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MUSC 499B

April 23, 2024

Planetary Music: The Depiction of the Cosmos in Concert and Film Repertoire

Since ancient times, philosophers, scientists, and musicians have studied the heavens seeking to unravel the mysterious relationship between music and the cosmos. The fifth century Roman philosopher Boethius along with Hildegard von Bingen, a twelfth century mystic and composer, were some of the earliest to theorize about the mathematical connections between the planets and harmony. During subsequent centuries, interest in this relationship continued, sometimes indirectly such as with one of Mozart's last works, nicknamed the "Jupiter" Symphony. But it was not until the twentieth century that composers produced works focused solely on planetary and interstellar themes, such as Gustav Holst's suite *The Planets* (1914-1917). The rise of the film industry soon after brought a growing need for musical scores to accompany the storytelling. Science fiction films, in particular, garnered an early and dependent relationship with music, including *The Day the Earth Stood Still* (1951), *2001: A Space Odyssey* (1968), and *Close Encounters of the Third Kind* (1977). By exploring the philosophies of the ancients and analyzing certain pieces of the twentieth century concert and film repertoire, this paper will identify specific musical language and discuss its role in and relationship to planetary storytelling.

The early associations of music and the planets derived largely from the explorations of the ancient Greeks such as Plato, Aristotle, and Pythagoras, who posited *musica mundana*, a theory that the interrelated movements of celestial bodies such as the sun, moon, and stars could

create a form of music (Hustad 24). However, there remains debate among present-day scholars about whether this music was actually audible or not. According to Lowenthal, “For the ancient Greeks music mirrored an ordered cosmos, in which whirling stars and planets made matchless sounds” (4). He goes on to explain that the music could only be heard by a select few, although the “orbital sounds” and “sonic proportions” were later analyzed by the German astronomer, mathematician, and writer on music Johannes Kepler (1571-1630), who calculated the movements of the planets using musical terminology and intervals such as thirds, tenths, and semitones (Lowenthal 4). Nonetheless this idea of “Music of the Spheres” persisted for centuries.

In the early Middle Ages, Roman philosopher and scholar Boethius expanded on the theories of the ancient Greeks to become one of the founding fathers of Western musical theory. Fascinated by the order, beauty, and mathematical ratios between celestial spheres, Boethius believed humans reflected this cosmic wonder through musical harmony (Hustad 24). His focus on God as divine Creator also influenced his work as he saw music as “a worship gift returned to God” (Hustad 25). His ideas sparked the beginning of a conversation about music and the cosmos that continued throughout the Middle Ages and beyond.

Born in Germany about six hundred years later in 1098, Hildegard von Bingen, an important composer, writer, abbess, mystic, and visionary of the High Middle Ages, shared some similar views about music and the cosmos. Amidst her many talents and areas of expertise, Hildegard’s mystical visions and beliefs about the cosmos set her apart from others. One of her most well-known writings is *Scivias*, an illustrated treatise in three parts that describes some of her visions centered around religious themes such as creation, the Fall, salvation, and the kingdom of God (Meconi 85). This work also focuses on heavenly order and the cosmos, including a vision that depicts the organization of the universe as an oval shape she called the

“Cosmic Egg.” In this model, there exists an outer ring of fire, with the firmament forming the next layer, and the earth residing in the center with the sun, moon, and planets extending outwards to the east (DiClemente 2020). These layers of celestial bodies move and shift around the earth at the center, causing the rising of the sun and the setting of the moon. Hildegard believed that these movements created “divine music” (DiClemente 2020). The recurring themes of heaven, angels, and celestial harmony appear in many of Hildegard’s compositions, including *O virga ac diadema*, *Quia felix puericia*, and *Rex noster promptus est* (Meconi 85, 92). One notable example is Hildegard’s “*Symphonia armonie celestium revelationum* (Symphony of the Harmony of Celestial Revelations),” which music critic and author Alex Ross describes as “pieces of spectacular length and breadth, dissolving syllables into endless melismatic flights” (4).

The curious and innovative spirit that fueled the work of Boethius and Hildegard continued to shape musical thought in subsequent centuries before accelerating at an unprecedented rate in the twentieth century. Composers in the early 1900s experimented with new ways of writing and conceptualizing music, and many became closely tied with Modernism and avant-garde thinking (Auner 3-4). One composer who stands out for his contributions to this new philosophy is Gustav Holst, an English composer, teacher, and conductor born in 1874. Holst made musical advances through exploring unique time signatures, meters, and harmonies (Head 19). He is best known for his suite *The Planets*, an orchestral work composed between 1914-1917 and made up of seven movements named after each known planet in the solar system except for Earth. Like Boethius and Hildegard, Holst grew captivated by the inner workings of the universe, although his curiosity leaned towards astrology and stemmed more from an effort to understand his own purpose and future (Head 16-17). Holst was likely inspired to write *The*

Planets after reading the book *The Art of Synthesis* by Alan Leo, an astrologer and author Holst admired (Head 18). The titles Holst attributed to the suite's movements, including "Mars, the Bringer of War" and "Venus, the Bringer of Peace" were quite similar to the titles of each chapter in Leo's book, such as "Mars the Energizer" and "Venus the Unifier" (Head 18).

In *The Planets*, Holst sought to create a work that would effectively convey the personality and characteristics of each planet through musical expression and creativity. The opening movement "Mars" sets the tone with its defining features of asymmetrical 5/4 meter, *col legno* technique for strings, and a repetitive ostinato figure (Head 19). This movement, which Holst began in May 1914, is often seen by scholars as a foreboding premonition of the coming of World War I later that same year, although Holst himself never claimed this notion (Head 19). Musically, "Mars" certainly demonstrates "raw Martian impulses: the chaotic energy of youth, the misuse of the will, the desire for revolutionary action" (Head 19). The rhythm and irregular time signature contribute to the ominous, tenacious character of the piece, and the tri-tonal harmonies reinforce the destructive, war-like nature of the movement (Head 19). The next movement, "Venus, the Bringer of Peace," contrasts with these violent themes by providing the listener with much-needed resolution and stability. Holst achieves this through the use of consonant intervals such as perfect fourths and fifths, as opposed to the tri-tonal harmonies heard in "Mars" (Head 19). The juxtaposition of these two starkly contrasting movements can be interpreted as symbolic of the need for balance and harmony, not just within a large musical work, but also between the planets and the universe as a whole.

With the fourth movement, "Jupiter, the Bringer of Jollity," Holst employs an energetic burst of "Stravinskyan" notes in the opening, signifying jubilation, excitement, and celebration (Head 20). Later this lively spirit gives way to a slower andante maestoso section that is more

noble, heroic, and majestic in character. This melody would later be adapted in 1921 for the popular British patriotic hymn “I Vow to Thee My Country,” which sets poetry by Sir Cecil Spring Rice to the tune by Holst (Head 20). Later on the sixth movement, “Uranus, the Magician,” depicts yet another contrasting character that is full of humor and playful enthusiasm. In “Uranus,” Holst uses a folk-like dance tune and quirky jaunting rhythms that are reminiscent of *L’Apprenti Sorcier* (1897) by Paul Dukas, reflecting the curious, mystical nature of magic and the unseen (Head 21).

Towards the end of Holst’s life in 1934, moving pictures were gaining in popularity, and with this began the rise of film music. “Silent” films had existed previously from about the 1890s to 1920s, although this labeling was a bit of a misnomer, as live music often accompanied screenings of films even before the invention of synchronized pre-recorded sound (Cooke 7). However, the invention of the Vitaphone in 1925 by the Western Electric Company opened a world of new possibilities for sound cinema, and by the mid-1930s synchronized film scores were gaining traction (Cooke 49). One of the pioneers in film music was Bernard Herrmann, an American composer born in 1911 (Cooper 2020). Herrmann worked closely with Alfred Hitchcock, one of the most important figures in the history of cinema. He composed music for seven of Hitchcock’s films, with his most recognizable contributions being the scores for *Vertigo*, *North by Northwest*, and *Psycho*. The music for the shower scene from *Psycho* in particular remains one of the most “influential” and “frequently referenced” cues in musical and cinematic history (Cooper 2020).

Herrmann’s legacy in the world of film music also extended beyond his celebrated collaborations with Hitchcock. One score that is especially noteworthy in examining how film composers musically depict interstellar themes is for the 1951 science fiction film *The Day the*

Earth Stood Still, directed by Robert Wise. The plot centers around an extraterrestrial visitor named Klaatu who comes to Earth to warn people of the impending doom of their world, eventually winning over the trust of a young woman Helen and her son Bobby who help him spread the message and fulfil the mission. It rose to be one of the most significant science fiction films of the 1950s not only for the social and political relevancy of the plot, which resonated with the audience of the time, but also for its extraordinary soundtrack by Herrmann. Herrmann chose an eclectic group of instruments, including vibraphones, trumpets, trombones, two types of organs, electric violin, cello, and bass, which he paired with an extraordinary choice—an electronic instrument known as the theremin, of which he uses two (Bushard 317). The theremin had been invented in the 1920s by the Russian scientist and musician Leo Theremin as part of the Soviet Union’s fascination with futurism, but the winds quickly changed direction in the Soviet Union, and as part of Stalin’s Great Purge, Leo Theremin was sent to Siberia in 1938 and was eventually forced to use his innovative skills to create weapons of war for the Red Army and surveillance equipment for the KGB (Brown 191, 198).

Although Herrmann’s orchestration seems like quite the departure from standard orchestral instrumentation, the new genre of film music allowed composers more creative freedom and room for experimentation. As for the musical content of his score, Herrmann makes use of chromaticism, tri-tonal harmonies, and unconventional writing to propel the plot of the movie forward during moments of anticipation and tension (Bushard 316). Another important feature to note is the musical foreshadowing that Herrmann evokes in the track “Klaatu” through his suspensions and unsatisfying resolutions. The dissonance of a D-natural against an E-flat in this track creates “dramatic friction” and an aural clash that parallels the inner conflict of the otherworldly Klaatu as he pleads with the Americans for peace (Bushard 317). As the film

progresses, Herrmann continues implementing unique strategies to illustrate the plot and provide the audience with some foreshadowing. Some examples of this are the wailing glissandos in the theremins to create the perception of fear, sustained chords to represent the feeling of suspense (both literally and figuratively), and echoey reverberations to suggest weightiness (Bushard 318-320). Overall, his use of unconventional instrumentation, dramatic effects, and harmonic push and pull effectively unravel the storyline of the film in an exciting way, effectively demonstrating through music the mystery and intrigue that surrounds themes of outer space and extraterrestrial encounters.

Another pivotal film in the science fiction genre that demonstrates an important connection between music and the spheres is *2001: A Space Odyssey*. Inspired by the renowned science fiction writings of Arthur C. Clark, *2001* tells the story of astronauts, scientists, and a computer system named HAL who embark on a mission to Jupiter to investigate a strange alien monolith. This film proved groundbreaking not only for its place in the science fiction film genre of the 1960s, but also due to the carefully selected music, which its director Stanley Kubrick chose to accompany his film. Kubrick used pre-existing pieces by composers such as Johann Strauss II, Richard Strauss, and György Ligeti as a temporary soundtrack while waiting for well-known Hollywood composer Alex North to complete a score. But in a remarkable turn of events, Kubrick decided late in the process to stay with the temporary music rather than use North's score (Redner 177-178). Many of the curated pieces are extremely dissonant, using atonal, chromatic, and unstable harmonies. This is especially true for Ligeti's works—*Atmosphères*, *Lux Aeterna*, and *Requiem: Kyrie*, which musicologist David Patterson characterizes as “cosmic commentary” about the “incomprehensible yet ordered cosmos” depicted throughout the film (449). He goes on to describe *Atmosphères* in the context of the film as the “audible expression

of *musica mundana* or ‘music of the spheres,’” connecting back to the earlier philosophies of the ancient Greeks in a powerful full circle moment (Patterson 449).

Another important piece used in *2001* is Richard Strauss’ tone poem *Also Sprach Zarathustra*. Originally composed in 1896, this piece took on a second life with Kubrick’s use of it as the breathtaking title cue, transforming it into one of the most recognizable and frequently referenced musical themes in film history (Redner 177). Kubrick relies on the solemn *do-so-do* opening notes in the trumpet and the powerful boom of the timpani for the tone-poem for two other scenes in addition to the opening sequence of Jupiter rising out of the dark sky. The next instance happens towards the end of the opening when an ape gains some intelligence, realizing he can use a bone as a weapon or tool (Redner 181). The last use of this theme takes place at the end of the film upon the appearance of the “star child” (Redner 180). Each time the motif appears it brings with it certain connotations, such as the process of evolutionary change, the mysterious nature of the universe, and the tendency towards chaos and destruction.

Nine years after the release of *2001: A Space Odyssey*, Steven Spielberg launched a film that explored even more directly the relationship between music and life beyond earth. This 1977 film *Close Encounters of the Third Kind* tells the story of a man named Roy Neery who becomes obsessed with discovering the truth about extraterrestrial life after a strange encounter with a UFO. Simultaneously, a team of scientists are investigating similar strange happenings and phenomena, including the reappearance of missing planes, multiple sightings of UFOs, and other unexplained encounters (Engel 380). Spielberg partnered with John Williams, who would become Hollywood’s most celebrated film score composer and would collaborate with Spielberg on twenty-nine films. Nominated for an Oscar, William’s score contains dissonant and haunting music not unlike the musical language used in Herrmann’s *The Day the Earth Stood Still* and

Ligeti's works in *2001*. Throughout the film, music also plays a crucial role in the plot through a recurring five-note tonal phrase first detected by people in India, who hear the phrase coming from the sky. A team of scientists work hard to decipher the meaning of the motif and attempt to use music to communicate with the aliens, including the French scientist Claude Lancombe who utilizes Curwen hand signs to communicate distinct musical pitches (Engel 380). With the arrival of the alien mothership near the end of the film, scientists play the five-note phrase in an attempt to start a conversation. The mothership accepts this invitation, and both parties engage in an intense and exciting dialogue through music and colored lights. An especially moving moment happens when Lancombe approaches the alien by using the Curwen hand signs with the five pitches, and the alien reciprocates this gesture with the same signs (Engel 381). Overall, music as a tool for communication serves as a powerful and inspiring symbol throughout this movie. It is a compelling force which transcends time, overcomes barriers, allows for community, and truly can be considered the "universal language" (Engel 376).

In conclusion, music has been tied to outer space and the cosmos since ancient times. Greek philosophers were interested in the mathematical ratios between the planets and theorized about *musica mundana*, the aural manifestation of this harmonious relationship. Boethius and Hildegard in the Middle Ages also maintained these theories and expanded on them, making a lasting mark on philosophy and beliefs about music and the cosmos. The twentieth century saw a rapid acceleration of this same curious and innovative spirit, most likely due to advances in science that allowed for more accurate examination of the solar system paired with the experimental and expressive freedom that composers enjoyed in the new century. Holst used unique meters and harmonies, and his suite *The Planets* eventually became widely recognized as the most quintessential example of music depicting space. Science fiction film scores are

especially important as composers began to portray storytelling in an innovative way by using specific techniques or styles to illustrate themes of outer space and extraterrestrial life. Herrmann employed unusual instrumentation, chromaticism, and dissonant harmonies to convey tense feelings of anticipation, dread, and excitement about the unfamiliar and otherworldly in *The Day the Earth Stood Still*. Likewise, the use of the Strauss and Ligeti pieces in *2001* mirror the feelings of uneasiness, fear of the unknown, discovery, and chaos that surrounds space exploration and interstellar themes. Finally, William's use of dissonant and haunting harmonies in *Close Encounters of the Third Kind* reflects the values of wonder, suspense, and mystery associated with the extraterrestrial. The five-note tonal phrase also shows the endless communicative possibilities that music can offer as a universal language spanning time and galaxies. Overall, the relationship between music and space is an extraordinary, multifaceted one that has stood the test of time and continually captivates the minds of composers.

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