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ИЕРАРХИЯ И ВЛАСТЬ В ИСТОРИИ ЦИВИЛИЗАЦИЙ

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Тезисы докладов

HIERARCHY AND POWER IN THE HISTORY OF CIVILIZATIONS

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Abstracts

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Science, Evolution, Resources

The face of the contemporary civilization is mainly determined by the liberal-market innovative economy closely related to science. Science also plays a leading role in the attempts to preserve the human environment for the future. Yet one may wonder whether civilization in the more or less distant future will actually be based on science, as well as what the possible place will be of science in progress in the future.

In analyzing these questions, science is considered as a typical phenomenon of the evolution within the frameworks of the universal evolutionism. Science is analyzed in this context as a progressive evolutionary phenomenon, yet it is noted that no progressive evolutionary phenomenon is an eternal "leader of the progress"; with the passage of time, other evolutionary paradigms may take over this leadership role. This point implicates the fundamental inference that science will lose its leadership position in the creation of the progress vector of the civilization.

The main focus of my work consists of the resource restrictions in the progress of science. The contemporary trends are such that progress in the most fundamental directions of the science becomes more and more expansive, and the costs begin to contradict the aggregate world profit of its civilization. A very dangerous process for fundamental science is thus being produced: the restriction of the monetary funds for science leads to decrease of the stream of new science results; the decrease of the stream of new science results leads to decrease of the interest of society in science; the decrease of the interest of the society in science leads again to decrease of the monetary funds for the science, etc.—the positive feedback loop is closed. This positive feedback loop may lead to almost sudden collapse of the fundamental researches.

The main focus of my work is related to the development and analysis of a mathematical model of this positive feedback loop. The model produces some nontrivial and even at first sight counterintuitive predictions. For example, it predicts that the growth of funds for fundamental science will lead to a far earlier collapse, while it cannot prevent this unpleasant moment in time from happening. It is discussed why the funding of fundamental science must be as high as possible in spite of this event.

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***Paleontological Data Imply the Existence of Positive Feedbacks
in the Evolution of Biodiversity***

Biodiversity dynamics largely depends upon changes in average longevity of taxa. The hyperbolic character of the Phanerozoic biodiversity growth im-