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**EXPANDING HUMAN PRESENCE BEYOND THE SOLAR SYSTEM
THROUGH ACTIVE SETI:
ON THE PREREQUISITES FOR LEGAL RELATIONS WITH
EXTRATERRESTRIAL INTELLIGENCE**

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ABSTRACT

Recently there has been increased interest in the international SETI community on *active SETI*, in which intentional signals would be sent from Earth prior to the detection of intelligence on other worlds. Some have argued that essentially the same legal and policy considerations apply whether one is replying to a signal from an already detected civilization, or whether one is transmitting without prior knowledge that an extraterrestrial civilization exists. In contrast, this paper argues that decisions about whether to transmit from Earth *de novo*, prior to detecting extraterrestrial intelligence, may require guidance from other disciplines to an extent not previously discussed for traditional, passive SETI. One of the lessons learned by members of the IAA's Study Group on Interstellar Message Construction is that significant insights can be gained by seeking input from disciplines not typically involved in SETI. In that spirit, this paper examines the value of addressing some of the legal issues surrounding relationships with extraterrestrial intelligence by drawing specifically on the work of theorists of narrative.

INTRODUCTION

As we consider the legal aspects of expanding human presence beyond low Earth orbit, it is important to consider ways that human beings can even now have a presence in space well beyond the confines of our solar system. Since the 1980s, under the auspices of the IAA and IISL, legal experts, scientists, and technologists have devoted significant

attention to legal issues relevant to the Search for Extraterrestrial Intelligence (SETI), which seeks evidence of technological civilizations around other stars. This discussion has drawn upon precedents from space law and other legal principles to provide guidance about the transmission of messages from Earth to any extraterrestrial intelligence that might be detected in the course of SETI research.

More recently, there has been increased interest in the international SETI

community on *active SETI*, in which intentional signals would be sent from Earth prior to the detection of intelligence on other worlds. Some have argued that essentially the same legal and policy considerations apply whether one is replying to a signal from an already detected civilization, or whether one is transmitting without prior knowledge that an extraterrestrial civilization exists. In contrast, this author suggests that decisions about whether to transmit from Earth *de novo*, prior to detecting extraterrestrial intelligence, may require guidance from other disciplines to an extent not previously discussed for traditional, passive SETI.

One of the challenges of adopting legal precedents as a foundation for exchanges with extraterrestrial intelligence is that law is most informative when there is already a well-established relationship between the actors whose relationship is in question. That is, before we know what the appropriate legal relationship between two entities should be, we typically know that both entities actually exist, and we have an existing of some sort relationship between those two entities.

If we detect extraterrestrial intelligence in passive searches for signals from other planets, then we would indeed know that the other intelligence exists. If their signal is in response to unintentional leakage of electromagnetic radiation from Earth, or other evidence of developing civilization on Earth, such as atmospheric changes in the nineteenth century due to industrialization, then the extraterrestrial civilization would also know about our existence. Thus, there are at least some cases of traditional

passive search scenarios in which legal precedents would seem to provide at least initial guidance for defining our relationship. A more perplexing case holds for active SETI, in which we would transmit a message to beings whose existence we posit, but without direct evidence.

One of the lessons that has been learned by members of the IAA's Study Group on Interstellar Message Construction is that significant insights can be gained by seeking input from disciplines not typically involved centrally in SETI. For example, when the traditional approach of constructing interstellar messages based on principles of mathematics and science is supplemented with artistic insights, the resulting messages seem richer and potentially easier to decode. This paper will examine the value of addressing some of the legal issues surrounding relationships with extraterrestrial intelligence by drawing specifically on the work of theorists of narrative.

NARRATIVE IN INTERSTELLAR MESSAGES

In more ways than we might initially anticipate, narrative structure has been used in many prior interstellar messages, although sometimes only implicitly as the authors of the messages have attempted to tell coherent stories. Narrative theories can thus be useful for interpreting the intent and meaning of interstellar messages, even if the messages' creators did not explicitly think about the narrative structure of these messages.

As we consider the role of narrative in interstellar message composition, it is

important to be clear just what we mean by narrative. A narrative, or story, has several components. First, there are a series of events that are connected together. The particular way in which these events are connected allows for a recounting of the plot.

Narrative also requires that there be a certain trajectory to the events. To tell a story, it is not sufficient simply to recount a list of events. Rather, meaningful connections must be drawn between the events. From the perspective of extraterrestrial attempting to understand terrestrial narratives, once the actions depicted in an event are comprehended, the next interpretive challenge comes in understanding their significance.

Given the many ambiguities of interpreting narratives, in interstellar messages, we should look for ways to thematize stories. For example, Alexander Ollongren has identified methods to clarify the logical content of interstellar messages, using concepts from propositional logic to make explicit the relationships between variables and more complex messages. Such an approach could be of value in more nuanced tellings of terrestrial narratives.

In contrast to a scientific understanding of interstellar message construction, a narrative approach eschews the goal of objective detachment in recounting a series of events as they occur *per se*, and instead advocates the intentional shaping of stories.

OBJECTIVITY, SCIENCE, AND DIPLOMACY

The telling of narratives in interstellar messages also requires choices about the perspective from which to tell stories. Consistent with the ideal of scientific objectivity, most interstellar messages to date have implicitly assumed a third person perspective, in which events and actions are recounted as if they were being described without bias. Nevertheless, those who have constructed interstellar messages have often acknowledged the limitations of their own perspectives, and the inevitability of interjecting their own values into interstellar messages, at a minimum insofar as they are choosing the content to be included.

This emphasis on an objective, third person perspective is consistent with the traditional goal within the SETI community of modeling interstellar communication upon diplomatic and legal discourse. The SETI community is guided in its actions by a protocol that dictates that any decisions about transmitting messages in reply to other civilizations should be made on behalf of all of humankind.

The astronomer Jean Heidmann provided a prototypical example of how one might portray the breadth of human concerns, but minimizing bias toward a specific perspective. In his plan, we might simply send one or more encyclopedias. Even encyclopedias, however, represent editorial perspectives including decisions about which topics are worth including and how much attention each deserves, even if these biases are not explicitly stated. Even if it were possible to create a message that was neutral, however, the question remains whether this is an appropriate ideal.

As we consider the role of *point of view* in narratives, we realize that the same set of events can be told from many different perspectives. Again, this is an idea that has not been emphasized by those who have constructed past interstellar messages, who have typically striven for a univocal message.

As noted above, past narratives in interstellar messages have cast the narrator, from whose perspective the story is told, as a third person observer. That is, the narrator stands outside of the story that is being recounted. As an alternative so far not explored, one might create interstellar narratives in which the narrator plays a role within the narrative itself, either as a major or minor character.

REPRESENTING HUMANKIND

Using an approach inspired by the ideals of international cooperation and consensus, typically associated with passive SETI protocols and inspired by diplomatic models, we might focus on messages having a content about which we can come to broad-based consensus. Drawing on the author's alternative Dialogic Model, we might alternatively seek to represent the *diversity* of human perspectives in interstellar messages, emphasizing the value of individual expressions rather than relying solely on content upon which all agree. From this perspective, one might argue that if a message is restricted to only the content about which there is universal consensus, the resulting message would provide a very impoverished – and perhaps brief—representation of human concerns.

It is by no means certain, however, that an extraterrestrial interlocutor will automatically assume that a message from Earth will be sent on behalf of all of humankind. Indeed, the claim that any particular message is representative of Earth as a whole, while also describing the conflicts and lack of coordination of many aspects of our civilization, would make a claim of broad representativeness questionable, and rightly so.

Indeed, physicist Freeman Dyson has argued that the multiplicity of messages that might follow detection of extraterrestrial intelligence, while not in accord with existing SETI protocols, is nevertheless the likely response given the challenges of regulating transmissions from Earth. However, Dyson sees this cacophony of responses as representing humankind, insofar as it represents our lack of agreement on many fundamental issues.

TELLING THE TRUTH

We must also consider the authority and credibility of the narrator in interstellar messages. As some commentators on interstellar messages have noted, interstellar messages that present humans as fundamentally altruistic, without noting our less benevolent aspects, would be fundamentally deceptive. If in addition the content of messages raises questions about the consistency of our claims, then in addition our credibility as narrators might be called into question. Lawyers Alex Haley, Ernst Fasan, and Patricia Sterns have noted that among the various Metalegal guidelines for appropriate interstellar communication, a fundamental principle is truthfulness.

ACROSS GENERATIONS

If we conceive of interstellar messages as not self-contained, complete messages, but rather as a series of ongoing transmissions that will be made across generations, then an *epistolary* model very quite useful. Using an epistolary model, each message is akin to one letter in an ongoing series of letters. In the case of transmissions that occur over several generations, the author changes over the course of time, and there may well be periods in which our cosmic interlocutors would receive very few additional letters, as interest in active SETI waned or funding for such projects was scarce. One important feature of our civilization that we could communicate in a transgenerational epistolary model is the extent to which we are capable of a project of ongoing transmissions. Intermittent bursts of messages over the course of millennia would convey a very different sort of civilization than one that continually transmits.

WHOSE HISTORY?

The intergenerational nature of interstellar communication makes it particularly important to be clear about who is speaking. Literary theorist Jonathan Culler also reminds us that when we are looking at the point of view from which stories are told, we need to separate two aspects of point of view. First, who is speaking, and secondly, whose perspective is being presented. In an interstellar message that would portray the history of humankind, we might recount history through the words and ideas of those who have written in the past, but it's possible that particular presentation of these ideas represents the

view of the one who juxtaposes various views on the past into a far larger history of humankind.

As the author has noted in earlier papers, one compelling theme for an interstellar message is a specifically evolutionary history of humankind, told within the broader framework of cosmic, biological, and cultural evolution. During the past century, evolution has played the role of a central myth of our self-understanding, making it particularly appropriate to represent both where we came from and what our recent and current condition.

The temptation in interstellar messages is to describe the state-of-the-art of our current knowledge. There have been occasional exceptions. In the Voyager interstellar record, a bit of the history of science was included in the form of an image from Isaac Newton's *System of the World*, but even here, the image selected was chosen because its continuity with current conceptualizations of celestial mechanics. Alternatively, one might recount the history of science by a successive set of accounts of science as expressed in their own terms.

A CASE STUDY: A VOYAGE IN SELF-UNDERSTANDING

As we consider the various stories behind the sequence of images in the Voyager interstellar recording, we see a serious attempt to portray our world, our species, and our cultures. Multiple, interconnected narratives are included in these images, with the following being one characterization of the major themes, in the order they appear.

- First, basic principles of a numbering system, physical units, and basic astronomical and planetary information is provided.
- The chemical basis of life is described briefly. It is noteworthy that although a broader description of earth, its varied environments, and a sampling of its lifeforms is included later, the primacy of humankind in the message was established early by using humankind to show relationship between biochemistry and organismal morphology.
- Next, seven images of the major systems of the human body are shown.
- As French philosopher and historian of science Michel Foucault notes, during the past century we have increasingly come to understand ourselves in terms of our sexuality. This is reflected in the Voyager message, which next includes a series of nine more images describing human reproduction. Interestingly, in spite of this emphasis on sexuality, at the final stages of production a photograph of a nude man and pregnant woman holding hands was removed by NASA in an effort to avoid the criticism of sending objectionable images into space.
- Next, five images of the human family are shown.
- Then a series of images depicting the history, structure, and varied environments of the Earth and the life that it supports is included. Throughout this

sequence, humans intermittently appear: as a rider horseback, as a shepard, standing near a tree, at the top of a visual “tree of life” in which humankind is that the upper right hand corner, as an underwater diver, as the caretaker (or at least holder of) a frog, as an examiner of a dead alligator, as a primatologist studying our relatives the chimpanzees, and as a hunter. Other environments and animals are shown in remaining photographs, and from this point on, all images are photographs and not diagrams as were some of the earlier images.

- The center of attention on the final series of images are human beings, their technologies, their buildings, their tools of investigation, their means of transportation (on land, air, and space), and—after an image of a sunset—a string quartet and sheet music for the musical selection that begins the opposite side of the recording, which features sounds of Earth.

FUTURE DIRECTIONS: METALAW AND ACTIVE SETI

Current strategies in SETI presuppose an asymmetry between human and extraterrestrial communicants in the degree of responsibility that should be expected to establish contact. For contact to occur, it is argued, an extraterrestrial civilization must be much longer lived than humankind current is. Because active transmitting is more expensive than passive listening, it has been argued that we should expect that older, extraterrestrial civilizations

should bear the onus of transmitting, relieving humankind of this more burdensome role.

This emphasis on the benefits of interstellar communication for humans, rather than for extraterrestrial intelligence, is reflected in the Draft Declaration of Principles Concerning Sending Communications with Extraterrestrial Intelligence, developed within the IAA SETI Committee. This document notes that if a message is sent to an extraterrestrial civilization, "The content of such a message should reflect a careful concern for the broad interests and wellbeing of Humanity..." No mention is made of the potential benefits of such communication for intelligence on other worlds. Although many have suggested that humankind could benefit from joining a "Galactic Club" of other civilizations, few have suggested that humankind should be expected to pay dues to join, or that we should consider the needs and interests of other members of the club.

Principles of Metalaw proposed by Andrew G. Haley and developed by Ernst Fasan suggest an alternative emphasis, which would also take into account the potential benefits for extraterrestrial intelligence of receiving transmissions from Earth. In describing the principles that may guide the relations between civilizations, Fasan has proposed "It is not a legal, but an ethical principle that one race should help the other by its own activities." But how could a relatively young civilization such as ours exercise such an ethical obligation, helping a more advanced civilization?

I would argue that it is precisely the very precarious and vulnerable nature of being a young civilization that may provide a rare commodity in an interstellar exchange, providing invaluable information to share with more technologically advanced civilizations that may have long since forgotten the struggles of being an adolescent civilization. This is consistent with Patricia Sterns' observation that an intentional communication could provide important information to another civilization even if they have previously detected intelligence on Earth via leakage radiation.

De novo transmissions from Earth, prior to detection of an extraterrestrial civilization, may also have a salutary effect for future generations of humans. If other civilizations are waiting to reveal their presence until receiving an invitation from humankind, an active SETI program may be a prerequisite to establishing communication with extraterrestrial intelligence. In the process, search strategies based on Metalegal principles that take seriously human obligations to other civilizations may also increase the chances that future generations of humans will make contact with life beyond Earth.