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# Extraterrestrial civilizations? Scientific, philosophical and theological consequences.

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## Abstract

The conviction that life is ubiquitous in the universe, together with astrophysical knowledge on exoplanets, supports the belief that extraterrestrial civilizations overlapping with our time may exist in our galaxy. How do we find out? My analysis rests on the insights (a) *that we are physically confined to our solar system*, (b) *that SETI is the only way to verify the existence of intelligent life elsewhere*, and the postulate (c) *that the same applies to ETI*. That SETI has been unsuccessful so far is a consequence of the huge number of choices of direction, frequency, timing, and duration for search for intelligent signals on the sky. An adequate approach to SETI as well as to sending messages (METI) requires installation of many radio telescopes or arrays and operating them continuously for hundreds or thousands of years, guided by an ever advancing catalogue of exoplanets. An interesting conclusion is that, before we can expect messages, we must try to make ourselves known. Most important is the question: When will our civilization be ready to make the necessary huge investments? A condition is that our loneliness in the universe must become very strongly felt by humankind. Before this is going to happen, the great societal and environmental problems of our time must have been largely solved. This may require the passing of several centuries. Receiving an intelligent message now would have a tremendous impact, scientific, cultural and religious. The same will be true in a few hundred years. But looking backwards in history, can we derive much confidence that a future society on our Earth will be sufficiently stable as to sustain, for maybe thousands of years, a deep interest in the question: Are we alone?

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