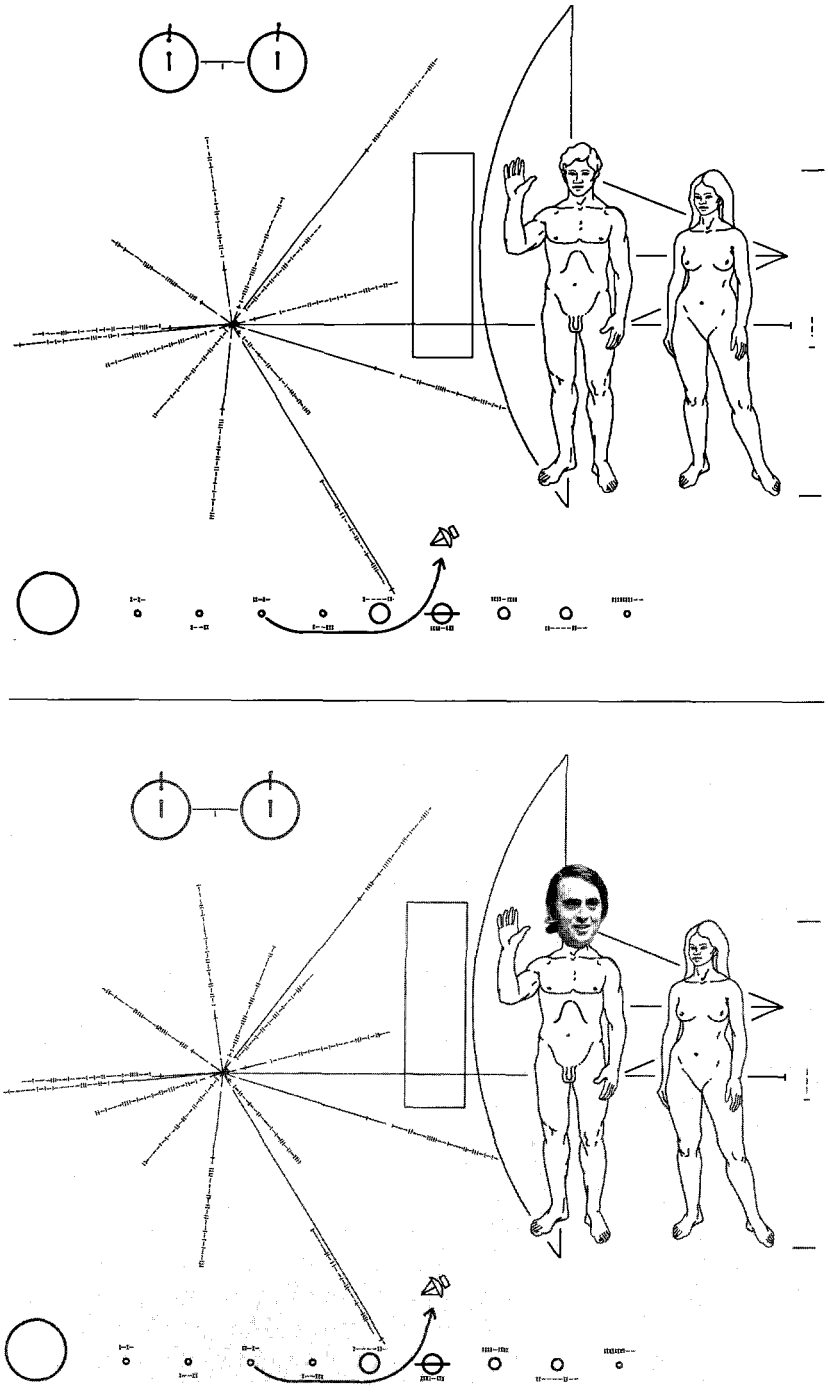

*The official drawing of Pioneer 10's message to outer space (top) differs in one significant detail from the version concocted by Caltech students for publication in the March 2 issue of* The California Tech *(bottom).*

# Message to the Milky Way

For the last month or so, Carl Sagan, visiting associate in planetary science at Caltech, has been rather secretive and vague about an innocuous looking six-by nine-inch etched aluminum plate in his office. He has put off curious visitors with a wave of the hand and the remark: "Oh, it's just something I am doing for publication."

Anyone with any knowledge of where Sagan's interests lie would have concluded he was writing something about the possibilities of contacting extra-terrestrial civilizations. But the plate in Sagan's office had to do with more than an article about sending a message into space.

It *is* the message.

The etched plate was imbedded in the side of the Pioneer 10 Jupiter probe launched on March 3, and is intended to identify the Earth as the spacecraft's point of origin and to depict the nature of the beings that launched it. It is included aboard Pioneer 10 because, following a two-year flight to Jupiter and a brief flyby, it will loop out of the solar system toward the other stars in our Milky Way Galaxy—the first man-made object to do so.

Etched on the right side of the plate are two nude figures, a man and a woman, poised against a scale outline of the spacecraft's configuration to show their relative sizes, particularly with respect to the probe's nine-foot dish antenna.

On the left, lines radiate from what looks like an explosion. Circular forms float above and below this. The bottom row of variously sized circles represents our sun and its planets. A sketch of the spacecraft and its trajectory shows its origin from within the solar system. Two circular designs at the top represent the neutral hydrogen atom whose radio emission is one of the most characteristic natural "signals" in the universe. Supposedly, anyone who studies the universe would know this.

The lines radiating from the "explosion" actually mark the direction of 14 pulsars as seen from Earth. Pulsars are radio sources with very strong and accurately pulsed emissions. They too are a striking cosmic feature another advanced civilization should recognize. Each pulsar is identified by its characteristic pulse rate. A system of binary

numbers encodes these rates in terms of their ratio to the hydrogen frequency. If any extraterrestrial beings ever discover Pioneer's message, presumably they will be able to identify each pulsar. From the relative distances of these pulsars from the Earth, they could locate our solar system. Since pulsar rates slow down at a known rate, the discoverers could also tell when the message was sent. The difference between pulsing rates at the time of discovery and those encoded in the message would measure the elapsed time.

The idea for a message originated with freelance writer Richard Hoagland and Eric Burgess, former West Coast science writer for the *Christian Science Monitor,* who were intrigued with the idea that Pioneer 10 will drift away among the stars. They raised the question with Sagan, director of Cornell University's Laboratory for Planetary Studies, and Frank Drake, director of the National Astronomy and Ionosphere Center at Cornell.

Sagan and Drake picked up the suggestion and—working with Sagan's artist wife, Linda—they produced the design, which the National Aeronautics and Space Administration then officially adopted.

This message is a first attempt to specify our position in the galaxy, our epoch, and something of our nature. The scientists admit that they don't know if it will ever be found or decoded, but its inclusion on Pioneer 10 seems to them a hopeful symbol of a vigorous civilization on Earth.


*Courtesy of Paul Conrad and the Register and Tribune Syndicate*

"The earth people are evidently similar to us here on Jupiter . . . except that they don't wear any clothes!"

## Reader Reaction—two letters to the Los Angeles Times

"I must say I was shocked by the blatant display of both male and female sex organs on the front page of The Times (February 25). Surely this type of sexual exploitation is below the standards our community has come to expect from The Times.

Isn't it bad enough that we must tolerate the bombardment of pornography through the media of film and smut magazines? Isn't it bad enough that our own space agency officials have found it necessary to spread this filth even beyond our own solar system?"

"I certainly agree with those people who are protesting our sending those dirty pictures of naked people out into space. I think the way it should have been done would have been to visually bleep out the reproductive organs on the drawings of the man and the woman. Next to them, then, should have been a picture of a stork carrying a little bundle from heaven.

Then, if we really want our celestial neighbors to know how far we have progressed intellectually, we should have included pictures of Santa Claus, the Easter Bunny, and the Tooth Fairy."