Prošireni sažetak / Extended abstract

Theory of chaos and theory of string

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At the turn of the millennium it became apparent that science is fully losing its foundations — objective reality and the consequent determinism. The illusion of objectivity has already been eliminated by quantum science, showing how human consciousness plays a significant role in the quantum realm of subatomic matter. Scientists Descartes and Newton founded the science on assumption that the consciousness has no effect on reality. The consciousness itself was shown isolated, even from the domain of religion. It was believed that everything in nature could be explained by mechanistic terms, the universe itself was assumed to be a huge mechanical clock. Causal determinism, already damaged by quantum science with the uncertainty principle in quantum space was finally destroyed by the theory of chaos.[1]

The theory of chaos suggests that all events in nature are chaotic and unpredictable and that physical laws can only operate within the confined boundaries, giving space for creativity and spontaneity. Cause and consequence are reversed, since the fractal as a cause attracts consequential effects. Chaos means a kind of temporal behavior in which the difference between the two states initially grows exponentially with time. Chaotic system is extremely sensitive to the initial state and unpredictable in the long time scale, where the initial state is rarely known with absolute precision.[2] The systems we find in nature exhibit the characteristics of nonlinear and chaotic behavior. We can attempt to show all systems as linear, near-equilibrium systems. However, if a continuous "flow" of energy is sufficient to arouse the system sufficiently, it will become nonlinear or even chaotic. Chaos can be more easily understood when compared with the other two forms of behavior by a random, uncontrolled system and system of periodicity. Random behavior is never repeated in the same form and it is unpredictable and disorganized. A typical example is normal sinus rhythm recorded by ECG. If we know the amplitude, frequency and phase of the sine wave, we can at any time predict the incidence and amplitude of the sine wave.[3] Chaos is different from the behavior of periodicity and randomness, but it also includes the features of the both systems at the same time. Although chaotic behavior seems to be disorganized, random behavior, it is actually a deterministic, periodic behavior. The most important criteria of chaotic behavior are: Chaos can be deterministic and aperiodic. Unlike the Newton's laws of physics, the chaotic behavior is never exactly repeated. There are no visible cycles that circulate at regular time intervals. Chaotic systems are very dependent on the initial conditions.[4] This means that very small changes in the initial condition can result in large differences at a later time period. Even chaotic behavior is limited. As the system is becoming controlled, behavior is becoming limited and predictability grows and eventually every chaotic behavior has an ultimate form.[5] Chaotic behavior in general has a definite form, while parts of a pattern have a similar form.[6] Thus, the theory of chaos shows that our universe is in no way deterministic, but it is creative and eternally evolving.[7]

In an attempt to unify Einstein's theory of relativity and that of quantum physics, and in accordance with the mainstream physics, the Holy Grail of contemporary physics would be the theory of string". The theory of string should allow the Einstein's unification theory that would connect the four existing force fields (strong and weak nuclear forces, electromagnetic forces and forces of gravity) in a unified theory of everything (theory of everything; T.O.E.).[8] In theory, string is the building block of a matter, a vibrating variable, which can have loose ends or is one-dimensional closed loop. Depending on a variety of spins and frequencies of vibrating string, various subatomic particles are reflected. In theory of string, there is only one fundamental cause, vibration of the string, but the note played on the string is actually accountable for a different type of a particle. The string itself is so small that it is impossible to imagine its existence. The string is hypothetically said to be as big as an atom, if the atom is as big as the Earth. This means that the string is incredibly small. Should the theory ever be effective, the basic inquiry will be whether scientists will be able to prove the existence of strings in their laboratories. The theory of string predicts the existence of at least 10 or more dimensions. Physicists around the world today still agree that such physical dimensions themselves still cannot explain our physical reality. The problem of the theory of string is also the existence of several theories of string in order to obtain a more efficient model and those theories of string are so complex that their complete understanding and explanation is still eagerly expected. In fact, we are going to face an interesting future!

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