



The Path of Information Philosophy to Solve the Defect of Einstein's Integration of Space–Time [†]

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Abstract: Einstein's concept of spatiotemporal integration only involves the spatialization of time without the temporization of space. Therefore, there is an inevitable and important issue, which is the need for time to cancel its own characteristics to adapt to the rules of space, leading to the dilemma of the antinomy between time and space, which is both integrated and not fully integrated. This kind of integration is not only incomplete spatiotemporal integration but also faces the situation of being misinterpreted in the meaning of time itself so that the meaning of time itself tends to disappear, and space cannot balance the dual meanings of time and space. The solution of information philosophy proposes a possibility to solve this problem. In the sense of information evolution, the spatialization of time and the spatialization of space are carried out simultaneously, thus achieving complete spatiotemporal integration.

Keywords: spatiotemporal integration; spatialization; temporization

1. Introduction

Einstein's demonstration of space–time integration is based on the space–time spatial construction of event relations. The following statements generally hold the following: Every physical description resolves itself into a number of statements, each of which refers to the space–time coincidence of two events, A and B. In terms of Gaussian coordinates, every such statement is expressed by the agreement of their four coordinates, x_1, x_2, x_3, x_4 . Thus, in reality, the description of the time–space continuum by means of Gaussian coordinates completely replaces the description with the aid of a body of reference without suffering from the defects of the latter mode of description; it is not tied down to the Euclidean character of the continuum which has to be represented [1], p. 79 Einstein's special theory of relativity eliminates the etheric illusion by keeping the speed of light constant, and his general theory of relativity explains gravity in terms of the curvature of space–time caused by objects themselves. Space–time curvature establishes the space–time bending theory under the integration of space–time, so the discussion of events must also be possible under the dual positioning of space–time coordinates because the variability of either time and space can only possibly be analyzed under the promotion of the other side.

The bending of space–time theory provides a non-coincidental explanation for the success of modern physics, and we agree with it [2], p. 234 The problem, instead, is that Einstein's theory of space–time integration can and can only remain an explanation of physical phenomena. So much so that Einstein himself admitted that, for physicists, we believe the division between past, present, and future is merely a stubborn illusion [3], p. 199 The passing of time can only be sought in the series of events described in the moving time–space, so that the dynamic series of time itself, which represents the past, present, and future of time, is eliminated here, leaving only the purely physical sequence, in which there is no longer the passing of through itself, but only the first and the last in the coordinate



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system. So time can only become a vassal of space, that is, to understand time in the way of spatial coordinates so that the meaning of time itself is cancelled in this construction. For Einstein, there was no solution to the problem, only to concede that time was an illusion and the flaw was obvious.

2. Solution Path of Information Philosophy

But the philosophy of information can provide a solution to this problem on the basis of completing the demonstration of the integration of time and space without eliminating the meaning of time itself. Such an argument is based on two key steps, the first is the establishment of the relationship between space and time, and the second is the construction of evolutionary information. A re-examination of the relationship between time and space is a crucial step in facing the incomplete integration of time and space, as only by facing the true relationship between time and space can we establish a prerequisite for how time and space can be transformed into each other. There are three aspects that need to be clearly constructed here: time, space, and the relationship between time and space. Moreover, when facing the transformation relationship between time and space, one cannot avoid or weaken the problems encountered but rather seek a more useful solution, which is what information philosophy research does. Therefore, researchers in information philosophy proposed a methodology for spatiotemporal integration based on evolutionary information, which can directly address the issue of incomplete spatiotemporal integration, which needs to be discussed in detail in the following text.

2.1. Establishment of Space–Time Relationship

From Einstein's space–time integration view of time and space, it can be seen that "the ruler is smaller and the clock is slow" and other descriptions of the phenomenon of space and time change; such descriptions come from the curvature effect of space–time being deformed. "Chi shrink" is because the time reference is consistent, but the space reference changes; "clock slow" is because the space reference is consistent, but the time changes. Therefore, in this sense, there must be a distinction between the existence of time and space because once time and space are consistent, there will be no such difference, so Einstein believed that time and space are different. However, Einstein also cancelled the lapse of time, so that time can only be understood through coordinates similar to space, that is, the spatialization of time, and pointed to the consistency of time and space. They are caught in the antinomy of space–time being different and space–time being consistent. In the face of such a situation, Einstein did not believe that there was a problem with his own understanding of time but directly cancelled the meaning of time itself and only described time as an illusion. So in Einstein's integration of time and space, the relationship between time and space is extremely unequal, and space holds a higher position, while time is just a vassal of space.

Therefore, how to establish a relationship between time and space without inherent contradictions is of great importance, which is also the first step of information philosophy. Wu kun proposed that the discussion of space–time relationship should be based on space–time transformation from the perspective of information philosophy. In this view, time and space are intrinsically unified; that is, time and space are historical, interchangeable, and unified concepts [4], p. 200 Once time and space can be transformed into each other, time will not be a vassal of space, nor will it cancel the characteristics of time itself. The relationship between time and space also becomes equal. There is no contradiction that is consistent in some senses and inconsistent in some senses. How to construct this transformation of time and space is the next question that information philosophers must face. Although Einstein's interpretation of the concept of time and space was problematic, it was based on the mathematically reasonable assumption of relativity, and this assumption also provided a lot of supporting evidence in many subsequent physical experiments. The study of information philosophy cannot refute this by relying solely on a conclusion of the integration of time and space.

2.2. Space–Time Transformation and Information Evolution

The universal nature of the information body determines that the information about multiple relations of its own evolutionary history must be condensed in its internal specific structure “trace”. In this way, the information about the passage of time during evolution and the information about the state of the old spatial structure from which things evolved will be preserved in the existing structure of the evolving things to varying degrees in a form that is distorted, deformed, or partially dissipated and abandoned. In this way, after the process of the direct existence of the historical thing disappears, the direct existence can still be transformed into some form of indirect existence to continue to exist. This indirect existence of history is inherited in the form of a direct existence constructed in subsequent stages of evolution. In this way, the spatialization of time and the spatialization of space are understandable and inevitable [4], p. 202 In the evolution of information, time carries the information of space, and space also has a dimension of time about history. Furthermore, with their own existence, things condense three important pieces of information about their own history, present situation, and future. It can also be said that because of the “nature” of evolution, things are always holographic to their past, present, and future [4], p. 203 Therefore, the features of the past, present, and future of time are not cancelled but tightly condensed on things in the state of information, and such time information is not only the simple meaning of time but also the retention of spatial information in different times. Because only under the condensation of time and space can we really talk about the “holographic” core, and this condensation points to the characteristics of space–time transformation.

In the solution of information philosophy, time and space are not limited to the discussion scope of time itself or space itself because once only discussing time or space, it is inevitable to encounter a problem of how time and space are the same if they are different. This kind of problem can only discard the properties of either time or space so that time is no longer time, and space is no longer space. And the philosophy of information has introduced the intermediary element of information, where the mutual transformation of time and space not only exists on top of both but also in the core of information. Therefore, there is a possibility for this transformation to proceed smoothly. The core of holography also exists in the mutual transformation of time and space, so information, time, and space all occupy their rightful position in this transformation process without being changed or cancelled. This is the key significance of introducing the information factor into space–time transformation.

3. Conclusions

Although Einstein’s concept of space–time integration is regarded as the norm by physics, this sense of space–time integration is not complete—there is only the spatialization of time, but there is no temporization of space. Therefore, there is an inevitable and important problem; that is, it takes time to cancel its own characteristics to adapt to the rules of space and then to derive the antinomy dilemma that space and time are integrated but not fully integrated. Information philosophy perfectly solves this dilemma by discussing the transformation of time and space based on the evolution of information because once the integration of time and space is two-way, time can be transformed into space, and space can also be transformed into time. Only in this way can it be called complete integration. And only this kind of space–time dual core can achieve true holographic evolution.

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