-series. For the relations of the *A* series are changing relations, and no relations which are exclusively between members of the time-series can ever change. Two events are exactly in the same places in the time-series, relatively to one another, a million years before they take place, while each of them is taking place, and when they are a million years in the past. The same is true of the relation of moments to one another, if moments are taken as separate realities. And the same would be true of the relations of events to moments. The changing relation must be to something which is not in the time-series.

Past, present, and future, then, are relations in which events stand to something outside the time-series. Are these relations simple, or can they be defined? I think that they are clearly simple and indefinable. But, on the other hand, I do not think that they are isolated and independent. It does not seem that we can know, for example, the meaning of pastness, if we do not know the meaning of presentness or of futurity.

We must begin with the *A* series, rather than with past, present, and future, as separate terms. And we must say that a series is an *A* series when each of its terms has, to an entity *X* outside the series, one, and only one, of three indefinable relations, pastness, presentness, and futurity, which are such that all the terms which have the relation of presentness to *X* fall between all the terms which have the relation of pastness to *X*, on the one hand, and all the terms which have the relation of futurity to *X*, on the other hand.

We have come to the conclusion that an *A* series depends on relations to a term outside the *A* series. This term, then, could not itself be in time, and yet must be such that different relations to it determine the other terms of those relations, as being past, present, or future. To find such a term would not be easy, and yet such a term must be found, if the *A* series is to be real. But there is a more positive difficulty in the way of the reality of the *A* series.

Past, present, and future are incompatible determinations. Every event must be one or the other, but no event can be more than one. If I say that any event is past, that implies that it is neither present nor future, and so with the others. And this exclusiveness is essential to change, and therefore to time. For the only change we can get is from future to present, and from present to past.

The characteristics, therefore, are incompatible. But every event has them all.[5] If *M* is past, it has been present and future. If it is future, it will be present and past. If it is present, it has been future and will be past. Thus all the three characteristics belong to each event. How is this consistent with their being incompatible?

It may seem that this can easily be explained. Indeed, it has been impossible to state the difficulty without almost giving the explanation, since our language has verb-forms for the past, present, and future, but no form that is common to all three. It is never true, the answer will run, that *M is* present, past, and future. It *is* present, *will be* past, and *has been* future. Or it *is* past, and *has been* future and present, or again *is* future, and *will be* present and past. The characteristics are only incompatible when they are simultaneous, and there is no contradiction to this in the fact that each term has all of them successively.

But what is meant by "has been" and "will be"? And what is meant by "is," when, as here, it is used with a temporal meaning, and not simply for prediction? When we say that *X* has been *Y*, we are asserting *X* to be *Y* at a moment of past time. When we say that *X* will be *Y*, we are asserting *X* to be *Y* at a moment of future time. When we say that *X* is *Y* (in the temporal sense of "is"), we are asserting *X* to be *Y* at a moment of present time.

Thus our first statement about *M*—that it is present, will be past, and has been future—means that *M* is present at a moment of present time, past at some moment of future time, and future at some moment of past time. But every moment, like every event, is both past, present, and future. And so a

similar difficulty arises. If *M* is present, there is no moment of past time at which it is past. But the moments of future time, in which it is past, are equally moments of past time, in which it cannot be past. Again, that *M* is future and will be present and past means that *M* is future at a moment of present time, and present and past at different moments of future time. In that case it cannot be present or past at any moments of past time. But all the moments of future time, in which *M* will be present or past, are equally moments of past time.

And thus again we get a contradiction, since the moments at which *M* has any one of the three determinations of the *A* series are also moments at which it cannot have that determination. If we try to avoid this by saying of these moments what had been previously said of *M* itself—that some moment, for example, is future, and will be present and past—then "is" and "will be" have the same meaning as before. Our statement, then, means that the moment in question is future at a present moment, and will be present and past at different moments of future time. This, of course, is the same difficulty over again. And so on infinitely.

Such an infinity is vicious. The attribution of the characteristics past, present, and future to the terms of any series leads to a contradiction, unless it is specified that they have them successively. This means, as we have seen, that they have them in relation to terms specified as past, present, and future. These again, to avoid a like contradiction, must in turn be specified as past, present, and future. And, since this continues infinitely, the first set of terms never escapes from contradiction at all.[6]

The contradiction, it will be seen, would arise in the same way supposing that pastness, presentness, and futurity were original qualities, and not, as we have decided that they are, relations. For it would still be the case that they were characteristics which were incompatible with one another, and that whichever had one of them would also have the other. And it is from this that the contradiction arises.

The reality of the *A* series, then, leads to a contradiction, and must be rejected. And, since we have seen that change and time require the *A* series, the reality of change and time must be rejected. And so must the reality of the *B* series, since that requires time. Nothing is really present, past, or future. Nothing is really earlier or later than anything else or temporally simultaneous with it. Nothing really changes. And nothing is really in time. Whenever we perceive anything in time—which is the only way in which, in our present experience, we do perceive things—we are perceiving it more or less as it really is not.[7]

Dr Broad, in his admirable book *Scientific Thought*, has put forward a theory of time which he maintains would remove the difficulties which have led me to treat time as unreal.[8] It is difficult to do justice to so elaborate and careful a theory by means of extracts. I think, however, that the following passages will give a fair idea of Dr Broad's position. His theory, he tells us, "accepts the reality of the present and the past, but holds that the future is simply nothing at all. Nothing has happened to the present by becoming past except that fresh slices of existence have been added to the total history of the world. The past is thus as real as the present. On the other hand, the essence of a present event is, not that it precedes future events, but that there is quite literally *nothing* to which it has the relation of precedence. The sum total of existence is always increasing, and it is this which gives the time-series a sense as well as an order. A moment *t* is later than a moment *t'* if the sum total of existence at *t* includes the sum total of existence at *t'* together with something more."

Again, he says that "judgments which profess to be about the future do not refer to any fact, whether positive or negative, at the time when they are made. They are therefore at that time neither true nor false. They will become true or false when there is a fact for them to refer to; and after this they will remain true or false, as the case may be, for ever and ever. If you choose to define the word *judgment* in such a way that nothing is to be called a judgment unless it be either true or false, you must not, of course, count judgments that profess to be about the future as judgments. If you accept the latter, you must say that the Law of Excluded Middle does not apply to all judgments. If you reject them, you may say that the Law of Excluded Middle applies to all genuine judgments; but you must add that judgments which profess to be about the future are not genuine judgments when they are made, but merely enjoy a courtesy title by anticipation, like the elder sons of the higher nobility during the lifetime of their fathers." "I do not think that the laws of logic have anything to say against this kind of change; and, if they have, so much the worse for the laws of logic, for it is certainly a fact."

My first objection to Dr Broad's theory is that, as he says, it would involve that "it will rain to-morrow" is neither true nor false, and that "England will be a republic in 1920," was not false in 1919. It seems to me quite certain that "it will rain to-morrow" is either true or false, and that "England will be a republic in 1920," was false in 1919. Even if Dr Broad's theory did enable him to meet my objections to the reality of time (which I shall try to show later on is not the case) I should still think that my theory should be accepted in preference to his. The view that time is unreal is, no doubt, very different from the *prima facie* view of reality. And it involves that perception can be erroneous. But the *prima facie* view of reality need not be true, and erroneous perception is not impossible. And, I submit, it is quite impossible that "it will rain to-morrow" is neither true nor false.

In the second place it is to be noted that Dr Broad's theory must be false if the past ever intrinsically determines the future. If *X* intrinsically determines a subsequent *Y*, then (at any rate as soon as *X* is present or past, and therefore, on Dr Broad's theory, real) it will be true that, since there is an *X*, there must be a subsequent *Y*. Then it is true that there is a subsequent *Y*. And if that *Y* is not itself present or past, then it is true that there will be a future *Y*, and so something is true about the future.

Now is it possible to hold that the past never does intrinsically determine the future? It seems to me that there is just as much reason to believe that the past determines the future as there is to believe that the earlier past determines the later past or the present.

We cannot, indeed, usually get a positive statement as simple as "the occurrence of *X* intrinsically determines the occurrence of a subsequent *Y*." But the intrinsic determination of the events can often be summed up in a statement of only moderate complexity. If the moon was visible in a certain direction last midnight, this intrinsically determines that, either it will be visible in a rather different direction next midnight, or the night will be cloudy, or the universe will have come to an end, or the relative motions of the earth and moon will have changed. Thus it is true that in the future one of four things will happen. And thus a proposition about the future is true.

And there are other intrinsic determinations which can be summed up in very simple negative statements. If Smith has already died childless, this intrinsically determines that no future event will b a marriage of one of Smith's grandchildren.

It seems, then, impossible to deny that th truth of some propositions about the future is im plied in the truth of some propositions about th past, and that, therefore, some propositions abou the future are true. And we may go further. If nc propositions abut the past implied propositions about the future, then no propositions about th past could imply propositions about the later pas or the present.

If the proposition "the occurrence of *X* implies the occurrence of *Y*" is ever true, it is always true, while *X* is real, and, therefore, even according tc Dr Broad's view of reality, it is always true while *X* is present and past. For it is dependent on the nature of *X* and the laws of implication. The latter are not changeable, and when an event has once happened, its nature remains unchangeable. Thus, if it were not true, in 1921, that the occurrence of any event in 1920 involved the occurrence of any event in 1922, then it could not be true in 1923, when both 1920 and 1922 are in the past. And this would apply to any two periods in time, as much as to 1920 and 1922.

There are, then, only two alternatives. Either propositions about the future are true, and Dr Broad's theory is wrong. Or else no proposition about any one period of time implies the truth of a proposition about any other period of time. From this it follows that no event at any point of time intrinsically determines any event at any other point of time, and that there is no causal determination except what is strictly simultaneous.

It is clear, from the rest of his book, that Dr Broad does not accept this last alternative, and it is difficult to conceive that anyone would do so, unless he were so complete a sceptic that he could have no theory as to the nature of time, or of anything else. For a person who accepted this alternative would not merely deny that complete causal determination could be proved, he would not merely deny that any causal determination could be proved, but he would assert that all causal determination, between non-simultaneous events, was proved to be impossible. But if this is not accepted, then some propositions about the future must be true[9].

In the third place, even if the two objections already considered should be disregarded, time would still, on Dr Broad's theory, involve the contradiction described above. For although, if Dr

Broad were right, no moment would have the three incompatible characteristics of past, present, and future, yet each of them (except the last moment of time, if there should be a last moment) would have the two incompatible characteristics of past and present. And this would be sufficient to produce the contradiction.

The words past and present clearly indicate different characteristics. And no one, I think, would suggest that they are simply compatible, in the way that the characteristics red and sweet are. If one man should say "strawberries are red," and another should reply "that is false, for they are sweet," the second man would be talking absolute nonsense. But if the first should say "you are eating my strawberries," and the second should reply "that is false, for I have already eaten them," the remark is admittedly not absolute nonsense, though its precise relation to the truth would depend on the truth about the reality of matter and time.

The terms can only be made compatible by a qualification. The proper statement of that qualification seems to me to be, as I have said, that, when we say that *M* is present, we mean that it is present at a moment of present time, and will be past at some moment of future time, and that, when we say that *M* is past we mean that it has been present at some moment of past time, and is past at a moment of present time. Dr Broad will, no doubt, claim to cut out "will be past at some moment of future time." But even then it would be true that, when we say *M* is past, we mean that it has been present at some moment of past time, and is past at a moment of present time, and that, when we say *M* is present, we mean that it is present at a moment of present time. As much as this Dr Broad can say, and as much as this he must say, if he admits that each event (except a possible last event) is both present and past.

Thus we distinguish the presentness and pastness of events by reference to past and present moments. But every moment which is past is also present. And if we attempt to remove this difficulty by saying that it *is* past and *has been* present, then we get an infinite vicious series.

For these three reasons it seems to me that Dr Broad's theory of time is untenable, and that the reality of time must still be rejected.

It is sometimes maintained that we are so immediately certain of the reality of time, that the certainty exceeds any certainty which can possibly be produced by arguments to the contrary, and that such arguments, therefore, should be rejected as false, even if we can find no flaw in them.

It does not seem to me that there is any immediate certainty of the reality of time. It is true, no doubt, that we perceive things as in time, and that therefore the unreality of time involves the occurrence of erroneous perception. But, as I have said, I hope to prove later that there is no impossibility in erroneous perception. It may be worth while, however, to point out that any theory which treated time as objectively real could only do so by treating time, *as we observe it*, as being either unreal or merely subjective. It would thus have no more claim to support from our perceptions than the theories which deny the reality of time.[10]

I perceive as present at one time whatever falls within the limits of one specious present. Whatever falls earlier or later than this, I do not perceive at all, though I judge it to be past or future. The time-series then, of which any part is perceived by me, is a time-series in which the future and the past are separated by a present which is a specious present.

Whatever is simultaneous with anything present, is itself present. If, therefore, the objective time-series, in which events really are, is the series which I immediately perceive, whatever is simultaneous with my specious present is present. But the specious present varies in length according to circumstances. And it is not impossible that there should be another conscious being existing besides myself, and that his specious present and mine may at the same time be of different lengths. Now the event *M* may be simultaneous both with *X*'s perception *Q*, and with *Y*'s perception *R*. At a certain moment *Q* may have ceased to be a part of *X*'s specious present. *M*, therefore, will at that moment be past. But at the same moment *R* may still be a part of *Y*'s specious present. And, therefore, *M* will be present at some moment at which it is past.

This is impossible. If, indeed, the *A* series was something purely subjective, there would be no difficulty. We could say that *M* was past for *X* and present for *Y*, just as we could say that it was pleasant for *X* and painful for *Y*. But we are now considering the hypothesis that time is objective. And, since the *A* series is essential to time, this involves that the *A* series is objective. And, if so, then at any moment *M* must be present, past, or future. It cannot be both present and past.

The present, therefore, through which events

are really to pass, cannot be determined as being simultaneous with a specious present. If it has a duration, it must be a duration which is independently fixed. And it cannot be independently fixed so as to be identical with the duration of all specious presents, since all specious presents have not the same duration. And thus an event may be past or future when I am perceiving it as present, and may be present when I am remembering it as past or anticipating it as future. The duration of the objective present may be the thousandth part of a second. Or it may be a century, and the coronations of George IV and of Edward VII may form part of the same present. What reasons can we find in the immediate certainties of our experience to believe in the existence of such a present, which we certainly do not observe to be a present, and which has no relation to what we do observe as a present?

If we take refuge from these difficulties in the view, which has sometimes been held, that the present in the *A* series is not a finite duration, but a single point, separating future from past, we shall find other difficulties as serious. For then the objective time, in which events are, would be something entirely different from the time in which we experience them as being. The time in which we experience them has a present of varying finite duration, and is therefore divided into three durations—the past, the present, and the future. The objective time has only two durations, separated by a present which has nothing but the name in common with the present of experience, since it is not a duration but a point. What is there in our perception which gives us the least reason to believe in such a time as this?

And thus the denial of the reality of time turns out not to be so very paradoxical. It was called paradoxical because it required us to treat our experience of time as illusory. But now we see that our experience of time—centring as it does about the specious present—would be no less illusory if there were a real time in which the realities we experience existed. The specious present of our observations cannot correspond to the present of the events observed. And consequently the past and future of our observations could not correspond to the past and future of the events observed. On either hypothesis—whether we take time as real or as unreal—everything is observed as in a specious present, but nothing, not even the observations themselves, can ever really *be* in a specious present. For if time is unreal, nothing can be in any present at all, and, if time is real, the present in which things are will not be a specious present. I do not see, therefore, that we treat experience as much more illusory when we say that nothing is ever present at all, than when we say that everything passes through some present which is entirely different from the only present we experience.

It must further be noted that the results at which we have arrived do not give us any reason to suppose that *all* the elements in our experience of time are illusory. We have come to the conclusion that there is no real *A* series, and that therefore there is no real *B* series, and no real time-series. But it does not follow that when we have experience of a time-series we are not observing a real series. It is possible that, whenever we have an illusory experience of a time-series, we are observing a real series, and that all that is illusory is the appearance that it is a time-series. Such a series as this—a series which is not a time-series, but under certain conditions appears to us to be one—may be called a *C* series.

There are good reasons for supposing that such a *C* series does actually exist, in every case in which there is the appearance of a time-series. For when we consider how an illusion of time can come about, it is very difficult to suppose, either that all the elements in the experience are illusory, or that the element of the serial nature is so. And it is by no means so difficult to account for the facts if we suppose that there is an existent *C* series. In this case the illusion consists only in our applying the *A* series to it, and in the consequent appearance of the *C* series as a *B* series, the relation, whatever it may be, which holds between the terms of the *C* series, appearing as a relation of earlier and later.

The *C* series, then, can be real, while the *A* and *B* series are merely apparent. But when we consider how our experience is built up, we must class *C* and *A* together as primary, while *B* is only secondary. The real *C* series and the appearance of the *A* series must be given, separately and independently, in order to have the experience of time. For, as we have seen, they are both essential to it, and neither can be derived from the other. The *B* series, on the other hand, can be derived from the other two. For if there is a *C* series, where the terms are connected by permanent relations, and if the terms of this series appear also to form an *A* series, it will follow that the terms of the *C* series will also appear as a *B* series, those which are placed first, in the

direction from past to future, appearing as earlier than those whose places are further in the direction of the future.

And thus, if there is a *C* series, it will follow that our experience of the time-series will not be entirely erroneous. Through the deceptive form of time, we shall grasp some of the true relations of what really exists. If we say that the events *M* and *N* are simultaneous, we say that they occupy the same position in the time-series. And there will be some truth in this, for the realities, which we perceive as the events *M* and *N*, do really occupy the same position in a series, though it is not a temporal series.

Again, if we assert that the events *M*, *N*, *O* are all at different times, and are in that order, we assert that they occupy different positions in the time-series, and that the position of *N* is between the positions of *M* and *O*. And it will be true that the realities which we see as these events will be in a series, though not in a temporal series, and that they will be in different positions in it, and that the position of the reality which we perceive as the event *N* will be between the positions of the realities which we perceive as the events *M* and *O*.

If this view is adopted, the result will so far resemble the views of Hegel rather than those of Kant. For Hegel regarded the order of the time-series as a reflection, though a distorted reflection, of something in the real nature of the timeless reality, while Kant does not seem to have contemplated the possibility that anything in the nature of the noumenon should correspond to the time-order which appears in the phenomenon.

Thus the *C* series will not be altogether unlike the time-series as conceived by Mr Russell. The *C* series will include as terms everything which appears to us as an event in time, and the *C* series will contain the realities in the same order as the events are ranged in by the relations of earlier and later. And the time-series, according to Mr Russell, does not involve the objective reality of the *A* series.

But there remain important differences. Mr Russell's series is a time-series, and the *C* series is not temporal. And although Mr Russell's time-series (which is identical with our *B* series) has a one-to-one correspondence with the *C* series, still the two series are very different. The terms of the *B* series are events, and the terms of the *C* series are not. And the relation which unites the terms of the *B* series is the relation of earlier and later, which is not the case with the *C* series.

Endnotes

[1] It is very usual to contemplate time by the help of a metaphor of spatial movement. But spatial movement in which direction? The movement of time consists in the fact that later and later terms pass into the present, or—which is the same fact expressed in another way—that presentness passes to later and later terms. If we take it the first way, we are taking the *B* series as sliding along a fixed *A* series. If we take it the second way, we are taking the *A* series as sliding along a fixed *B* series. In the first case time presents itself as a movement from future to past. In the second case it presents itself as a movement from earlier to later. And this explains why we say that events come out of the future, while we say that we ourselves move towards the future. For each man identifies himself especially with his present state, as against his future or his past, since it is the only one which he is directly perceiving. And this leads him to say that he is moving with the present towards later events. And as those events are now future, he says that he is moving towards the future.

Thus the question as to the movement of time is ambiguous. But if we ask what is the movement of either series, the question is not ambiguous. The movement of the *A* series along the *B* series is from earlier to later. The movement of the *B* series along the *A* series is from future to past.

[2] The past, therefore, is always changing, if the *A* series is real at all, since at each moment a past event is further in the past than it was before. This result follows from the reality of the *A* series, and is independent of the truth of our view that all change depends exclusively on the *A* series. It is worth while to notice this, since most people combine the view that the *A* series is real with the view that the past cannot change—a combination which is inconsistent.

[3] Neither would they be simultaneous, since that equally involves being in the same time. They would stand in no time-relation to one another.

[4] It is true, no doubt, that my anticipation of an experience *M*, the experience itself, and the memory of the experience, are three states which have different original qualities. But it is not the future *M*, the present *M*, and the past *M*, which have these three different qualities. The qualities are possessed by three different events—the anticipation of *M*, *M* itself, and the memory of *M*—each of which in its turn is future, present, and past. Thus this gives no support to the view that the changes of the *A* series are changes of original qualities.

[5] If the time-series has a first term, that term will never be future, and if it has a last term, that term will never be past. But the first term, in that case, will be present

and past, and the last term will be future and present. And the possession of two incompatible characteristics raises the same difficulty as the possession of three.

[6] It may be worth while to point out that the vicious infinite has not arisen from the impossibility of *defining* past, present, and future, without using the terms in their own definitions. On the contrary, we have admitted these terms to be indefinable. It arises from the fact that the nature of the terms involves a contradiction, and that the attempt to remove the contradiction involves the employment of the terms, and the generation of a similar contradiction.

[7] Even on the hypothesis that judgments are real it would be necessary to regard ourselves as perceiving things in time, and so perceiving them erroneously. And we shall see later that all cognition is perception, and that, therefore, all error is erroneous perception.

[8] I have published my views on time, pretty nearly in their present shape, in *Mind* for 1908.

[9] It might seem that the truth of propositions about the future would be as fatal to my theory as to Dr Broad's, since I am denying the reality of time. But, as will be explained later, although there is no time-series, there is a non-temporal series which is misperceived as a time-series. An assertion at one point of this series may be true of a fact at some other point in this series, which appears as a future point. And thus statements about the future might have phenomenal validity—they might have a one-to-one correspondence with true statements, and they might themselves be as true as any statements about the past could be. But Dr Broad's theory requires that they should have no truth whatever, while some statements about the past and present should be absolutely true.

[10] By objectively real time, I mean a common time in which all existent things exist, so that they stand in temporal relations to each other. By subjectively real time, I mean one in which only the different states of a single self exist, so that it does not connect any self with anything outside it.