The truth of my claim: “It is raining” depends on the time at which I made it. It was true if and only if it was indeed raining (in my vicinity) at that time. Similarly my assertion “it has been raining”, made at time $t$, is true if there was a time $t'$ preceding $t$ such that it rained at $t'$.

But what is a time? In physics, where it has been standard practice to represent time as a structure isomorphic with the real numbers, we have become accustomed to thinking of times as either durationless instants or else collections of such instants.

The concept of a durationless temporal instant is a quite sophisticated one, the eventual response, after many centuries of experimentation, to Zeno's puzzle. It contains at least two distinct mathematical ideas, both of which are by no means obvious. In fact, they appear counterintuitive to many who encounter them for the first time. The first of these concerns the possibility of densely ordered structures, between any two elements of which there is a third; the second the possibility that a collection of elements each of which has zero size by itself, may nonetheless have a size bigger than 0. (Thus in particular, an interval may have finite duration even though each of the instants that constitute it has no duration whatever.)
These principles tend to strike non-mathematicians as particularly puzzling when they are stated in the context of time; and one of the reasons for this is no doubt that the instant-concept which would satisfy them is so very far removed from the ideas that people ordinarily have of ‘time’—however inarticulate these ideas may be.

Is time really like the real numbers? Or is it rather like the rationals, or like the integers, or has it some other structure? Before we can even make an attempt at answering such a question, we must first determine what sort of question it is. And the sort of question it is depends on what we take to be the nature of time. If time is, as Kant suggested, a mental category, then the question is about how, and to what extent, the structure of the mind determines the formal properties of this category. If we take—as it seems, Poincaré advocated—the structure of time to be a matter of theoretical convention, with no more justification, and no more need of justification, then its utility to a highly successful complex of scientific theories, the question disappears. If we assume, with Leibniz, Einstein or Whitehead, that time is no more than the totality of temporal relations between the events and processes which constitute the history of our world, the question is about the actual structural relations between these events and processes. If we assume—as it appears Russell did at some stage—that statements about time, like other statements which appear to be about the world outside us, are in last analysis complex claims about actual and possible experiences, then the question is about the structure of these experiences.

Only the last two of these different conceptions are relevant to what I wish to say below. These two views, however different in their general philosophical perspectives, are nevertheless quite similar in an important formal respect: Each takes as primary certain entities—be they mental experiences or physical events—which are generally—in fact it is reasonable to assume always—of finite duration. I shall refer to such entities henceforth as events.

If we can talk about durationless instants at all, these must, on either of the two views, be constructs, built from elements which are themselves not without duration.

II

There are various ways in which such a construction can proceed. The one which I shall present here goes back to Russell and Wiener.1 This particular

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1 Cf. Russell (1936), Wiener (1914).