Three Concepts of Time

Kenneth G. Denbigh
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$19.80

Certainly throughout a good part of western intellectual history the idea that there may be two concepts of time, or that it can be studied from two exclusive viewpoints, has developed considerable support. The two concepts have generally fallen into such categories as objective and subjective, rational and intuitive, or even physical and spiritual.

Kenneth Denbigh fragments this duality by dividing the objective viewpoint into two separate concepts. Thus in his monograph he presents the idea that there are three concepts of time:

- the time of conscious awareness
- the time of theoretical physics
- the time of thermodynamics and the life sciences, such as evolutionary theory.

The last two have the common feature that there is no unique moment set apart from the others, that is, the "now" or the "present" is not defined, as is the case with the first; while the first and the third have in common temporal irreversibility. It is Denbigh's aim to increase coherence in our notions of time, including the "profoundly temporal character of consciousness," by attempting to remove some of the "divergence between the attitudes to time of theoretical physics, thermodynamics and the life sciences." In these efforts he adopts what he terms a "relational view" of time, in that philosophically time is regarded as a relationship between events, without which there could be no concept of time.

The book is divided into two parts. In the first part he carefully analyzes ideas of objectivity in observations of time. Among other things he provides us with a rigorous examination of temporal order as well as a detailed study of the notion of simultaneity, in particular from the viewpoint of relativity theory.

Denbigh completes the first part of the book with a treatment of the problem of "the present," by discussing what are known by some thinkers as the A- and B-theories. In the A-theory "now" or the "present" is a real feature of the world at each location as well as is the notion of becoming. According to the B-theory, past, present and future are considered mind-dependent, so that real events are regarded as happening tenselessly with the notion of "earlier than," "simultaneous" and "later than" being used to distinguish them. Neither theory can be proved or disproved, and Denbigh gives each its due. However, he does conclude that a time concept without consideration of consciousness would be deficient, and that

such a concept enjoys "a progressively increasing degree of richness" in passing from the time of physical phenomena to that of biology and psychology.

In the second part of the book Denbigh discusses three distinctive kinds of temporal change: processes occurring in inanimate nature, those of animate nature, and processes related to consciousness. He studies the identification of irreversible time with the increase of entropy, often called the "thermodynamic arrow of time," then compares this "arrow" with the "cosmological arrow," based on the expansion of the universe.

In dealing with time in consciousness, he convincingly points out its inherent irreversibility. For example, it is very difficult to conceive realistically reading a book backwards, progressively erasing from one's memory the knowledge of its contents. Denbigh argues in support of the conviction held by some thinkers that time provides a link between the physical and the mental, that is, between the material brain and mental activity. He concludes by sharing some opinions and speculations, one of which is that because of its greater comprehensiveness the time of consciousness has some primacy in reality over the other two concepts. This is perhaps the basis for another speculation, reminiscent of Pierre Teilhard de Chardin, that there is a progressive increase of total consciousness in the cosmos.

Three Concepts of Time is a well and carefully written book which gives a thought-provoking analysis of time for anyone with some background in one of the natural sciences. It is an outgrowth of extensive study of time involving a previous book (*An Inventive Universe*, George Braziller, New York, 1975) and chapters in several publications of *The Study of Time* (edited by J. T. Fraser, Springer-Verlag, Berlin), which is essentially the proceedings of the International Society for the Study of Time. For any scientifically oriented college graduate interested in a closer look at many aspects of time it is well worth reading and is comparable in quality to the well-respected *Voices of Time* (edited by J. T. Fraser, University of Massachusetts Press, Amherst, 1981).

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