

## II

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# *The Meaning of Time and Space*

The main idea introduced in this paper is that both time and space are arbitrary concepts of man related directly to how he experiences the universe.

A major improvement in our understanding of time and space was brought about by Einstein's revolutionary theory of relativity. It led to the abandonment of the concept of absolute universal time and absolute universal space for all frames of reference. Therefore, we acknowledge that time and space are different for different inertial systems.

However, within any one inertial frame of reference, both time and space are still considered as real pervasive entities which are distinct from physical phenomena. I wish to propose here that such entities *in reality* do not exist and that there is neither experimental nor theoretical basis for their existence. Time and space as actually determined by us, then,

exist merely as artificial concepts arbitrarily defined by man. They are neither pervasive nor distinct from physical phenomena.

Man's arbitrary method of defining time and space is based on his own physiological framework, and it reveals that the concepts of time and space are completely interrelated. Although Minkowski had earlier suggested that some kind of union exists between time and space, the nature of this had not been well defined. One of the aims of this paper is to more fully elaborate on this union. It will then be seen that the concepts of time and space are truly inseparable to the extent that one cannot define time without space and vice versa.

## **Time**

In presenting this new theory of time and space, we run into the difficulty brought about by the interrelatedness of the different aspects. We can only introduce the new concepts one at a time and the reader must realize that a true picture will only emerge after he has grasped all the different elements together. Keeping this in mind, we will first consider the concept of time.

It is proposed here that what we measure as time is, in reality, the rate of electromagnetic transmission in our perceived space. This means that in order to determine time, we need first to demarcate our space. The rate at which the electromagnetic field travels in *this* space is then the rate at which our time progresses.

To understand better the reason for this arbitrary choice in defining time, we have to consider the realm of human experience. All of man's physiological activities, including neural

transmission, are mediated by electromagnetic interactions. Therefore, the rate of electromagnetic interactions, which is dependent on the rate of electromagnetic transmission, determines the rate of all our bodily functions and thought processes. It is not surprising, then, that man has arbitrarily defined time as an entity which reflects this rate.

In order to detect any uniform change in the rate of electromagnetic transmission, there has to be a standard available for comparison. It is evident that no such standard is available as not even our own physiological or mental processes can be used as such.

The explanation for Einstein's postulate now becomes clear. The speed of light is constant because determination of time depends directly on electromagnetic transmission. In other words, by our arbitrary definition of time, we have actually inadvertently also defined the speed of light to be constant.

## **Space**

Similar considerations relating to the realm of human experience determine man's arbitrary definition of space. He has defined space as that entity demarcated by solid state matter at rest in his frame of reference. This arbitrary choice is hardly surprising as his own body "utilizes" this definition of space.

It is evident that, like time, space so determined is also directly dependent on electromagnetic phenomena. This is because all the mechanisms which cause bonding between atoms in solid state matter are due to electromagnetic interactions.

I will now propose a method of determining space using electromagnetic transmission which will produce a result identical to the space demarcated by solid state matter at

rest in the relevant inertial reference system. Light rays are sent at the same instant from one point to different locations where they are then reflected back. If all these light rays arrive back at the original point at the same instant, the different positions where each of them is reflected back are then considered to be of equal distance from the original point. By repeating this procedure, a space-grid can then be set up in any inertial system.

It can be seen that the atoms in solid state matter at rest in the same reference system will align themselves in such a manner as to define a similar space. From symmetry considerations, electromagnetic transmission from one atom to any two or more symmetrically placed atoms in the lattice, will, after reflection at these atoms, arrive back at the first atom at the same instant. This phenomenon is, of course, directly related to the electromagnetic mechanism determining the spatial configuration of all the atoms in the solid state lattice. Each atom cannot "know" the position (in space and time) of the other atoms in the lattice other than by electromagnetic transmission.

One may now perceive that as both time and space are directly related to electromagnetic transmission, a close relationship between the two must exist. However, before we can fully appreciate the synthesis of time and space, we need first to understand yet another arbitrary concept of man — simultaneity.

### **Simultaneity**

Simultaneity is a concept required mainly to support man's notion that time is a pervasive entity independent of space.