

John Cage and Sun Ra: Exploring the Universe Through Music

by

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## ABSTRACT

The Space Race (1957–1975), a period of rapid technological advancements prompted by the uncertainty and fear of the Cold War, captured the curiosity and attention of many artists, filmmakers and composers. Their responses, recorded in a multitude of works from various genres, reflect the overall tone and mirror societal views in the midst of uncertain, politically-charged times.

My thesis explores two seminal American artists who explored outer space in numerous works. John Cage (1912–1992), an avant-garde classical composer, wrote such works as *Atlas Eclipticalis* (1961), *Etudes Australes* (1974–75), and the *Freeman Etudes* (1977–1980), all composed using star-maps. Sun Ra (1914–1993), an American Afrofuturist jazz composer, created hundreds of iconic experimental jazz works on the theme of outer space, with albums such as *We Travel the Space Ways* (1967), *Space Is the Place* (1973), and *Cosmos* (1976).

The works of these two composers span across several decades, encompassing the Space Race and Cold War. In this thesis, I will specifically discuss the details of two works: Cage's *Atlas Eclipticalis*, and Ra's composition *Space Is the Place* (later included in the soundtrack of a film by the same name). Discussion will elaborate on the cultural, political, philosophical, and societal influences that played a part in the creation of these two compositions.

My research materials for this thesis includes a collection of primary sources in the form of recordings, early musical sketches, and in the case of Ra, film footage from *Space Is the Place* (1974), as well as multitude of secondary sources. By choosing works from two different genres I hope to present a wider, more nuanced

snapshot of artist responses to space exploration during the Cold War.

## DEDICATION

To Mom and Grandma

Thank You.

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# JOHN CAGE AND SUN RA: EXPLORING THE UNIVERSE THROUGH MUSIC

## CHAPTER 1: INTRODUCTION

Unprecedented technological advancements of the twentieth century have helped us explore and understand our cosmic environment in a way previously thought unimaginable. Science fiction has become everyday reality. The Space Race (1957–75), more than any previous era in human history, had the greatest impact on our exploration of the universe. With the looming threat of the Cold War between the United States and the USSR, these two nations raced to establish their dominance in space. The frenzy and publicity surrounding the launch of the first man-made satellite by the USSR in 1957, to the moon landing in 1969 by American astronauts, these events had a lasting and profound effect on society.

On April 12, 1961, Yuri Gagarin, a Soviet cosmonaut, became the first human in space.<sup>1</sup> Threatened by USSR's successful mission, the urgency to be the first to conquer the last frontier intensified.<sup>2</sup> U.S. president, John F. Kennedy, encapsulates this feeling in his famous "Moon Speech" (Rice University, September 12, 1962):

If this capsule history of our progress teaches us anything, it is that man, in his quest for knowledge and progress, is determined and cannot be deterred. The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind in the race for space.

Those who came before us made certain that this country rode the first waves of

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<sup>1</sup> Jim Wilson, "Yuri Gagarin: First Man in Space," *NASA*, updated April 13, 2011, accessed October 1, 2017, [https://www.nasa.gov/mission\\_pages/shuttle/sts1/gagarin\\_anniversary.html](https://www.nasa.gov/mission_pages/shuttle/sts1/gagarin_anniversary.html).

<sup>2</sup> See Figure 1, a newspaper clipping from April 12<sup>th</sup>, 1961, *The Huntsville Times*.

the industrial revolutions, the first waves of modern invention, and the first wave of nuclear power, and this generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it -- we mean to lead it. For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.

Yet the vows of this Nation can only be fulfilled if we in this Nation are first, and, therefore, we intend to be first. In short, our leadership in science and in industry, our hopes for peace and security, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world's leading space-faring nation.<sup>3</sup>



Figure 1. Front page of *The Huntsville Times*

<sup>3</sup> Jerry Woodfill, "John F. Kennedy Moon Speech – Rice Stadium," *NASA JSC*, modified May 24, 2012, accessed February 21, 2017, <https://er.jsc.nasa.gov/seh/ricetalk.htm>.

The rallying cry of this stirring speech, is that this mission is for all Americans, and indeed, for all of humanity. Kennedy indirectly references the Manifest Destiny, and reinforces the thought that it is the American right and duty to lead forth, explore the unknown frontiers and establish their presence. The conquest of outer space would further establish dominance over land, water, and air, thus reaffirming the nation's place as the leader of technological advances. Kennedy engages the audience's patriotism, as well as their fear of the Cold War and the USSR, without ever mentioning either of these by name. He frames the space exploration as the nation's destiny, its moral right, an obligation as the leader of nations, an educational endeavor, and ultimately, as a peace-setting measure. The tone of Kennedy's speech echoes on the plaque left on the lunar surface by the first two astronauts: "Here men from the planet Earth first set foot upon the moon. July 1969 A.D. We came in peace for all mankind."<sup>4</sup>

Was Kennedy's speech truly in the best interest for all Americans? Was a manned mission to the moon the best use of the taxpayers' money? How will future generations deal with issues presented with space travel? These are just a few of the questions regarding space exploration and the ethical, political, moral, and environmental concerns it raises.

As a response to rapid technological developments arising philosophical questions, musicians, artists, writers, and filmmakers have offered creative commentary through science and science fiction. Space exploration themes in popular culture,

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<sup>4</sup> NASA Content Administrator, "July 20, 1969: One Giant Leap for Mankind," *NASA*, updated: August 4, 2017, accessed August 7, 2017. [https://www.nasa.gov/mission\\_pages/apollo/apollo11.html](https://www.nasa.gov/mission_pages/apollo/apollo11.html).

dystopian, and futuristic sci-fi books, movies, and music have flourished since then, prompting a huge spike in public interest.

The striking similarities between the recent scientific and technological discoveries concerning space, the planned missions to Mars and the mounting interest, prompted me to take a closer look at the Space Race of the Cold War era and to explore how it shaped music in the United States. How did American artists respond to these developments in their music? How did it influence their aesthetic imagination, compositional processes and their reconsideration of musical boundaries?

Exploring these questions led me to focus on two iconic figures in twentieth-century music that wrote innovative music about space: John Cage and Sun Ra. In this thesis, I will focus on two particular works: Cage's *Atlas Eclipticalis* (1962) and Ra's *Space is the Place* (1972). These two pieces spanning a decade of the most exciting cosmological endeavors will be examined in connection to cultural, historical, societal and political aspects of the era, the influences of scientific and technological advancements, artistic and musical trends, and philosophies expressed in their respective works.

Although there are many composers in both the classical and jazz arenas worthy of exploration, I chose to focus on John Cage, and Sun Ra, who are both recognized as avant-garde, experimentalist and highly influential musicians of their time. While reviewing literature on the topic of Space Race and the music of that time period, I noticed a divide in literature focusing on classical and jazz musicians within the same framework centering on a single theme. When Cage's and Ra's works are addressed together, it is generally in regard to indeterminacy, improvisation, or perhaps their

prominence and influence on other composers in their respective fields. Many other connections remain unaddressed, such as mutual connection to music about space. I attempt to fill this lacuna by showing many of the similarities of Cage and Ra's work through various shared concepts. Examples include compositional, experimentalist techniques, exploration of noise and sound boundaries within music, shared interests and influences of space exploration in their works, personal philosophies and lastly their joint concert in 1986.

Furthermore, my goal is to lessen the distinctions and bridge the gaps between classical music and jazz, and portray these two composers as the great pioneers of experimental music, without genre-imposed boundaries. This is a necessary step in the discussion of their music, as they are generally addressed in separate settings, even in conversations about the same topics.<sup>5</sup> At some point in their careers, both Cage and Ra were independently labeled as “experimental, avant-garde composers,” but Cage is frequently named as an influence on other classical composers, while Ra's influence is confined to jazz circles.

This separation between classical and jazz is a direct result of persistent racism throughout history, not only in music but in all other fields as well. African-American musicians, artists, writers and scientists have been greatly underrepresented in their various fields. Ra, as an African-American musician, faced racism and discrimination

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<sup>5</sup> More information about the divide between classical and jazz music, including dismissal of some of the key concepts of jazz, such as improvisation, can be found here: George E. Lewis, “Music After 1950: Afrological and Eurological Perspectives,” *Black Music Research Journal* 22, (2002), 215–46.

throughout his life. In the context of the Space Race, this divide remains firmly in place. African American scientists have been greatly underrepresented in the scientific field, working “behind the scenes” without the public acknowledgement of their work. The first seven American astronauts were all white males, the first of whom was successfully sent into space in 1961. Yet, it was not until 1983 and 1992—full twenty-two and thirty-one years later—that Guion “Guy” Bluford, and Mae Jemison, the first African American man and woman, were successfully sent into space.<sup>6</sup>

The scientists and mathematicians who worked for NASA since its inception were hidden from the public eye and did not receive the treatment or recognition worthy of their contribution.<sup>7</sup> In the same manner Ra has been underrated as an experimental musician in avant-garde music circles.<sup>8</sup> By centering on Ra and Cage, two musicians of

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<sup>6</sup> Megan Gannon, “30 Years Ago: First African-American Launches into Space,” *Space.com*, August 30, 2013, accessed October 6, 2016, <http://www.space.com/22615-first-african-american-astronaut-guy-bluford.html>. Additionally, useful information on Mae Jamison may be found here: Nola Taylor Redd, “Mae Jemison: Astronaut Biography,” *Space.com*, accessed October 6, 2017. <https://www.space.com/17169-mae-jemison-biography.html>.

<sup>7</sup> A *New York Times* bestseller, *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race*, by Margot Lee Shetterly, which served as the inspiration for the film *Hidden Figures* (2016), discusses the invaluable input of African American female scientists and mathematicians who helped put NASA’s astronauts on the moon. Known as “human computers,” they calculated everything from rocket trajectories to landings. The book discusses the life and work of several women who worked for Langley Memorial Aeronautical Laboratory in Virginia, while facing racial and gender discrimination and segregation under Jim Crow laws. The author is also the founder of *The Human Computer Project* which is an online database aiming to collect names, biographies and other information about the hundreds of women who worked for NASA and NACA from 1930 to 1980s. For more information see: [margotleshetterley.com](http://margotleshetterley.com). Accessed: April 21, 2017.

<sup>8</sup> For more information on this subject consult: Lewis, “Improvised Music After 1950,” 215–46.

the Cold War era, I am hoping to provide a more insightful look into the music of this time period, one that is not divided among racial lines or musical genres.

## I. Literature Review

Among many biographies of John Cage, two proved to be the most helpful in my research. David Revill's 2014 *The Roaring Silence: John Cage: A Life*<sup>9</sup>, and Kenneth Silverman's 2012 *Begin Again: A Biography of John Cage*.<sup>10</sup> They respectively, provide a thorough and detailed account of his life and career. Silverman, in particular devotes more attention to *Atlas Eclipticalis* than most other sources. Alternatively, the most intriguing narratives of Ra's life and his work stem from firsthand accounts and other collected information in John F. Szwed's 1997 book: *Space Is the Place: The Lives and Times of Sun Ra*, which remains the most comprehensive and authoritative source on Ra's life and work.<sup>11</sup> "The Transmolecularization of Black Folk: *Space is the Place*, Sun Ra and Afrofuturism," by Nabeel Zuberi contains detailed information about the film *Space Is the Place*, as well as a discussion on Ra's philosophies in cultural context.

Cage's *Atlas Eclipticalis*, overall has not received as much scholarly attention as perhaps some of Cage's other famous works. However, in *Experimentalism Otherwise*:

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<sup>9</sup> David Revill, *The Roaring Silence: John Cage: A Life*, 2<sup>nd</sup> edition (New York: Arcade, 2014).

<sup>10</sup> Kenneth Silverman, *Begin Again: A Biography of John Cage*, 2<sup>nd</sup> edition (Evanston, IL: Northwestern University Press, 2012).

<sup>11</sup> John F. Szwed, *Space Is the Place: The Lives and Times of Sun Ra* (New York: Pantheon, 1997).



*The New York Avant-Garde and Its Limits*, Benjamin Piekut recounts the infamous United States premiere of *Atlas Eclipticalis*.<sup>12</sup> In *Conversing with Cage*, Richard Kostelanetz discusses *Atlas* in respect to its performance and compositional process.<sup>13</sup> Sabine Feisst addresses Cage's views on chance, indeterminacy and improvisation in relation to *Atlas* and his musical encounter with Ra in her essay "John Cage and Improvisation: An Unresolved Relationship."<sup>14</sup>

Ra's *Space Is the Place*, is a song, an album, a film and a soundtrack, all sharing the same name, and they are often discussed in the same context. For details on this topic and its contexts I turned to Graham Lock's *Blutopia: Visions of the Future and Revisions of the Past in the Work of Sun Ra, Duke Ellington and Anthony Braxton* (1999). He discusses the philosophical aspects of Ra's life and works: from "alien-ness" to religion, nationality to mythocracy and outer space.<sup>15</sup> George Lewis's article, "Music After 1950: Afrological and Eurological Perspectives," remains an invaluable source in the discussion of the musical divide on the subject of improvisation and its treatment within classical and jazz circles.<sup>16</sup>

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<sup>12</sup> Benjamin Piekut, *Experimentalism Otherwise: The New York Avant-Garde and Its Limits* (Berkeley, CA: University of California Press, 2011).

<sup>13</sup> Richard Kostelanetz, *Conversing with Cage* (New York: Limelight, 1988).

<sup>14</sup> Sabine M. Feisst, "John Cage and Improvisation: An Unresolved Relationship," in *Musical Improvisation: Sound, Society and Education*, edited by Gabriel Solis and Bruno Nettl (Urbana, IL: University of Illinois Press, 2009), 38–51.

<sup>15</sup> Graham Lock, *Blutopia: Visions of the Future and Revisions of the Past in the Work of Sun Ra, Duke Ellington and Anthony Braxton* (Durham, NC and London: Duke University Press, 1999).

<sup>16</sup> George E. Lewis, "Music After 1950: Afrological and Eurological Perspectives," *Black*

I use the published score and individual parts and sketches of Cage's *Atlas* to discuss the work in more detail. Ra's work, however, is not published in the form of a detailed score, as is often the case in jazz. The only written materials available are transcriptions of Ra's works, outlining basic melodic and harmonic contours of the instruments; these will be used in the discussion of "Space Is the Place" in Chapter 3. I will also use sound visualization software to investigate such aspects as sound texture and timbre of the recording.<sup>17</sup>

Photographs, films and recordings capture some of Cage's and Ra's performances and have helped me better understand these two composers.<sup>18</sup> Cage often conducted and performed his music as percussionist, pianist and vocalist, sometimes adding sounds via electronics.<sup>19</sup> Ra took an active role in leading his band, The Arkestra, in world tours, and served as composer, arranger, bandleader, and keyboardist.<sup>20</sup>

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*Music Research Journal* 22 (2002), 215–46.

<sup>17</sup> The Sonic Visualizer is an application developed at the Centre For Digital Music, Queen Mary, University of London. For more information on the program, visit: <http://www.sonicvisualiser.org/download.html>, accessed October 29, 2017.

<sup>18</sup> *Space Is the Place*, DVD, directed by John Coney (1974; San Francisco: Harte Recordings, 2014). John Cage and Sun Ra, *John Cage Meets Sun Ra*, CD, Modern Harmonic, MHCD-020, 2016.

<sup>19</sup> There are many recordings of Cage performing or conducting his works; a comprehensive discography may be found at the John Cage Compendium website: <https://cagecomp.home.xs4all.nl/recordings.html>. Additionally: John Cage, *Atlas Eclipticalis with Winter Music*, Mode Records, MODE-0306, 2007 [re-issue], CD.

<sup>20</sup> Ra wrote and arranged all parts for himself and the Arkestra. There are dozens of LPs, cassettes, and re-issued CDs of his works. A comprehensive discography is listed in Szwed's *Space Is the Place*. Sun Ra, *Soundtrack to the Film Space Is the Place*, San Francisco, Evidence 22070, 1972, CD [re-issued in 1998].

Cage and Ra met and performed music together once.<sup>21</sup> Cage's and Ra's single performance together in June of 1986, Coney Island is described particularly well in Szwed, Feisst, and Silverman's publications and provides details of this significant event.

I have been interested in science, and particularly astronomy, for most of my life and have been particularly fixated on ways in which music and science interact. In this thesis, I draw on numerous sources of inspiration and information about space, such as films, documentaries, articles, and books I have read over the years. For specific scientific facts, I mainly used the NASA website, as it provides the most comprehensive and updated data available. For inspiration in regard to trends and media's depiction of cultural and societal views, I have considered the following films to be of particular significance: *Apollo 13* (1995), *October Sky* (1999), *Hidden Figures* (2016), and *Cosmos, A Spacetime Odyssey* (2014): a series based on an original *Cosmos* series (1980) and writings by Carl Sagan. Many other scholars have written on the topic of music and science with recent publications by Allison Kerbe Portnow's 2011 dissertation "Einstein, Modernism, and Musical Life in America, 1921–1945,"<sup>22</sup> and Peter Pesic's 2014 book *Music and the Making of Modern Science*.<sup>23</sup> These sources, along with many other works, have inspired me continue the discussion on this topic in my own thesis.

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<sup>21</sup> John Cage and Sun Ra, *John Cage Meets Sun Ra*, Modern Harmonic MHCD-020, 2016, CD.

<sup>22</sup> Allison Kerbe Portnow, "Einstein, Modernism, and Musical Life in America, 1921–1945," PhD diss. (University of North Carolina at Chapel Hill, 2011).

<sup>23</sup> Peter Pesic, *Music and the Making of Modern Science* (Cambridge, Massachusetts: MIT Press, 2014).

## II. Methodology

In my thesis, I draw on a variety of methods. I use a collection of primary sources, including musical sketches, music scores, artwork, published interviews, correspondence, music recordings, newspapers and videos. I analyze this material to establish a basis for two case studies, presenting close readings of one specific work by Cage and Ra respectively, *Atlas Eclipticalis* and *Space is the Place*. For my case studies, I also use numerous secondary sources, such as biographies, essays on the music of Cage and Ra, articles, theses and dissertations on their philosophies and on improvisation. Various sources on the history and politics of the Space Race provided information about the historical and cultural contextualization of the artists and their works.

## III. Clarification of Terms

A number of musical terms are used throughout this thesis and some of them are in need of some clarification. I use such terms as improvisation which has many meanings and has been used in compositional processes and in performance, often suggesting that players have a certain amount of freedom and flexibility in the realization of a work. In Cage's understanding, however, improvisation in performance often leads to very subjective and predictable results and thus he conceived notation that is indeterminate to allow performers a certain amount of creative flexibility, but is accompanied by a set of rules to avoid overly subjective and predictable outcomes in performance. It is thus important to note that indeterminacy does not necessarily facilitate a wide variety of improvisation. Indeterminacy can often be found in music scores with alternative forms of notation.

I will also use the concept of Afrofuturism, a term widely used in jazz literature. It points to a movement from the second half of the twentieth century that draws on black history and heritage while exploring futuristic and science-fiction themes. It is an important movement that spans across multiple disciplines and has shaped the arts in the United States.

Another concept is myth-science and it is generally attributed to Ra. The term suggests that myth and science are intertwined and interchangeable, forming a duality without which neither can exist. Ra uses the word “myth” not as a word that means “legend” or “lie” but as a historical truth. Myth-science is a term with a complex history that draws on historical, cultural, spiritual, and ethnic roots of African-Americans. In this thesis, it will be used in the chapter on Ra to describe much of his philosophies and teachings.

#### IV. Chapter Layout

My thesis contains four chapters: an introduction, a chapter on John Cage, a chapter on Sun Ra, and an epilogue, followed by a bibliography and two appendices. All four chapters include discussions of music, the Space Race, and other aspects relating to the Cold War. The second and third chapters provide insight into Cage and Ra’s biographies and cultural and philosophical backgrounds to contextualize their Space-Race inspired works *Atlas Eclipticalis* and *Space is the Place*.

## V. Significance of Study

The aim of this thesis is to showcase two fascinating musical works reflecting the Space Race during the Cold War and to challenge the often racially motivated distinction between classical music and jazz. Using a common thread -- music relating to space, I will show the commonalities between Cage, categorized as a classical composer and Ra, categorized as a jazz composer. Neither of them fits into these “boxes,” therefore a discussion of both composers, and their space-related works, will provide a more insightful snapshot of the music of this particular period in history.

In president Kennedy’s speech referenced earlier, he proclaims that the Space Race was truly for all Americans. However, as African-Americans were largely excluded from space-exploration, and given little recognition for their contributions, so is their music which is often discussed in separate settings from similar classical works—even those that share the same theme.

In his speech at Amherst College in October of 1963, Kennedy speaks of the role of art and artists in society. His remarks, though hopeful and uplifting in their tone, reveal the already unfavorable conditions, where inequality in wages put artists at a disadvantage: “I look forward to an America which will reward achievement in the arts as we reward achievement in business or statecraft. I look forward to an America which will steadily raise the standards of artistic accomplishment and which will steadily enlarge cultural opportunities for all our citizens.”<sup>24</sup> In other words, America during Kennedy’s time was far from ideal in its treatment of artists, particularly those already affected by

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<sup>24</sup> John F. Kennedy, “Remarks at Amherst College, October 26, 1963,” John F. Kennedy Presidential Library and Museum, accessed November 15, 2017, <https://www.jfklibrary.org/Asset-Viewer/80308LXB5kOPFEJqkw5h1A.aspx>.

racism, poverty or other socioeconomic barriers. Considering that unequal treatment and lower wages were already in place “in business and statecraft” among other fields, building on that model would not produce favorable results for black artists or minorities.

My goal is to motivate readers and music lovers to explore composers and music across genres, race and other perceived boundaries and hierarchies, rather than separating them and ignoring their commonalities. I hope to achieve this by providing a common thread—outer space-- throughout the narrative. I want my readers to discover how the Space Race inspired manifold types of music and how studying the music of this era, can provide a more nuanced and deeper understanding of Cage’s *Atlas Eclipticalis* and Ra’s *Space is the Place*.

## CHAPTER 2: JOHN CAGE AND THE MUSIC OF STARS: A CASE STUDY OF *ATLAS ECLIPTICALIS*

*Atlas Eclipticalis* (1962), the first in a series of star-map-based compositions by American experimental composer John Cage, coincided with a new era in United States history, including a decade of scientific firsts and fast-paced technological advancements propelled by the Space Race, and the politics behind the Cold War. The significance of *Atlas Eclipticalis*, written for up to 86 instruments, is both in its unique source material and musical properties that emerge from it, as well as in the fact that it captures the fervor that gripped the nation in the early sixties and the obsessive way in which the masses, led by the media, turned their attention towards the sky. In *Atlas*, Cage merges Eastern and Western ideas reflected in his use of the I Ching, silence, chance, and indeterminacy, along with conventional Western instruments, electronics, and star atlases. In this chapter insight is provided into the unique compositional process and features of *Atlas* and into its historical, cultural and political background.

### I. Background

What do stars and other planets sound like? What would a human experience out in space be? Science fiction books, comic books, radio shows, and films of the late 1950s and the early 1960s offered their own answers to these questions. These sci-fi productions inspired many artists who collaborated in making the sci-fi movement of the late fifties more popular. Cage's colleagues, electronic music composers Louis and Bebe Barron, created the first ever, fully electronic film score for the science fiction movie *Forbidden*



*Planet*.<sup>1</sup> The film premiered in 1956—a full year before the first ever Soviet satellite was launched. The film was quite popular and propelled the futuristic sci-fi movement inspiring new generations of books and movies. The enthusiastic reception of the film and the sci-fi movement in general increased public interest in the space program. Technological advances made it possible to realize dreams of finally conquering the last frontier—space.

The late 1950s saw the first successful launch of both satellites and probes into space from the Soviet Union and the United States. Although the scientific field experienced rapid growth since the early twentieth century, much of the general population remained largely unaware of the science of sound and many other physical properties of space. This changed with the first of Soviet’s probes, Sputnik 1, launching into the orbit on October 4, 1957, followed by the second probe, Explorer 1, on January 31, 1958, from the United States.<sup>2</sup> These two events marked the beginning of the Space Race. Although the reason for scientific exploration of space were largely fueled by political and nuclear tensions during the Cold War, the resulting effect on the public as well as on artists of all kinds made a lasting impact on the arts of the twentieth century.

It is this fascination with the mystery of undiscovered otherworldly sights and sounds, and an increased scientific and political interest in space exploration that likely led Cage to think about star-based composition. The story of Cage’s discovery of the star

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<sup>1</sup> Jane Brockman, “The First Electronic Film score - *Forbidden Planet*: A Conversation with Bebe Barron,” *The Score* 7, no. 3 (Fall-Winter 1992): 5, 12–13.

<sup>2</sup> Susan Watanabe, “Education: the First Probes,” *NASA: Jet Propulsion Laboratory*, last modified February 26, 2010, accessed February 23, 2016, <http://www.nasa.gov/centers/jpl/education/spaceprobe-20100225.html>.

atlases that led to the creation of *Atlas* is as fascinating as the work itself. While teaching at Wesleyan University in New Haven, Connecticut during the 1960–61 school year, Cage took a walk up to the university’s Van Vleck Observatory one night – already with the intention of composing music using star maps.<sup>3</sup> While there, a student working at the Astronomy Library, Bill Jeffreys, showed him Antonin Bečvář’s *Atlas Eclipticalis*: “I showed [the charts] to Cage, whose eyes lit up as I think it was a lot more than he expected.”<sup>4</sup> It is an impressive sight indeed: the atlases are quite large, and filled with dozens of pages of depictions of celestial objects (See Figure 1, 2).<sup>5</sup>

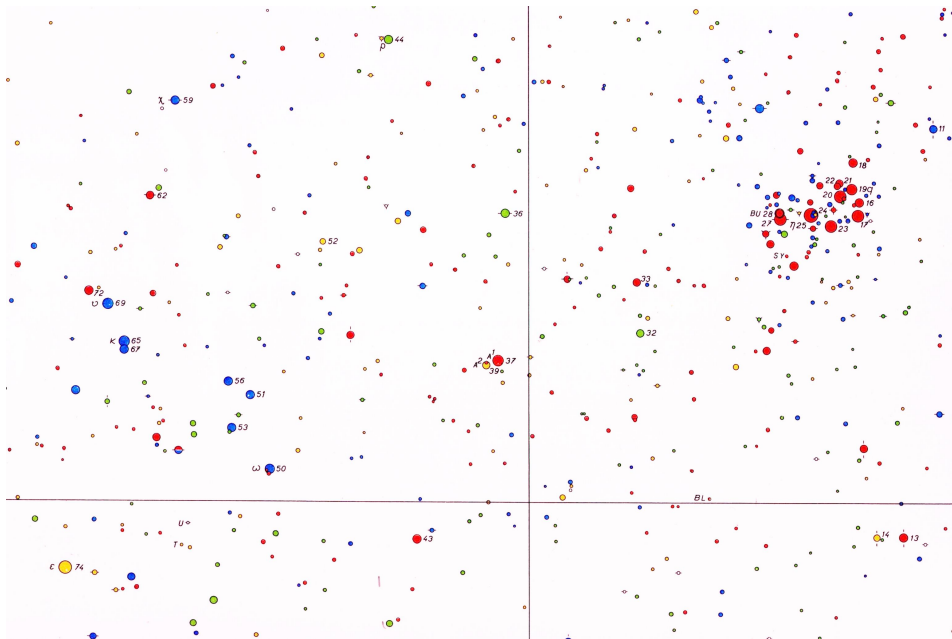


Figure 2. *Atlas Eclipticalis* (star atlas).

<sup>3</sup> Abigail Shneyder, “Songs from the night sky: How one experimental composer turned stars into music,” *Under Connecticut Skies*, July 6, 2015, accessed April 7, 2016, <https://underctskies.wordpress.com/2015/07/06/songs-from-the-night-sky-how-one-experimental-composer-turned-stars-into-music/>.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.



Figure 3. *Atlas Eclipticalis* detail, depicting a color-coded cluster of celestial objects.<sup>6</sup>

The atlases, completed in Czechoslovakia by astronomer Antonín Bečvář (1901–65) and his team, provided the main source of material for several of Cage’s star-map-based compositions. Bečvář, founder and director of Skalnaté Pleso (Rocky Lake) Observatory (1943–50) atop the Tatras Mountains in Slovakia—one of the highest in Europe—discovered eighteen comets and photographed many meteors.<sup>7</sup> An expert climatologist, meteorologist, astronomer, photographer and pianist, Bečvář’s first star atlas: *Atlas Coeli*, in 1950, catalogued over 35,000 stellar objects, was later refined and

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<sup>6</sup> Antonín Bečvář, *Atlas Eclipticalis*, 2<sup>nd</sup> ed. (Cambridge: Sky Publishing Co., 1964).

<sup>7</sup> Peter Wlasuk, Martin Soloc, “Bečvář, Antonin” in *The Biographical Encyclopedia of Astronomers* (New York: Springer, 2007), 106, accessed April 7, 2016, doi: 10.1007/978-0-387-30400-7\_129.

divided into the three star atlases: *Atlas Eclipticalis* (1958), *Atlas Borealis* (1962), and *Atlas Australis* (1964).<sup>8</sup>

Cage's compositions share the name of the atlas they are based on, with the exception of the *Freeman Etudes*, which are derived from *Atlas Australis*. In chronological order, Cage's star-inspired pieces are: *Atlas Eclipticalis*, composed in 1961, *Atlas Borealis With the Ten Thunderclaps*, 1966, *Etudes Australes*, created in 1974–5, *Etudes Boreales* 1978, and *Freeman Etudes* composed between 1977–80 and 1989–90 respectively. Cage's fascination with star maps lasted for decades, far longer than it took the U.S. to challenge the Soviet Union in the Space Race. *Atlas Eclipticalis* was Cage's largest and most ambitious work based on a star map and thus deserves closer examination.

## II. A closer look at *Atlas Eclipticalis*

Pierre Mercure, a Canadian composer and performer, commissioned Cage's work for the Montreal Festivals Society in 1961.<sup>9</sup> Cage worked on the individual parts of *Atlas* between June 1961 and January 1962.<sup>10</sup> Since no two instruments have the same part, even within the same instrumental group, Cage spent a great deal of time hand-notating each of the eighty-six parts. This is unusual for an orchestral work of this scope:

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<sup>8</sup> Ibid. In his three star atlases, Bečvář used six different colors to depict the spectral types of the stars visually. This is why the pages of *Atlas Eclipticalis* are filled with hundreds of colorful dots or clusters of blue, yellow, red, green, etc.

<sup>9</sup> Paul van Emmerik, "A John Cage Compendium," last modified January 6, 2016, accessed March 9, 2016, <http://www.xs4all.nl/~cagecomp/music.htm>.

<sup>10</sup> Ibid.

generally, the composer will only write for instrumental groups, therefore all the players within their section will play the same music, for example, the first violin, second violins, violas, cellos, and so on. (Exceptions may include the woodwinds and brass sections of the orchestra since only one or two players may be present per part.) Occasionally, the section may split into two parts, or contain a solo. In *Atlas*, essentially every part is a solo, and there are no duplicates. Cage embellishes the individualist spirit of the score by dedicating each of the eighty-six parts to an individual. Notable examples include: Nam June Paik, a famous Korean-born artist and pioneer of video art to whom Cage dedicated violin 3 part, Merce Cunningham, the internationally renowned dancer and choreographer (timpani 2), and one of the most iconic twentieth-century German composers, Karlheinz Stockhausen (viola 4).<sup>11</sup>

Cage's composed *Atlas* in several stages. First, he placed transparencies with musical staves over the pages of star maps. The "dots" of documented stars and galaxies in the atlas became the basis for the pitch material of the score. Cage never revealed which parts (or specific pages) of the atlas he used for his compositions, and it would be impossible for musicologists to guess based on the musical parts that resulted from the process. This is in part because the pages of the atlas appear very similar to each other and although there are variations in the density of the objects portrayed (clusters of stars versus empty space) there is no evidence to suggest that clusters in the atlas resulted in clusters of notes in the musical score. Cage further transformed the astronomical data he collected from the atlas because he did not translate every "dot" into a note, but rather

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<sup>11</sup> For a complete list of dedicatees of *Atlas Eclipticalis*, see Appendix II.

used chance operations to determine what and how to incorporate the material into the score.<sup>12</sup>

The next stage of the composition process was to determine the successive and simultaneous occurrence of notes, in other words, which notes were to be played as a single pitch, as part of a chord or cluster, or if there would be silence instead. Cage devised a specific system by creating a grid of different possible combinations and using the I Ching, an ancient Chinese divination manual to obtain the result (see Figure 3).<sup>13</sup> The idea behind using the I Ching and chance was that Cage sought to lessen the presence of his composer ego in the work—he was inspired by Eastern philosophies.

The concepts of the I Ching or *Yijing* (also known as The Book of Changes), the Dao, the Yin-Yang are ancient ideas about life, nature, the divine—in short, these concepts address the Cosmos and everything in it. The I Ching is over three thousand years old, and during that time has been continuously used and adapted by many different cultures all over the world.<sup>14</sup> It gained popularity in the U.S. during the 1960s among artists and musicians.

Some of Cage's exposure to Eastern philosophy and The Book of Changes came about during his informal study with Gita Sarabhai on the topic of Indian philosophy and through attending lectures on Zen Buddhism by Daisetz T. Suzuki between 1940s and

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<sup>12</sup> For examples of the early drafts that illustrate the compositional process of the *Atlas Eclipticalis*, see Appendix I.

<sup>13</sup> Unknown artist, Ancient History Encyclopedia, image uploaded February 13, 2016, accessed August 25, 2016, <http://www.ancient.eu/image/4552/>.

<sup>14</sup> Richard J. Smith, *The I Ching: A Biography* (Princeton: Princeton University Press, 2012), 1–2.

1950s.<sup>15</sup> Cage was deeply influenced by these concepts and embraced many ideas of Buddhist and Eastern philosophies during the latter half of his adult life. He began using The Book of Changes for compositional purposes in 1951, starting with a 43-minute work for solo piano entitled *Music of Changes*, and later integrated this compositional process into many of his later works, including all the atlas-based compositions.<sup>16</sup>

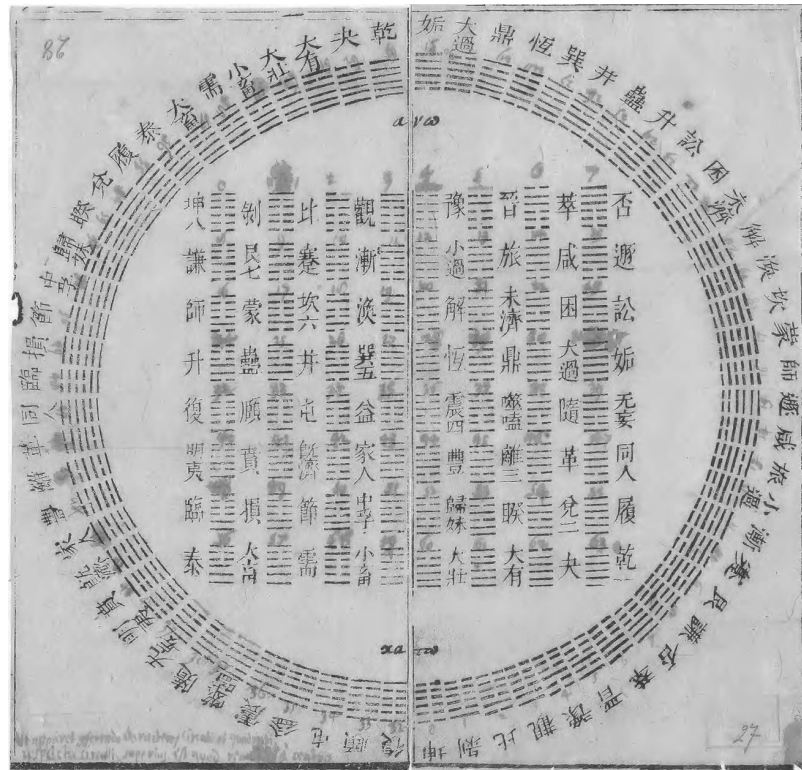


Figure 4. *I Ching* hexagram.

<sup>15</sup> “Database of Works: Music of Changes,” *John Cage*, accessed September 8, 2016, [http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work\\_ID=134](http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work_ID=134).

<sup>16</sup> Ibid.

Indeterminacy is also an important factor of the compositional and performing aspect of *Atlas*. The aspects of indeterminacy in individual parts of the work will be examined in greater detail further on in this chapter, but the basic idea is to give the performer freedom to choose how, when or which notes to play. In fact, this is considered in the notation of the score and written in the directions for performing the work: “the player is under no obligation to play tones in rapid succession,” and “a performance may be at any point between minimum activity (silence) and maximum activity (what’s written).”<sup>17</sup> Cage’s use of chance and indeterminacy in *Atlas* illustrate a fascinating example of Eastern ideals adopted by a Western composer and applied to music. However, the implications of chance and indeterminacy in his works also suggest a scientific concept: the idea of chaos theory, which made its way -- consciously or subconsciously—into Cage’s works. In his article in *The Musical Times*, Marc Jensen, aptly summarizes the delicate balance of artistic creativity and scientific complexity that is chaos theory:

Among the interpretations of Cage’s work with the I Ching, perhaps the most intriguing is the idea that this is an artistic expression of chaos theory at some level. During the time that he was developing his techniques of composing with chance operations in the 1950s and 1960s, scientists from many disciplines were beginning to define the basic principles of chaos theory. One of the central tenets of chaos theory is the seemingly paradoxical idea that extremely simple systems of rules can produce behaviours of infinite complexity within a deterministic space: predictability and randomness coexisting in systems that display both tendencies simultaneously. This is also a perfect description of Cage’s chance music.<sup>18</sup>

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<sup>17</sup> John Cage, *Atlas Eclipticalis* (New York, NY: Henmar Press, 1962).

<sup>18</sup> Marc G. Jensen, “John Cage, Chance Operations, and the Chaos Game: Cage and the ‘I Ching’,” *The Musical Times* 150, no. 1907 (2009), 97–102.



While the score is a unique example of orchestral writing with eighty-six individual parts, the instrumentation consists of traditional orchestral setup: strings, woodwinds, brass, percussion, with the special addition of three timpani and three harp players. The instruments may be amplified through contact microphones. The work may be performed in part, or as a whole and can be combined with Cage's other works: *Cartridge Music* (1960), "Solo for voice 45" and "Solo for voice 48" (both from *Song Books*, 1970) as well as with *Winter Music* (1957).<sup>19</sup> If performed as a whole, the piece can last forty minutes or more.<sup>20</sup> Each part can also be performed as a solo work. (For score details see Figure 5, 6.)<sup>21</sup>

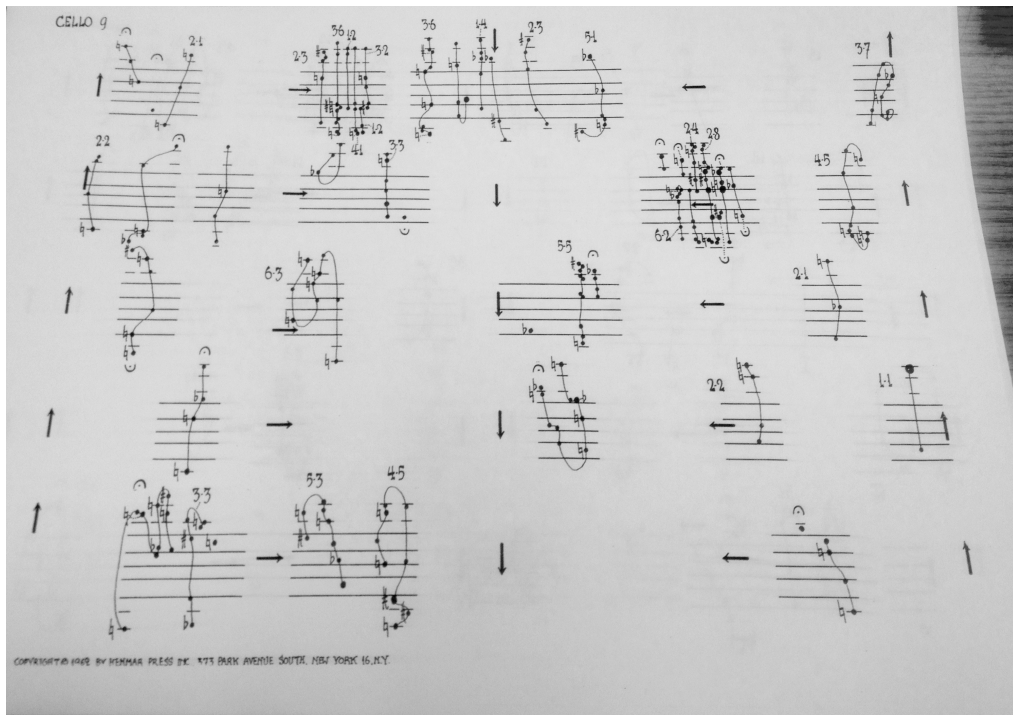


Figure 5. *Atlas Eclipticalis*, cello 9.

<sup>19</sup> Emmerik, "A John Cage Compendium."

<sup>20</sup> Ibid.

<sup>21</sup> John Cage, "*Atlas Eclipticalis*."

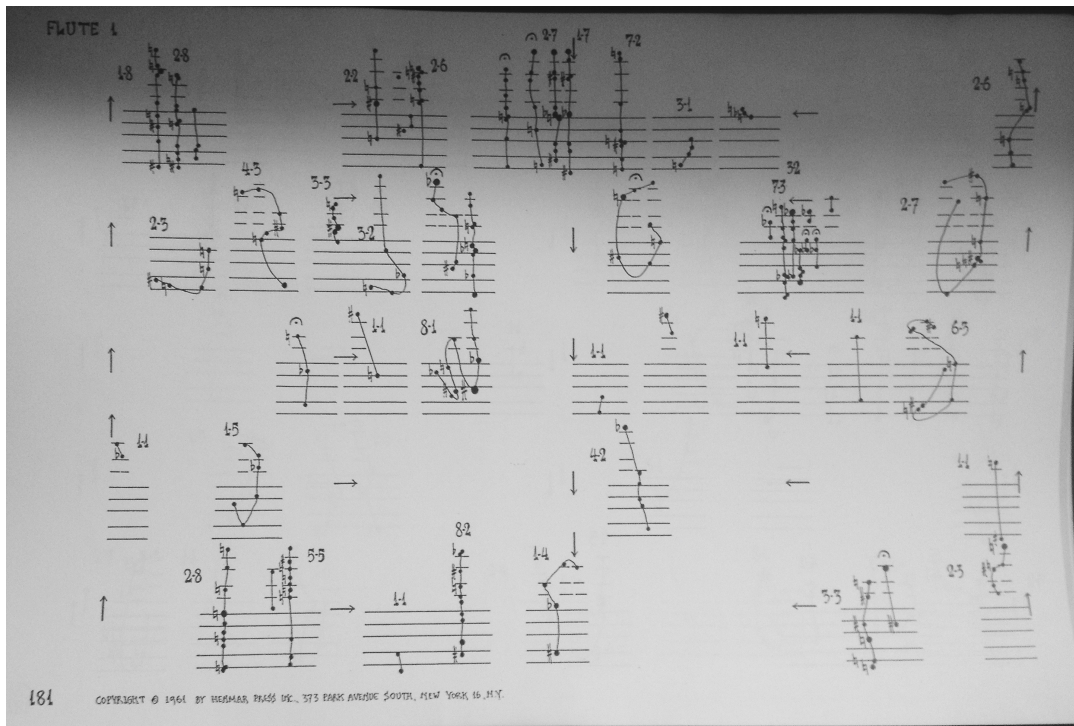


Figure 6. *Atlas Eclipticalis*, flute 1.

There are two similarities shared between all eighty-six parts: first, they all contain an identical set of directions for performance, and second, each part is exactly four pages long and consists of five systems on each page. The only other set of instructions given are for amplification of instruments, which may be applied to all or any within the ensemble. “The directions for conductor and assistant” prefacing his or her part of *Atlas* explain the finer details of their roles (there is no full score). The conductor marks the passage of time in the piece, but instead of using traditional conducting movements, he or she moves their arm in a clock-wise circle like a watch-hand. Starting at the twelve o’clock position at the top of the circle, which marks the start at 0 seconds (0”), the right arm moves to show where the beginning of the next system occurs. Cage specifies that the arm is only to be moved at the 0, 30 and 60 second mark while the 15

and 45 second mark is to be shown using just the palm. At the top of the circle both hands meet, fingers touching to show the completion of the “clock-cycle.”<sup>22</sup> The conductor’s part specifies that the duration of one “clock-cycle” marked by the conductor is at least twice the length of a regular clock (therefore, at least two minutes), but that the conductor should “extend the time to the point where the presence of silence is felt.”<sup>23</sup> The assistant plays no part in the conducting process, but prepares for a performance of his or her own part taken from *Cartridge Music* and controls the tone and volume of the amplified instruments.<sup>24</sup>

Based on the conception of the individual parts, the overall sonic density and sounds of *Atlas Eclipticalis* can be described as thin and sparse. As indicated in the instructions, the size of notes as depicted on the page indicates their loudness. The majority of notes are played short and soft. No rhythmic indications are given to the performers except for the following:

Two numbers above an event (or near it) tell: the first, how many notes are as short as possible; the second, how many have appreciable duration. The absence of number means all tones are as short as possible. A [fermata] means all have some duration. This may not exceed that of a breath of a bow.<sup>25</sup>

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<sup>22</sup> A clip of John Cage conducting his Concert for Piano and Orchestra in this manner is available on DVD: *Birdcage: 73'20.958" for a Composer - A Film Collage by Hans G. Helms*, directed by Hans G. Helms (1972; Mainz, Germany: Wergo, 2016), DVD.

<sup>23</sup> John Cage, *Atlas Eclipticalis*.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid.

Silence predominates, indicated by the white space between the notes. Cage is known for his most famous “silent” piece titled *4’33”* in which a performer “plays” his instrument for the duration of the work, simply listening to silence and the sounds of his or her surroundings. The sounds of the environment become the “music.” *4’33”* is not the only work in which silence takes center stage: Cage embraces prolonged silences in many of his compositions; this is often seen as a manifestation of the philosophical and Eastern ideas in his music.

*Atlas* can be seen as a musical sonification of the night sky, therefore the majority of the work would be silent, representing the vast expanse of space, with only a few points of light glimmering in against the dark sky. *Atlas* can give the listener a sense of a sonified night sky: vast open space, great silences interrupted only by quiet, fleeting sounds, a sense of timelessness, and unmeasured movement. There are no indications of meter or tempo, no sense of pulse patterns. No traditional melodic lines or harmonic contours are detectable. Thus, performers of *Atlas* have considerable flexibility in the creative decision making. The endless number of possibilities in performance practice pay homage to the ever-changing starry nights and the number of ways viewers can interpret the stars. However, the work is not meant to be improvisatory by any means and Cage limited performance freedoms to comply with his aesthetic vision in his instructions accompanying the instrumental parts.

Performances of *Atlas* are, as Cage suggested, often paired with *Winter Music*, *Cartridge Music* or solos from *Song Book*, and while the complete analysis and discussion of these two works is beyond the scope of this investigation, it is necessary to

address the general aspects of these compositions and how their simultaneous performance changes the final result.

*Winter Music* (1957) and *Cartridge Music* (1960) both preceded *Atlas* and all subsequent atlas-based compositions. *Winter Music* is a composition for one to twenty pianists, premiered January 12<sup>th</sup>, 1957 in New York. The score consists of twenty unnumbered pages and may be played in part or whole with or without.<sup>26</sup> The pianos may be prepared in advance as noted in the instructions for the piece, to obtain harmonics, which cannot be produced on non-prepared pianos. Much of the piece is free and up to the discretion of the individual players: dynamics, the length of individual notes, etc. The similarities between *Winter Music* and *Atlas* are evident in the markings of the score: organized into five systems spread across the page from left to right, the notes are placed on small snippets of the musical staff with wide spaces separating the five systems and the staves (see Figures 7 and 8).<sup>27</sup>

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<sup>26</sup> “Database of Works: Winter Music,” *John Cage*, accessed September 8, 2016, [http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work\\_ID=247](http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work_ID=247).

<sup>27</sup> John Cage, *Winter Music: To Be Performed, In Whole or Part, By 1 To 20 Pianists* (New York: Henmar Press, 1960).

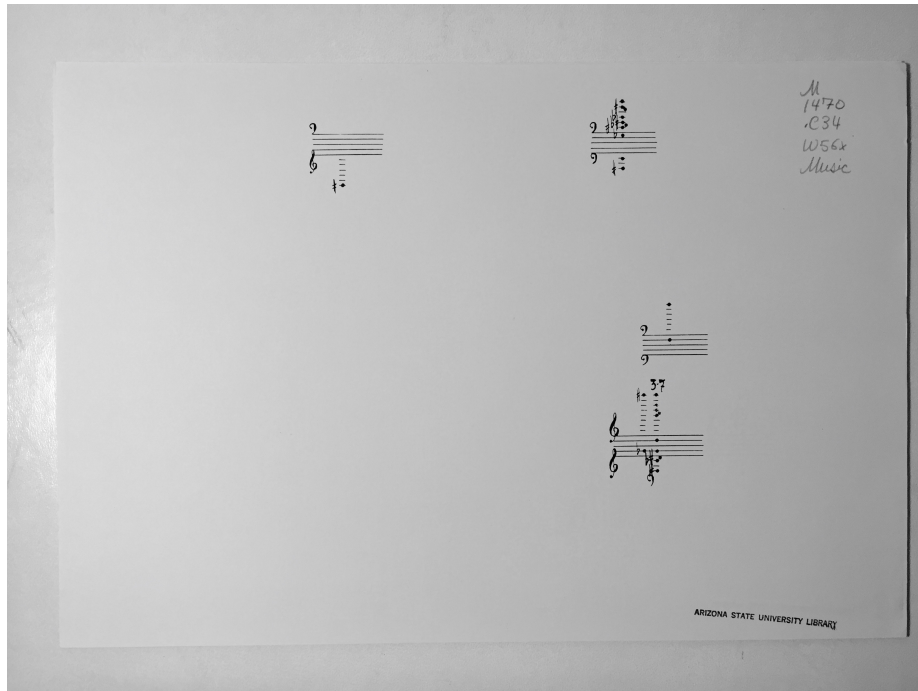


Figure 7. John Cage, *Winter Music*, excerpt no. 1, not paginated.

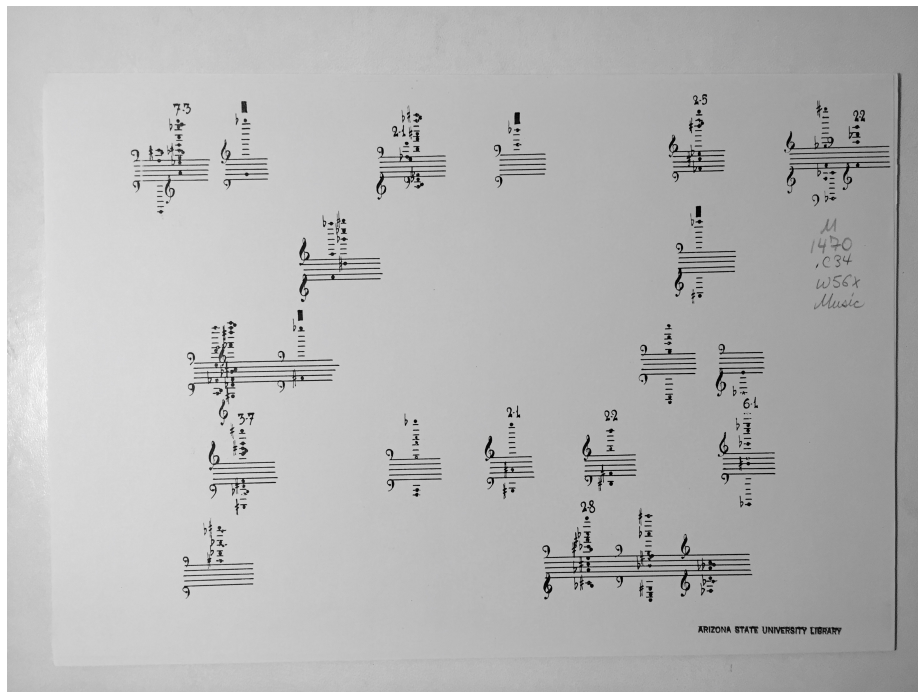


Figure 8. John Cage, *Winter Music*, excerpt no. 2, not paginated.

Like *Winter Music*, *Cartridge Music*, is another piece that may be performed along with *Atlas*. *Cartridge Music* is an indeterminate work and written for “one to forty performers using up to twenty record players, instruments or objects amplified by means of cartridges or contact microphones.”<sup>28</sup> It has a fascinating score including non-linear graph notation on transparencies (see Figures 9, 10).<sup>29</sup> Of course, the simultaneous performance of another work and the addition of electronics can create greater density and raise the volume level of the performance. In this sense, *Atlas*, *Winter Music*, and *Cartridge Music* are parts of a greater work that can be enjoyed separately, but give the most complete musical idea when combined into one mesmerizing performance.



Figures 9 and 10. Layers of transparencies that form the score of *Cartridge Music*.

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<sup>28</sup> Emmerik, “A John Cage Compendium.”

<sup>29</sup> John Cage, *Cartridge Music: Also Duet for Cymbal and Piano Duet, Trio, etc.* (New York: Henmar Press, 1960).

This compositional approach to allow the simultaneous performance of several different pieces shows that Cage was interested in a multiplicity of events, complexity and unpredictability. He later explored this concept in a series of four compositions on the idea of a “musical circus;” these include “\_\_\_\_, \_\_ \_\_\_\_\_ *circus on* \_\_\_\_\_,” *Musircircus*, *Musircircus for Children*, and *Scottish Circus*. The first of these compositions, *Musircircus* (1967), presents the invitation to any number of musicians to gather and simultaneously play any piece, or perform in the way they desire. There is no set number of musicians, instrumentation or any other designated instructions for the performers. The manuscript does contain a diagram designating the positions of performers in the performance space, as well as “a list of musicians for the first performance ... [and] indicates various works by Cage and Erik Satie that were performed, as well as a few non-musical works.”<sup>30</sup>

At first glance the structure of Cage’s “circus works” may seem non-existent or best described as “chaotic,” but the idea behind them points to the contrary. These performances showcase principles of democracy, peaceful co-existence, anarchy, and utopian views translated into a musical setting. It is widely known that Cage embraced these ideas in his personal life, as well as propagated the idea of the conductor-less orchestra. However, while Cage’s “circus works” tend to leave certain creative choices to the performer, Cage did not endorse the idea of complete musical freedom and improvisation in his other works, especially *Atlas*. The botched U.S. premiere of this work by the New York Philharmonic under the direction of Leonard Bernstein cemented

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<sup>30</sup> “*Atlas Eclipticalis*,” accessed October 20, 2017, [johncage.org](http://johncage.org) .



his skepticism about unfettered freedom, as will be discussed later.

Cage never intended for any part of *Atlas* to be freely improvised by the performer. While there is certainly freedom left for the performer to influence the outcome of the piece (indeterminacy) by choosing certain aspects out of the pre-composed options—such as choosing which notes to play out of a cluster, there is no room for the performer’s own musical “commentary” in the form of musical quotes from scores by Stravinsky and other composers of the past, for trampling on contact microphones that were supposed to be attached to the instruments or other forms of improvised contributions along these lines. Indeterminacy, a compositional process pioneered by Cage, “leaves certain aspects of the music unspecified,” which, in the case of *Atlas*, can mean things such as how many, if any, notes are played by the performer during the allotted time.<sup>31</sup>

### III. Performances and Reception

The world premiere of *Atlas* took place on August 3 of 1961 in Montreal, Quebec, during the Semaine internationale de musique actuelle, (international week of today’s music), a seven-day music festival organized by Pierre Mercure.<sup>32</sup> The performance was at the Théâtre de la Comédie-Canadienne de Montréal, and Cage himself successfully directed the orchestra.<sup>33</sup> *Atlas* was only one in a series of newly premiered works at the

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<sup>31</sup> Ibid.

<sup>32</sup> Pamela Jones, “Early Years in Montreal, 1971–1982,” *Alcides Lanza: Portrait of a Composer* (Montreal: McGill-Queen’s University Press, 2007), 125.

<sup>33</sup> Ibid.

festival; works by other Avant-Garde composers such as Milton Babbitt, György Ligeti, Morton Feldman, Krzysztof Penderecki, Pierre Schaeffer, Karlheinz Stockhausen, Edgar Varèse, and others were presented in a series of concerts.<sup>34</sup>

In *La Presse* (8 Aug 1961) Claude Gingras wrote:

In all this “music” heard in five concerts there is surely both some value and some deliberate mystification. It is too early to separate the two. It is too easy to laugh and it would be ridiculous to want to make a firm judgment. Only time will be the judge. Perhaps it will be necessary to find new definitions for the words “art,” “music,” “dance,” “beauty,” “balance,” “taste.”<sup>35</sup>

In stark contrast to the Canadian premiere a few years earlier, the American premiere and reception of *Atlas* was disastrous.<sup>36</sup> On February 9<sup>th</sup>, 1964, the New York Philharmonic, under the direction of Leonard Bernstein, presented a concert comprised of works by Vivaldi and Tchaikovsky, followed by Cage, Feldman and Earle Brown.<sup>37</sup> The last three pieces, Bernstein informed the audience, were part of the last segment of “The

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<sup>34</sup> Lyse Richer, “International Week of Today's Music/Semaine internationale de musique actuelle” in *The Canadian Encyclopedia*, article published February 7, 2006, accessed April 7, 2016, [http://www.thecanadianencyclopedia.ca/en/article/international-week-of-todays-musicsemaine-internationale-de-musique-actuelle-emc/#h3\\_jump\\_0](http://www.thecanadianencyclopedia.ca/en/article/international-week-of-todays-musicsemaine-internationale-de-musique-actuelle-emc/#h3_jump_0).

<sup>35</sup> Ibid.

<sup>36</sup> The reception of the U.S. premiere of *Atlas Eclipticalis*, garnered negative reviews, as did subsequent performances in Los Angeles and Hawaii. Leta E. Miller discusses the reception and reviews of performances of *Atlas Eclipticalis* in “Cage, Cunningham, and Collaborators: The Odyssey of *Variations V*,” *The Musical Quarterly* 85, no. 3 (2001), 545–67.

<sup>37</sup> Benjamin Piekut, “When Orchestras Attack: John Cage Meets the New York Philharmonic,” *Experimentalism Otherwise: The New York Avant-Garde and Its Limits*, (Berkeley, CA: University of California Press, 2011), 20–21.

Avant-Garde” series of concerts presented by the Philharmonic, and were “the most avant-garde [...] of the entire series,” even requiring “psychological adjustment” of the performers.<sup>38</sup> The uncomfortable atmosphere intensified during the performance as audience members booed, hissed and walked out of the hall.<sup>39</sup>

In preparation for the concert, Bernstein planned to lead the orchestra in an improvisatory segment before playing *Atlas Eclipticalis*, which Cage urged against. He wrote a letter to Bernstein asking him to reconsider: speaking on behalf of his work and those of the other avant-garde composers on the program-- “improvisation is not related to what the three of us are doing in our works.”<sup>40</sup> Additionally, although this was to be a performance of *Atlas Eclipticalis* without *Winter Music*, Cage was forced to add it at the last minute.<sup>41</sup> The contact microphones given to the musicians were of poor quality due to budget constraints, and furthermore, the orchestra musicians resisted attaching them to their instruments.<sup>42</sup> These last minute additions, coupled with inadequate rehearsal time contributed to the overall less-than-enthusiastic attitude of orchestra members.

During the rehearsals Bernstein showed a dismissive attitude towards the work, and showed no interest in accommodating Cage’s wishes for a successful performance.

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<sup>38</sup> Ibid.

<sup>39</sup> Ibid, 41.

<sup>40</sup> Sabine M. Feisst, “John Cage and Improvisation: An Unresolved Relationship,” in *Musical Improvisation: Sound, Society and Education*, edited by Gabriel Solis and Bruno Nettle (Urbana, IL: University of Illinois Press, 2009), 38–51.

<sup>41</sup> Leta E. Miller, “Cage, Cunningham, and Collaborators: The Odyssey of *Variations V*,” 549.

<sup>42</sup> Ibid, 549–50.

The premiere was botched due to several issues: uncooperative musicians who improvised during the performance and even played excerpts from other musical works, technology issues, and an unreceptive audience, many of whom walked out during Cage's piece.<sup>43</sup>

Cage was deeply disappointed with the performance and remarked on this on several occasions, citing that the musicians acted unprofessionally and misinterpreted the piece. Perhaps the limited rehearsal time, along with the eighty-six individual parts inscribed with unfamiliar, difficult notation were to blame. Or, perhaps it was that unusual way the piece was conducted, or more likely, that the music was simply too avant-garde. As one performer reportedly said to Cage: "come back in ten years, we'll treat you better," perhaps Cage and his music were simply ahead of his time.<sup>44</sup>

Although the Space Race was well underway by the time *Atlas* premiered, based on the New York performance, it can be concluded that, while Americans may have been ready to send a man to the moon, they were not ready to hear Cage's music of the stars.

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<sup>43</sup> Ibid, 551.

<sup>44</sup> Benjamin Piekut, "When Orchestras Attack: John Cage Meets the New York Philharmonic," 41.

## SUN RA'S SPACE AGE MUSIC: A CASE STUDY OF *SPACE IS THE PLACE*

“I come to you from a dream that the black man dreamed long ago.” Perhaps the most famous quote from Sun Ra’s visionary work, “Space Is the Place” (1974), it references the continuous struggle of African Americans in the midst of the Civil Rights movement in America. Sun Ra was a musician, but he was also an advocate, an activist, writer and poet, preacher, and a peace-maker. He emphasized that he was not human, not of this earth, and without an earthly family. Ra said he was guided by Creator<sup>1</sup> and saw himself as a travelling musician from Saturn with a mission to transport his audience to a new world on his spaceship powered by music. His crew, the Arkestra, joined him on a tour across the globe, as he shared glimpses of the cosmos through avant-garde, futuristic jazz performances.

Like John Cage, Sun Ra (1914–93) was a prolific and versatile artist: a composer, arranger, bandleader, pianist, and writer. He was also interested in space, but, unlike Cage, he avidly focused on cosmology and Afrofuturism. In this chapter, I will discuss some of the key factors that shaped Ra’s music: religion and identity, the use of symbolism, mythology, mythocracy and myth-science, civil rights, science fiction, and Afrofuturism. These concepts will be introduced in a historical and cultural context of the 1960s and 70s, at the height of the Cold War and the Space Race, and with reference to Ra’s career. This discussion will form the foundation for an investigation of Ra’s work “Space is the Place” (1972), a song later used in the film by the same title (1974).

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<sup>1</sup> John F. Szwed, *Space is the Place* (New York: Pantheon Books, 1997), 6.

## I. The Rise of Sun Ra

Herman Poole “Sonny” Blount from Birmingham, Alabama, became Le Sony’r Ra, from Saturn. In adopting a new name and birthplace and erasing ties to his past, Ra provided an example for others who yearned to shed their given names—a constant reminder of slavery and oppression.<sup>2</sup> Ra’s name went through several transformations with which he sought to distance himself from his given name.<sup>3</sup> Ra’s biographer, John F. Szwed, outlined several name changes and the reasons behind them in his book *Space Is the Place*, Ra’s names over time included: Sonny Blount, Sonny Bhlount, H. Sonne Bhlount, the last of which he deciphered to mean “the sound of God.”<sup>4</sup>

Several name variations later, Ra approached his friend and band manager, Alton Abraham about officially changing his name. Abraham was supportive. Ra debated between “La Sun Ra, “Le Sun Ra” and “Le Sony’a Ra,” but ultimately settled on “Le Sony’r Ra.”<sup>5</sup> The reasons for this final change to his name before making it official in 1952 remain a complete mystery and a secret that Ra never revealed.<sup>6</sup> The last little bit of

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<sup>2</sup> Ibid., 80-81.

<sup>3</sup> The transformations of his name also highlight his passionate study of etymology, changing the spellings and meanings of words, to achieve new insight and meanings. Etymology plays an important role throughout Ra’s life and career and will be discussed in further detail in later sections of this thesis. Furthermore, his name plays an important role in his identity and gives insight into his

<sup>4</sup> Ibid., 79.

<sup>5</sup> Ibid., 83.

<sup>6</sup> Ibid.

information regarding his name must—appropriately—remain a secret, to reinforce the symbolic connection that mankind can never know all the secrets of the Cosmos.

Taking control of his destiny, starting with his own name, meant freedom and the ability to redefine words, breaking away from the confines and negative connotations of language. His deep interest and study of etymology—the re-naming and redefinition of words (with different spellings)—became an important factor for him and other African Americans. His teachings on religions and philosophy had a profound influence on his band members, and a wide circle of musicians, friends, and supporters.<sup>7</sup> These themes are continuously re-visited in his music and lectures, as well as in the film *Space Is the Place*. Ra frequently gave lectures, before, during, or after his concerts, in which he weaved a narrative from historical, mythological, philosophical, and etymological perspectives.<sup>8</sup>

## II. Ra in Cultural and Historical Contexts

The Cold War, Space Race, and the Civil Rights movement of the 1960s and 70s had a profound effect on Ra’s music. As with Cage, and many other artists of the time, these historic events served as inspiration for many musical works of Ra. As an African

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<sup>7</sup> Many other African Americans during the Civil Rights movement (1960s) chose to shed their given “slave name” in favor of the letter X or a more symbolic name representing their roots to Africa (for example, Malcolm X). The “X” symbolized the fact that their ancestral names have been taken away or lost over time, just as they were taken from their homeland and forced into slavery. Re-claiming names was a common practice among African Americans during the Civil Rights movement, not only to re-name and regain control of their identity, but to draw parallels to African traditions of multiple names given to individuals. See Szwed, 80.

<sup>8</sup> For more information on Sun Ra’s sermons and his use of etymology in religious context, please see *The Wisdom of Sun-Ra: Sun Ra’s Polemical Broadsheds and Streetcorner Leaflets*, by John Corbett, ed.

American, the Civil Rights movement, coinciding with the Cold War and the Space Race had an additional impact on Ra. Religion, race and identity played a central role in Ra's career. However, Ra often found himself in disagreement with different religious groups (such as Nation of Islam followers, Baptists, or other Christians). Not fitting in any "box," Ra devoted his time to the broad study of religions, etymology, history, science, and science fiction. This led Ra to unique and firmly held beliefs of his own particular views on religion and philosophy.

Ra's music became deeply rooted in his own "brand" of religion. He often spoke to his audiences about his religious teachings and philosophies, and by the mid-1950s Ra became an "international spokesman for the creator of the Omniverse," writing, proselytizing and distributing leaflets.<sup>9</sup> He carefully studied the Bible and other religious texts, deriving interpretations that did not always fall in line with the doctrines of traditional religions.<sup>10</sup>

Another source of influence for Ra was science and science fiction. Science fiction became very popular in the decades spanning the Cold War and the Space Race, and Ra was an avid fan of science fiction. The Cold War between the United States and the Soviet Union prompted a scientific and military push with the intention to outmaneuver the declared enemy. The control of land, water and air was crucial, but both countries had their sights set on a new frontier: space. Military leaders on both sides

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<sup>9</sup> John Corbett, "one of everything: blount hermeneutics and the wisdom of ra," in *The Wisdom of Sun-Ra: Sun Ra's polemical broadsheets and streetcorner leaflets*, compiled by John Corbett (Chicago: WhiteWalls, 2006), 5. [Non-standard capitalization reflects original title.]

<sup>10</sup> John Corbett's *The Wisdom of Sun Ra* is a compilation of many of Ra's teachings and street corner sermons.



realized that satellites could be used to monitor or deploy weapons from space, without being easily detected. Now civilians also had to fear attacks from land, water and air, as well as from missiles launched from space. The media picked up on this scenario by releasing films, graphic novels, books, etc., all with the intent to answer one question: what is waiting for mankind out in space? How will these scientific advances (mainly robots) change life here on earth? Many artists added their own commentary to the Space Race movement.

It was in this frenzy that Cage picked up a newly-published star atlas which he used to write *Atlas Eclipticalis*. But unlike Cage, Ra and other African Americans did not have equal opportunities to pursue government sponsored space-related occupations, or to even be part of the main-stream media conversation on this topic. Arguably the greatest feat achieved by humankind—the moon landing—was to be done by an entirely white, male crew. Being left out of the scientific endeavors, Ra and others in the black community turned to music as a viable tool to build a space-exploration narrative. Without access to space exploration technology, music became a means to “transport black people to other states of being in both material and spiritual terms.”<sup>11</sup>

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<sup>11</sup> Nabeel Zuberi, “The Transmolecularization of [Black] Folk: Space is the Place, Sun Ra and Afrofuturism,” *Off the Planet: Music, Sound and Science Fiction Cinema*, ed. Philip Hayward (Eastleigh: John Libbey Publishing, 2004), 78.

Highlighting the unrest, inequality and lack of opportunity, Gil Scott-Heron released “Whitey on the Moon,” a poem set to music on his new album *A New Black Poet* – *Small Talk at 125th and Lenox* (1970).<sup>12</sup>

A rat done bit my sister Nell.  
(with Whitey on the moon)  
Her face and arms began to swell.  
(and Whitey’s on the moon)  
I can’t pay no doctor bill.  
(but Whitey’s on the moon)  
Ten years from now I’ll be paying still.  
(while Whitey’s on the moon)  
The man just upped my rent last night.  
(‘cause Whitey’s on the moon)  
No hot water, no toilets, no lights.  
(but Whitey’s on the moon)  
I wonder why he’s upping me?  
(‘cause Whitey’s on the moon?)<sup>13</sup>

The lyrics paint a picture of the standard of living for millions of African Americans, in direct contrast to whites landing on the moon. It highlights the injustice of affording luxuries of space travel while an entire race was subjected to deplorable living conditions. How could these two extremes of such inconceivable human achievement coupled with sub-human treatment and living conditions exist within the same community?

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<sup>12</sup> Simon Price, “The Voice of Black America falls Silent,” *The Independent*, May 28, 2011, accessed September 9, 2017, <http://www.independent.co.uk/news/people/news/the-voice-of-black-america-falls-silent-2290401.html>.

<sup>13</sup> Alexis C. Madrigal, “Gil Scott Heron’s Poem, ‘Whitey on the Moon’,” *The Atlantic*, May 28, 2011, accessed: April 10, 2017, <https://www.theatlantic.com/technology/archive/2011/05/gil-scott-herons-poem-whitey-on-the-moon/239622/>.

### III. Afrofuturism, Religion, and Myth-Science

Although the development of Afrofuturism cannot be attributed to a single person, the term itself has frequently been ascribed to Mark Dery who describes it as:

Speculative fiction that treats African-American these and addresses African-American concerns in the context of twentieth-century technoculture—and, more generally, African-American signification that appropriates images of technology and prosthetically enhanced future—might for want of a better term be called ‘Afro-futurism.’<sup>14</sup>

In the same article Nabeel Zuberi elaborates on Afrofuturism by describing it as “a formation that codifies, organizes and maps an alternative cultural history and critical framework for African American media production.”<sup>15</sup> “Afrofuturistic” is a term frequently used to describe Ra’s music. Furthermore, Ra and his Arkestra members regularly played their concerts in costumes and clothing that were in line with Afrofuturism. There is no doubt that Ra was a key figure in spreading awareness on this topic.

Various religions played a part in Ra’s music. Christianity, Islam, Egyptian, African or other ancient myths, are intertwined with his music. Ra’s study of religion was incredibly systematic. Although the entirety of his study cannot be discussed in the scope of this chapter, a sole example of one of his street-corner sermons will illustrate the point. To begin the discussion of his obsessive study of religious texts, etymology must be discussed first. John Corbett described Ra as a “logophile,” a lover of words and

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<sup>14</sup> Zuberi, 79.

<sup>15</sup> Ibid.

homophony, where the “words [are] another form of music.”<sup>16</sup> As mentioned before, etymology—the study of the origins and history of words was a passion of Ra’s and played a significant role in his music and teachings.

In many of his street-corner sermons, Ra used etymology to explain, deepen, or even re-interpret the meaning of a word. In one sermon, he begins with the study of the word “Christianity” and delves into historical, mythological, cultural, and religious meanings tied to the word. A section of a street-corner sermon outlining some of Ra’s views on Christianity and his obsession with etymology and words also shows his philosophical tendencies as well as his fascination with early Christian history:<sup>17</sup>

Christianity is a religion based upon the [word] of Christ, but when used in this manner it should be spelled Christianity. There is a difference between the people who believe in Christ and the people who believe on Christ. The meaning of this will require study by those who are interested. The word chrest is also significant, and we should not neglect the word crest because a crest is a shield or a coat of arms. Crest also means top. It is remarkable that people are in ignorance concerning these two words. We recommend that you research upon the words chrest and chrestion.<sup>18</sup>

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<sup>16</sup> John Corbett, “sun ra in chicago: street priest and father of d.i.y jazz,” in *Pathways to Unknown Worlds: Sun Ra, El Saturn and Chicago’s Afro-Futurist Underground 1954–68*, curated by John Corbett, Anthony Elms and Terri Kapsalis (Chicago: WhiteWalls, 2006), 5. [Capitalization reflects original title.]

<sup>17</sup> *Ibid.*, 137.

<sup>18</sup> Unaware of the meaning of the words “chrest” and “chrestion,” I discovered that an ancient document by the name of “The Chrestion inscription” exists. I cannot be sure that this is what Ra was referring to in his sermon, but my findings seem to point to early Christian history (around first century A.D.) and deal with religious and spiritual/mythological matters, so this remains my best guess in deciphering the somewhat cryptic message in Ra’s sermon.

The remains of the Chrestion inscription were found on the ruins of an ancient Temple of Proserpina (Persephone) in Malta, in 1613. The text can be summarized as such: a man named Chrestion, who was a procurator for the Roman emperor Augustus, restored parts of Persephone’s temple which had been falling apart due to age. Although

Ultimately, Ra saw much of Christianity as false and oppressive. Ra explored these ideas further in the film *Space is the Place*, whose plot—although set in modern times— closely follows ideas of the Bible. Ra’s ultimate goal was to “awaken” the people to his teachings and to allow Rapture to happen; this is depicted at the end of the film when Ra takes a few African Americans aboard his spaceship and takes them to a new planet, while the rest is left behind on a “fallen” earth controlled by the Devil. This event can also be viewed as an Exodus (like in the Old Testament) when Moses led his people out of the oppressed land of Egypt where they served as slaves, into the new land, where they were free to start anew.<sup>19</sup>

Ra and his Arkestra gained international fame in the 1950s as they toured across America, Europe, and Asia not only for their futuristic space-inspired jazz, but also for the costumes, headgear, and other visual aspects that accompanied Ra’s performances.

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the inscription is dated around the first century A.D., the Temple itself is believed to be much older, having needed restorations at the time of Augustus’ reign.

Scholars suggest that this inscription is evidence that points to “the presence of the cult and of the priesthood of Proserpina,” but there is no mention of Christianity in any way, or how the Temple or the cult may relate. Therefore, the reader must make their own conclusions about what the Chrestion inscription may mean in connection to chrest, crest, Christ and Christianity in Ra’s sermon. For further reading and bibliographic information on this footnote, please consult “The Chrestion Inscription,” by Joseph Busuttil, in *Treasures of Malta*, Easter 2015, vol. 21, no. 2, 60–63.

<sup>19</sup> For Ra, the Promised Land for his people was not here on Earth, but on another planet (perhaps Saturn?) but truly, the universe was open to their exploration. It is important to note the connection of the event taking place at the end of the film as both an event of the past and the future: The Exodus is one of the earliest events (occurring in the Old Testament) while the Rapture—a time when Jesus would return to judge all of humanity and re-claim the earth, was promised as a future event by the prophets of the Bible. Ra was able to merge these two events so that they simultaneously represent the historical roots of his people as God’s chosen people and point to the fact that they will be saved in the Rapture—but only should they choose the right path.

Since the 1950s, Ra's band, The Intergalactic Myth-Science Solar Arkestra, was commonly referred to as "the Arkestra." Acknowledging a rare reference to his birthplace Ra named his band Arkestra, joking that this is how "orchestra" is pronounced in his native Alabama.<sup>20</sup>

It was also fitting that the spelling of the word references the Biblical Ark.<sup>21</sup> The symbolism of the Ark is a reoccurring theme in Ra's work: it is a vessel, a ship, and a tool, sometimes physical, sometimes metaphorical, by which Ra transports himself and others to and from Earth, across the Solar system, into the past, and into the future. His band, the Arkestra, signifies a metaphorical ark that carries the music, ideas and the seeds of his philosophical and religious teachings as the group travels around the world. At other times, the Ark is the music itself, transporting Ra's audience into the future through experimental, futuristic jazz; at other times still, the Ark is the space ship in *Space is the Place*, which carries Ra and his passengers across the Solar System.

Ra's views and philosophies caused many to question Ra's authenticity, sincerity, and commitment to his principles and his identity. However, this only seemed to strengthen Ra's resolve: "I believe that if one wants to act on the destiny of the world, it's necessary to treat it like a myth."<sup>22</sup> Ra held a life-long insistence on the necessity of myth, not only in history, music, and art, but also in every aspect of life. subject of myth, myth-science, mythocracy, and mythology which captures the vision behind Ra's

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<sup>20</sup> Corbett, 5.

<sup>21</sup> Ibid.

<sup>22</sup> Lock, 61.

passionate pursuit of the subject. He insisted on necessity of myth, not only in history, music, and art, but also in every aspect of life. In his eyes, to change the world, it is necessary to examine the boundaries of reality, truth, and mystery. There is a deeper truth to Ra's philosophies and teachings: as he invites his listeners to examine these boundaries they discover that there may not be any boundaries at all. In fact, they may be seen as myths themselves. In his eyes, to change the world, it is necessary to examine the boundaries of reality, truth, and mystery. June Tyson, singer in the Arkestra, proclaimed: "If you are not a myth, whose reality are you? If you are not a reality, whose myth are you?"<sup>23</sup>

In one of the most iconic scenes in his film *Space is the Place* (1974), Ra visits a youth center in Oakland, California. Dressed in his typical Afrofuturist clothing, which often included capes, headgear, reflective fabrics, orbs, or Egyptian-like fashion, he materialized in a room full of teenagers who, surprised by his appearance, asked him if he is "for real." Ra answered:

I'm not real, I'm just like you. You don't exist in this society. If you did, your people wouldn't be seeking equal rights. You're not real. If you were, you'd have some status among the nations of the world. So we're both myths. Because that's what black people are, myths. I come to you from a dream that the black man dreamed long ago.<sup>24</sup>

Ra discovers a way to relate to the crowd and impart wisdom and hope. This speech touches on the subject of mythocracy and why it is important to discuss this

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<sup>23</sup> Camille Norment, "Notes From the Oscillating Dream Space," in *Pathways to Unknown Worlds: Sun-Ra, El Saturn and Chicago's Afro-Futurist Underground 1954–68*, edited by John Corbett, Anthony Elms and Terri Kapsalis (Chicago: WhiteWalls, 2006), 23–25.

<sup>24</sup> Ibid.

during this time of civil unrest. Ra's definition of the word "myth" is different from the traditional in a sense that he redefines the word from having a negative connotation to a positive one: "I don't call a lie a lie. I call it a myth. [...] The mythocracy is what you never came to be that you *should* be."<sup>25</sup>

#### IV. *Space Is the Place*

"Space Is the Place" or *Space Is the Place* exists as a song (recorded in 1972), as part of an album released in 1973), a film by the same title (1974), and a separately released original motion picture soundtrack with selected songs from the film (1993). The idea for a film first came from Jim Newman, a film producer, in the early seventies, who reached out to Ra and the Arkestra with the desire to make a short documentary about them at the San Francisco Planetarium.<sup>26</sup> This dream was never realized; however, a new project materialized under director Jim Coney: a full-length film, which was aptly described by John Szwed as "part documentary, part science fiction, part Blaxploitation, part revisionist Biblical epic."<sup>27</sup> Released in 1974, the film, was also called a "cinematic realization of Ra's cosmic harmonic consciousness."<sup>28</sup> This iconic cinematic work is as

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<sup>25</sup> Lock, 61.

<sup>26</sup> Szwed, 330.

<sup>27</sup> Ibid.

<sup>28</sup> David C. Wall, "Space Is the Place (Review)," *Black Camera* 1 no. 2 (2012), 164–66.



much a political commentary on current events, as a semi-autobiographical, music documentary.<sup>29</sup>

The film plot incorporates flashbacks to past, present and future. It also includes scenes that seem entirely “out of time,” such as in Ra’s meetings with the Overseer. The majority of the film storyline is set in Oakland, California, in 1972, which happened to be Ra’s residence.<sup>30</sup> In the film, Ra has come back to Earth with his spaceship, after having found a suitable planet far away on which to resettle African Americans, and give them a chance to thrive without the oppression and influence of the whites. But Ra cannot simply take them away on his ship—he has to battle the evil Overseer first and win them over.

In *Space Is the Place*, Ra speaks to the youths in Oakland, pointing out that they are myths, as even their existence is denied.<sup>31</sup> Ra sees the necessity of reclaiming myths (whether in myth-science or mythocracy) in order to restore the dignity, equality and prosperity to black people all over the world.

The main characters, Ra (as himself) and the Overseer (Ray Johnson), are seen playing cards in the desert—a reference to Jesus and the Devil, and one of many Biblical references throughout the film—Ra must get the African American population to agree to

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<sup>29</sup> The full-length film is available online at: [http://ubu.com/film/ra\\_space.html](http://ubu.com/film/ra_space.html), accessed February 7, 2017.

<sup>30</sup> Szwed, 330.

<sup>31</sup> In the twentieth century as before, democracy was failing in its most basic premises in the United States. A right to vote was denied to black citizens in many Southern states until the Voting Rights Act of 1965 (a mere nine years before the film’s release in 1974), even though the 15<sup>th</sup> Amendment (1870) guaranteed no discrimination on basis of race.

go on his spaceship and colonize the new planet. The Overseer, who is also a “pimp” and is seen in connection to NASA and the FBI, seeks to sabotage Ra’s plans and get him arrested. As a countermeasure, Ra uses music and plays a concert (actual footage of a performance by the Arkestra is seen) to “transport” his audience and show them the wonders of the cosmos. A short excerpt of the song “Space Is the Place” is played during the final scene of the film, where the ship has left Earth for outer space, and the planet is seen exploding.

The film had only a couple of showings in San Francisco and New York.<sup>32</sup> It was sometimes shown in the background (without sound) during Arkestra performances, but failing to attract a wider audience, it became an “underground film.”<sup>33</sup>

A soundtrack of the film music was released in 1993, and included a total of sixteen songs. The “Space Is the Place” soundtrack opens with “It’s After the End of the World,” (heard at the beginning of the film) and includes a shortened four-and-a-half-minute version of the song “Space Is the Place,” a greatly reduced version of the original 21-minute length.<sup>34</sup>

The film *Space Is the Place* did not receive the recognition worthy of such an intricate, complex, and fascinating film, but it remains an essential source when discussing Sun Ra’s music, in particular the song “Space Is the Place.”

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<sup>32</sup> Szwed, 332.

<sup>33</sup> Ibid.

<sup>34</sup> *Space Is the Place*, 40<sup>th</sup> Anniversary ed. (San Francisco: Harte Recordings, 2014), 124.

## V. A Closer Look at the Song “Space Is the Place”

When asked about what fuels his spaceship, Ra answered: music. Music is both a tool of technology, and the message that Ra has come to spread on Earth. He believed that music was the key to interstellar travel. Perhaps it is only through music that the true message of the Creator’s Omniverse can be shared with humans. In that sense, music can be seen as an energy possessing qualities and properties on its own. He speaks of music and vibrations as having different properties in different places: in the opening of the film *Space is the Place*, Ra reveals his plan to build a utopia through a space colony and discusses the different ways he could bring the travelers to the new planet. The song is heard towards the end of the film, as well as at the end of the CD release of the movie soundtrack, as an open invitation to board the ship and embark on a journey to outer space.

The music is different here. The vibrations are different. Not like Planet Earth. Planet Earth sounds of guns, anger, frustration. There will be no one from Planet Earth we could talk to who would understand. We’ll set up a colony for black people here. See what they can do on a planet all their own, without any white people here. They would drink in the beauty of this planet. It would affect their vibrations, for the better of course. Another place in the universe, up in the different stars. [...] We’ll bring the here through either isotopic teleportation, transmolecularization or better still, teleport the whole planet here through music.<sup>35</sup>

The *Space is the Place* album was recorded on October 19<sup>th</sup> and 20<sup>th</sup> 1972, at Streeterville Recording Studio in Chicago.<sup>36</sup> Originally produced by Alton Abram and Ed

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<sup>35</sup> *Space Is the Place*, directed by John Coney (1974; San Francisco, CA: Harte Recordings, 2014), DVD.

<sup>36</sup> Stephen Cook, “Sun Ra: Space Is the Place,” *AllMusic*, accessed June 21, 2017.

Michel, the album was later released in 1973, under Blue Thumb Records, on vinyl.<sup>37</sup> It consists of only five numbers in the order of “Space Is the Place,” “Images,” “Discipline,” “Sea of Sounds,” and “Rocket Number Nine” for a total length of around 42 minutes. The album has since been reissued in a CD format (1998) under MCA/GRP records and produced by Ed Michel.<sup>38</sup> All compositions and arrangements are by Ra; additionally, he plays the space organ, the Farfisa.<sup>39</sup> Sun Ra used it for many of his other songs as well, as it created a futuristic sound capable of producing special effects onto which other sounds could be added in a loop. This instrument, particularly the Professional series, was popular in the late 1960s and early 70s. It is a nod to the long line of electronic instruments that evolved along with technological advances, starting with the early Theremins. Sun Ra played the Farfisa on all but one of the tracks (“Images” is performed on piano). The group is collectively credited as “Astro Intergalactic Infinity Arkestra.”<sup>40</sup>

The instrumentation of this album consists of instruments generally seen in a jazz band setup, but with some alterations and additions of “exotic” and electronic instruments (Farfisa). Understandably, the instrumentation for Arkestra changed over the years, along

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<sup>37</sup> Stevie Chick, “Sun Ra Space Is the Place Review,” *BBC Review*, 2012, <http://www.bbc.co.uk/music/reviews/35x2/>, accessed February 27, 2017.

<sup>38</sup> Sun Ra, *Space Is the Place*, Impulse!/GRP AAIMPD249, 1998, CD.

<sup>39</sup> Farfisa is an electronic organ, capable of producing a variety of unusual sound effects, including an amplifier, repeater and “wah-wah” pedals.

<sup>40</sup> Although Ra had settled on that particular variation of his name for a couple of decades, the Arkestra’s name kept evolving over time. In *Space is the Place*, Szwed lists at least fifty different names the Arkestra has used (Szwed, 94–95).

with its members, however, Ra kept a fairly consistent setup of instruments that comprised the core of the Arkestra: piano (keyboards, synthesizer or space organ), trumpet, (sometimes with addition of flugelhorn), alto, tenor, and baritone saxophone, flute, bass clarinet, electric bass, drums and various percussion instruments, as well as voice. Additionally, most members of the Arkestra provide backup vocals in addition to the lead singer, and all members are expected to be percussionists: “as all Marines are riflemen, all members of the Arkestra are percussionists.”<sup>41</sup> This setup allows for the musicians to improvise and add additional percussive instruments as needed, to fortify the texture and diversify the timbre of any piece. Ra encouraged Arkestra members to try out different instruments in rehearsal, and with favorable results he would implement the new additions into future arrangements.<sup>42</sup> The sonic diversity meant that each performance would be unique and that the musicians had freedom to express their musicality through call-and response interaction, solos, vocalizations, and added percussive sounds.

“Space Is the Place” begins with a 5/4 meter and changes to 4/4 after the two introductory measures. It starts with the space organ playing a short introduction (approximately eight seconds in length). The sound mimics lasers, static, rising glissandi from the electronic keyboard and other sounds evoking space, often heard in sci-fi films. The baritone saxophone begins with a two-measure introduction playing the secondary theme. The bass clarinet, saxophones, the electric bass, and percussion join in with the

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<sup>41</sup> Sun Ra, *Space Is the Place*, CD.

<sup>42</sup> Szwed, 127.

main theme of “Space Is the Place.” The basic melodic contour of the piano reduction part outlines an interval of a major 6<sup>th</sup> (Bb to G), mostly following the leap-step-step pattern. This primary, eight-measure theme is repeated again, this time with the addition of the rest of the brass instruments. The primary motivic structure (dotted quarter note followed by eighth note, eighth rest, eighth note and a quarter note tied to a whole note in the next measure) is repeated and clearly carried through all the instruments.<sup>43</sup> At the beginning of the third repetition, June Tyson adds the lyrics: “Space is the place/ Outer space is a pleasant place/ A place that’s really free/ There’s no limit to the things that you can do/ There’s no limit to the things that you can be/ Your thought is free/ Your life is worthwhile/ A vast and endless free.”<sup>44</sup>

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<sup>43</sup> See Figure 11 for a piano transcription of the melodic material.

<sup>44</sup> Rob E. Cohen, “The Sun Ra Memorial mArchestRa,” accessed October 23, 2017, <http://www.rob-cohen.com/marchestra.html>. The lyrics have been simplified and shortened in this document. For a complete version please visit website listed.

# Space Is the Place

Piano

Sun Ra

The image displays a piano transcription of the piece "Space Is the Place" by Sun Ra. It consists of three systems of musical notation, each with a grand staff (treble and bass clefs). The first system begins with a whole rest in the treble clef, followed by a series of chords and eighth-note patterns in the bass clef. The second system starts at measure 5, featuring more complex chordal textures and rhythmic patterns. The third system starts at measure 10, continuing the intricate harmonic and rhythmic development. The notation includes various chord symbols, accidentals, and rhythmic markings typical of a piano score.

Figure 11. Excerpt of “Space Is the Place” piano transcription.<sup>45</sup>

After Tyson’s initial introduction of the lyrics, the melody is embellished with additional voices featuring other members of the Archestra, extended techniques from the horns, dissonant chords from building through the harmony, and individual solos passed from performer to performer. Pitch-bending voices and instruments are common, particularly, in the secondary and tertiary repetitions of the primary melody.

*Sprechstimme*, calls and responses, vocalizations, and interwoven melodic fragments,

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<sup>45</sup> Full transcriptions for trumpet, alto, tenor and baritone saxophone, trombone and piano are at *The Sun Ra Memorial Marchestra*, transcribed by Rob Cohen, <http://www.rob-cohen.com/marchestra.html>, accessed October 29, 2017.

create a thick harmonic and microtonally enriched texture, for the majority of the piece. A tonal center is always present, and seems to linger as a drone sound that is echoed around the group. The piece has a predominantly dense and polyphonic texture with multiple duets, solos, as well as call-and-response interactions.

The “Space Ethnic Voices” of Tyson, Ruth Wright, Cheryl Banks, and Judith Holton, in addition to Akh Tal Ebah, and John Gilmore create a multi-layered call-and-response structure. Tyson plays a dominant role in the Arkestra as a lead singer, and has a wide vocal range, and while the two additional backup singers tend to stay in a similar melodic range as Tyson, their voices are clearly discernible in the recording. Tyson transfers the repeated lyrics of the “space is the place” lyrics to Wright, Banks and Holton, while she continues to sing through the different stanzas. When she goes back to “space is the place,” the backup singers simply utter “space.” Overall, there are six main stanzas which are repeated at least twice (although the lyrics “space is the place” are repeated many times, for at least seven stanzas). Once all the stanzas are heard at least once the various instruments come to the forefront and improvise in free-jazz style solos. The singing continues throughout. The words of the singers and the sounds of the instruments overlap and blend into a thick canopy, however, the original melody (as seen in the piano reduction score, Figure 11), is never obstructed, and snippets of it are always carried through to the listener.



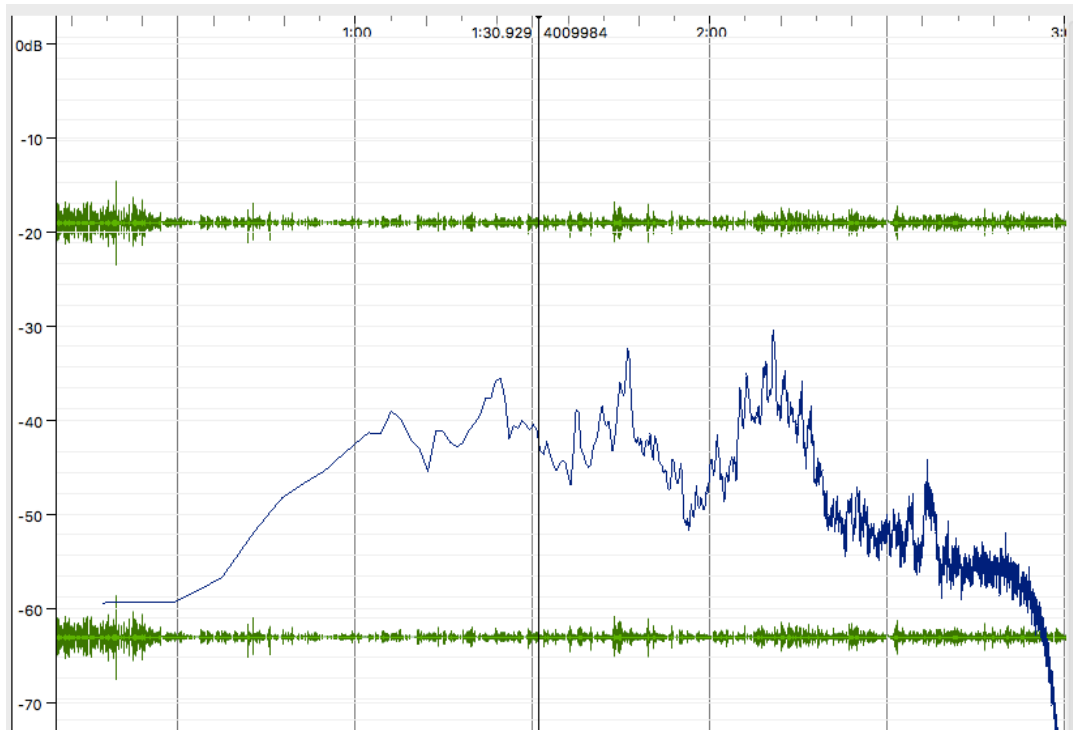


Figure 12. Sonic visualization of “Space Is the Place,” three-minute excerpt.<sup>46</sup>

A mapping of the song’s sonic properties with sonic visualizer software can reveal details with regard to frequency, timbre, sonic texture and rhythm that are not readily apparent in the piano transcription. In this short, approximately three-minute excerpt, the first verse is heard once, as well as the chorus. The song has a wide melodic range drawn out by various voices and instruments, with the addition of extended techniques (particularly in the winds). In this graph, the melodic line is shown in blue (ruler on left shows decibels). Texture and rhythmic contours are outlined in green. At the end of this excerpt, the first solo emerges to the forefront; the texture becomes thicker and the melodic line gains in sonic complexity with the superimposition of several

<sup>46</sup> Excerpt showing the melodic contour of the song’s first three minutes. The Sonic Visualizer is an application developed at the Centre For Digital Music, Queen Mary, University of London. For more information on the program, visit: <http://www.sonicvisualiser.org/download.html>, accessed October 29, 2017.

frequency layers. The glissandi at the beginning of “Space Is the Place” is a very symbolic way to start the song, as it can be interpreted as a metaphorical rise into the atmosphere and into outer space.

The space organ returns at around seven minutes into the song, playing and then improvising on the short motif heard at the very beginning. It is a featured solo, and soon thereafter it blends into the background again. Around twelve minutes into the piece, the polyphony loses in complexity, and gradually the instruments drop out to quietly blend in the background. Tyson’s voice, is once again the predominant feature, heard clearly against the suddenly shadowy, shimmering background of the Arkestra. With five minutes left, the lyrics add a new twist: “don’t you wanna go?” is sung in response to “space is the place.” In a quick succession, the members take turns soloing, but for the first time, there are moments when the song is either entirely choral or entirely instrumental. The texture gradually thins out and fades into echoes of “space is the place” and “don’t you know?”

The fade-out at the end of “Space Is the Place” alludes to the vast, immeasurable distances of our universe, through which the vibrations of Ra’s music might travel infinitely. It is an artistically creative way to end the piece—one without a definite end, but with an echo reverberating through space. *Space is the Place*—both the film and the song, invites audiences on a journey across the universe, one that is free of constraints and troubles of an oppressive society. The music offers an invitation to come along on an intergalactic journey and experience the universe firsthand. In Ra’s view, outer space is to be experienced, firsthand rather than observed; and his music offers inclusion and invitation to all. In stark contrast to Cage’s *Atlas Eclipticalis*, where silence, pointillistic

instrumental sounds and no human voices suggest a quiet outer space without presence of humans, Ra's "Space is the Place" seems to be full of humans. It is a radically different interpretation of the universe: one that is filled with noise, sounds, music, and song, offering an invitation to joyfully celebrate outer space in the manifold sonic echoes that crisscross the cosmos.

## EPILOGUE: POSTCARDS FROM SATURN

On the morning of August 21<sup>st</sup>, 2017, a total solar eclipse passed across the United States from the West to the East coast. With major news and media coverage of the event, reportedly eighty-eight percent (around 215 million) of American adults watched the eclipse.<sup>1</sup> In anticipation of the event, merchandise sales, travel, and lodging, all experienced a drastic increase in volume. Articles with photos of United States president, Donald J. Trump, and his family, watching the eclipse from the White House splashed across headlines. The event has since been dubbed “The Great American Eclipse” with “unparalleled public interest and engagement.”<sup>2</sup> In the days following, it became very apparent: the attraction, mystery, awe, excitement, and frenzy over celestial events has not gone away since the moon landing in 1969. In fact, I believe that it is stronger than ever.

What kind of response will come from artists this time around? Will this generation get to watch the first human land on Mars? Have the political, moral and ethical norms shifted since the last Space Race? And how will the current generation address these problems?

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<sup>1</sup> Jonah Engel Bromwich, “215 Million Americans Watched the Solar Eclipse, Study Finds,” *The New York Times*, September 27, 2017, accessed September 28, 2017, <https://www.nytimes.com/2017/09/27/science/solar-eclipse-record-numbers.html?smid=fb-nytimes&smtyp=cur>.

<sup>2</sup> Ibid.

## I. The New Space Race

We are currently in a period that shares some startling connections to that of the Cold War and Space Race era, that I have discussed in this work. There have been rising political tensions between Russia and the United States, as well as threats of a nuclear war with North Korea. Natural phenomena also point to a repeat in history, as the last eclipse to pass over the forty-eight contiguous states was in February of 1979, four years after the end of the Space Race (1975).<sup>3</sup> As with the moon landing and the original Space Race, concerns surrounding environmental, ethical, financial and other concerns have not been resolved. Environmental issues regarding space exploration include many unsustainable practices, pollution, hazardous waste, and space debris, to name just a few.

Since the beginning of the Space Race and the launch of a first man-made satellite, more than half a million objects (non-functioning or discarded parts of satellites and rockets) now orbit Earth in a cloud, and pose a serious threat to the International Space Station, as well as functioning satellites.<sup>4</sup> The launching sites of rockets are extremely loud and result in damages to the surrounding ecosystems. As one might imagine, the current space exploration has many critics. Some of them argue that, since

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<sup>3</sup> Asidesach Debebe, “When was the last solar eclipse seen from contiguous United States, and when will the next one happen?” *NASA*, accessed September 14, 2017, <https://eclipse2017.nasa.gov/when-was-last-solar-eclipse-seen-contiguous-united-states-and-when-will-next-one-happen>.

<sup>4</sup> Mark Garcia, “Space Debris and Human Spacecraft,” *NASA*, updated August 4, 2017, accessed September 27, 2017, [https://www.nasa.gov/mission\\_pages/station/news/orbital\\_debris.html](https://www.nasa.gov/mission_pages/station/news/orbital_debris.html).

humanity has poorly managed earth's resources and environment thus far, it would be unethical to venture out and destroy other environments in the solar system.<sup>5</sup>

Ethical concerns over sending humans into space and colonizing other planets are debated among the public. Astronauts must be prepared to deal with an extremely dangerous environment and expose themselves to serious health risks.<sup>6</sup> Since 1967, twenty-one astronauts have lost their lives.<sup>7</sup> Is it ethical to subject human lives to an environment to which they are not adapted and in which they might not survive? One might ultimately ask whether the space exploration program is hurting more people than helping them.

Financial aspects of the space programs have been hotly debated for decades. Billions of dollars are allocated by space agencies worldwide to fund both human and robotic missions to space, as well as construction and upkeep of billion-dollar telescopes,

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<sup>5</sup> NASA takes this concern into consideration, and employs a team of scientists under Office of Planetary Protection. Their job is to protect environments from biological contamination both our own, and those of the planets we explore, as well as ensure that the biosphere of any environment is preserved in its natural state. Rakesh Mogul, "Office of Planetary Protection," *NASA*, September 15, 2017, accessed September 24, 2017, <https://planetaryprotection.nasa.gov/about>.

<sup>6</sup> Space travel has a significant impact on the physical, mental, and emotional well-being of astronauts. Extensive testing is done before and after an astronaut's journey to ensure the best protection and rehabilitation after the exposure to harsh environment of outer space. For a complete list of health concerns, testing and prevention, consult "The Human Body in Space," *NASA*, <https://www.nasa.gov/hrp/bodyinspace>, accessed September 18, 2017.

<sup>7</sup> This number also includes Russian cosmonauts, and reflects the total number of lives lost while inside spacecraft (including pre-flight). Remy Melina, "The Fallen Heroes of Human Spacecraft," *Space.com*, April 11, 2011, accessed September 2, 2017, <https://www.space.com/11353-human-spaceflight-deaths-50-years-space-missions.html>.

space stations, observatories and other facilities. Amidst serious environmental crises, uncontrolled global warming, rampant pollution, and millions of people subjected to extreme poverty, hunger, and disease, many wonder whether space exploration deserves any funds at all.<sup>8</sup>

Lack of diversity still remains a serious deficiency of space programs around the globe. The first seventeen years of the Space Race included astronauts from only two countries: The United States, and the Soviet Union.<sup>9</sup> Since then other countries have joined in, and while astronaut crews have gotten more diverse over time, they have nevertheless remained overwhelmingly populated by white American males. Since 1961, 549 people from 40 different countries have been sent to space, but only 59 of them are women,<sup>10</sup> and only sixteen of NASA's 321 candidates are African American.<sup>11</sup> The vast

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<sup>8</sup> It is worth mentioning that the technological and space exploration efforts by NASA have not been without merit. Advances in medicine, food storage, communication devices, clothing, safety gear, and computers have greatly improved due to NASA's efforts in the last fifty years. However, pros and cons of space exploration and funds allocated are still hot-button issues.

<sup>9</sup> Konstantin Kakaes, "International Collaborations in Space Always Reflect Politics on Earth," *Slate*, March 30, 2017, accessed September 16, 2017, [http://www.slate.com/articles/technology/future\\_tense/2017/03/a\\_brief\\_history\\_of\\_the\\_countries\\_that\\_send\\_people\\_to\\_space\\_and\\_why.html](http://www.slate.com/articles/technology/future_tense/2017/03/a_brief_history_of_the_countries_that_send_people_to_space_and_why.html).

<sup>10</sup> Steve Garber, "Women in Space," *NASA*, updated July 2017, accessed September 27, 2017, <https://history.nasa.gov/women.html>.

<sup>11</sup> Brian Dunbar, "NASA's African-American Astronauts Fact Sheet," *NASA*, updated June 15, 2017, accessed September 19, 2017, [https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/African\\_American\\_Astronauts.html](https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/African_American_Astronauts.html).

majority of countries, nationalities, ethnicities, continue to be underrepresented in space exploration.

For opportunistic minds, the added pressures of environmental concerns and dwindling natural resources, the exploration of outer space is an opportunity to claim rights to new untapped sources and untold profits. The commercialization of spaceflight, colonization of Mars and discovery of alien life have been widely popularized by the media in recent years. But with his piece *Next Stop Mars*, Ra has already drawn attention to Mars as early as 1966. With many of the world's leading scientists expressing that colonization of other planets may be the only sure way to save humanity, new, private space programs have emerged. Building on the public's thirst for the exploration of the unknown, exotic, sci-fi environments, SpaceX, a private, California-based company founded in 2002 by Elon Musk, has announced a trip around the moon for two private citizens in 2018.<sup>12</sup> "Space tourism," although present since the 1980s, is still reserved for the very wealthy elite, where "tickets" for private citizens cost millions of dollars, are likely become an even more lucrative business in the decades to come.<sup>13</sup>

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<sup>12</sup> "SpaceX to Send Privately Crewed Dragon Spacecraft Beyond the Moon Next Year," *SpaceX*, February 27, 2017, accessed: March 23, 2017, <http://www.spacex.com/news/2017/02/27/spacex-send-privately-crewed-dragon-spacecraft-beyond-moon-next-year>. Additionally, Mars One, a Netherlands-based private organization, seeks to establish a permanent human residence on Mars by 2032. The crew must be highly trained and willing to go on a one-way mission to Mars. These two companies are at the forefront of the new space race, with both private and government-based organizations vying to be the first country to send people to the Red Planet. "Roadmap," *Mars One*, accessed March 23, 2017, <http://www.mars-one.com/mission/roadmap>.

<sup>13</sup> Konstantin Kakaes, "International Collaborations in Space."



## II. The Golden Record

Although many people, including musicians, may never be able to afford a “golden ticket” to space, Golden Records, the most diverse and inclusive human artifact, have made it to space. In 1977 two phonograph records, known as The Golden Records – twelve-inch, gold plated copper disks – were placed aboard two satellites: Voyager 1 and 2. The records contain images, sounds, greetings and music from around the globe.<sup>14</sup>

President Jimmy Carter sent off the Voyager with a letter; it summarizes the purpose and intent of this one-of-a-kind time capsule:

This is a present from a small distant world, a token of our sounds, our science, our images, our music, our thoughts, and our feelings. We are attempting to survive our time so we may live into yours. We hope someday, having solved the problems we face, to join a community of galactic civilizations. This record represents our hope and our determination, and our good will in a vast and awesome universe.<sup>15</sup>

These hopeful tones are echoed in the content of the Golden Records.

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<sup>14</sup> Jon Nelson, “Making of the Golden Record,” *NASA*, accessed August 25, 2017, <https://voyager.jpl.nasa.gov/golden-record/making-of-the-golden-record/>.

<sup>15</sup> Benjamin Breen, “Dear Space Aliens: Hello! Love, Jimmy Carter,” *Slate*, October 9, 2013, accessed August 29, 2017, [http://www.slate.com/blogs/the\\_vault/2013/10/09/jimmy\\_carter\\_the\\_president\\_s\\_letter\\_on\\_the\\_voyager\\_probe.html](http://www.slate.com/blogs/the_vault/2013/10/09/jimmy_carter_the_president_s_letter_on_the_voyager_probe.html).



Figure 13. Golden Record cover (left), and the Golden Record (right).

The music section is comprised of twenty-seven tracks (approximately ninety minutes) and features music from different countries and genres.<sup>16</sup> Classical music selections include works of Bach, Beethoven, Mozart, and Stravinsky. Jazz, blues and R&B selections included “Melancholy Blues” by Louis Armstrong and his Hot Seven, “Dark Was the Night,” by Blind Willie Johnson, and “Johnny B. Goode” by Chuck Berry. Newer experimentalist and avant-garde compositions were not included with the exception of Laurie Spiegel’s *Music of the Spheres* which is listed under the “sounds” rather than “music” category. music and other documents on the records were selected by Carl Sagan, Linda Salzman Sagan, Timothy Ferris, and Ann Druyan, who collaborated on the project over the course of approximately six months.<sup>17</sup>

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<sup>16</sup> John Nelson, “What Are the Contents of the Golden Record?” *NASA*, accessed September 12, 2017, <https://voyager.jpl.nasa.gov/golden-record/whats-on-the-record/>.

<sup>17</sup> Timothy Ferris, “How the Voyager Golden Record Was Made,” *The New Yorker*, August 20, 2017, accessed September 28, 2017,

This project was not without criticism: some wondered what use the Golden Record could serve to any possible intelligent being who may encounter the Voyager, or how they may be able to interpret the information encoded.<sup>18</sup> Furthermore, there were some slight disagreements on the choice of music and copyright infringements. In his recent article, Timothy Ferris offers us a first-person account of the committee's selection process: "I'm often asked whether we quarreled over the selections. [sic] We didn't, really; it was all quite civil. With a world full of music to choose from, there was little reason to protest if one wonderful track was replaced by another wonderful track."<sup>19</sup>

Having composed a rich catalog of works about space, for much of their careers, Cage and Ra did not have their works programed in the same venues and concerts and never knew each other well. But they performed together once. In their one and only meeting on June 8<sup>th</sup>, 1984, titled "Sideshows by the Shore," Cage and Ra played at the Coney Island Museum.<sup>20</sup> Beyond a few sentences, their conversations backstage before and after the show were not recorded, so there is virtually little to no information about their impressions of the event. However, Ra later mentioned that "Cage was the most

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<https://www.newyorker.com/tech/elements/voyager-golden-record-40th-anniversary-timothy-ferris>.

<sup>18</sup> These concerns, as well as thought-provoking questions from a musicological perspective may be found in "Earth Music" by Alexander Rehding and Daniel KL Chua, *Musicology Now*, July 2017, accessed September 26, 2017, <http://musicologynow.ams-net.org/2017/07/earth-music.html>.

<sup>19</sup> Ibid.

<sup>20</sup> Szwed, John F. *Space Is the Place: The Lives and times of Sun Ra* (New York: Pantheon Books, 1997), 356.

important Euro-American composer.”<sup>21</sup> This significant moment in music history was recorded by Meltdown Records and was re-released as the LP *John Cage Meets Sun Ra* (2016) by Modern Harmonics.<sup>22</sup> The LP is comprised of two tracks totaling approximately 43 minutes of music (Figure 14).<sup>23</sup>



Figure 14. John Cage and Sun Ra record.

The concert included members of Ra’s Arkestra, as well as dancers. During the performance Ra played keyboard, read poetry, and in one instance (only for a few seconds), accompanied Cage with “bell tones.”<sup>24</sup> Cage recited in a kind of *Sprechstimme*

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<sup>21</sup> Ibid.

<sup>22</sup> “John Cage Meets Sun Ra to Be Reissued,” *The Wire*, June 17, 2016, accessed September 14, 2017, <https://www.thewire.co.uk/news/42230/john-cage-meets-sun-ra-to-be-reissued>.

<sup>23</sup> “John Cage & Sun Ra—John Cage Meets Sun Ra,” accessed September 18, 2017, <https://www.discogs.com/John-Cage-Sun-Ra-John-Cage-Meets-Sun-Ra/release/580490>.

<sup>24</sup> Swed, 356.

approach or as Feisst describes it: “Cage alternated with softly spoken-sung excerpts from *Empty Words* (1973–74), stretching vowels and observing long pauses between syllables,” and performing “vocal and silent solos.”<sup>25</sup> After the show, Cage and Ra exchanged pleasantries, and parted ways. Curiously when Cage was asked about the one and only instance when he and Ra played together, he answered that they had not, in fact, played together at all.<sup>26</sup>

From their meeting in 1984 to his passing eight years later, Cage continued to fervently compose, perform, write and paint. In his last years and after his death in August 1992 Cage has received countless performances of his many works, including the space-themed *Atlas Eclipticalis*, *Etudes Australes* and *Freeman Etudes I–XVI*, and *XVII–XXXII*. His music has inspired generations of composers, performers and scholars who continue to create music in his spirit and study and perform his works.

Ra died less than a year after Cage, in May of 1993, also at the age of 79. Before suffering a debilitating stroke in 1990, Ra toured, performed, composed, arranged, and led his Arkestra around the world. Due to his declining health, he stopped touring in the early nineties and appointed saxophonist John Gilmore, a member of the Arkestra, to direct it in his stead. Ra left behind over a thousand compositions, 200 albums, three

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<sup>25</sup> Sabine Feisst, “John Cage and Improvisation: An Unresolved Relationship,” in *Musical Improvisation: Art, Education and Society*, edited by Gabriel Solis and Bruno Nettle (Urbana, IL: University of Illinois Press, 2009), 48.

<sup>26</sup> Szwed, 357.

films, and several published works.<sup>27</sup> As of 2017, the Arkestra—now under the direction of Marshall Allen (saxophone)--continues to tour around the world to continue Ra's legacy and take their audience on a journey across the galaxy.<sup>28</sup>

For many, the various media represent the only way to experience the wonders of outer space. Since the scientific and technological boom of the 1960s, the film, music and merchandise industry has been capitalizing on the public's demand for science-fiction. Space exploration themes in popular culture, dystopian, futuristic, sci-fi, post-humanist films, books, and music have continued to flourish since the first Space Race but have experienced a particular boom in recent years. In the past three years, Hollywood has produced a series of highly-grossing, widely popular and award-winning films, including *Gravity* (2003), *Interstellar* (2014), and *The Martian* (2015), and sequels to the *Star Wars* saga to name a few (2015 and 2016).<sup>29</sup> The sound tracks of these films have been well received and remain popular among audiences.<sup>30</sup>

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<sup>27</sup> Gale Thompson, "Sun Ra," *Encyclopedia.com*. 2005, accessed September 28, 2017, <http://www.encyclopedia.com/education/news-wires-white-papers-and-books/sun-ra-1>.

<sup>28</sup> Suso Navarrete, "Tour Dates," *The Sun Ra Arkestra*, accessed September 5, 2017, <http://www.sunraarkestra.com/1-main.html>.

<sup>29</sup> Younger audiences have also been targeted with films like the eco-science fiction movie *Wall-E* which is centered around a robot protagonist and explores post-humanism and adaptation to life in space. More post-humanist-inspired discussion can be found in the article by Rehding and Chua "Earth Music."

<sup>30</sup> Hollywood's success with these films extended to their soundtracks as well: *Gravity*, directed by Alfonso Cuarón, received seven Oscars (among many other awards) including an Academy Award for Best Original Music Score by composer Stephen Price. *Interstellar*, directed by Christopher Nolan and scored by composer Hans Zimmer, received numerous awards as well as an Oscar nomination. Ridley Scott (director) and Harry Gregson-Williams (composer) took a unique approach with *The Martian*

As knowledge about astrophysics, cosmology, and space exploration has become more widespread, music from all genres has addressed the growing trend. Recently, with the help of NASA's spacecraft, radio emissions from space are converted to sound waves and have been made available online to listeners all over the world.<sup>31</sup> These sounds from our Solar System have inspired artists to compose and perform music integrating the sounds of space.<sup>32</sup> NASA's SoundCloud account contains a library of space-related sounds under categories such as "Rocket Engine Sounds," "Solar System and Beyond," "Space Shuttle Mission Sounds," and more.<sup>33</sup> These sounds have been used by composers all over the world, often in collaborative efforts such as in the case of Fabrica Musica Area whose musicians produced an EP entitled *80UA*, using only the sounds from

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soundtrack, and it remains a fan favorite with many disco classics including hits from Abba, David Bowie, and many more. For complete information on these films and soundtracks visit: [imdb.com](http://imdb.com).

<sup>31</sup> Susan Watanabe, "Spooky Space "Sounds,"" *NASA*, updated November 30, 2007, accessed September 28, 2017, [https://www.nasa.gov/vision/universe/features/halloween\\_sounds.html](https://www.nasa.gov/vision/universe/features/halloween_sounds.html).

<sup>32</sup> Becky Chung, "Space Songs: An EP Made Entirely from NASA's Sound Library," *Vice*, December 19, 2014, accessed September 22, 2017, [https://creators.vice.com/en\\_us/article/53w3a8/space-songs-an-ep-made-entirely-from-nasas-sound-library](https://creators.vice.com/en_us/article/53w3a8/space-songs-an-ep-made-entirely-from-nasas-sound-library).

<sup>33</sup> Jim Wilson, "Audio and Ringtones," *NASA*, updated August 3, 2017, accessed September 28, 2017, <https://www.nasa.gov/connect/sounds/index.html>.

NASA's sound library.<sup>34</sup> Radio Astronomy is an online, mp3 audio stream, with the object of "broadcasting live sounds from our cosmos."<sup>35</sup>

### III. Music of the Future

Although the works of Cage and Ra are not part of the Golden Record (which celebrates its 40<sup>th</sup> anniversary this year) their music remains relevant and has helped continue the movement of musical exploration of outer space.<sup>36</sup> Since the beginning of the first Space Race (1957), generations of musicians representing all genres have since produced music about outer space. These include popular music artists from the 1950s all the way to today, such as The Beatles, Elton John, The Police, David Bowie, The Killers, Justin Timberlake, Eminem, and many, many more. With *Atlas Eclipticalis*, and *Space is the Place*, Cage and Ra were among the early pioneers of space-themed music that set the tone for future generations of musicians.

On September 15<sup>th</sup>, 2017, the Cassini spacecraft ended its 13-year-old exploration of Saturn and its moons. From Earth, Saturn is but a twinkling dot in the night sky. Cassini sent back postcards of a colossal planet enveloped in rings, orbited by dozens of

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<sup>34</sup> "UA" refers to the dimensions of our Solar System as measured in Astronomical Units. Becky Chung, "Space Songs: An EP Made Entirely from NASA's Sound Library."

<sup>35</sup> "Radio Astronomy" *radioqualia*, accessed September 17, 2017, <http://www.radio-astronomy.net/index.htm>.

<sup>36</sup> Since its launch in the late seventies, The Golden Record, aboard the Voyager, has travelled billions of miles from Earth, and has officially left the solar system. To track Voyager 1 Voyager 2 in real time and more information about the spacecraft: John Nelson, "Voyager: Mission Status," *NASA*, accessed September 21, 2017, <https://voyager.jpl.nasa.gov/mission/status/>.



frozen moons, against a backdrop of a vast universe. At the end of its mission, it dove into Saturn's atmosphere: in seconds, it was engulfed in flames and disintegrated, leaving no trace of humanity's presence on the planet. Decades earlier, Ra had played the music of his declared home world, Saturn, and allowed us a glimpse into the future. As space missions take us farther out into the Solar system and beyond, I am confident that the music of John Cage and Sun Ra will continue to guide us through the space-faring age.

## BIBLIOGRAPHY

- Allen, Jesse S. *The Classification of Stellar Spectra*. Accessed May 5, 2017. [http://www.star.ucl.ac.uk/~pac/spectral\\_classification.html](http://www.star.ucl.ac.uk/~pac/spectral_classification.html).
- Bečvář, Antonín. *Atlas Eclipticalis*, 2<sup>nd</sup> ed. Cambridge, MASS: Sky Publishing Co., 1964.
- Beeler, Charles Alan. "Winter Music/Cartridge Music/Atlas Eclipticalis: A Study of Three Seminal Works by John Cage." Ph.D. diss., Washington University, St. Louis, 1973.
- Bernstein, David W., and Christopher Hatch, eds. *Writings Through John Cage's Music, Poetry, and Art*. Chicago: The University of Chicago Press, 2001.
- Birdcage: 73'20.958" for a Composer*. Directed by Hans G. Helms. 1972. Mainz, Germany: Wergo, 2012. DVD.
- Breen, Benjamin. "Dear Space Aliens: Hello! Love, Jimmy Carter." *Slate*. October 9, 2013, accessed August 29, 2017. [http://www.slate.com/blogs/the\\_vault/2013/10/09/jimmy\\_carter\\_the\\_president\\_s\\_letter\\_on\\_the\\_voyager\\_probe.html](http://www.slate.com/blogs/the_vault/2013/10/09/jimmy_carter_the_president_s_letter_on_the_voyager_probe.html).
- Brockman, Jane. "The First Electronic Film Score - *Forbidden Planet*: A Conversation with Bebe Barron." *The Score* 7, no. 3 (Fall-Winter 1992): 5, 12–13.
- Bromwich, Jonah Engel. "215 Million Americans Watched the Solar Eclipse, Study Finds." *The New York Times*. September 27, 2017, accessed September 28, 2017. <https://www.nytimes.com/2017/09/27/science/solar-eclipse-record-numbers.html?smid=fb-nytimes&smtyp=cur>.
- Busuttill, Joseph. "The Chrestion Inscription." *Treasures of Malta* 21, no. 2 (2015): 60–63.
- "Database of Works: Winter Music." *The John Cage Trust*. Accessed September 8, 2016. [http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work\\_ID=247](http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work_ID=247).
- Debebe, Asidesach. "When was the last solar eclipse seen from contiguous United States, and when will the next one happen?" *NASA*. Accessed September 14, 2017. <https://eclipse2017.nasa.gov/when-was-last-solar-eclipse-seen-contiguous-united-states-and-when-will-next-one-happen>.
- Cage, John. *Atlas Eclipticalis*. New York: Henmar Press, 1962.

- Cage, John. *Atlas Eclipticalis* (sketches), 1961. *John Cage Unbound, A Living Archive*. New York Public Library. Accessed August 29, 2017. <http://exhibitions.nypl.org/johncage/node/194>.
- Cage, John. *Cartridge Music: Also Duet for Cymbal and Piano Duet, Trio, etc.* New York: Henmar Press, 1960.
- Cage, John. *Winter Music: To Be Performed, In Whole or Part, By 1 To 20 Pianists*. New York: Henmar Press, 1960.
- Cage, John and Sun Ra. *John Cage Meets Sun Ra*. Modern Harmonic MHCD-020, 2016. CD.
- Chick, Stevie. "Sun Ra Space Is the Place Review." *BBC*. 2012, accessed February 27, 2017. <http://www.bbc.co.uk/music/reviews/35x2/>.
- Chung, Becky. "Space Songs: An EP Made Entirely from NASA's Sound Library." *Vice*. December 19, 2014, accessed September 22, 2017. [https://creators.vice.com/en\\_us/article/53w3a8/space-songs-an-ep-made-entirely-from-nasas-sound-library](https://creators.vice.com/en_us/article/53w3a8/space-songs-an-ep-made-entirely-from-nasas-sound-library).
- Cohen, Rob E. "The Sun Ra Memorial mArchestRa." Accessed October 23, 2017. <http://www.rob-cohen.com/marchestra.html>.
- Cook, Stephen. "Sun Ra: Space Is the Place." *AllMusic*. Accessed June 21, 2017. <https://www.allmusic.com/album/space-is-the-place-mw0000035233>.
- Corbett, John, Anthony Elms and Terri Kapsalis, eds. *Pathways to Unknown Worlds: Sun-Ra, El Saturn and Chicago's Afro-Futurist Underground 1954-68*. Chicago: WhiteWalls, 2006.
- Corbett, John, ed. *The Wisdom of Sun-Ra: Sun Ra's Polemical Broadsheets and Streetcorner Leaflets*. Chicago: WhiteWalls, 2006, 5.
- "Database of Works: Music of Changes." *John Cage*. Accessed September 8, 2016. [http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work\\_ID=134](http://www.johncage.org/pp/John-Cage-Work-Detail.cfm?work_ID=134).
- Dunbar, Brian. "NASA's African-American Astronauts Fact Sheet." *NASA*. Updated June 15, 2017, accessed September 19, 2017. [https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/African\\_American\\_Astronauts.html](https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/African_American_Astronauts.html).
- Emmerik, Paul van, ed. *A John Cage Compendium*. Last modified July 1, 2017, accessed August 21, 2017. <https://cagecomp.home.xs4all.nl>.

- Feisst, Sabine. "John Cage and Improvisation: An Unresolved Relationship." In *Musical Improvisation: Art, Education and Society*, edited by Gabriel Solis and Bruno Nettl, 38–51. Urbana, IL: The University of Illinois Press, 2009.
- Ferris, Timothy. "How the Voyager Golden Record Was Made." *The New Yorker*. August 20, 2017, accessed September 28, 2017. <https://www.newyorker.com/tech/elements/voyager-golden-record-40th-anniversary-timothy-ferris>.
- Finkel, Joseph. "Negotiating Music and Politics: John Cage's United States Bicentennial Compositions 'Lecture on the Weather' and 'Renga with Apartment House 1776'." Master's thesis, Arizona State University, 2011.
- Fischlin, Daniel, and Ajay Heble, eds. *The Other Side of Nowhere: Jazz, Improvisation, and Communities in Dialogue*. Middletown, CT: Wesleyan University Press, 2004.
- Gann, Kyle. *No Such Thing as Silence: John Cage's 4'33''*. New Haven, CT: Yale University Press, 2010.
- Gannon, Megan. "30 Years Ago: First African-American Launches into Space." *Space.com*. August 30, 2013, accessed October 6, 2016. <http://www.space.com/22615-first-african-american-astronaut-guy-bluford.html>.
- Garber, Steve. "Women in Space." *NASA*. Updated July 2017, accessed September 27, 2017, <https://history.nasa.gov/women.html>.
- Garcia Mark. "Space Debris and Human Spacecraft." *NASA*. Updated August 4, 2017, accessed September 27, 2017. [https://www.nasa.gov/mission\\_pages/station/news/orbital\\_debris.html](https://www.nasa.gov/mission_pages/station/news/orbital_debris.html).
- Hayward, Philip, ed. *Off the Planet: Music, Sound and Science Fiction Cinema*. London: John Libbey, 2004.
- "The Human Body in Space." *NASA*. Accessed September 18, 2017. <https://www.nasa.gov/hrp/bodyinspace>.
- Jensen, Marc G. "John Cage, Chance Operations, and the Chaos Game: Cage and the 'I Ching'." *The Musical Times* 150, no. 1907 (2009), 97–102.
- "John Cage & Sun Ra—John Cage Meets Sun Ra." *Discogs*. Accessed September 18, 2017. <https://www.discogs.com/John-Cage-Sun-Ra-John-Cage-Meets-Sun-Ra/release/580490>.

- “John Cage Meets Sun Ra to Be Reissued.” *The Wire*. June 17, 2016, accessed September 14, 2017. <https://www.thewire.co.uk/news/42230/john-cage-meets-sun-ra-to-be-reissued>.
- Jones, Pamela. “Early Years in Montreal, 1971–1982.” *Alcides Lanza: Portrait of a Composer*, 125. Montreal: McGill-Queen’s University Press, 2007.
- Kakaes, Konstantin. “International Collaborations in Space Always Reflect Politics on Earth.” *Slate*. March 30, 2017, accessed September 16, 2017. [http://www.slate.com/articles/technology/future\\_tense/2017/03/a\\_brief\\_history\\_of\\_the\\_countries\\_that\\_send\\_people\\_to\\_space\\_and\\_why.html](http://www.slate.com/articles/technology/future_tense/2017/03/a_brief_history_of_the_countries_that_send_people_to_space_and_why.html).
- Kostelanetz, Richard, ed. *Conversing with Cage*. New York: Limelight, 1988.
- Kostelanetz, Richard, ed. *John Cage*. New York: Praeger, 1970.
- Kostelanetz, Richard, ed. *Writings about John Cage*. Ann Arbor, MI: The University of Michigan Press, 1993.
- Kuhn, Laura, ed. *The Selected Letters of John Cage*. Middletown, CT: Wesleyan University Press, 2016.
- Lewis, George E. “Improvised Music After 1950: Afrological and Eurological Perspectives.” *Black Music Research Journal* 22 (2002): 215–246. Accessed November 15, 2017. <http://www.jstor.org/stable/1519950>.
- Lock, Graham. *Blutopia: Visions of the Future and Revisions of the Past in the Work of Sun Ra, Duke Ellington and Anthony Braxton*. Durham, NC: Duke University Press, 1999.
- Madrigal, Alexis C. “Gil Scott Heron’s Poem, ‘Whitey on the Moon.’” *The Atlantic*, May 28, 2011, accessed April 10, 2017. <https://www.theatlantic.com/technology/archive/2011/05/gil-scott-herons-poem-whitey-on-the-moon/239622/>.
- Melina, Remy. “The Fallen Heroes of Human Spacecraft.” *Space.com*, April 11, 2011, accessed September 2, 2017. <https://www.space.com/11353-human-spaceflight-deaths-50-years-space-missions.html>.
- Miller, Leta E. “Cage, Cunningham, and Collaborators: The Odyssey of ‘Variations V.’” *The Musical Quarterly* 85, no. 3 (2001): 545–567. Accessed November 20, 2017. <http://www.jstor.org/stable/3600996>.
- Mogul, Rakesh. “Office of Planetary Protection.” *NASA*. September 15, 2017, accessed September 24, 2017. <https://planetaryprotection.nasa.gov/about>.

- NASA Content Administrator. "July 20, 1969: One Giant Leap for Mankind." *NASA*. Updated August 4, 2017, accessed August 7, 2017. [https://www.nasa.gov/mission\\_pages/apollo/apollo11.html](https://www.nasa.gov/mission_pages/apollo/apollo11.html).
- Navarrete, Suso. "Tour Dates." *The Sun Ra Arkestra*. Accessed September 5, 2017. <http://www.sunraarkestra.com/1-main.html>.
- Nelson, Jon. "Making of the Golden Record." *NASA*. Accessed August 25, 2017. <https://voyager.jpl.nasa.gov/golden-record/making-of-the-golden-record/>.
- Nelson, Jon. "Voyager: Mission Status." *NASA*. Accessed September 21, 2017. <https://voyager.jpl.nasa.gov/mission/status/>.
- Nelson, Jon. "What Are the Contents of the Golden Record?" *NASA*. Accessed September 12, 2017. <https://voyager.jpl.nasa.gov/golden-record/whats-on-the-record/>.
- Norment, Camille. "Notes from the Oscillating Dream Space." In *Pathways to Unknown Worlds: Sun-Ra, El Saturn and Chicago's Afro-Futurist Underground 1954-68*, edited by John Corbett, Anthony Elms, Terri Kapsalis, 23-5. Chicago: WhiteWalls, 2006.
- Pesic, Peter. *Music and the Making of Modern Science*. Cambridge, MASS: MIT Press, 2014.
- Piekut, Benjamin. *Experimentalism Otherwise: The New York Avant-Garde and Its Limits*. Berkeley, CA: The University of California Press, 2011.
- Portnow, Allison Kerbe. "Einstein, Modernism, and Musical Life in America, 1921-1945." Ph.D. diss., University of North Carolina at Chapel Hill, 2011.
- Price, Simon. "The Voice of Black America Falls Silent." *The Independent*, May 28, 2011, accessed September 9, 2017. <http://www.independent.co.uk/news/people/news/the-voice-of-black-america-falls-silent-2290401.html>.
- Ra, Sun. *Space Is the Place*. Impulse!/GRP AAIMPD249, 1998. CD.
- Ra, Sun. *Space Is the Place*. San Francisco: Harte Recordings, 2014.
- Redd, Nola Taylor. "Mae Jemison: Astronaut Biography." *Space.com*. Accessed October 6, 2017. <https://www.space.com/17169-mae-jemison-biography.html>.
- Rehding, Alexander, and Daniel KL Chua. "Earth Music." *Musicology Now*. July 2017, accessed September 26, 2017. <http://musicologynow.ams-net.org/2017/07/earth->

music.html.

Revill, David. *The Roaring Silence: John Cage: A Life*, 2<sup>nd</sup> edition. New York: Arcade, 2014.

Richer, Lyse. "International Week of Today's Music/Semaine internationale de musique actuelle." In *The Canadian Encyclopedia*. Published February 7, 2006, accessed April 7, 2016. [http://www.thecanadianencyclopedia.ca/en/article/international-week-of-todays-musicsemaine-internationale-de-musique-actuelle-emc/#h3\\_jump\\_0](http://www.thecanadianencyclopedia.ca/en/article/international-week-of-todays-musicsemaine-internationale-de-musique-actuelle-emc/#h3_jump_0).

Rivest, Johanne. "Atlas Eclipticalis, Commade Montrealaise." *Circuit: Musiques Contemporaines* 8, no. 2 (1997): 61–70. Accessed October 27, 2017, doi: 10.7202/902207ar.

"Roadmap." *Mars One*. Accessed March 23, 2017. <http://www.mars-one.com/mission/roadmap>.

Shetterly, Margot Lee. "Hidden Figures." Accessed April 27, 2017. <http://margotleeshetterly.com/hidden-figures-nasas-african-american-computers/>.

Shneyder, Abigail. "Songs from the Night Sky: How one Experimental Composer Turned Stars into Music." *Under Connecticut Skies*. July 6, 2015, accessed April 7, 2016. <https://underctskies.wordpress.com/2015/07/06/songs-from-the-night-sky-how-one-experimental-composer-turned-stars-into-music/>.

Silverman, Kenneth. *Begin Again: A Biography of John Cage*, 2<sup>nd</sup> edition. Evanston, IL: Northwestern University Press, 2012.

Smith, Richard J. *The I Ching: A Biography*. Princeton, NJ: Princeton University Press, 2012.

*Space Is the Place*, 40<sup>th</sup> Anniversary ed. San Francisco: Harte Recordings, 2014.

*Space Is the Place*. Directed by John Coney. 1974. San Francisco, CA: Harte Recordings, 2014. DVD.

"SpaceX to Send Privately Crewed Dragon Spacecraft Beyond the Moon Next Year." *SpaceX*. February 27, 2017, accessed March 23, 2017. <http://www.spacex.com/news/2017/02/27/spacex-send-privately-crewed-dragon-spacecraft-beyond-moon-next-year>.

Stevance, Sophie. "Contemporary Music at the Fringe: the Example of 'Musique Actuelle' in Canada." *New Sound* 38, no. 2 (2011): 51–63.

- Szwed, John F. *Space Is the Place: The Lives and times of Sun Ra*. New York: Pantheon, 1997.
- Thompson, Gale. "Sun Ra." *Encyclopedia.com*. 2005, accessed September 28, 2017. <http://www.encyclopedia.com/education/news-wires-white-papers-and-books/sun-ra-1>.
- Unknown artist. Ancient History Encyclopedia. Image uploaded February 13, 2016, accessed August 25, 2016. <http://www.ancient.eu/image/4552/>.
- Wall, David C. "Space Is the Place (Review)." *Black Camera* 1, no. 2 (2010): 164–6.
- Watanabe, Susan. "Education: The First Probes." *NASA: Jet Propulsion Laboratory*. Last modified February 26, 2010, accessed February 23, 2016. <http://www.nasa.gov/centers/jpl/education/spaceprobe-20100225.html>.
- Watanabe, Susan. "Spooky Space "Sounds."" *NASA*. Updated November 30, 2007, accessed September 28, 2017. [https://www.nasa.gov/vision/universe/features/halloween\\_sounds.html](https://www.nasa.gov/vision/universe/features/halloween_sounds.html).
- Wilson, Jim. "Audio and Ringtones." *NASA*. Updated August 3, 2017, accessed September 28, 2017. <https://www.nasa.gov/connect/sounds/index.html>.
- Wilson, Jim. "Yuri Gagarin: First Man in Space." *NASA*. Updated April 13, 2011, accessed October 1, 2017. [https://www.nasa.gov/mission\\_pages/shuttle/sts1/gagarin\\_anniversary.html](https://www.nasa.gov/mission_pages/shuttle/sts1/gagarin_anniversary.html).
- Wlasuk, Peter, Martin Soloc. "Bečvář, Antonín." *The Biographical Encyclopedia of Astronomers* (New York: Springer, 2007), 106. Accessed April 7, 2016, doi: 10.1007/978-0-387-30400-7\_129.
- Woodfill, Jerry. "John F. Kennedy Moon Speech – Rice Stadium." *NASA JSC*. Modified May 24, 2012, accessed February 21, 2017. <https://er.jsc.nasa.gov/seh/ricetalk.htm>.
- Zuberi, Nabeel. "The Transmolecularization of [Black] Folk: Space is the Place, Sun Ra and Afrofuturism." In *Off the Planet: Music, Sound and Science Fiction Cinema*, ed. Philip Hayward, 78. Eastleigh: John Libbey Publishing, 2004.



APPENDIX I

*ATLAS ECLIPTICALIS* SKETCHES

This appendix contains six images from the *John Cage Unbound: A Living Archive* exhibition at the New York Public Library.<sup>1</sup> The images show some of the early manuscripts of *Atlas Eclipticalis*, from 1961. These manuscripts provide the reader with an opportunity to gain deeper insight into Cage’s complex and unique compositional process.

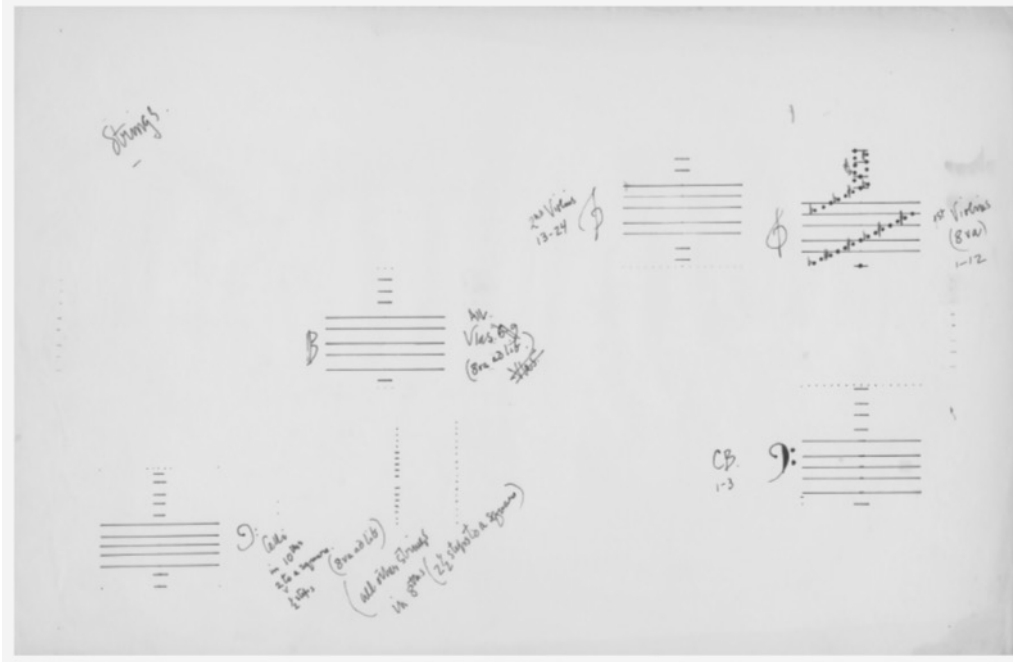


Figure 15. *Atlas Eclipticalis*, Sketch no. 1.

Early sketch for string parts, showing small sections of music staves marked with the treble, alto and bass clefs, labeled “1<sup>st</sup> violins,” “2<sup>nd</sup> violins,” “vlas [violas],” “celli,” and “C.B. [contrabass].” The 1<sup>st</sup> violin part shows the start of a chromatic scale. There are extra ledger lines written above and below the staves in all parts.

<sup>1</sup> John Cage, *Atlas Eclipticalis (Sketches)*, 1961, *John Cage Unbound: A Living Archive*, New York Public Library, <http://exhibitions.nypl.org/johncage/node/194>, accessed August 29, 2017.

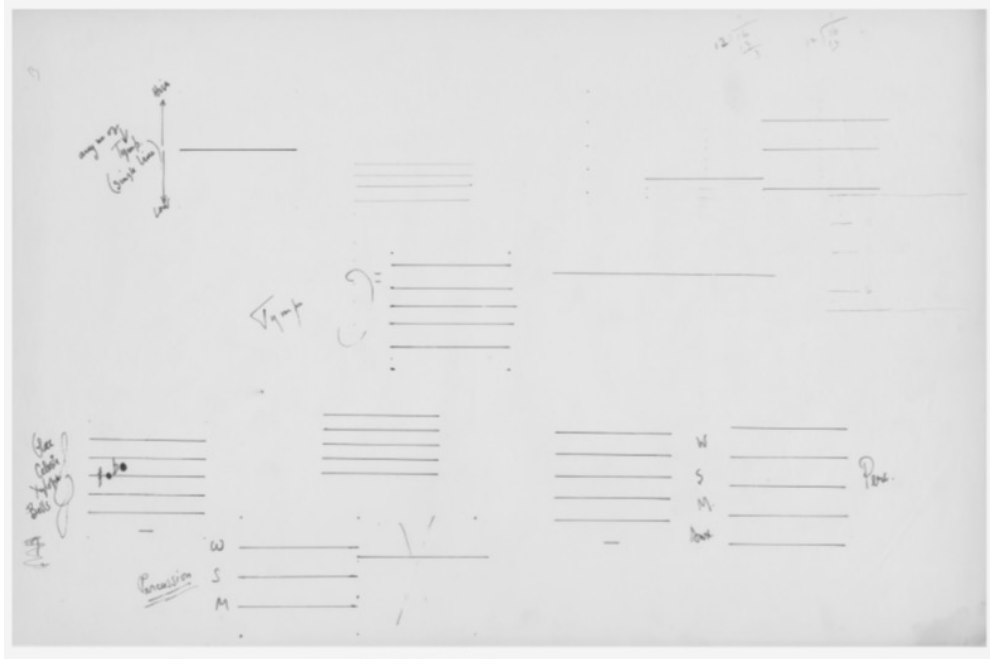


Figure 16. *Atlas Eclipticalis*, Sketch no. 2.

Separate staves labeled for trumpet and percussion with a single staff with a treble clef is marked for glockenspiel, celesta, xylophone and bells. Only two notes appear on the whole page: next to a staff with a treble clef; the notes appear to be a B# and Cb. The two separate percussion staves are marked with “W,” “S,” and “M.”



Figure 17. *Atlas Eclipticalis*, Sketch no. 3.

The page is marked with “Brass” heading on the lower right-hand corner. It features seven different staves with treble and bass clefs. While no notes are written on

any of the staves, the sketches show that they are intended for “Horns, 1,3,” and “Horns 2,4,5,” grouped together; also, “Trumpets D, Bb,” “Tenor Tbn [trombone],” “Bass Tbn,” and “Tuba, Eb, Bb.” A small sketch underneath the trumpet part seems to suggest an outline the intended melodic contour.



Figure 18. *Atlas Eclipticalis*, Sketch no. 4.  
Early clef sketches for woodwinds: oboe, English horn, clarinet, etc.



Figure 19. *Atlas Eclipticalis*, Sketch no. 5.

A page that appears to be directly from *Atlas Eclipticalis*—it is entirely filled with seemingly randomly distributed dots, each labeled with a single letter: R, N, K, P, G, L, D, F, I, A, T, M, S (may be repeated). The letters O, B, A, F, G, K, M, R, N, S, T, are letters used to denote spectral class of stars: further proof that the page is from a star atlas.<sup>2</sup> There is no musical notation present besides four straight and thinly drawn lines across the page suggesting the start of a musical staff.

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<sup>2</sup> Jesse S. Allen, “The Classification of Stellar Spectra,” accessed September 9, 2016, [http://www.star.ucl.ac.uk/~pac/spectral\\_classification.html](http://www.star.ucl.ac.uk/~pac/spectral_classification.html).



Figure 20. *Atlas Eclipticalis*, Sketch no. 6.  
Notes, note clusters (events), and chords derived from the atlas.

APPENDIX II

*ATLAS ECLIPTICALIS* DEDICATIONS

The following is a list of dedicatees of each of the 86 instrumental parts (plus the part for the conductor) of *Atlas Eclipticalis*. The list is organized by instrument and grouped by instrumental families. Many of the dedicatees are Cage's friends and supporters, mentors, teachers, fellow musicians, artists and collaborators or other inspirational figures. The list of dedicatees gathered from Paul van Emmerik's *John Cage Compendium* website.<sup>3</sup>

Woodwind and Brass:

Flute, 3 parts:

Ralph Pendleton (flute 1); Carl and Jane Viggiani (flute 2); David Gordon and Valda Setterfield (flute 3).

Oboe, 3 parts:

Mell and Minna Daniel (oboe 1); Mary Bauermeister (oboe 2); István and Beata Anhalt (oboe 3).

Clarinet, 3 parts:

Ralph Ferrara (clarinet 1); C. H. Waddington (clarinet 2); Robert H. and Johnsia Knapp (clarinet 3).

Bassoon, 3 parts:

Mauricio and Ursula Kagel (bassoon 1); Willard and Louise Lockwood (bassoon 2); Richard Maxfield (bassoon 3).

Horn, 5 parts:

Gita Sarabhai (horn 1); Jose and Lidia Gomez-Ibanez (horn 2); Emile de Antonio (horn 3); Esther Dam (horn 4); Benedicte Pesle (horn 5).

Trumpet, 3 parts:

Richard and Louise Lippold (trumpet 1); David and Susan McAllester (trumpet 2); Toshi Ichianagi (trumpet 3).

Trombone, 3 parts:

Ihab Hassan (trombone 1); Milton and Crete Cage (trombone 2); Peggy Guggenheim (trombone 3).

Tuba, 3 parts:

Nathan and Irene Shapira (tuba 1); Walter and Barbara Van Tilburg Clark (tuba 2); J. R. T. and Emily Bueno (tuba 3).

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<sup>3</sup> Paul van Emmerik, "Atlas Eclipticalis," *A John Cage Compendium*, last modified July 1, 2017, accessed August 21, 2017, <https://cagecomp.home.xs4all.nl/music.html>.



Percussion:

Timpani, 3 parts:

David Tudor (timpani 1); Merce Cunningham (timpani 2); Earle and Carolyn Brown (timpani 3).

Percussion, 9 parts:

Norman O. and Beth Brown (percussion 1); Samuel and Bunnie Green (percussion 2); Martha Gerhart (percussion 3); Marian Vaine (percussion 4); Ben Johnston and Betty (percussion 5); Paul Weiss (percussion 6); Johanna Alida Ribbelink (percussion 7); Clara Mayer (percussion 8); Marston and Nancy Bates (percussion 9).

Strings:

Harp, 3 parts:

Tania Senff (harp 1); Grace Bacon (harp 2); Reginald and Gertrude Arragon (harp 3).

Violin, 24 parts:

Guy G. Nearing (violin 1); Remy Charlip (violin 2); Nam June Paik (violin 3); Walter and Evelyn Hinrichsen (violin 4); Henri and Thea Pousseur (violin 5); Robert and Marilyn Wood (violin 6); Lois Long (violin 7); Richard K. and Betty Winslow (violin 8); W. Robert and Mary Thompson (violin 9); Paula Madawick (violin 10); Robert Rauschenberg (violin 11); Kurt Michaelis (violin 12); Norman and Linda Rudich (violin 13); Keith and Donna McGary (violin 14); Arthur and Mary Caroline Josephson (violin 15); Nicola Cernovich (violin 16); Louis Silverstein (violin 17); Lawrence and Ann Halprin (violin 18); Chaloner and Helen Spencer (violin 19); Pegeen Rumney (violin 20); Sigmund Neumann (violin 21); Raymond Grimaila (violin 22); George and Anahid Avakian (violin 23); Robert and Judith Dunn (violin 24).

Viola, 9 parts:

Edgar and Dorothy Anderson (viola 1); Viola Farber (viola 2); Christian Wolff (viola 3); Karlheinz and Doris Stockhausen (viola 4); Connie Wilson and Louella Bacon (viola 5); Bruce and Rosemary Markgraf (viola 6); Luciano and Cathy Berio (viola 7); Morton and Cynthia Feldman (viola 8); Jasper Johns (viola 9).

Cello, 9 parts:

Dr. David R. and Paula Telson (violoncello 1); Hans and Sulamith Austen (violoncello 2); William Jefferys (violoncello 3); Pierre Mercure (violoncello 4); James and Clay Sykes (violoncello 5); Ross and Priscilla Gortner (violoncello 6); Louis and Pat Mink (violoncello 7); Joe and Ruth Peoples (violoncello 8); Shareen Blair (violoncello 9).

Bass, 3 parts

Leonard and Lee Meyer (contrabass 1); Steve Paxton (contrabass 2); Öyvind and Barbro Fahlström (contrabass 3).

Victor R. Butterfield and Mrs. Butterfield (conductor).