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Incorporating Interstellar Communication into the Classroom: The Pioneer 10 Plaque

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G.I.F.T:

Incorporating Interstellar Communication into the Classroom: The Pioneer 10 Plaque

Courses: Introduction to Communication, Intercultural Communication

Objectives: Upon completion of this activity, students should be able to:

1. Recognize communication's interpretive nature using the *Pioneer 10* interstellar message;
2. Identify the different ways people interpret the *Pioneer 10* message elements;
3. Demonstrate how denotative and connotative meanings work in the *Pioneer 10* message;
4. Appraise the sensitivity of the *Pioneer 10* message pertaining to issues of gender and diversity;
5. Illustrate how the *Pioneer 10* message applies to the Triangle of Meaning; and
6. Describe *Pioneer 10* controversial elements.

Rationale:

In courses where I teach foundational communication theory and principles, I find it valuable to incorporate interstellar communication as a way to explain, illustrate, and problematize communication's symbolic and interpretive nature. Interstellar communication, informally defined as purposeful messages designed to initiate contact with extraterrestrial life, challenges accepted communication principles in exciting ways. Furthermore, it introduces students to a set of rhetorical artifacts that are typically not examined in communication courses.

Time for Activity: 5 to 15 minutes

Resources Needed:

1. Access to the *Pioneer 10* Interstellar message, which is found easily on the internet (see Appendix).
2. Ability to show image to the class.

Activity:

This activity is designed to illustrate some basic traits and characteristics of communication principles using the *Pioneer 10* interstellar message.

Before decoding the *Pioneer 10* plaque, provide students with some time to analyze the message on their own to determine its meaning (see Appendix for message explanation). Normally students

successfully decode the two human figures, the simple drawing of the probe, and the rudimentary diagram of our solar system. What is more difficult to figure out is the drawing of the hydrogen atoms and the pulsar map. The specific purpose of these two message elements is to help recipients determine the length of time since the message was sent and our location in the Milky Way galaxy, respectively.

I proceed to ask students if they see any errors contained in the *Pioneer 10* message. Some students recognize and identify how the simple drawing of our solar system is incorrect. Pluto lost its status as a planet and was reclassified as a dwarf planet in August 2006 because it did not have the ability to “clear its orbit of other objects” (“Pluto loses status,” 2006, ¶ 10). Denotatively, Pluto should not be on the message because in 2016 it is reclassified as a dwarf planet, not an actual planet. But in 1972, Pluto’s designation as a planet was unquestioned. However, this error provides incorrect directions to locate Earth. For many people colloquially, the idea of Pluto losing its planetary designation is too much to bear. As Kreider (2006) laments, “Planets, like Supreme Court justices, are appointed for life, and you can’t blithely oust them no matter how eccentric, skewed or unqualified they may prove to be” (¶ 4). Despite denotatively not being a planet, for many, connotatively Pluto will remain a planet for the rest of their lives.

I then move the discussion to the two human figures contained within the *Pioneer 10* plaque. The first part focuses on the man’s right arm gesture. In many cultures, people would decode this gesture as a greeting. But there are different ways people can interpret this message element. Some may see it as a sign of warning, interpreting its meaning as stop or do not proceed any further. Another interpretation of this arm gesture is that of a threat, as if the man is getting ready to strike. Additional interpretations could be that the man has a question, is taking an oath, or is stretching.

With regards to this hand gesture, there was also concern by people that only the male figure is offering a greeting. There is a practical reason why both the man and the woman cannot do this gesture. If both people did this action it might confuse the recipients into thinking this is how human anatomy is naturally. However, people can and do interpret this symbol as a sign of privileging maleness and as a representation of our culturally embedded sexism. Even the fact the male is centered in the probe, whose

purpose is help the extraterrestrial gain a perspective of human height, is also interpreted as a privileging of men over women.

There is also a question of values and morals surrounding this message. Message framers were concerned that the figures' clothing might be mistaken for human skin. However, the figures' general nude sketch was interpreted by some people on Earth as a symbol of immorality. Sagan (1973) recalls, "there were angry letters to the editor denouncing NASA for using taxpayer's money to send 'smut' into space. There were letters from outraged feminists protesting that the woman on the plaque appeared to be subservient to the man" (p. 59). These issues may be meaningless to an extraterrestrial audience or interpreted in such a way humans cannot even fathom. The multiple layers of meaning and interpretation contained within a single message element is something the *Pioneer 10* interstellar message illustrates effectively.

A final way communication educators can use the *Pioneer 10* plaque is to illustrate the Triangle of Meaning, one of the cornerstones in our discipline that showcases how symbolic communication systems work. The probe on which the message is attached serves as a referent, by which the extraterrestrial has access to, can measure, and ascertain the height of people in the extraterrestrial's measurement system. By placing the man in the center of the probe drawing, the extraterrestrials can measure the referent (the satellite) and calculate human height. The symbol of the referent (the satellite) can be found twice within the message; [1] there is a larger version with the humans superimposed over it, and [2] a smaller version showing the satellite's flight path out of our solar system and into intergalactic space. The third part of the triangle of meaning, the thought/reference, is something people cannot determine with certainty from an extraterrestrial perspective. Our first, purposeful form of interstellar communication could be interpreted by an extraterrestrial as a symbol of primitiveness, friendship, hope, or aggression. It is interesting to see what perspectives students have concerning this message and to watch them theorize what an extraterrestrial perspective concerning the thought/reference component of the Triangle of Meaning would be.

Discussion:

In the field of communication studies, interstellar communication has the ability and potential to challenge the way our discipline understands current theory and constructs. There is great diversity in how people communicate, but it is difficult for people to transcend these constructs. People are still anchored to human values, beliefs, experiences, and behaviors. Using interstellar communication as a tool to examine human communication can problematize accepted principles. Extraterrestrials may interpret, understand, or decode human communication in ways we cannot even imagine. The *Pioneer 10* message, the Arecibo Radio Telescope message, and the *Voyager 1* and *2* messages offer communication scholars and educators the ability to interrogate many of our core concepts in new and innovative ways.

Appraisal:

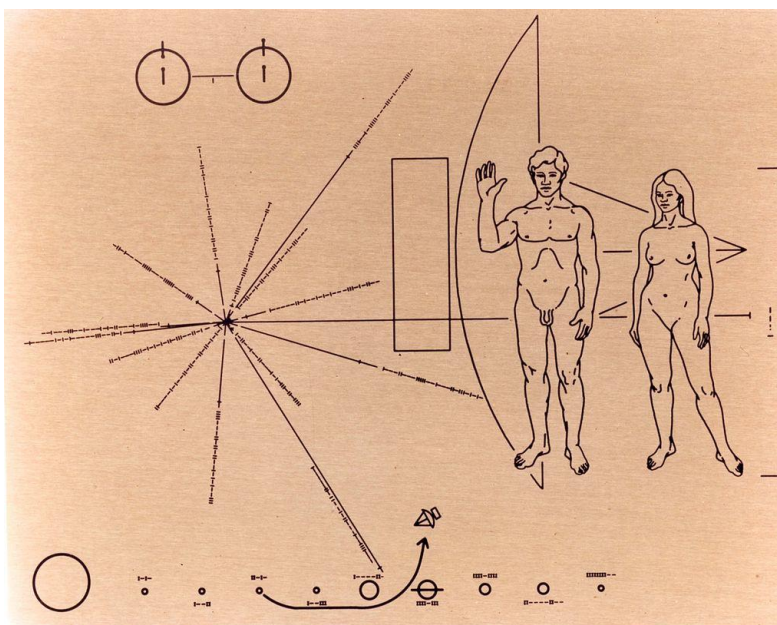
When I use the *Pioneer 10* message in my *Fundamentals of Communication* or my *Intercultural Communication* course students react positively. For many there is an unawareness this type of communication even exists. The discussions and engagements are constructive, and it allows me to illustrate a variety of concepts in new and novel ways.

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Appendix

Pioneer 10 Plaque



Designed by Carl Sagan and Frank Drake. Artwork prepared by Linda Salzman Sagan. Photograph by NASA Ames Research Center (NASA-ARC) (Ames Pioneer 10) [Public domain], via Wikimedia

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Explanation of *Pioneer 10* Message Elements (Launius, 2011).

