“The Sounds of the Earth” (1977)

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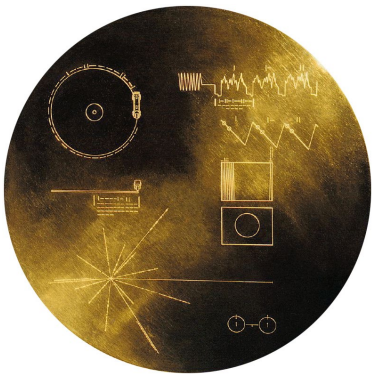
Essay by Amy Fletcher (guest post)*

The Golden Record


Voyager before launch


Golden disc covering with external markings/instructions

On July 20, 1969, the crew of the United States Apollo 11 mission landed on the Moon. The event represented a milestone in the Cold War technological competition between the United States and the Soviet Union and sparked worldwide celebrations. Commander Neil Armstrong became the first human being to walk on the Moon on July 21, 1969.

The Moon landing is an iconic historical event. However, in the 1970s, the National Aeronautics and Space Agency (NASA) found that political and popular interest in space exploration began to wane after this monumental goal had been met. NASA searched for innovative ways to showcase the benefits of space travel and engage the public.

The Golden Record is a key artifact from both the post-Apollo era of space exploration and the ongoing search for extraterrestrial intelligence (SETI) in the universe. Launched into space on the Voyager 1 and Voyager 2 missions, the Golden Record is a 12-inch, gold-plated copper disk in an aluminum cover that holds sounds and images chosen to reflect life on Earth.

The Golden Record embodies the hope that an intelligent species, existing somewhere in the outer reaches of space, might one day find and listen to it, and perhaps even choose to communicate with us. It is also a significant moment in the long history of NASA’s parallel research focus on space sound and acoustics.

From capturing the sounds made by a black hole to the search for extraterrestrial intelligence (SETI), space acoustics is a thriving research field. As early as 1901, engineer and inventor Nikola Tesla announced that he had received radio communications from intelligent life on Mars. While this proved illusory, Telsa persisted in his belief that intelligent life existed in outer space and that he would one day communicate with it via radio technology.

As the Cold War hardened in the 1950s, Guiseppi Marconi and Philip Morrison urged astrophysicists to listen for interstellar signals being transmitted by alien species. In popular culture, the search for UFO’s (unidentified flying objects) animated stories in TV shows such as “The Twilight Zone” and movies such as “The Day the Earth Stood Still.”

Interest in SETI among both specialists and amateur enthusiasts persisted throughout the Cold War. Carl Sagan (1934-1996), the renowned astrophysicist and science communicator, worked with Frank Drake to develop the Drake Equation in the early 1960s. The equation estimates the number of civilizations that might exist in the universe (and hence be capable of transmitting or receiving radio signals). While scientists by this point accepted that no other intelligent life

existed in our solar system, advances in acoustics had raised the possibility that sentient life might exist much further away from Earth.

Sagan and Drake, like many of their contemporaries, were motivated not only by science but by the environmental and humanitarian concerns of their era. Hence, they integrated SETI with an ethos that prioritized cooperation and global amity. Carl Sagan, who became famous via publication of his book "Cosmos" and the parallel PBS series of the same name, also had a gift for translating complex subjects into accessible and intriguing stories. The Golden Record was his brainchild and represented his aspirations for transmitting the best of humanity to outer space in the hopes of friendship with any extraterrestrial civilization that might find it.

On March 2, 1972, Pioneer 10 carried with it a small metal plaque that noted its time and place of origin. On November 16, 1974, the Arecibo message, the first official human transmission from Earth to potential extraterrestrial life, was sent from a radio telescope in Puerto Rico. The message, in binary code, included a drawing of a person and representations of DNA and our solar system. The radio signal traveled approximately 25,000 light years from Earth.

These events set the stage for the Golden Record, which was included on both the Voyager 1 and Voyager 2 missions. Both probes were ambitious attempts to travel beyond our solar system, farther than any previous manmade object had. In an anomaly, Voyager 2 launched first, on August 20, 1977, while Voyager 1 launched on September 5, 1977.

Carl Sagan headed the committee that produced the Golden Record. Issues such as copyright, licensing, and the coordination of the member states of the United Nations, made it an arduous project but one that Sagan was committed to completing successfully. Sagan knew better than anyone that the probability of another civilization listening to the record was vanishingly small. Yet he also believed that even a small chance of connecting with another civilization outside our solar system was worth the time and effort.

The Golden Record is designed to last for a billion years. Sagan's committee settled on the inclusion of 115 analog photographs that showcase Earth's diversity, as well as a 12-minute montage of natural sounds (including whales), greetings from Earth in 55 languages, and 90 minutes of music.

The record begins with a short message from UN Secretary General Kurt Waldheim. He notes that, "We step out of solar system and into the universe, seeking only peace and friendship, to teach, if we are called upon, to be taught if we are fortunate. We know full well that our planet and all its inhabitants are but a small part of this immense universe that surrounds us, and it is with humility and hope that we take this step" (see https://goldenrecord.org/#universum).

Western classical music is well-represented on the disc, with the inclusion of major pieces from Bach, Mozart, Stravinsky, and Beethoven. Chuck Berry's "Johnny B. Goode," as well one song each from Louis Armstrong and Blind Willie Johnson, mean that American blues and early rock-and-roll will travel through space for a billion years or more. Ethnomusicologists consulted for the project also ensured that non-Western and indigenous music, ranging from Mahi musicians to the Mbuti of the Ituri Rainforest, were included.

The question of whether and how another civilization would know how to play the Golden Record preoccupied the committee. It finally settled on a diagram that includes a drawing of the phonograph and stylus. Using binary code, the instructions also indicate the correct rotation time (3.6 seconds), and that the album should be played from the outside of the disc inwards.

In 2017, the 40th anniversary of the Golden Record's launch on the Voyager probes, an anniversary edition was released to the public. The Kickstarter campaign that underwrote the

repackaging and release of the project rapidly became the most funded project through the Kickstarter platform at that time. Twenty percent of the profits were donated to the Carl Sagan Institute at Cornell University.

Voyager 1 became the first man-made object to leave the solar system in 2012. By August 2022, the probe was estimated to be approximately 14.6 billion miles from Earth. Political and public interest in space exploration is experiencing a revival due to the high-profile launches of rockets by billionaires such as Jeff Bezos and Elon Musk, the emerging lunar competition between the United States and China, and rapid advances in technology such as artificial intelligence and robotics. As the Golden Record, an artifact from an optimistic era, continues to spin through space, it may yet connect with an intelligent civilization in the outer reaches of the universe.

Amy Fletcher is an independent scholar and freelance writer specializing in politics and technology. She focuses on the comparative history of space exploration in the United States and Europe, and on the emerging geo-politics of Space 2.0. She resides in Knoxville, TN, and has a PhD in political science and public policy from the University of Georgia.