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Search for Extraterrestrial Intelligence (SETI) - The Next Steps (34th Symposium) (IAA.1.1)
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ADVANTAGES OF ACTIVE SETI

Abstract

This paper will examine the potential benefits of Active SETI, a prospect raised in the Project Cyclops report, which noted "if our first search of the nearest 1000 target stars produced negative results we might wish to transmit beacons to these stars for a year or more before carrying the search deeper into space" (p. 153). Renewed discussion of that possibility is particularly timely in light of the recent completion of Project Phoenix, which surveyed nearly 1000 nearby stars.

It has often been argued that the young age of human civilization, when compared to the older age of any extraterrestrial civilization we may contact, justifies our reliance on passive SETI as opposed to transmitting. Because transmission is more costly and requires longer timescales to succeed, the argument goes, we should be expected to take the easier role. However, this reasoning presupposes that the motivations of extraterrestrial civilizations are sufficiently benevolent that they will transmit de novo rather than only in reciprocation, and that they choose to make contact even prior to learning that we desire contact. This paper examines an alternative scenario, in which entry into the Galactic Club requires initiative on the part of the applicant, rather than passively waiting for an invitation. It proposes a solution to the troubling possibility that many civilizations are listening but none is transmitting.

This paper will question the argument that there is currently no need to transmit, because there is sufficient leakage radiation to make Earth detectable. In contrast to this position, Louis Scheffer has identified a number of beacon designs that are currently technologically feasible, some of which could be constructed at very low cost and yet that would make the task of reception significantly easier. When compared to leakage, even an inexpensive beacon could have a higher EIRP, uniform repetition, and Doppler compensation. Moreover, as Patricia Sterns has noted, an intentional signal from another civilization would convey significantly different information about their interest in making contact than would detecting that civilization via passive radiation. It may be, for example, that other civilizations have a policy of not making themselves known unless explicitly asked.

This paper will also challenge the argument that active SETI is a poor strategy because we cannot guarantee the longevity of our civilization. This uncertainty, in fact, highlights one of the great advantages of initiating a transmission project even if humankind does not continue to exist long enough to receive a reply. The benefit of transmissions to other civilizations, even if they are not sustained, provides an opportunity for humankind to contribute to a "galactic census," in which we could provide one data point about the lifetime of civilizations willing to transmit to others. Moreover, the very act of transmitting

may, ironically, signal to another civilization that Earth has begun to adopt a cosmocentric ethic, indicating our advance to a stage that may justify communication with us. By using some of our resources for projects that may more directly benefit other civilizations than ours, we may also show we are deserving of receiving membership in the Galactic Club that passive SETI now so eagerly seeks.

Even if the decision is made not to begin active SETI programs for several decades, initial planning for such programs would yield significant benefits, even if they will not be actualized. By better understanding the sorts of signals we might transmit, we may have a better understanding of what we should search for. In addition, significant questions remain as to how content should be decided, and whether we are capable of encoding information that would be of interest—to us or to extraterrestrials.