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SETI TERMINOLOGY: DO WE INTERPRET SETI TERMS CORRECTLY?

Abstract

Many important SETI terms are either ambiguously defined or interpreted by different experts differently. The term “habitable zone” is a good example. “The habitable zone around a star (HZ) is defined as the region where a planet could reside and maintain surface temperatures that allow liquid water to exist. Outside of this zone temperatures will be either too cold or too hot...” i.e. according to Jakosky (1998) habitability depends only on the distance from the central star. Yet we know that there are many problems with this classical definition: 1/ surface temperature depends not only on the distance to the central star, but also on the density and composition of the planetary atmosphere; 2/ there are several internal heat sources which might maintain subsurface oceans; 3/ it is not at all obvious that the existence of liquid water is a sufficient condition for life; 4/ almost any planet or satellite might be considered habitable for well-equipped astronauts of an advanced ETC etc. The definition of habitability influences our search strategy for ETCs and also the relation between SETI on the one hand and the search for life in the Solar System or the search for habitable exoplanets on the other.

There are many other important examples including the terms ETI, SETI and METI themselves, the definition of alien life (whether it should be indigenous or might have terrestrial origin), of an extraterrestrial artifact, of an ET discovery, of the Fermi-paradox etc. As regards the possible social consequences of an ET discovery, it might be completely different depending on the definition of a discovery, its circumstances and the character of the phenomenon (see Rio Scale, 2000).

As regards the exact definition of the famous Fermi-paradox (“Where is everybody?”), it is also missing in spite of the fact that an excellent book has been published on the subject (Webb, 2002). It is a paradox only if we assume that there are no unknown forces preventing colonization over interstellar distances. And do belong unmanned space probes or radio messages in the category “everybody” – defining a “stronger version” of the Fermi-paradox? All these questions are related to the manner how we might think about ETI and SETI in new ways. The paper will summarize the problems connected with exact terminology and its potential implications for the future scientific search for extraterrestrial intelligence.

References: Jakosky, Bruce 1998. The Search for Life on Other Planets (Cambridge Univ. Press)
Webb, Stephen 2002. Where is Everybody? Fifty Solutions to the Fermi Paradox and the Problem of Extraterrestrial Life (Copernicus Books New York)