



North American AstroPhysical Observatory (NAAPO)



Cosmic Search: Issue 9 (Volume 3 Number 1; Winter 1981)

[Article in magazine started on page 9]

In Which Klingons Became Chimeras

By: Frank Drake

SETI has recently been afflicted by a serious disease, a disease curable through the steady application of good old horse sense. I'll call it *Star Trekitis*, because the first germs were spread by Capt. Kirk and company along with a very laudable awakening in awareness of the fascinating richness of space phenomena. The symptoms are frequent calls from media reporters posing statements such as "I hear that the failure of your searches for signals means that we are alone in the galaxy," or, worse, "I understand that because 'They' are not here, it has been proven that we are alone in the galaxy." The debilitating effect of the disease is concern among those who provide funds for SETI as to whether any further support is justified.



Now the first symptom is easily cured. It is easy to show that the searching which has been done, and it now amounts to an impressive tens of millions of tests of frequencies and directions in space, is still a drop in the bucket. In the immensity of the cosmic haystack, it will take many many more trials than those to create a reasonable chance of success. The program now being developed in NASA addresses this very problem, and we can hope that the effect of *Star Trekitis* does not delay it.

The second symptom is the provocative one. Its roots lie in a seductive logic which is impressive, but nonetheless is a classic case where logic and common sense don't reach the same conclusion. The logic goes like this: Eventually every technical civilization develops the ability to send spacecraft to other stars. They will then send colonizers to suitable planets of nearby stars. In time each colony will develop a space industry able to launch its own colonies. In some finite time this colonizing civilization will reach and colonize every suitable planet in the galaxy.

Now the punch line is that even the most conservative estimate of the finite time for total colonization of the galaxy is only about 100 million years, an instant in the age of the galaxy. It all sounds like a typical Star Trek scenario — yes, it says,

there should be a Klingon Empire out there. Most importantly, the first civilization to colonize inherits the galaxy, which is pretty heady stuff. No one else has a chance. The logical conclusion: Since no Klingons of any sort have come to earth, *we* must be the first — and maybe only — intelligent creatures in the galaxy. Therefore, searching for other civilizations is a waste of time and money.

The flaw in this is the tacit assumption that anything which is possible will happen. This theorem does seem to apply to natural phenomena in space, but now we are talking about intelligent creatures. They do not do everything possible, but only that which has the biggest payoff. Look at us: we could build a building a mile high (Frank Lloyd Wright designed one), but we don't. We built a few Concorde before realizing the payoff wasn't there, at which point the project was abandoned.

Now if there is anything which doesn't provide an attractive payoff, no matter how rich you are, it is interstellar colonization. The simplest of physical laws and the vast interstellar distances force any colonization scheme to be preposterously expensive. Here again Star Trek has led us astray with its one hour journeys from star to star. For example, if we launched one hundred colonists in a spacecraft providing a mass of ten tons per colonist (only a little more than the typical mass per passenger in a large jet plane), at a speed which would carry the spacecraft only ten light years in 100 years time, what is the absolute minimum amount of energy required? Answer: the same amount as 400,000 people consume in all ways in their lifetimes! Putting in some reasonable efficiencies for fuel production, etc. the minimum amount of energy grows to equal the total energy consumption of the United States for 100 years! Would you shut down America for a hundred years to launch a colony on a very iffy mission which would do you no good? Would any government do that?

How about the even more costly round trip missions? Barney Oliver recently worked out the minimum energy required to send a 1000 ton payload to Alpha Centauri and back in 50 years. It turns out to equal 4000 years of the total U.S. electrical energy production. Even assuming 100 percent efficiency, the cost at current rates would be 400 trillion dollars, which would affect income tax rates in a rather depressing way.

The point is that even if you had funds like this, you would spend them in more beneficial ways. For far less cost per person, you could provide a good life to

countless people by floating cities on the oceans or turning the arctic into a Garden of Eden. If you are intent on providing a good life to ever more people, you are far better off to pursue the building of space colonies as proposed by Gerard O'Neill. Yes, there may be great technologies; there may be countless planets which have been reformed into vast, comfortable habitats; there may even be fleets of space colonies orbiting other stars. But no Klingon Empires. Despite widespread intelligence and wealth in space, no Mayflower will descend from the sky.

Intelligent civilizations will limit their contacts to intellectual ones, touching one another, we reason, through radio and other electromagnetic waves. This is the ultimately logical way for logical beings. We should proceed with our radio searches.



Dr. Frank D. Drake is Director of the National Astronomy and Ionosphere Center of Cornell University which includes the Arecibo Observatory. Dr. Drake is a member of the Editorial Board of **COSMIC SEARCH**.

[HOME](#)

Copyright © 1981-2006 Big Ear Radio Observatory, North American AstroPhysical Observatory (NAAPO), and Cosmic Quest, Inc.

Designed by Jerry Ehman.

Last modified: June 6, 2006.