# The existence of an object in one-dimensional spacetime: for the $A$- and $B$-theory of time

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## Abstract

What does it mean to give a philosophical explanation? Creating texts and nothing else. If you want to explain the concept of time, regarding series $A$ and $B$, your explanation will contain only sentences and nothing else. But it does not necessarily have to be so. Why not use cyberspace or computer software, which are as portable as a text on paper, but, unlike dead letters, are living media? You can simulate time in cyberspace; you can simulate the connection between facts and sentences. This kind of explanation is as multipliable as a book printed on paper and as transportable as a printed journal. And this is exactly what I do. You do not have to be a programmer to understand this.

## Introduction

To simplify the problem as much as necessary, we consider a single point-like object that has the property of being somewhere at some time. For simplicity, this world is deterministic, predetermining when the object is where. This world is, for simplicity, made up of discrete places, only nineteen places, and time is not continuous, but a finite series of moments. It is a discrete, finite, one-dimensional spacetime, a unit of time, a moment. An object in this spacetime can move forwards or backwards, or remain stationary. It is assumed that the object is never in more than one place at a time, although if it was moving at infinite speed, it would be in more than one place at a time. The object is always moving forward in time.

## Where is this world?

This world we are about to investigate exists; it exists in cyberspace in the form of a spreadsheet.
Here: `https://ferenc.andrasek.hu/models/time-series2.xlsx`
In this world, time elapses with a press of a key, and one press of a key elapses one moment of time. In the inner world of this world, there is no continuous time between two moments and no continuous space between two discrete locations. The history of the object in this case is as follows. It starts from the 6th position and goes forward to the 8th position. There, it pauses for two moments and then moves on to place 11. It stays in place for three moments, then goes to 14, where it turns back and returns to 11 at the last time. While the model is running, it shows which moment is "now" (the present) and which place is "here", where the object is. While running, the model also shows which moments belong to the past and which to the future. From there, you can see that the history of the object is always going forward in time. Furthermore, time-space relation is a function relation on domain of time. In contrast, the `https://ferenc.andrasek.hu/models/rev-time2.xlsx` model shows a history of the object where the object is moving backwards in time for a period of time. In this case, however, the place-time relation in time is not a function relation, because when the object is moving backwards in time, it is in several places at once.

In any case, the history of the object can be represented by a graph or a table, as seen in the worksheets of spreadsheet models. The graph or the table represents the history of the object in the spirit of time $B$-theory. In the $B$-theory of time, they describe where the object is and when it is as a timeless and eternal truth. Notice that in the $B$-theory model, all the time–all the ticks or moments–are at the same time, on the same axis of the graphs or in the rows of the table. All times were at some point future, present, and then past, but never all at once. In $B$-theory, the concepts of "past, present, future" are relations, not properties, one-argument predicates as in $A$-theory of time. The transient nature of time is not visible on graphs or tables, it is only shown by the cybernetic model–the table in cyberspace–when a button is pressed to bring the model to life. Just so, a text (or graph) that the reader is reading cannot represent this in any way, because writing is static, letters (or graphs) are dead creatures. The dynamic and transient nature of time can only be indicated by the meaning of the words, but does not appear

itself. The situation changes when you press a key to bring the model to life. Then you can see where the object is right now, what time it is, the past and future changes, the transience of the present. We can use the properties "past, present, future" meaningfully in relation to events and times. We then have both the $A$ and $B$ series.

# Dimensions

Macroscopic physical objects, living beings and persons exist according to the $A$-theory of time, and are therefore always bounded by their own present. The light cone of a photon shows the events of spacetime that are accessible from a given point, and shows the events that cannot be affected by the photon, even if they appear simultaneous from another point of view. We, as humans, can infer the past existence of past events, but they are inaccessible to us and unchangeable. The past does not exist in the present, i.e., the past does not exist in the dimension of everyday existence, but it does exist in the dimension of truth as the truth-bearer of statements about the past. This is what science is looking for, researching; this is what science is about. That is why the $B$-theory of time is so natural to physicists, and why the $A$-theory seems unscientific and illusory. But this is a mistake, confusing the property of the model with the property of reality. In the physical model, in the dimension of description, dimension of truth, the past and the future are there, or more precisely, neither the past nor the future is there, but only the temporal relations are there. But still the common sense view is right. This is not changed by the fact that, according to recent quantum physics theories, time is emergent. The chair I am sitting on is certainly emergent, certainly not a fundamental existence, but that makes its existence certain, even more certain than any theory. And it is just such certainty that everyday thinking about the present is so certain. We exist according to $A$-theory of time, but we seek truth in the spirit of $B$-theory. Perhaps this relation also is valid for other metaphysical dilemmas. Only indicative, summarized in a table:

| Dimension / Mode of existence | Time | Quantity | Physical objects |
|---|---|---|---|
| Everyday life | $A$-theory | Numeral | Endurantism |
| Truth | $B$-theory | Number | Perdurantism |

Table 1: Existence Dimensions