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METI (Messaging Extra Terrestrial Intelligence) is irrational and should be abandoned

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Abstract

No one will answer our METI calls. All METI does is create (existential) risk for humankind.

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1 Introduction

The nonprofit organization METI International is preparing to beam directed messages into space in order to establish contact with potential technologically advanced civilizations¹ [1]. The idea of METI (an acronym for “Messaging Extra-Terrestrial Intelligence”) is very intriguing. If a METI attempt were to succeed, that would almost certainly have a profound and irreversible impact on humankind.

Is METI a good idea that should be supported and pursued? Or is METI a bad idea that should be stopped? In other words: If there are technologically advanced extraterrestrial civilizations out there, should we actually *want* them to notice us?

2 Preliminaries: How to think about “aliens”

METI, also known as “active SETI” (for “active search for extraterrestrial intelligence”), is concerned with advanced extraterrestrial life, and you might be inclined to dismiss METI without giving it much thought. Aren’t people who believe in UFOs sort of irrational cranks and / or charlatans? And then, aren’t, by logical consequence, people who are interested in METI also cranks and / or charlatans? No, not at all.

There is a *pop-cultural* and a *rational* concept of life beyond Earth. Pop culture, including popular myths and conspiracy theories, is oftentimes about UFOs and explosions and anal probes. But one can also think about life beyond Earth in rational terms. After all, everything we know about life on Earth suggests that life is a natural occurrence that is not necessarily restricted to our home planet. Since conditions that allow for life in our Solar system are not at all unique in the universe (there are billions upon billions of suns, planets, and moons), it follows that life could currently exist beyond Earth. The thing is: We don’t know. However, even though we don’t know whether life exists beyond Earth, we can think about the possibility of life beyond Earth in rational, justified ways. In order to think about METI in a concise and effective manner, a few premises about life and intelligence beyond Earth need to be clarified first.

2.1 The probability for life and intelligence beyond Earth

The famous Drake equation posits that the existence of advanced civilizations (beyond our own) is highly probable[2], and the equally famous Fermi paradox wonders where all those civilizations are[3] – we have seen no trace of them so far. There are many possible “solutions” to the Fermi paradox[4], among them

¹<http://meti.org/mission>

the possibility that civilizations don't last all that long because there is a "great filter" that is difficult to overcome[5].

We cannot infer a precise probability for the existence of extraterrestrial life and intelligence. Given our knowledge of life and intelligence on Earth, we can plausibly assume that the probability is greater than 0 – as far as we know, our own existence is the result of "accidental" occurrences and conditions, and those occurrences and conditions are not unique to Earth. However, we simply do not know whether extraterrestrial civilizations exist at the moment, and we don't know whether they existed in the time before there were humans.

This fundamental lack of information combined with justified speculation – life and intelligence beyond Earth are certainly possible, but that is already about all we can say with confidence – makes METI a very important undertaking; it makes METI is a very high-stakes game. While it is entirely possible that METI is completely futile (we are alone and METI is a waste of time), METI could also, if it were to succeed, fundamentally transform humankind, for the better as well as for the worse.

2.2 Think strategy, not tactics and scenarios

The most important aspect of thinking about life and intelligence beyond Earth is to adopt what can be called a *higher-order frame of reference*.

In our everyday thinking, we mostly operate in a *low-level frame of reference*, meaning that we feel and think on the micro-level. We are individual people, and most of the time, we interact with other individual people. This means that we are usually dealing with highly complex systems: In a given day-to-day situation, individual people behave in many different kinds of ways for many different kinds of reasons, and the specific ways in which people can behave are nearly infinite in number. A lot of pop culture about aliens is focused on low-level thinking. After all, that is the dramaturgical point of view most interesting to us. Witnessing our fictional heroes overcome challenges (from outer space!) is simply a fun thing to do when we are watching movies. But this low-level approach is inadequate for thinking about extraterrestrial life in rational, real-world terms. We are not dealing with individuals who interact with other individuals, but with a *civilization*, humankind, that interacts with extraterrestrial life, potentially with another civilization.

A civilization interacting with another civilization represents a higher-order, macro-level interaction. On this abstract yet real level, the system we are interested in is actually simpler than our everyday low-level systems. In its most basic form, the system consists of only two actors, humankind and another civilization. Both of those actors have a set of preferences. In essence, this represents a *rational choice* situation. Rationality means that the involved actors have some preferences

and that they act so as to realize their preferences as well as possible. In other words, they are maximizing their respective utility.

If we understand interactions between civilizations as rational choice constellations, then we are interested in the *strategies* that the actors (might) adopt. A strategy is a generalized approach towards utility maximization, as opposed to short-term, context-specific tactics and scenarios. We cannot speculate about tactics and we cannot speculate about scenarios because the empirical, real-world contexts within which they occur are essentially unknowable. They lie in the future and / or we have no information about them, and they are contingent on many factors that themselves lie in the future and / or we have no information about; and so forth. We can, however, speculate about strategy.

For example, we have no way of rationally speculating about the ways in which members of an extraterrestrial civilization would react if they learned about us (If that civilization even consisted of something approximating our concept of individual members). Maybe those “aliens” would be ecstatic to learn of us, maybe they would be terrified, maybe all notions of emotional responses would not apply to them. We have no justified clue about any potential scenario simply because we know absolutely nothing about that civilization. Within a higher-level frame of reference, however, the spectrum of generalized strategies that that civilization can adopt is limited, and we can decide what our own behavior should be in light of those strategies.

2.3 Extraterrestrial intelligence: Biological and artificial

We all know that we, humans, are the most intelligent life forms on our planet. But what, exactly, do we mean by intelligence? And what exactly do we mean when we are talking about *extraterrestrial* intelligence? Perhaps surprisingly, there is no universally accepted definition of intelligence[6, 7, 8]. The notion of extraterrestrial intelligence, it follows, also cannot be clearly defined. That is why, in order to describe extraterrestrial intelligence, we are usually taking a functionalist “shortcut”: Extraterrestrial intelligence, the reasoning goes, is present when we are observing things and actions that require a technologically advanced civilization in order to happen. Of course, extraterrestrial equivalents of the Cro-Magnons are, in principle, also intelligent, but in the context of extraterrestrial life, the focus is on technologically advanced civilizations simply because advanced technology is a convenient and unambiguous heuristic for intelligence.

Extraterrestrial intelligence understood as an advanced technological civilization is usually thought of as *biological intelligence*. We humans are a form of biological technologically advanced civilization, and it is plausible to think of other similar extraterrestrial civilizations as being biological as well. But there can be another kind of extraterrestrial intelligence: Extraterrestrial *artificial intelligence*.

Artificial intelligence is intelligence in a specific way: A technical apparatus, such as computer software, that is maximizing some utility by incorporating stimuli from its environment[9]. Artificial intelligence has, essentially, nothing to do with popular accounts of artificial intelligence as artificial consciousness[10]. For the most part, artificial intelligence is computer code that is trying to achieve some goal (For the most part and not exclusively because, in principle, artificial intelligence can also be implemented in a physical, mechanical way.). Artificial intelligence is not about robots that develop self-awareness; that is pop culture.

2.4 Three strategies: Apathy, benevolence, hostility

We have no justified idea what extraterrestrial civilization or extraterrestrial artificial intelligence might look like. Therefore, we cannot predict in any meaningful way how an interaction with extraterrestrial civilization or extraterrestrial artificial intelligence would play out; imagining such scenarios is the domain of popular culture. However, we can think about the general strategies an extraterrestrial civilization or an extraterrestrial artificial intelligence could adopt in the context of interaction with other civilizations or artificial intelligences. There are three basic strategies: *Apathy*, *benevolence*, and *hostility*. The properties of these three strategies can be understood if we apply them to the example of what kinds of reactions to our METI messages are thinkable.

An *apathetic* reaction by an extraterrestrial civilization or an extraterrestrial artificial intelligence is a reaction lacking in interest towards us. More specifically, learning about our human civilization might have an impact on the receiving civilization or artificial intelligence in the sense of knowledge, but it would not result in any kind of response towards us humans.

A *benevolent* reaction by an extraterrestrial civilization or an extraterrestrial artificial intelligence is a reaction that, contrary to the apathetic one, *does* result in some kind of response towards us humans. That response is benevolent in that the extraterrestrial civilization or artificial intelligence in question does not *a priori* regard their own preferences as categorically more important than the preferences of humankind. This means that the extraterrestrial civilization or artificial intelligence does not act only to maximize its own preexisting utility, but changes its preferences by taking into account the preferences of humankind.

A *hostile* reaction by an extraterrestrial civilization or an extraterrestrial artificial intelligence is similar to the benevolent one, with one important difference: The extraterrestrial civilization or artificial intelligence in question regards their own preferences as more important *a priori* than the preferences of our human civilization. A hostile reaction, therefore, is one where the extraterrestrial civilization or artificial intelligence exclusively acts so as to maximize its own pre-existing utility. This hostile strategy does not necessarily result in harm to humankind,

but it can.

3 The potential benefits of METI

3.1 Finding out whether we are alone

One big potential benefit METI is that it increases the probability for finding out whether there is intelligence beyond Earth. That is a question humankind, arguably, has been pondering for quite some time, and METI might answer it. Knowing that we are not alone would profoundly change human societies and the ways in which we think about life, intelligence, and the universe. METI might help us enter a new historical and philosophical era.

Of course, declaring this point to be a benefit is debatable. For example, we don't know how exactly people would react to the news that there is an extraterrestrial civilization out there. Maybe there would be mass violence and chaos because people couldn't properly handle such a shock to their world view. From an "enlightened" epistemological point of view, however, having more information about reality is preferable to having less information.

3.2 Technological leap

If METI were successful, humankind might enjoy a great scientific and technological leap – if we contact a civilization more advanced than ours, we could learn many things from that civilization that might otherwise take us a long time to discover.

Such a technological leap would occur if METI contacted a benevolent civilization or a benevolent artificial intelligence. The leap would probably not be instantaneous, but even if extraterrestrial scientific information had to travel a long time through the vacuum of space, it could expand our scientific body of knowledge vastly beyond our own rate of discovery once it arrived. Greatly increasing our scientific knowledge about reality would translate into greatly improving our lives: We might rid humankind (as well as other sentient life forms) of disease and suffering and greatly increase pleasure.

4 The potential downsides of METI

4.1 The almost certain outcome: No response

One of the major potential benefits of METI is a response by a benevolent extraterrestrial civilization or artificial intelligence. But that potential benefit is,

in all likelihood, simply wishful thinking – even a benevolent extraterrestrial civilization or artificial intelligence will not respond to METI if they have any semblance of rationality and if self-preservation is a relevant goal they wish to achieve.

In order to understand why, imagine that we humans are the recipients of a METI message. If we were to be contacted via METI, we would already know that the sender, a civilization or an artificial intelligence, is not apathetic towards us; otherwise, they would not have contacted us via METI. Therefore, the sender is either benevolent or hostile. In the METI message, the sender declares themselves to be benevolent. Do we believe the sender and respond? No, of course not, because doing so would be irrational. The reason why is easy to explain.

In the constellation of us receiving a METI message by an allegedly benevolent civilization, we know that we are benevolent. Even though we do not have a universal coherent system of human ethics, we are, as a civilization, benevolent. If we learned of an extraterrestrial civilization or an extraterrestrial artificial intelligence, we would change our preferences to account for theirs. If we were to receive a METI message by an allegedly benevolent civilization or artificial intelligence, therefore, we would stay benevolent – but we would *not* give up our goal of self-preservation, of course. This means that we would not simply believe the METI message's propositional content to be true. Why? The declaration of benevolence in the METI message might be a ruse in order to trick an irrational civilization into revealing itself. In that case, the allegedly benevolent civilization or artificial intelligence that sent out the METI message is, in fact, hostile.

What is the rational thing for us humans to do upon receiving a METI message from an allegedly benevolent civilization or artificial intelligence? There is, of course, only one rational course of action: Stay silent. Since we have no way of making sure that the allegedly benevolent civilization or artificial intelligence really is benevolent, we have to operate under the assumption that the METI message is fake and that it is an attempt to make us reveal ourselves.

Now imagine that a truly benevolent extraterrestrial civilization received our truly benevolent METI message. What would that truly benevolent extraterrestrial civilization do? The only rational thing to do for that civilization is, of course, not to respond, since the civilization has no way of knowing that we are truly benevolent.

What would happen if, say, a *hostile* civilization were to receive our METI message? Its reaction would be, again, to stay silent: Since the hostile civilization would have no way of knowing whether we are truly benevolent, revealing itself poses a risk. However, and crucially: By sending a METI message, we have already revealed ourselves to the hostile civilization, and that is a huge strategic advantage against us. Therefore, the hostile civilization has the element of surprise, and it will make use of it. Even if our METI message is borderline suicidal (by containing

coordinates of our Solar system), the hostile civilization will not send anything conspicuous like large spaceships to Earth – simply because the hostile civilization is aware that, if the METI message had been sent by a hostile and more advanced civilization or artificial intelligence, it might be endangering itself by revealing itself. Therefore, the hostile civilization will probably only send something like one or several probes to Earth in order to gather information about us and, depending on the information, plan its next steps in order to maximize its utility.

All in all, there are nine possible configurations of METI sender and METI recipient, as summarized in the following table:

Table 1: Reactions upon receiving METI messages in different configurations of senders and recipients.

		Recipient		
		<i>benevolent</i>	<i>hostile</i>	<i>apathetic</i>
Sender	<i>benevolent</i>	silence (real)	silence (probing)	silence (real)
	<i>hostile</i>	silence (real)	silence (probing)	silence (real)
	<i>apathetic</i>	-	-	-

There is *no* constellation in which METI results in anything but silence. Silence is the *only* rational response for any kind of recipient in any kind of constellation. The only exception are cases of civilizations and/or artificial intelligences that are fundamentally irrational or cases of civilizations and/or artificial intelligences that do not value self-preservation much. Both of those cases are very improbable because such traits are, for obvious reasons, detrimental to the prospect of a civilization or artificial intelligence reaching a high level of technological maturity.

4.2 Existential risk

If we engage in METI, we will almost certainly not receive an answer, and we will possibly expose ourselves to hostile civilizations or hostile artificial intelligences. Hostility in the context of METI is not hostility in the Hollywood sense – a hostile extraterrestrial civilization is not necessarily one that will visit Earth and wage war.

A hostile extraterrestrial civilization or artificial intelligence is one whose preferences are unaffected by our preferences. Such a civilization or artificial intelligence would simply try to achieve its goals as well as possible, without any regard for the goals of humankind, such as self-preservation. Therefore, hostile civilizations and artificial intelligences represent an existential risk, not certain death.

5 Conclusion: METI is irrational and should be abandoned

At best, METI is a waste of time: There are no technologically advanced civilizations or artificial intelligences out there, and no one will receive our METI messages.

At worst, METI creates an existential risk: If there are technologically advanced civilizations or artificial intelligences out there, we will almost certainly not receive a response to our METI messages, but we will simply reveal ourselves to hostile civilizations or artificial intelligences.

There is no rational reason why we should engage in METI. All METI activity should be abandoned. Ideally, METI proponents will be convinced of the irrationality of METI. If not, METI has to be outlawed.

Proponents of METI sometimes make the argument that “accidental METI” in the sense of electromagnetic radiation “leakage” into space has already occurred (with a peak in the 1980s), so any harm that METI could do has already been done[11, 12]. This is a non sequitur. The fact that electromagnetic “leakage” as an externality of human communication has occurred in the past does not at all justify deliberate METI that is orders of magnitude more powerful and much more precise. That is akin to saying that, in a game of hide and seek, you might have been spotted when your shoe was showing around the corner, so you should come out of hiding altogether.

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