

# VOYAGER MISSION AND VOICE OF INDIAN CLASSICAL MUSIC

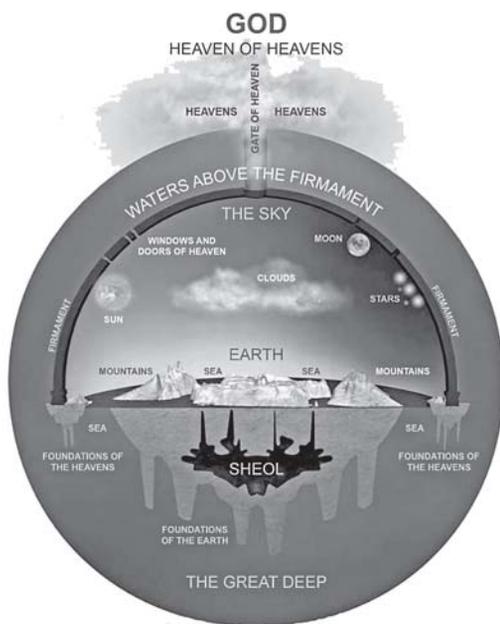
ACHINTYA PAL\*

*NASA launched Voyager 1 and 2 in 1977 to explore interstellar space extending its original mission to study outer planets. Apart from numerous instruments for scientific study, the spacecrafts carried a golden record containing pictures, sounds and music from different regions of the earth with the hope that in the event of the spaceship encountering a civilization in any distant stellar system, its intelligent beings would come to know about us. Many of us may not be aware that a piece of Indian classical music finds a proud place in the selection of 27 musical items from various parts of the world. It is a song rendered by Surashri Kesarbai Kerkar of Atrauli-Jaipur Gharana.*

Centuries ago, man thought he was at the centre of the ‘universe’ that was limited to what he could observe around him and up in the sky. Gradually, as scientific ideas about locations of the Sun, the planets, the stars and their relative distances evolved, he realized that his earth was only a tiny speck in the vast expanse of the universe of innumerable galaxies and stars. As it dawned

on him that there were millions of stars like the Sun his ancestors once worshipped, he started thinking whether there were other stellar systems like the solar system and other ‘civilizations’ like his own. Just as one looks for like-minded companions in one’s neighbourhood, mankind as a whole wondered whether he was alone in this vast unfathomable universe or there were other intelligent beings flourishing somewhere out there! From another point of view, there was the apprehension that if ever planet Earth were to get destroyed in some catastrophic event, some memory of it should be saved.

Thoughts like these prompted NASA (National Aeronautics and Space Administration) of USA to plan sending of unmanned spacecrafts to explore the solar system beyond the neighborhood of the outer planets to the outer limits of the Sun’s sphere of influence, and possibly even beyond that. It started with launching of Pioneer-10 and 11 in early seventies followed by spacecrafts (appropriately named) Voyager 1 and 2 in quick succession in 1977. As a matter of fact, launch of Voyager 2 preceded that of Voyager 1. They were launched in to take advantage of a favorable alignment of Jupiter, Saturn, Uranus, and Neptune (Fig. 2) and are now exploring the outer boundary of the heliosphere (the region of influence of the Sun) in interstellar space. The twin Voyager 1 and 2 spacecraft are exploring where nothing from Earth has flown before. Continuing on their 40 year journey since their 1977 launches, both of them are much farther away



**Fig. 1:** The belief that Earth was the centre of the ‘Universe’

\* Retired Exploration Geophysicist of ONGC,  
e-mail : achintya.pal1952@gmail.com, babulan@gmail.com

from the Sun than Pluto. In August 2012, Voyager 1 made the historic entry into interstellar space, the region between stars, filled with material ejected by the death of nearby stars millions of years ago. Scientists hope to learn more about this region when Voyager 2 also reaches interstellar space. Both spacecraft are still sending scientific information about their surroundings through the 'Deep Space Network', or DSN.

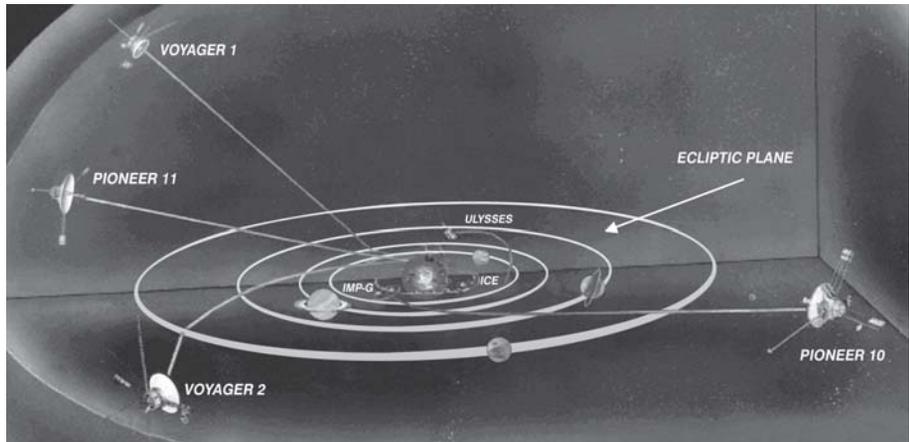


Fig. 3: Three-dimensional view of the trajectories with respect to the ecliptic plane

The primary mission<sup>1</sup> was the exploration of Jupiter and Saturn. After making a string of discoveries there such as active volcanoes on Jupiter's moon 'Io' and intricacies of Saturn's rings, the mission was extended. Voyager 2 went on to explore Uranus and Neptune, and is still the only spacecraft to have visited those outer planets. The adventurers' current mission, the Voyager Interstellar Mission (VIM), will explore the outermost edge of the Sun's sphere of influence and beyond.

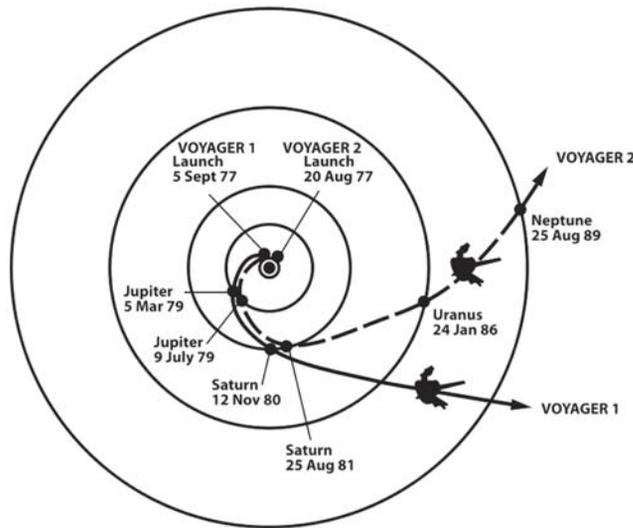


Fig. 2: The timelines and the trajectories of Voyager 1 and 2

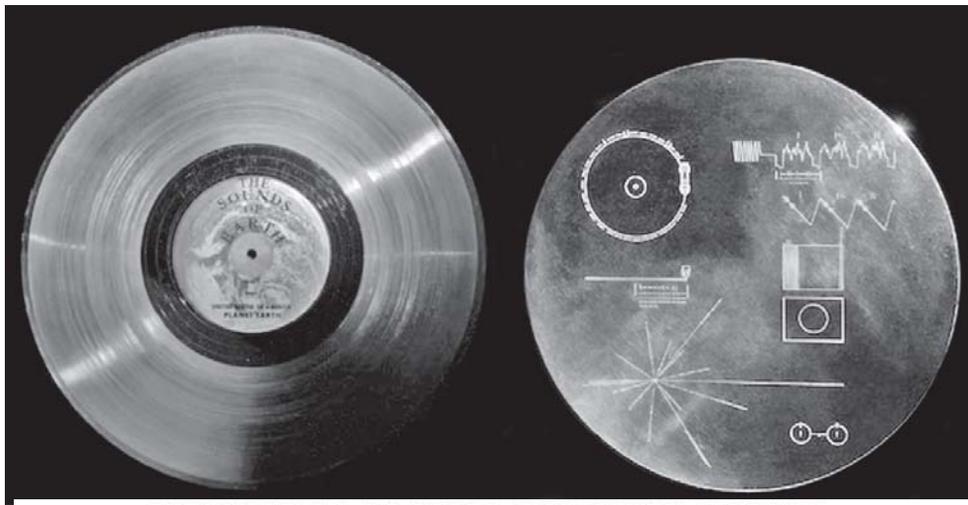
As of February 2017<sup>1</sup>, Voyager 1 was at a distance of 20.6 Billion Kilometers (138 AU) from the sun and Voyager 2 at a distance of 17 Billion kilometers (114 AU). [1 AU (Astronomical Unit) is equal to 150 million kilometers, the mean distance of Earth from the Sun.] Voyager 1 is escaping the solar system at a speed of about 3.6 AU per year, 35 degrees out of the ecliptic plane (the orbital plane of the planets) to the north, in the general direction of the Sun's motion relative to nearby stars.

Voyager 2 is also escaping the solar system at a speed of about 3.3 AU per year, 48 degrees out of the ecliptic plane to the south (Fig.3). The Voyager spacecrafts were built at the Jet Propulsion Laboratory in Southern California, and they were funded by NASA, which also funded their launchings from Cape Canaveral, Florida.

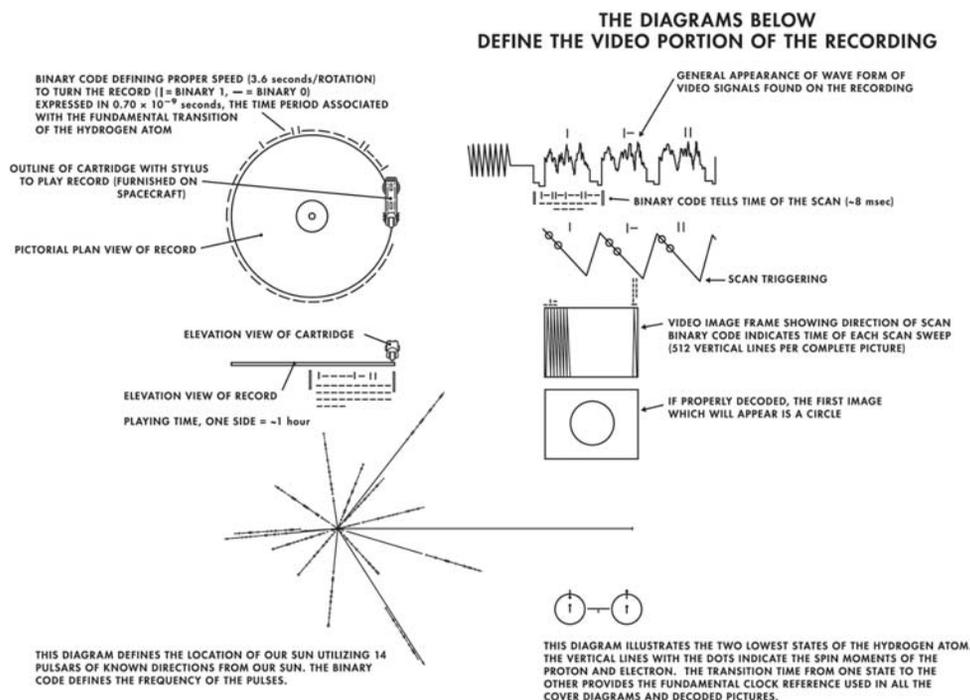
### Connection with Indian Classical Music

The details about the design, functioning and scientific objectives of the Voyager Mission may be found<sup>1,2</sup>. The primary emphasis of this article is on the efforts made to communicate to any 'intelligent' being that may be encountered by the spacecrafts during their voyage. For this purpose, NASA placed ambitious messages aboard Voyager 1 and 2 a kind of time capsule, intended to communicate a story of our world to extra-terrestrials. The Voyager message is carried by a phonograph record a 12 inch gold-plated copper disk containing sounds and images selected to portray the diversity of life and culture on Earth. The contents of the record were selected for NASA by a committee chaired by Carl Sagan of Cornell University, et al. Dr. Sagan and his associates assembled 115 images and a variety of natural sounds, such as those made by surf, wind and thunder, birds, whales, and other animals. To this they added musical selections from different cultures and eras, and spoken greetings from Earth people in fifty-five languages, and printed messages from President Jimmy Carter and the then U.N. Secretary General Kurt Waldheim. Each record is encased in a protective aluminum jacket, together with a cartridge and a needle.

Instructions, in symbolic language, explain the origin of the spacecraft and indicate how the record is to be played. The 115 images are encoded in analog form. The remainder of the record is in audio, designed to be played at 16-2/3 revolutions per minute. It contains the spoken



**EXPLANATION OF RECORDING COVER DIAGRAM**



**Fig. 4:** The Golden record and the instructions for playing and decoding

greetings, beginning with Akkadian, which was spoken in Sumer about six thousand years ago, and ending with Wu, a modern Chinese dialect. Following the section on the sounds of Earth, there is an eclectic 90-minute selection of music, including both Eastern and Western classics and a variety of ethnic music. The Voyager spacecrafts left the solar system (beyond Pluto) in 1990 and they now find themselves in empty space. It will be at least forty thousand years before they make a close approach to any other planetary system. As Carl Sagan has noted, “The spacecraft will be encountered and the record played only if there are advanced space-faring civilizations in interstellar space. But the launching of this bottle into the cosmic ocean says

something very hopeful about life on this planet.” About the apprehension of the earth getting destroyed he said “A billion years from now, when everything on Earth we’ve ever made has crumbled into dust, when continents have changed beyond recognition and our species is unimaginably altered or extinct, the Voyager record will speak for us.”

It may not be known to many Indians that their country occupies a proud position in the selection of music among 27 compositions in diverse languages spanning over different regions of the earth. The selection, understandably biased toward Western Classical music to some extent, covers a satisfactorily wide range of global expressions including an ethereal three-and-a-half minute piece “Jaat Kahan Ho” in Raga Bhairavi sung by Surashri Kesarbai Kerkar (1892-1977).

How did Kesarbai’s music actually get selected?

There were probably selection panels featuring musicologists from multiple genres, including an ethnomusicologist or two. According to reliable sources, the recording was recommended for inclusion on the Voyager disc by the ethnomusicologist Robert E. Brown, who found it to be the finest recorded example of Indian classical music.

While opinions may differ on hailing the classical piece as ‘the finest recorded example of Indian classical music’, the incomparable mood of spiritual renunciation embedded in the notes of Kesarbai’s Bhairavi indeed resonates and lingers in the mind of a discerning listener.

Kesarbai Kerkar, from the village of Keri in Goa,



Fig. 5: Kesarbai

finally settled in erstwhile Bombay after a brief stay in Kolhapur. Gurudev Rabindranath Tagore honoured her with

aware of her talents and abilities and she always performed with self-confidence. She held out honourably on her own in an otherwise male-dominated music circle. While there were a number of eminent female singers such as Begum Akhtar, Siddheshwari Devi, Mogubai Kurdikar (mother of Kishori Amonkar) of her time, only Kesarbai is seen to feature among a galaxy of male musicians honoured by President Dr. Rajendra Prasad at Rashtrapati Bhavan immediately after independence in 1948<sup>3</sup>.

Isn't it a great pride for all of us that 40 years of space travel and 12 billion celestial miles later, the haunting Hindustani classical rendition 'Jaat kahaan ho akeli gori ...' has been immortalized alongside the greatness of Chuck Berry, Mozart, Bach and Beethoven on the fateful Golden record? Coincidentally, Voyager 1 was launched in September 1977, the same month and year of Kesarbai's demise<sup>3</sup>. The great singer that she was, it is entirely appropriate that her immortal voice has been wandering



Fig. 6: The bright star in a galaxy of renowned musicians honoured by Dr. Rajendra Prasad

the title 'Surashri' at a ceremony in Calcutta. The Indian government awarded her the Padmabhushan, and Maharashtra conferred on her the title Maharashtra Rajya Gayika. She was the disciple of such eminent gurus as Pandit Ramkrishnabuva Vaze, Bhaskarbuva Bakhale and Ustad Alladiya Khan. She studied music under these masters for no less than 25 years, and became a proficient exponent of the gayaki of the Atrauli-Jaipur gharana.

She became known through the length and breadth of India for her unique style of presentation. Kesarbai had a very dignified and regal personality and she was fully

through unexplored terrains of outer space till perhaps the end of time! The lyrics of the song literally translate to 'Where are you going alone, fair maiden ...' □

### References

1. Voyager Mission related website of NASA
  2. Wikipedia page on Voyager Mission
  3. 'The Music Room', by Namita Devidayal (Disciple of Smt Dhondutai Kulkarni, who in turn was the only disciple of Kesarbai Kerkar), Random House, India
- (Figures and photographs are taken from different sources on the internet.)