

SPACE AND TIME: CAUSALITY OR INTUITION?

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Do space and time follow causal laws or, on the contrary, can their reality be explained by another principle? Do we have to know the causality laws to understand space and time or can we grasp them by intuition? Almost since the first stages of History, this significant question has divided scientists and philosophers and placed them into two opposite categories: logical and non-logical. For a long time the logical method has been considered the only way to understand physical phenomena. On the other hand, most thinkers have assumed that metaphysics does not have any relation to logical methodology. My belief is that the most recent discoveries in physics can be considered a part of metaphysics. Even more, physical and metaphysical insight about reality are so close that it is very difficult now to define or separate their limits.

If we begin with the concept of space, we realize that almost all scientific discoveries have been based on causality laws. However, since the modern establishment of relativity and quantum theory, the concept of causality is changing. One of the most surprising phenomenon in physics was the discovery of "black holes" in space, that is, segments of space that cannot be explained according to causal law. Another significant discovery was the confirmation that matter is energy and, even more, it can be at the same time, wave and particle. Many other experiments have shown that the unknown "dimension" exists and escapes, at least until now, our comprehension.

If we consider the concept of time, we cannot yet ignore the crucial experiment called EPR,<sup>1</sup> related by Fritjof Capra in his book The Turning Point.<sup>2</sup> In this experiment, two electrons are put in a state in which their total spin<sup>3</sup> is zero, that is, they are spinning in opposite directions. Thereafter they are separated by a large distance. The paradoxical aspect of EPR is manifested when we change the rotational axis of one of them, at that instant the other also changes in order to preserve the primary opposition.

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<sup>1</sup> Einstein-Podolsky-Rosen experiment.

<sup>2</sup> Fritjof Capra, The Turning point, (New York: Bantam Books, 1983), p.83.

<sup>3</sup> particle spin is in sense a rotation about the particle's own axis.

What has happened? There is no time for one of the electrons to receive the information by any conventional signal since the speed is superior to the speed of light; even more, it occurs simultaneously. The only explanation to this action is to consider both particles as parts of an indivisible whole, whole in which the classical notion of causality does not fit. Might be explained, perhaps, by the Jungian synchronic principle<sup>4</sup> or by intuition?

When Jung studied the unconsciousness he realized that a considerable amount of phenomena occurred simultaneously. He explained how a person could know an event although it was impossible to know it considering the causality laws of space/time. As he studied for a long time the ancient Book of Changes, I Ching,<sup>5</sup> he also stated that the sequence of events developed when man was trying to find the right answer, was according to the same synchronic principle.

Let us consider intuition as a way of knowledge to understand space and time. Intuition has been considered as the only method which is not based in the principle of causality. Through this method, we can reach the certainty without intermediate steps; therefore, our apprehension is direct and immediate. In this sense, reality does not need to follow causality laws to be present in our mind, or in other words, we do not need the principle of a causal order to apprehend the reality.

Intuition and synchronic principle are, thus, the two ways to explain those phenomena which "apparently" do not follow the causal laws. And I say apparently because my belief is that there is no difference or opposition between causality and synchronic principle or between causality and intuition.

My belief is based on the consideration that no matter what the phenomenon is in space or time, there is always a logical link between the two manifestation of it. For example, if someone knows, as Jung proved, one thing which has happened a long time

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<sup>4</sup> Carl Gustav Jung, The Secret of the Golden Flower, (London: Kegan Paul, Trench and Trubner, 1983).

ago or far away, the important fact is that this person knows the event because it has relation with his life. Therefore, we can see there exists a logical explanation for this although space and time does not seem to follow the causal laws.

In relation with the synchronic principle that Jung referred to in the I Ching, it is important to consider that the answer given by the book is always in relation with the question. Thus, there also exists a logical link between both question and answer. Even more, all sequences of events in this book are based in the dialectic development of causal laws. The crucial difference is to know that there are two levels of development: the logical world and the world of freedom. Therefore, man can choose anything that he wants, that is freedom; but, once he has chosen one thing he will have, inevitably, the logical consequence derived of this thing.

What happens, then, with the instant knowledge of an event that does not seem to follow the logical laws of space/time? certainly we cannot deny a phenomenon by the fact that we do not have its explanation. Servet and Galileo, among many other scientists and philosophers, are good examples of the discovery of the "unknown." That we only know the speed of light does not mean that there exists no other different speeds, like the speed of the mind, for example. We cannot measure this speed because we do not have appropriate instruments, as well as we could know the space between neurons, for example, until we had the electronic microscope.

There exists, thus, a time and a space which do not have "apparent" explanation. But, because it always shows some logical link and because its development always follows a determinate order, I think it follows the causal laws. The explanation to the paradoxical phenomenon of simultaneity could be another "black hole" in time, just as "black holes" occur in space. That is, segments of space and time whose velocity is still not known.

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<sup>5</sup> The I Ching (The Richard Wilhelm Translation), (New Jersey: Princeton University Press, 1977).

Intuition could be, then, the possibility of knowledge of this kind of phenomenon. By intuition man can grasp this paradoxical reality. It does not mean that intuition follows other laws different from those of causality. It means, however, that intuition can transcend the limitations of space and time, giving man the freedom to govern his life according to causality laws. Intuition, thus, would be able to penetrate and apprehend even the "black holes." Therefore, physics and metaphysics could be the same thing and its point of departure would be, precisely, these black holes of space and time.

