

Evolving SETI: Expanded Horizons for the 21st Century
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As Cabrol (2016) has pointed out, although SETI has been a sporadic endeavor for the last 60 years, it is now at the stage where astrobiology was when the first Astrobiology Roadmap was drafted in 1998. The SETI community needs to think out of the box, reexamine its underlying assumptions, and incorporate the social sciences and humanities as an integral part of its strategy - all for very practical reasons. The community needs to question its deep underlying assumptions about intelligence, culture, civilization, technology and communication. One example, in an era when artificial intelligence is undergoing rapid progress on Earth, is the possibility that the universe is full of postbiological intelligence (Dick, 2003), which could change the scope and strategy of SETI. This is not just a random idea, but reflects the importance of cultural evolution, a part of the Drake Equation often ignored. In examining SETI's underlying assumptions, not only the natural sciences but also the social sciences and humanities – which include anthropology, political science, economics, psychology, sociology, philosophy, history and archaeology – may be helpful and indeed necessary to discover the alien. Concepts such as astrocognition (Dunér, 2011), astroethics (Impey et al., 2013) and astrotheology (Peters, 2014) become immediately relevant when we find intelligent life, if not before. These ideas are elaborated in more detail in my forthcoming book *Astrobiology, Discovery, and Societal Impact* (Cambridge University Press, 2018).

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