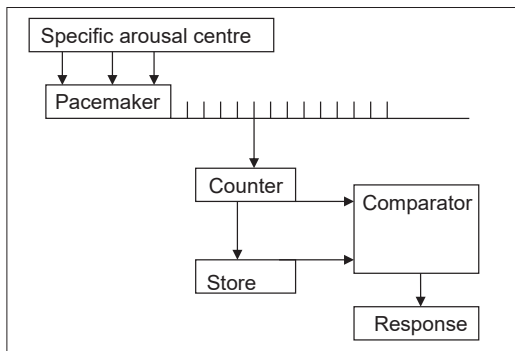


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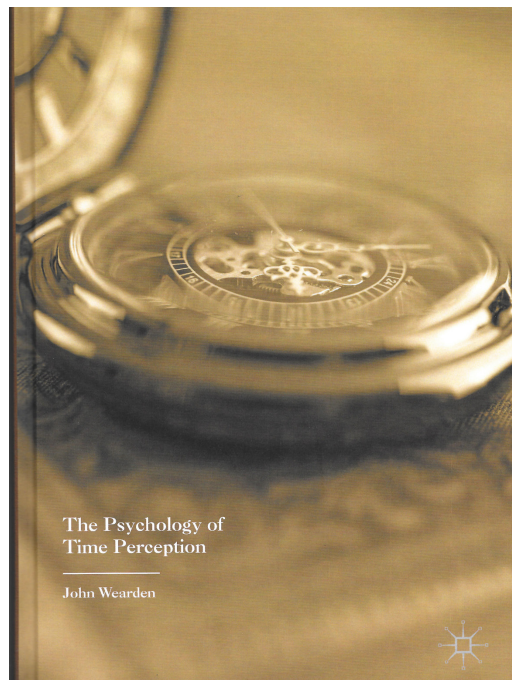
John Wearden, **Internal Clocks and the Human Perception of Time: History, Development, and Current Status**



The internal clock model proposed by Treisman in 1963.

The idea that people's perception of time could be understood by supposing they possess an internal clock-like mechanism has been in the psychological literature since the 1930s, but was developed by Treisman in 1963 in the form of the model shown in the figure, and later by a very similar account known as *scalar expectancy theory* (SET) by Gibbon, Church, and Meck in 1984. The model is conceptual, but its mathematical form fits many experimental results very well. A clock-based model automatically provides an 'arrow of time', enabling people to judge that one time interval is longer than another one. It also enables people to 'fractionate' time intervals, for example to judge that one duration is half as long as another. In addition, experimental results suggest that the rate of the pacemaker can be increased or decreased. In the SET model, the pacemaker-counter element, which

might be supposed to act as a clock, is only one part of a more complex system involving memories for time, and decision processes. Examples of how this system functions to model results from real timing tasks will be presented in the lecture. More recently, SET has been criticised on grounds of physiological implausibility, and I will discuss some of the (largely unsuccessful) attempts to replace it. It seems that reports of the death of the internal clock idea, like those of Mark Twain, have been exaggerated.



Professor John Wearden is Emeritus Professor of Psychology at Keele University, UK. He has also taught at the University of Manchester, as well as in the US and Belgium. He has published extensively on time perception in humans and animals. His book *The Psychology of Time Perception* (illustrated above) was published by Palgrave Macmillan UK in 2016.

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