



The reasons for the application of chaos theory to the analysis of catastrophes.

Kudin Valery

Lomonosov Moscow State University, Faculty of Geography

The study of catastrophes is necessary for understanding the nature of the interaction between the individual and the universal in the process of the development of complex systems.

Chaos theory, allowing describing adaptation and bifurcation mechanisms for the development of systems, defines the catastrophes as a transition of the system into a different state (change of structure). The previous state of the system is destroyed because of fluctuations, which do not play a role in the development of the system until it reaches the instability region that is inherent to any system. The catastrophe is considered in this theory as a stage in the evolution of the system, and thus emphasizes the importance of catastrophes for the development of any system.

We rarely manage events comprehensively, as events are always subject to changes like gas molecules changing the trajectory of motion each moment under the influence of countless blows. The concept of catastrophes is much broader and is generally applicable to any final result of collision of opposing aspirations. Philosophical definition of catastrophes comes down to the destruction of the unity, accompanied by violent collision between different parts, the growing disruption, failure to prevent crossing the dangerous threshold... As a final vertex of action, disaster is not, however, directly its end: the action may continue after the catastrophe, but in the direction that is determined by the character of opposing aspirations.

Major catastrophes, which have already destroyed and continue to ravage the world today, come from a superficial use of the laws of the development of complex systems and, in particular, of individual techniques of the chaos theory.