

Water worlds

Fermi resolved.

The King of Sweden was not a ruling monarch, but he did appoint the Nobel prize committees, and he had long been obsessed by the Fermi paradox. In this Golden Age of Astronomical Xenocology, there was nothing unusual about that, it had become a general cultural obsession as better and better instrumentation discovered more and more solar systems with planets in the liquid-water, Goldilocks zone — currently an estimated 20 billion of them.

In the mid-twentieth century, before even a single extrasolar planet had been discovered, Enrico Fermi had cavalierly assumed that they were there and that life on Earth was nothing unusual. Given the age of the Universe, there should be thousands of civilizations far more advanced than ours, and they should have filled the Galaxy by now ...

So where are they? Why haven't they visited us? Or at least announced their presence?

For the better part of the next century the Fermi paradox remained just a puzzle for astronomers and science-fiction fans. But as the Golden Age of Astronomy unfolded, it passed stepwise into a central cultural question, an unanswered riddle with deeper and wider public obsession.

The numbers said that there should be at least a million biosphere planets. But so far not a single advanced technological civilization? A Galaxy teeming with life but bereft of sentient beings other than ourselves? How could this be possible? What did it mean?

Religious fundamentalists declared that it meant we were the only sentient beings in this Universe and would be for ever; that it was created by God for humanity alone. Masses of people believed this, as no one had been able to come up with another answer.

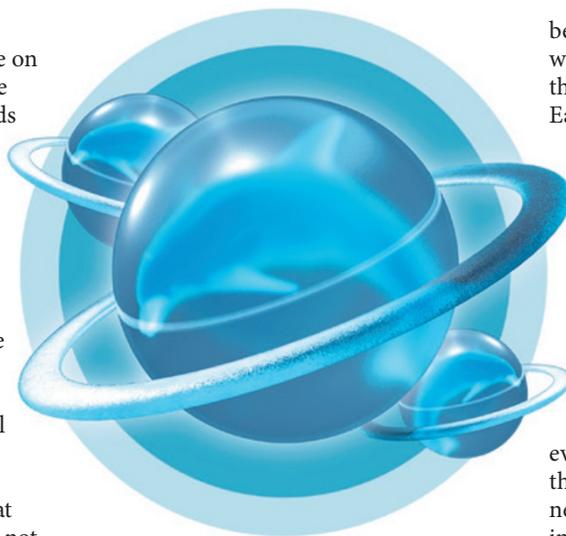
Until now.

No wonder that the solving of the Fermi paradox justified not merely a Nobel prize but a new category in which to award it. No wonder it was greeted with less than unanimous hosannas! And if the King of Sweden hadn't been an ardent

supporter of the Cetacean Liberation Front (CLF), the Nobel Prize in Xenocology might never have come into

being — and it certainly would not have been awarded for this controversial and depressing solution to the paradox.

By the middle of the twenty-first century it was clear that although there were more planets than stars, most of them were gas giants and the majority of H₂O got centrifuged into the outer reaches with them. That was the bad news for xenocology. But there were more moons than planets, and most of them revolved around gas giants, which was the modest good news.



Many of these moons would be balls of water ice either with or without small rocky cores, and some of their orbits through the gas-giant gravity could generate enough internal heat for deep liquid-water oceans to exist beneath the ice. And had not life on Earth begun in the ocean? Did not the evolution of organic chemistry from the inorganic have to happen in water?

So when such an ocean was discovered beneath the ice on Saturn's moon Enceladus, a submarine probe was launched with much excitement. And when aquatic creatures of some complexity were seen, more sophisticated drones were sent, revealing a biosphere not that much less evolved than that of terrestrial oceans, with creatures something like octopuses that congregated in organized teams to hunt and seemed to use prey bones as weapons.

Sentient? Intelligent?

Perhaps like dolphins and whales — which were more or less acknowledged as

sentient thanks to the lobbying of the CLF once it was understood that their 'languages' were really sonar video by which they not only communicated but told stories.

Eventually the CLF succeeded in getting a dolphin breathing oxygen via modified scuba gear sent to Enceladus. It was able to confirm that the 'Enceladuns' communicated with each other in the manner of terrestrial cetaceans.

Sentient aliens at last!

Or were they?

This turned out to be an uncouth debate between science and religion, which was only won by rationality when the CLF presented the Enceladuns and their water brothers of Earth as the resolution of the Fermi paradox.

Chemistry required that life had to evolve in liquid water. And the astrophysics of solar-system creation produced many more water moons for it to evolve in than wet rocks like Earth. Therefore there would be many more sentient species like cetaceans and Enceladuns than like humans.

Sentient cultures as the CLF insisted.

But if they had manipulative capacity like the Enceladuns, they could never evolve technological civilizations because they could never create fire and therefore never technology itself. Nor could they even imagine that there might be other worlds like theirs because from under those miles of ice and water they could never even see the stars.

Yes, the Galaxy teemed with worlds with biospheres and sentient civilizations.

But they were water worlds where technological civilizations capable of space travel or communication were impossible.

Like it or not, that was the solution to the Fermi paradox.

And like it or not, the expense of making a life-support tank to wheel into the assembly where the King of Sweden would present the first Nobel Prize in Xenocology to he who had solved it had to be paid.

Because the first Nobel Prize in Xenocology was won by a dolphin. □

NORMAN SPINRAD has been publishing novels in English for an actual half-century. His latest publication in English is the pamphlet *Raising Hell*. His latest novel has just been published in French as *Police Du Peuple*.

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