



Frank Drake, astronomer who devised a famous equation estimating the possibility of intelligent extraterrestrial life – obituary

He led the way in establishing what would become the Seti Institute, searching for civilisations on other planets

By Telegraph Obituaries

6 September 2022 • 2:57pm

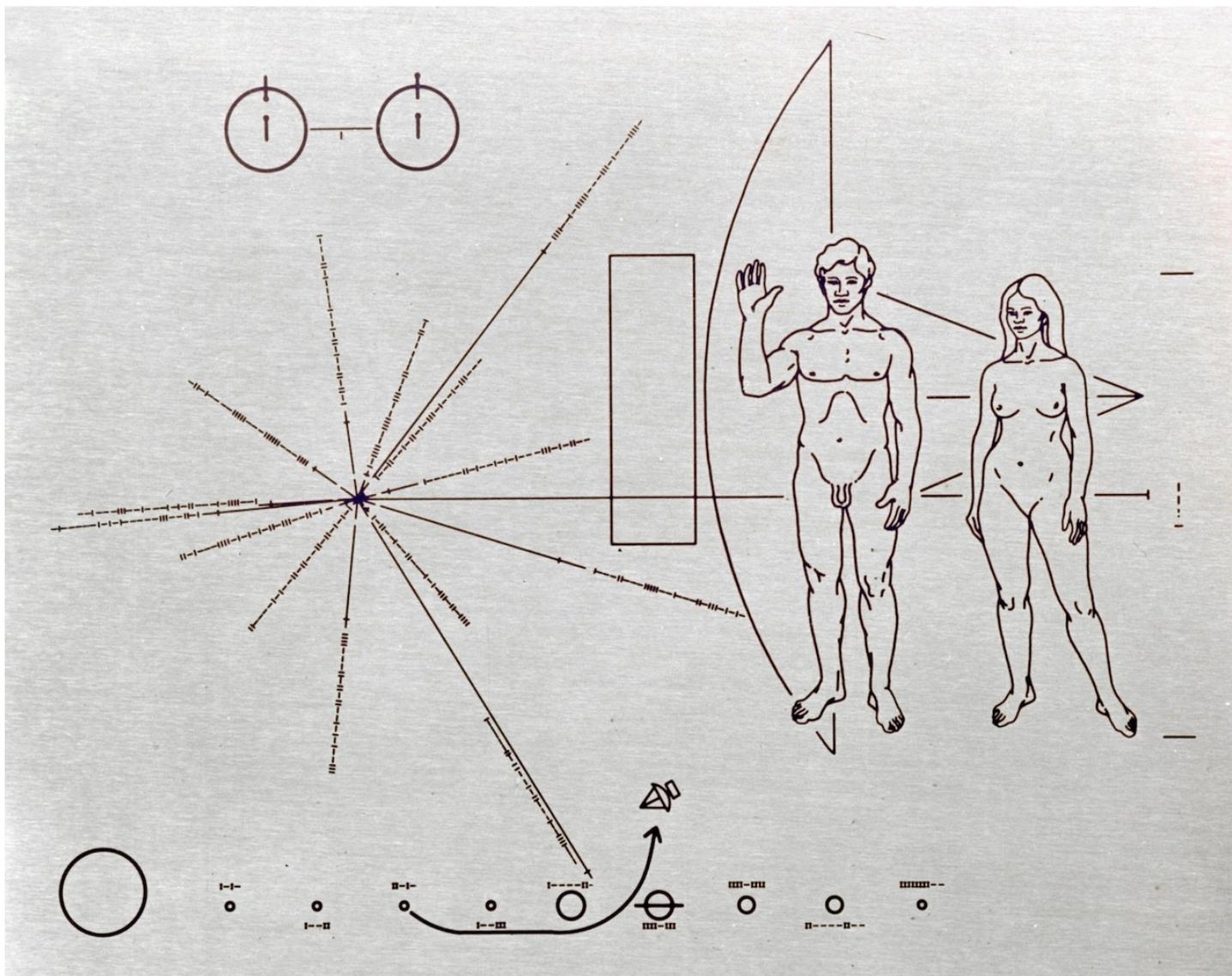
Frank Drake, who has died aged 92, was a radio astronomer known for his lifelong search for extraterrestrial life.

In 1960 Drake – then a young astronomer at the National Radio Astronomy Observatory at Green Bank, West Virginia – turned the newly constructed Green Bank radio telescope towards Tau Ceti, a nearby star similar to our own Sun.

He reasoned that for the previous 40 years Earth's increasingly powerful radar, radio and television transmissions had formed an expanding shell of electromagnetic radiation spreading across space. If any aliens happened to be listening, the signals would alert them to the presence of intelligent life on our planet. What was true for Homo sapiens, he reasoned, would also be true for broadcasts made by aliens.

For half an hour Drake and his team listened to the noise of Tau Ceti – a persistent hiss – before switching to another star, Epsilon Eridani, and were astonished and excited when they heard a series of regular pulses which were clearly artificial.

Further research revealed that the signals were coming from a nearby military base.



A plaque designed by Drake and Carl Sagan for Pioneer 10, the first spacecraft to leave our solar system | CREDIT: World History Archive/Alamy

Undaunted, Drake established what would eventually become the Seti (Search for Extraterrestrial Intelligence) Institute, a group dedicated to hunting for alien civilisations, and in 1961 published a famous formulation, the Drake equation, which seeks to estimate the number of technological civilisations that might exist in the Milky Way (which includes our solar system) by taking into account factors such as the rate of formation of suitable star systems, the fraction of possible planets that could harbour life, and the lifetime of civilisations.

Crunching the numbers, Drake and his colleagues estimated that there could be up to 50,000 civilisations capable of communicating across our galaxy.

The search for alien life is not as quixotic as it might appear. From the time when the sheer size and antiquity of the universe was becoming clear scientists have speculated that there

could well be other intelligent inhabitants of the universe beside ourselves. “Where the hell is everybody?” the physicist Enrico Fermi famously asked 10 years before Drake began his search.



Drake delivering a speech in 2008 | CREDIT: Reuters/Alamy

Drake's enterprise inspired several books and films, but despite continued efforts to detect intelligent signals from outer space by pointing radio telescopes of increasing power at thousands of stars and across millions of different radio frequencies, Seti scientists have continued to draw a blank. Not a single signal has ever been picked up to suggest that somewhere out there is a life form, other than ourselves, that possesses any sort of IQ.

Drake remained unperturbed. “I don't think the silence is eerie,” he told a Royal Society meeting in 2010, “it is predictable... There may be up to 10,000 civilisations in the galaxy but, given that the galaxy also contains 100 billion stars, that means we will have to search around 10 million stars before we have a realistic chance of finding one. That is certainly not going to happen in my lifetime... But we will make contact one day. I am sure of that.”

The older of two children, Frank Donald Drake was born on May 28 1930 in Chicago, Illinois, and became fascinated by the possibility of life on other planets as an eight-year-old. After

taking a degree in Engineering Physics at Cornell University, and service in the US Navy as an electronics officer on the Albany, flagship of the US navy's Sixth Fleet, he studied for a PhD in astronomy at Harvard and in 1958 joined the National Radio Astronomy Observatory at Green Bank, West Virginia.

In 1964 Drake returned to Cornell and in 1974 led an expedition to the Arecibo radio telescope in the tropical forests of Puerto Rico – the world's most powerful telescope at the time – to send mankind's first interstellar message, a three-minute recording consisting of a series of 1,679 binary digits, to a globular star cluster 25,000 light years away in the hope of reaching an extraterrestrial being on another planet.

In 1976 Drake was appointed Goldwin Smith Professor of Astronomy at Cornell and the following year served as technical director, with Carl Sagan and the science filmmaker Ann Druyan, in the creation of the Voyager Golden Record (a recording of sounds and images portraying the diversity of life and culture on Earth) carried on the Voyager 1 and Voyager 2 spacecraft.

In 1984, Drake left Cornell and served as dean of Natural Sciences at the University of California at Santa Cruz.

Frank Drake's first marriage, to Elizabeth Procter Bell, was dissolved and in 1978, he married Amahl Shakhshiri, who survives him with five children.

Frank Drake, born May 28 1930, died September 2 2022