

Interactive comment on “The definition of life in the context of its origin” by Y. N. Zhuravlev and V. A. Avetisov

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Received and published: 15 May 2006

Dear Referee, First of all, we would like to thank you for the attention you pay to our work, as well as for your highly helpful comments. We agree that the informational aspect is the most complex and ambiguous one of all those regarding to life. On the one hand, it seems natural to describe the genetic order in terms of “textual information”, and Shannon’s measure allows to evaluate this order. On the other hand, we do clearly realize that living systems are ordered in many different senses, and the necessity to create the order measure drastically differed from the genetic order is often arisen. Of course, if all types of orders could be reasonably represented as sequences of symbols, say, one and zero, Shannon’s measure could probably become universally applicable for living systems, too. However, we often find it difficult to do, for example, in the case when we deal with the structural complexity of living systems. And we meet more complex case when some sort of a measure is required to evaluate the dynamic complexity of a system, e.g. that of metabolic networks. Usage of Shannon’s measure

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is not always well-grounded, although in some cases relevant measures can be constructed using the Shannon's formula. On the whole, we do not find any well-defined informational Urstoff which can be universally applicable for multifaceted contexts of biological order. Therefore, the informational content of life remains undefined so far, being a fact we have to face quite independently of a threat it may or may not represent to the Darwinian paradigm. However, we certainly agree that this subject is to be discussed yet, and we will be happy if our paper could contribute to such discussion.

Interactive comment on Biogeosciences Discussions, 3, 155, 2006.

BGD

3, S184–S185, 2006

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