Music of the Spheres

Parvathi Nayar

There's not the smallest orb which thou behold'st
But in his motion like an angel sings,
Still quiring to the young-eyed cherubins;
Such harmony is in immortal souls;
But whilst this muddy vesture of decay
Doth grossly close it in, we cannot hear it.

(Shakespeare, Merchant of Venice)

Introduction to the artwork, Music of the Spheres

Long ago, when the heavens were imagined as a more orderly place, mathematicians, musicians and philosophers saw relationships between mathematics, the movements of celestial bodies, and the harmonies of music. Rather more recently, in the field of astro-seismology, scientists "listen" to the stars, and make studies of their inner structures, via the sound waves that are bouncing around within them.

Responding playfully and thoughtfully to such twinning of the celestial and the earthly, is *Music of the Spheres*, a 30-foot long art installation by Parvathi Nayar. She has created the artwork as a response to the new CMI space; i.e., the artist views this auditorium within a mathematical institute as a unique architectural combination of the arts and the sciences.

Music of The Spheres is a celebration and extension of the venue's purpose—to hold learned symposiums and convocations as well as a range of performance arts from music to theatre—that is expressed through the multi-layered language of Parvathi's drawings,

The artwork owes much to Pythagoras' worldview of the Sun, Moon and other planets resonating to a beautiful noise inaudible to our human ears—as well as to the newest discoveries of colliding black holes sending out ripples through space.

Parvathi explores these concepts as interventions into her own drawings—thereby creating moments of rupture on the intricately and densely hand-drawn surfaces of graphite on wood. The artist thinks of her artworks as heterotopias, or as alternate realities, which have a life of their own. Objects are placed upon and within the world of her drawings as signifiers that carry meaning—a process that in visual terms creates another complex landscape that has morphed and changed from the particularities of the original.

Music of The Spheres is an evocation and a celebration of the divergences and interconnectedness that make up the universe in which we live, a universe in which we can both listen to song and express its harmonies in numbers.

Some key concepts in Music of the Spheres

What if matter at its most basic level was composed of vibrating strings that emitted a noise or hum? What if the planets orbiting a central sun were also emitting energies at pitches that made them part of an inaudible celestial orchestra? These are some of the queries that are explored in Music of the Spheres. The objects that are placed on and interact with Parvathi's drawings each extend this narrative of Music of the Spheres in specific ways:

– the star is like a three-dimensional coalescing of Keppler's polyhedron drawings

– spherical glass marbles and other spherical glass objects are suggestive of planets, their satellites and suns

– glass bangles that evoke the rings of Saturn

– a small rabbit makes playful references to the rabbit in the moon

– floating asteroids

– the multiple uses of a grid serve to recall how the crisscross lattice is an element of mathematics and of contemporary art; it cold also suggest at the structural configuration of the auditorium and theatre.

Interestingly, the architecture of the auditorium reinforces the ideas of spheres and heavens with the use of curvilinear and spherical forms. In terms of hues too, the entrance roof, painted yellow between the spokes and the interior use of blue, are all reminders of celestial colours.

Background Notes:

Pythagoras, Music and Ideas in Pre-Renaissance times

Some of the ideas of the Music of the Spheres have its origins in the part-Mathematical, part-mystical work of Pythagoras, the 6th century BC Greek philosopher/mathematician. It is the stuff of myth, how Pythagoras stumbled across the numerical ratios of various sonic intervals by listening to the tones emitted when blacksmiths struck their metal hammers of varying sizes against anvils. Pythagoras first identified that the pitch of a musical note is in proportion to the length of the string that produces it, and that intervals between harmonious sound frequencies form simple numerical ratios.

At the time, the sun moon and other celestial bodies were thought to revolve in perfect circles/spheres round the earth. And therefore, by extension, Pythagoras propositioned that the Sun, Moon and planets all radiate their own distinctive hum (orbital resonance) based on their orbital revolution, though such sounds are pretty much imperceptible to the human ear. Subsequently, Plato described astronomy and music as "twinned" studies of sensual recognition: astronomy for the eyes, music for the ears, and both requiring knowledge of numerical proportions.

Pythagoras, who some consider as the first scientist was also one of the first to study music in a disciplined fashion. Pythagoras described the heavens as seven spheres, one nestled in the next, each supporting a known planet, with the sun as the innermost sphere. This perfect system both produced and was music; the music of the spheres was celestial harmony.

The "music" was not necessarily an actual audio arrangement one could hear, more, some sort of beautiful mathematical concept that pleased the intellect and heart—perhaps in the related but different manner in which football is referred to as the "beautiful game".

In pre-Renaissance times, meaningful relationships were seen as existing in the distances between heavenly bodies and the intervals between notes/chords. Such poetic ideas concerning the music of the spheres ran through late antiquity and the medieval period into the Renaissance and its echoes can be heard in fields such as astrology, astronomy, theology, and, in music itself.

Influenced by Pythagoras and Plato—who created Platonic polyhedral forms within which the celestial spheres were embedded—it was discussed by Cicero, Boethius, Marcello Ficino and Johannes Kepler. Kepler, the German mathematician, wrote about musical ratios in his Harmonices Mundi (finished in 1619).

However, instead of dealing with Pythagorean hammers, he suggested that harmonic ratios could be measured in the angular velocities of the elliptical orbits of planets around the sun. This directly connects the sounds we hear in music to the motion of the celestial bodies complete with

consonances, dissonances. Kepler was convinced "that the geometrical things have provided the Creator with the model for decorating the whole world."

In Harmony, he attempted to explain the proportions of the natural world—particularly the astronomical and astrological aspects—in terms of music. According to Kepler, the connection between geometry (and sacred geometry), cosmology, astrology, harmonics, and music is through the music of the spheres.

Thus, for centuries, scientists and philosophers held that the universe was a noble, methodical apparatus, and this system reflected both in the mathematical and musical. The smooth operation of the cosmos resulted in a sort of divine harmony that composers sought to understand and make musically more explicit. There was the harmony between music and science before the Renaissance, and the separation of the two into divergent disciplines after.

Yet it is not merely a notion of the ancient past but an idea that has found contemporary expression in such areas as astronomy and astro-seismology. We have telescopes that measure the infinitesimal variations in a star's brightness that occur as soundwaves jump around within it. Using resonances, scientists are able to construct a picture of the inside of a star.

www.parvathinayar.com
https://www.facebook.com/parvathinayarart
thottakat@gmail.com