

Some Free Thinking about Time¹

By A.N. Prior

There's a dispute among philosophers - indeed there has always been this dispute among philosophers - as to whether time is real. Some say yes, and some say no, and some say it isn't a proper question; I happen to be one of the philosophers who say yes. All attempts to deny the reality of time founder, so far as I can see, on the problem of explaining the appearance of time's passage: for appearing is itself something that occurs in time. Eddington once said that events don't happen, we merely come across them; but what is coming across an event but a happening?

So far, then, as I have anything that you could call a philosophical creed, its first article is this: I believe in the reality of the distinction between past, present, and future. I believe that what we see as a progress of events is a progress of events, a coming to pass of one thing after another, and not just a timeless tapestry with everything stuck there for good and all.

To bring out the difference of viewpoint I have in mind, let me mention a small logical point. Logic deals, at bottom, with statements - it enquires into what statements follow from what - but logicians aren't entirely agreed as to what a statement is. Ancient and medieval logicians thought of a statement as something that can be true at one time and false at another. For example, the statement 'Socrates is sitting down' is true so long as he is sitting down, but becomes false when he gets up. Most modern logicians, however, say that if a statement is true at any time, it's true all the time - once true, always true. Confronted with the example 'Socrates is sitting down', they would say that this isn't really a statement, but only a piece of a statement. It needs to be completed by some unambiguous specification of time at which he is sitting down, for example, at exactly 3 p.m. (Greenwich mean time) on June 15th, 326 B. C. And when we say that he is sitting down at this time and date, we don't need to change this 'is' to 'was', because in this sort statement it hasn't any tense at all - the complete statement tells us a timeless property of a date or moment; that date or moment just is, eternally, a Socrates-sitting-downy date or moment.

Such a notion of what a statement is, seems clearly to reflect what I have called the tapestry view of time, and I believe accordingly that this is a point at which logicians ought to retrace their steps. I think the logically primary sense of the word 'statement' is the old sense, the sense in which a statement which is true at one time, may be false at another time, and in which the tense of statements must be taken seriously. I don't think these are just fragments of 'statements' in some more fundamental sense of the word; on the contrary, the allegedly tensless statements of modern logic are just a special case of statements in the old sense - they are statements which happen to be either always false or always true, and the 'is' that occurs in them is not really a tensless 'is' but is just short for 'is, always has been and always will be'.

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This belief, or prejudice of mine, is bound up with a belief in real freedom. One of the big differences between the past and the future is that once something has become past, it is, as it were, out of our reach - once a thing has happened, nothing we can do can make it not to have happened. But the future is to some extent, even though it is only to a very small extent, something we can make for ourselves. And this is a distinction which a tensless logic is unable to express. In my own logic with tenses I would express it this way: We can lay it down as a law that whatever now is the case will always have been the case; but we can't interchange past and future here and lay it down that whatever now is the case has always been going to be the case - I don't think that's a logical law at all; for if something is the work of a free agent, then it wasn't going to be the case until that agent decided that it was. But if happenings are just properties timelessly attached to dates, I don't see how you can make this distinction.

This general position that I want to uphold has come under fire from different quarters at different times. In the Middle Ages was menaced by theologians, many of whom, like Thomas Aquinas, taught that God doesn't experience time as passing, but has it present all at once. In other words, God sees time as a tapestry.

Other medieval theologians such as Duns Scotus argued, I think very sensibly, that since time isn't a tapestry, either God doesn't see it that way or he has an illusion about it, and since He hasn't any illusions He doesn't see it that way but sees it as it is, as passing. I would go further than Duns Scotus and say that there are things about the future that God doesn't yet know because they're not yet there to be known, and to talk about knowing them is like saying that we can know falsehoods. God cannot know that 2 and 2 are 5, because 2 and 2 aren't 5, and if He's left some matter to someone's free choice, He cannot know the answer to the question 'How will that person choose?' because there isn't any answer to it until he has chosen.

Nowadays it's not so much the theologians we have to contend with as the scientists, and the philosophical interpreters of the scientists. Many philosophical upholders of what I've called the tapestry view of time claim that they have on their side a very august scientific theory, the theory of relativity, and of course it wouldn't do for mere philosophers to question august scientific theories. Well, I've tried to find out recently exactly what is the strength of this argument, and I'll discuss it with you now as simply as I can, though I'll have to warn you that it's not very simple. The physical facts seem to be more or less like this: My experience has a quite definite time-order, of which I am immediately aware; and your experience has a definite time-order, of which you are immediately aware; and similarly for any observer, no matter where he is, or how he is moving. Moreover, if you were to calculate the time-order of my experiences, I would agree with your result, and similarly if I were to calculate yours. The trouble arises when we come to compare one another's experiences - when, for example, I want to know whether I saw a certain flash of light before you did, or you saw it before I did. Even about points like this there is often agreement all round, but we can't depend on it. It could happen that if I assumed myself to be stationary and you moving, I'd get one result - say that I saw the flash first - and if you assumed that you were stationary and I moving, you'd get a different result. I could explain

your result by saying that the speed of your movement had made your measuring instruments go haywire; but you could explain my result in the same way.

And it appears to be established that in such a case there would be no physical way of deciding which of us is right; that is, there is no way of determining whether the light-signal first crossed my path or yours. And the conclusion drawn in the theory of relativity is that this question - the question as to which of us is right, which of us really saw it first - is a meaningless question; outside our private paths, the time-direction and space-direction just aren't as distinct as that.

Now I don't want to be disrespectful to people whose researches lie in other fields than my own, but I feel compelled to say that this just won't do. I think we have excellent grounds for insisting that the question in question is not a meaningless one, and I'll try and explain what its meaning is. People who are doing relativity physics are concerned with the relations of before and after and simultaneity, but these aren't the first things as far as the real passage of time is concerned - the first thing is the sequence of past, present, and future, and this is not just a private or local matter, different for each one of us; on the contrary, pastness, presentness and futurity are properties of events that are independent of the observer; and under favorable conditions they are perceived properties of events.

We all know what it is to wait for something - an examination, for example; or coming home from war; or Christmas. What we're waiting for begins by being future; it hasn't yet come to pass. Then a time comes when it does come to pass - when it's present, and we're aware of its presentness, and there is no mistaking it. And then it's past, and we say, perhaps, 'Thank goodness all that's over'; and we all know quite well what this 'being over' is, and couldn't mistake it for anything else. I have a very good friend and colleague in Australia, Professor Smart of Adelaide, with whom I often have arguments about this. He's an advocate of the tapestry view of time, and says that when we say 'X is now past' we just mean 'The latest past of X is earlier than this utterance'. But, when at the end of some ordeal I say 'Thank goodness that's over', do I mean 'Thank goodness the latest part of that is earlier than this utterance'? I certainly do not; I'm not thinking about the utterance at all, it's the overness, the now-endedness, the pastness of the thing that I'm thankful for, and nothing else. Past and future are in fact not defined in terms of earlier or later, but the other way round - 'X is earlier than Y' means 'At some time X was past and Y was present', and 'X is later than Y' means the opposite of this.

Coming back to this allegedly meaningless question as to whether you or I saw the light-flash first, surely what it means is just this: When I was seeing the flash, had you already seen it, or had you not? In other words, when my seeing it was a present fact, had your seeing it become a past fact, or had it not? And I just cannot be persuaded that such a question is meaningless - its meaning seems to me perfectly obvious. When an event X is happening, another event Y either has happened or has not happened - 'having happened' is not the kind of property that can attach to an event from one point of view but not from another. On the contrary, it's something like existing; in fact to ask what has happened is a way of asking what exists, and you can't have a

thing existing from one point of view but not existing from another, although of course its existence may be known to one person or in one region, without being known to or in another.²

So it seems to me that there's a strong case for just digging our heels in here and saying that, relativity or no relativity, if I say I saw a certain flash before you, and you say you saw it first, one of us is just wrong - or misled it may be, by the effect of speed on his instruments - even if there is just no physical means whatever of deciding which of us it is. To put the same point another way, we may say that the theory of relativity isn't about real space and time, in which the earlier-later relation is defined in terms of pastness, presentness and futurity; the 'time' which enters into the so-called space-time of relativity theory isn't this, but is just part of an artificial framework which the scientists have constructed to link together observed facts in the simplest way possible, and from which those things which are systematically concealed from us are quite reasonably left out.

This sort of thing has happened before, you know. When that formidable mathematical engine the differential calculus was first invented, its practitioners used to talk a mixture of excellent mathematics and philosophical nonsense, and at the time the nonsense was exposed for what it was, by the philosopher Berkeley, in a pamphlet entitled 'A Defence of Free Thinking in Mathematics'. And the mathematicians saw in the end that Berkeley was right, though it took them about a century and a half to come round to it. They came round to it when they became occupied with problems which they could only solve by being accurate on the points where Berkeley had shown them to be loose; then they stopped thinking of the things he had to say as just a reactionary bishop's niggling, and began to say them themselves. Well, it may be that some day the mathematical physicists will want a sound logic of time and tenses; and meanwhile the logician had best go ahead and construct it, and abide his time.

² There appears to be an omission in the MS page 5. It probably should read '... without being known to another person or in another region'.