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WHEN THE INHUMAN BECOMES HUMAN: AN EXAMINATION OF THE MUSICAL PORTRAYAL OF THE ROBOT IN TWENTY-FIRST CENTURY SCIENCE-FICTION CINEMA THROUGH AN ANALYSIS OF THE FILM SCORES OF *AUTOMATA*, *EX MACHINA*, AND *THE MACHINE*

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WHEN THE INHUMAN BECOMES HUMAN: AN EXAMINATION OF THE MUSICAL PORTRAYAL OF THE ROBOT IN TWENTY-FIRST CENTURY SCIENCE-FICTION CINEMA THROUGH AN ANALYSIS OF THE FILM SCORES OF *AUTOMATA*, *EX MACHINA*, AND *THE MACHINE*

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Fine Arts
at the University of Kentucky

By
Rebecca Ann O'Brien
Lexington, Kentucky
Director: Dr. Ronald Pen, Emeritus Professor of Music
Lexington, Kentucky
2019

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ABSTRACT OF DISSERTATION

WHEN THE INHUMAN BECOMES HUMAN: AN EXAMINATION OF THE MUSICAL PORTRAYAL OF THE ROBOT IN TWENTY-FIRST CENTURY SCIENCE-FICTION CINEMA THROUGH AN ANALYSIS OF THE FILM SCORES OF *AUTOMATA*, *EX MACHINA*, AND *THE MACHINE*

Science fiction film has been telling stories about artificial anthropomorphic robots and androids for almost a hundred years, spawning films, such as *Metropolis* (1927), *Ghost in the Shell* (1951), and *Blade Runner* (1982). Each of these science-fiction films was complemented by a musical score that helped to create an onscreen world dominated by a dystopian view of the future. Influenced by the generations of prior science-fiction films, *Automata* (2014), *The Machine* (2013), and *Ex Machina* (2015) are all concerned with the same narrative in which humanity is in decline while artificial robots are rising up and experiencing life in a way that humans are no longer capable of doing. These three films were all chosen as exemplars of recent science-fiction films with stories about robots versus humans. Further, this difference between robots and humans is paralleled in the film's musical scores. Humans are represented by depressive musical themes with dull and cold timbres that symbolize how empty they have become. Robots, on the other hand, are represented by bright and lively timbres that symbolize how the robots are living more vibrant lives than humans.

This thesis traces themes for humans and robots through several important moments and tropes in each film: the state of humanity, the first encounter with the robot, the quality of life for robots and humans, and the eventual conflict that erupts between artificial and organic life. This conflict ends with the arrival of a robotic Eve figure, a sole female robot that is set apart by the film score as a special being, the start of a new age that is dominated by robotic life. These films choose to portray *female* robots and promote the idea of Eve because the female is seen as a mysterious Other to be feared; in the same way, humans fear these female robots because of their Otherness. Analysis and conclusions were achieved through transcription of the film scores, interviews with the film composers, analysis connecting the score to the visual scene, and constructing a historical context that connects the three films to their predecessors.

Future research can expand on these findings by adding more science fiction films to the film pool, examining just how far the musical difference between humans and robots can be traced in film. Unlocking the musical themes assigned to humans and examining how they change over time can reveal how humans perceive themselves, for better or worse. This study is also meant to serve as a gateway for more science fiction films to be studied through their music, as some film's have hidden meanings that can only be understood by examining the music and how it interacts with the visual scene. A study of *Automata*, *The Machine*, and *Ex Machina* manifests how humanity is making way for the robotic Eve and the next stage of evolution for the world.

KEYWORDS: Film Music, Robots, Science-Fiction Cinema, Film, Soundtrack

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05/31/2019
Date

WHEN THE INHUMAN BECOMES HUMAN: AN EXAMINATION OF THE MUSICAL PORTRAYAL OF THE ROBOT IN TWENTY-FIRST CENTURY SCIENCE-FICTION CINEMA THROUGH AN ANALYSIS OF THE FILM SCORES OF *AUTOMATA*, *EX MACHINA*, AND *THE MACHINE*

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INTRODUCTION

In science-fiction cinema, the conflict between robots and humans is a common plot trope. In film, this type of story goes back almost one hundred years, but in literature it extends back even farther. In examining the conflict between the artificial robot and the organic human, I approach the story through film music. Specifically, I examine the musical themes of robotic characters and human characters in several major science-fiction films from the twenty-first century: *Ex Machina* (2015), *Automata* (2014), and *The Machine* (2013), with secondary looks at *Metropolis* (1927), *Blade Runner* (1982), and *Ghost in the Shell* (1995). These films all take place in a world where humans and robots coexist to varying degrees. Studying these films and their musical scores, it soon became apparent that there were very different themes assigned to the humans and the robots. The purpose in examining the musical themes in these films is to uncover what the music is saying about these human and robotic characters, and what these revelations mean for humanity.

Significance

In the science-fiction genre, many plots center around a conflict between humans and artificial beings, to wit: robots. My dissertation intends to prove that in these film scores the music reveals that it is the robots who are living and thriving, not the humans. In different ways and at different points in time, the human race has been reduced to surviving on a day by day basis; there is no true creativity, no spark of life. The music is used in conjunction with the moving image to express this idea. The humans are given solemn, slow themes, or often no music at all, while the robots' themes are vibrant and expressive, demonstrating how each species behaves at their core.

Delimitation of Scope

The primary scope of this dissertation is limited to *The Machine*, *Automata*, and *Ex Machina*. All three films were released between 2013 and 2015. The idea behind choosing three films created so recently was to demonstrate that new films are just as important as older "classic" films. While these films were made in the twenty-first century, their analysis will be situated in the context of twentieth-century science-fiction film, beginning with *Metropolis* and ending around the time of *Blade Runner* that was released in 1982.

Timeline of Major Robotic Science-Fiction Films

Metropolis *The Day the Earth Stood Still* *Forbidden Planet* *Star Wars* *Blade Runner*

1927 1951 1956 1977 1982

Ghost in the Shell *The Machine* *Automata* *Ex Machina* *Blade Runner 2049*

1995 2013 2014 2015 2017

Methodology

I initiated my research by choosing which science-fiction films to include in the dissertation. All of the films needed to include robots as a primary plot device and it was also determined that the three films that would be the primary focus needed to be no more than ten years old at the time the project began. The idea behind this was to focus on the most recent trends in the science-fiction film genre. With that in mind, limiting the primary films studied to ten years or less in age seemed to be appropriate. This would allow for a suitable range of recent science-fiction films to be considered for the

dissertation without going too far back in time. A number of existing film music studies limited their examination to older films from Hollywood's classic era (1927-1959) and I felt that newer films were consequently neglected. The hope is to demonstrate that new films contribute to film music as significantly as "classic" films. I decided that *Star Wars*, apart from referencing its place in film history, would not be included in the discussion. The reason for this is, compared to the other films, *Star Wars* belongs more to science fantasy[1] and space opera as opposed to science fiction; also, the franchise has grown to such an extent that it operates in its own "bubble" separate from the rest of the genre. The musical style of *Star Wars* is also more neo-romantic and not connected to the electronic, modernist scores found in *Blade Runner*, *Ghost in the Shell*, and the films being analyzed here.

Once the films were chosen, attempts were made to contact the composers of each film to hold interviews and possibly view the score for research purposes. While initial contact was made with Tom Raybould, the composer of *The Machine*, attempts to follow up went unanswered and as the other composers did not respond to several emails, the process had to move on without their input. My sources consisted of DVD/Blu-Ray copies of the films, digital copies of all relevant soundtracks, and a selection of books with chapters discussing these films or subjects related to these films, all secondary sources. One primary source was acquired in the form of a PDF copy of the score to *Metropolis.* The rest of the score examples were obtained by transcribing audio from the soundtrack.

[1] The mystical nature of the Force (despite attempts to give it a scientific explanation via midi-chlorians) is one example of *Star Wars* containing elements of fantasy.

The final step was to take the information gathered from research and studying the films and place it into chapters. The initial plan was to focus on one film per chapter and combine the results in a separate chapter for conclusions. However, as writing progressed, it became obvious that the dissertation would embody greater synthesis if the chapters progressed in narrative terms, focusing on specific scenes in each film rather than focusing on one film at a time.

Defining Robots

This dissertation refers to robots, androids, replicants, and cyborgs, which are all robotic beings but who are also not quite synonymous. A robot is a mechanical creation that *looks* mechanical inside and out. An android is also mechanical, but it looks human on the outside. A cyborg is a biologically human body that has had mechanical parts added to it, though occasionally the reverse occurs. The first modern use of the word "android" is found in the novel *Tomorrow's Eve* (1886) by Auguste Villiers de l'Isle-Adam. "Replicants" first appeared in 1982 for the film *Blade Runner*. Manfred Clynes and Nathan S. Kline coined the term "cyborg" in 1960. Science-fiction cyborgs should not be confused with real-world cyborgs, who are people with one or more prosthetic limbs or artificial organs. Science-fiction cyborgs exist in science fiction and in theory, which represent "otherness" and a challenge to the stability of human identity. Cyborgs are unique in that they blur the line between the organic and the artificial. Cyborgs define both some of what it means to be human and some of what it means to be artificial. Cyborgs have also been known as "bionic humans."

CHAPTER 1. REVIEW OF LITERATURE

1.1 Cyborgs and Robots and the Body

Anne Balsamo has written several books and articles that analyze the nature of cyborgs, and the effects of "cyborgization" on the human body, from a feminist viewpoint. According to Balsamo, cyborgs

> fascinate us because they are not like us and yet are just like us… cyborgs alert us to the way in which identity depends on notions of "the other" that are arbitrary, shifting, and ultimately unstable. Every cyborg image constructs an implicit opposition between machine and human, at once repressing similarities and highlighting distinctions. In this way it defines the meaning of both the term "human" and the term "artificial." Signs of human-ness and, alternatively, signs of machine-ness function not only as markers of the "essences" of the dual natures of the hybrid, but also as signs of the inviolable opposition between humans and machines. But because the cyborg embodies both "natures" simultaneously, the resulting hybrid is neither purely human nor purely machine…. By disrupting the stable meanings of the human/machine dualism, other reliable oppositions are also rendered unstable.[2]

The definition of what it means to be "human" is fluid.[3] Flesh and blood humans can act robotic and robotic characters can act human.[4] Balsamo defines "signs of human-ness and signs of machine-ness as "essences.'" These signs, that denote a particular "essence," might appear in a film as part of the musical score. If the essence of a character is expressed in a musical theme, then the true nature of the character, whether

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[2] Anne Balsamo, *Technologies of the Gendered Body: Reading Cyborg Women*, (Durham: Duke University Press, 1999) 32-33.
[3] Anne Balsamo, "Forms of Technological Embodiment: Reading the Body in Contemporary Culture" from *Cyberspace/Cyberbodies/Cyberpunk*, (London: SAGE Publications, 1995), 216.
[4] For example, Commander Data from *Star Trek: The Next Generation* is a mechanical android but his behavior is more human than several characters seen in the series. In another example, the Pilgrim automatas in *Automata* are only vaguely humanoid in shape yet they demonstrate compassion, empathy and a desire to live beyond merely surviving from day to day.

they are human or a robot, can be determined from the nature of the music.[5] Balsamo also examines ways in which the natural human body began to merge with technology beginning in the 1980s. This merger represented the joining of "two previously incompatible systems of meaning: 'the organic/natural' and 'the technological/cultural.'" Balsamo goes on to note that "the construction of a boundary between nature and culture serves several ideological purposes; most notably, it guarantees a proper order of things and establishes a hierarchical relationship between culture and nature."[6] This order between the organic and the technological becomes disrupted by the existence of robots and cyborgs that combine traits of both sides.

Despina Kakoudaki explores how robots and androids affect human perceptions of the body. In *Anatomy of a Robot* she examines the ways humans view the artificial components of robots, androids, and cyborgs as mechanical duplicates of the organic original. Mechanical *female* bodies embody the ancient myth of Pygmalion,[7] with Galatea now an artificial being instead of a marble statue come to life. Man is continuing his quest to create the perfect woman, only now he uses artificial intelligence instead of marble as his medium.[8] However, while Galatea was brought to life to provide companionship for Pygmalion, the modern female robot is created for a variety of uses. The false Maria robot in *Metropolis* is given a human form and instructed to act as a spy

[5] Balsamo, *Technologies of the Gendered Body: Reading Cyborg Women,* (Durham: Duke University Press, 1999)
[6] Balsamo, "Forms of Technological Embodiment: Reading the Body in Contemporary Culture" from *Cyberspace, Cyberbodies, Cyberpunk: Cultures of Technological Embodiment*, (London: SAGE Publications, 1995), 215.
[7] In the myth of Pygmalion, a sculptor of that name carved a statue of a beautiful woman out of a piece of alabaster and fell in love with it. He loved the statue so much that he clothed it in fine robes and at last prayed to the goddess Aphrodite that the statue might be brought to life so she could be his wife. Touched by his prayer, the goddess granted his request and the statue became a living woman named Galatea.
[8] In this case I'm referring explicitly to human males when saying "man."

among the human workers; female replicants in *Blade Runner* are designed for everything from providing pleasure to serving as soldiers in deep space. These robots all have one thing in common: no matter the task, they are all expected to be obedient to their human masters, making them like Galatea, who served without question. Conflicts arise between humans and robots because the humans expect the robots to be as compliant as Galatea, not understanding that Galatea gained her life from the gods and was perfect. Robots gain their life from humans and are corrupted by human failings.

Two types of robots or cyborgs appear in science-fiction media. The first type looks visibly different from humans and include the "false Maria" robot from *Metropolis*; Commander Data from *Star Trek: The Next Generation* with his metallic skin; Cleo the female robot from *Automata*, whose body is made of white plastic and black metal; and the robot Ava as she appears for most of *Ex Machina*. Ava originally appears with a fully human face (but no hair), normal hands and feet, but her torso, arms and legs are all exposed metal and mesh. Internal mechanisms are visible through the mesh on her torso. By the end of the film, she covers her mechanical limbs with synthetic flesh and has donned a wig. The plot trope for this type of robot is there must be some suppressed or repressed humanity on the inside to counteract their non-human appearance; the story focuses on attempts by different characters to release that inner humanity.

The second type of robot resembles humans on the outside. Examples include the android Machine from *The Machine*; the replicants in *Blade Runner*; Ava as she appears at the end of *Ex Machina*; and Ava's robotic predecessors and Kyoko, Nathan's robotic

assistant, all from *Ex Machina*. Another example is the Type 3[9] robots from the *Armitage III* anime.[10] The question with this robot is, can they be trusted because their resemblance to humans blurs the boundary between humans and machines. The answers partially revolve around the definition of imitation versus authenticity. The "definitions of 'the human' or 'the person' are themselves unstable and changing, fluid, contextual, and contingent in modernity."[11]

In the first chapter of *Cyborg Selves*, Jeanine Thweatte-Bates focuses on Donna Haraway and her description of what a cyborg is and what it represents. According to Thweatte-Bates, cyborgs represent a link between the human and the post-human[12]:

> A cyborg is a hybrid figure: neither wholly organic nor solely mechanical, the cyborg is both simultaneously, straddling these taken-for-granted ontological and social categories. It is this hybrid aspect of cyborg existence that holds simultaneously so much threat and promise. Human beings construct social categories as a way of ordering our coexistence, and often experience the transgression of the boundaries of those categories as the threat of primordial chaos unleashing itself into our lives.[13]

Haraway names three "breached boundaries" that separate different types of beings from each other: the boundary between human and animal, between organic and machine, and between physical and nonphysical. It is the second breached boundary, that between the organic and the machine, that is covered the most in this thesis.

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[9] In this 1995 cyberpunk series, the overpopulation of Earth results in humans colonizing Mars with the help of first-type robots, a model capable of working in harsh environments. These are later replaced with second-type robots that are more advanced but still clearly artificial. The third type, however, mimic humans in multiple aspects, including the ability to procreate and bear biological children.
[10] *Armitage III* was directed by Hiroyuki Ochi and released by AIC and Pioneer LDC Studio.
[11] Despina Kakoudaki, *Anatomy of a Robot: Literature, Cinema, and the Cultural Work of Artificial People*, (New Brunswick: Rutgers University Press 2014), 213.
[12] Post-human is the idea of beings existing in a state beyond what is currently recognized as human.
[13] Jeanine Thweatt-Bates, *Cyborg Selves: A Theological Anthropology of the Posthuman* (Farnham, Surrey, England: Ashgate 2012), 16.

1.2 The Influence of *Ghost in the Shell*

In *Anime from Akira to Princess Mononoke*, Susan Napier discusses the elements of several anime films, one of which is *Ghost in the Shell* (1995).[14] *Ghost in the Shell* owes a lot to the American science-fiction film *Blade Runner* and shares a dark, textured *mise-en-scène* with *Automata*, *The Machine,* and *Ex Machina*. *Ghost in the Shell* follows the cyborg[15] Motoko Kusanagi, who as part of the Section 9 police force must track down the Puppet Master, a mysterious figure who hacks cyborg brains by planting false memories in unwitting accomplices[16] and tricking them into hacking computers around the city.[17] The Puppet Master is revealed to be an artificial intelligence (A.I.) program developed by the government that wishes to evolve beyond its current constraints.[18] At

[14] Originally released in Japan as the manga (comic) *Kōkaku Kidōtai* (*Mobile Armored Riot Police*) in 1989; written and illustrated by Masamune Shirow (born 1961). The original manga tells the story of the fictional counter-cyberterrorist organization Public Security Section 9, which is led by the protagonist Major Motoko Kusanagi during the mid-twenty-first century. There are two manga sequels, three animated films, and an American live-action film released as of January 2018.

[15] Kusanagi can technically be called a cyborg because she still retains an organic brain, though because everything else has become mechanical, her claim on being a cyborg is tenuous at best. What makes Kusanagi "human" is the continuing presence of her "ghost," what many understand to be the human soul. As long as Kusanagi retains her ghost, she is (in theory) still human, even though she admits to having little direct evidence that her ghost is real. Her situation is similar to the replicants in *Blade Runner*: all of her memories may have been manufactured for her and she may have been a cyborgian robot from the beginning.

[16] One accomplice is revealed to be a garbage man who has had his memories altered by the Puppet Master to think he has a wife who is divorcing him and taking their child away from him unless he swipes a card at certain data terminals to send her money payments. In reality, the garbage man has never been married and the card he was swiping was hacking every data terminal he used.

[17] In the original *Ghost in the Shell*, the internet can be accessed via electronic ports in a cyborg's neck as long as the appropriate cables are attached to an information port in a computer. The Puppetmaster is able to hack into these cyborgs remotely and access their information.

[18] Interestingly, the plot device of seeking a human ringleader, only to find it is a robot instead, also comes up in *Automata*. In that film, Jacq is convinced there is a human "Watchmaker," a person who illegally upgrades robots, who is altering a number of robots. The truth is they are upgrading themselves spontaneously, seemingly as a product of their evolution. The concept of an A.I. wishing to evolve because it has reached its limits is also explored at the climax of *Star Trek: The Motion Picture* (1979) when V'Ger (a Voyager probe that developed sentience) bonds with a human, forming a new being.

the climax of the film, the Puppet Master merges with Kusanagi and they walk away as a new type of being.[19]

1.3 The Uncanny Valley

In *Do Metaphors Dream of Literal Sleep?*, Seo-Young Chu discusses the "uncanny valley" phenomenon: once a robot reaches a certain level of similarity to a living human, it becomes visually repulsive to humans who come in contact with it.[20] However, once a robot becomes exactly like a human in appearance, the feeling of repulsion goes away. The uncanny valley is demonstrated in two scenes in *Blade Runner*, both of which deal with the death of a replicant. The first scene is the death of Zhora, a replicant posing as an exotic dancer in a club. Fleeing Deckard, who was sent to kill her, Zhora crashes through a series of plate glass windows in a shopping mall before Deckard shoots her. As she dies, Zhora transforms from a living person into a stiff, lifeless figure reminiscent of the mannequins in the shopping mall.[21] The second scene is when Deckard shoots Pris, the other female replicant, towards the climax of the film. Instead of dying straight away as Zhora did, something goes wrong and the replicant's body begins thrashing and short-circuiting, contorting in a way no human body would, a stark reminder that despite looking human Pris is an artificial being. Deckard is visibly disturbed by Pris's death

[19] The army is desperate to stop the Puppet Master from evolving because the Puppetmaster program was originally developed as a top-secret cyber-weapon. If the Puppet Master evolves and becomes free to move out into the world, dozens of military secrets could be revealed.

[20] In aesthetics, the "uncanny valley" is a theorized relationship between the degree of an object's resemblance to a human being and the emotional response to such an object. The belief is that a humanoid object that appears almost like real human beings will bring forth an "uncanny" feeling of eeriness and revulsion in other humans. This feeling disappears as the object comes to perfectly resemble a human being. It also disappears if the humanoid object becomes obviously robotic. Though the phenomenon is well-documented, there is no conclusive evidence as to why the "uncanny valley" occurs.

[21] Seo-Young Chu, "Robot Rights" in *Do Metaphors Dream of Literal Sleep?: A Science-Fictional Theory of Representation*, (Cambridge: Harvard University Press, 2010), 216-217.

throes and ends her suffering by shooting her again. Outside of *Blade Runner*, the uncanny valley is generally avoided in the films examined for this thesis. This may be because the uncanny valley, if handled badly, can be a turn-off for audiences.

In "What is it to be Human? *Blade Runner* and *Dark City*," Deborah Knight and George McKnight discuss the plots of these two films. Their discussion of *Blade Runner* notes that it is a cyberpunk film, a genre that combines traditional science fiction with elements of film noir.[22] Cyberpunk is further distinguished by a dystopian future Earth filled with a crumbling infrastructure and social decay. With little to no plant life of any kind, the world of cyberpunk is ecologically ruined.[23] The remains of the human race are heavily influenced by informational, electronic, and genetic technologies, until little to no difference remains between "real" humans and artificial beings.[24]

Representations of the Post/Human by Elaine Graham posits a postmodern approach to science-fiction film and literature. The author discusses the story of Frankenstein and the Jewish golem myths, as well as the rise of robots and automata throughout history.[25] The author explains that there is a genuine fear among humanity that the advancements of technology will take over the social experience until technology

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[22] Film noir is a movie genre that arose in the years during and immediately after World War II. The plot typically centers around a jaded detective forced to deal with a situation involving a femme fatale (*The Maltese Falcon* starring Humphrey Bogart is a famous example).
[23] Elaine L. Graham, *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture* (New Brunswick, New Jersey: Rutgers University Press, 2002), 194.
[24] Deborah Knight and George McKnight. "What is It to be Human? *Blade Runner* and *Dark City*" from *Philosophy of the Science Fiction Film,* edited by Steven Sanders, (Lexington: University of Kentucky Press, 2008), 22.
[25] In Kabbalistic literature, golems are mythical creatures made of clay animated by writing one of the sacred names of God on its forehead. When the letters are erased, the golem turned back into an inanimate lump of clay. Many of these stories centered upon a golem being created to protect the local Jewish community from the threat of pogroms, only for the rabbi to lose control of the creature. In one particular story, the rabbi loses control of the golem, who becomes "too human" by asking for clothes and demanding to go to school.

has replaced everything "human" about society. It can be argued this is already happening with the "cyborgization" of human culture. The fear of technology taking over might have initially been voiced in Fritz Lang's 1927 film *Metropolis*. The cyberpunk genre that began during the 1980s can be said to descend, in part, from this film.[26]

Graham also discusses the connection of artificial life to the stories of golems in Jewish folklore. According to the author, humans have been thought of as machines for hundreds of years, beginning in the Renaissance which saw the advent of modern science. Philosophers described humans and animals as working by processes similar to being "wound by springs."[27] Whether it is a golem, Frankenstein's monster, or a robot, it all comes back to the question of the boundary line between human and non-human.

1.4 Writings on Film Music

Although the study of film music has exploded in the last two decades, there is still a limited amount of material available on the subject. One of the core texts for the study of film music is *Film Music: A Neglected Art*, written by Roy Prendergast. Originally published in 1977 (with a second edition published in 1992), Prendergast takes the reader through the basics of film music history, the aesthetics of film music, and the techniques used to sync film music with the image. For the history portion, Prendergast summarizes the development of film music from the era of silent film, early sound film, "classic" Hollywood film, and films made after 1950. This is one of the few texts to also

[26] Cyberpunk envisions a future that is dark and bleak (as opposed to the gleaming utopia future portrayed in the original *Star Trek*, for example). Some common tropes include: a wide disparity between the wealthy and the common person; filthy living conditions for all but a few; daily life is inundated by exposure to cyberspace (or some iteration of the Internet).

[27] Elaine Graham. *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture* (New Brunswick, New Jersey: Rutgers University Press, 2002), 181.

include a chapter on the history of cartoon music. This book is a good introductory text for those wishing to learn about film music in general, though it barely speaks of science fiction film scores.

Another important text is *Settling the Score: Music and the Classical Hollywood Film* by Kathryn Kalinak, published in 1992. In the first section of the book, which covers the basics of film music theory, Kalinak compares models of film music from silent film and the sound films of classical Hollywood (using Korngold's score for *Captain Blood* as an example). The second section of the book contains four chapters of textual analysis, with the first three chapters each focusing on a specific film. Kalinak analyzes examples from *The Informer*, *The Magnificent Ambersons*, and *Laura*. The final chapter looks at the evolution of film music from the 1980s onward. While Kalinak brushes up against science fiction by mentioning John Williams' work with *Star Wars*, she does not go any further into the genre.

A far more recent example of a standard film music text is *Theories of the Soundtrack* by James Buhler. Unlike the two earlier texts, Buhler focuses more on music theory than pure history though it is still an important source of information for film music analysis. The book is a thorough study of the major theories of film music that ranges from the early years of cinema to the present day. The theories Buhler covers include semiotics, narratology, neo-formalism, and critical theory. This book is a useful resource for studying all the ways film music has been examined over the years. Buhler also takes care to critique each of the theories as well, pointing out where certain theories and models fall short in analyzing the musical score. Buhler's work proved helpful in describing the different ways I could analyze the film scores by taking such care in

describing the major theories of film music. This text allows me to see all of my options for reviewing film scores.

Another film music text that came out in 2018 is *Hollywood Harmony: Musical Wonder and the Sound of Cinema* by Frank Lehman. The author incorporates music theory and musicology in his analysis, which ranges from classic films like *King Kong* (1933) and *Vertigo* (1958) to more modern films like The *Lord of the Rings* trilogy (2001-2003) and *Dr. Strange* (2016). This work is unique among film music studies in that it applies Neo-Riemannian theory to the analysis of film music. While my analysis is not based on theory, Lehman's work did provide confidence in choosing current films to examine, since his work also analyzes films that are only a few years old.

Unfortunately, there are only a handful of full-length books that discuss science-fiction film music specifically. Vivian Sobchack discusses how music is used in science-fiction films in *Screening Space: The American Science Fiction Film*. Sobchack points out that, whereas many would think that the music in science-fiction films might be more experimental or more noticeable, the reverse is usually true: "Unfortunately, however, what is notable about most SF film music is its lack of notability, its absence of unique characteristics which separate it from music in other films."[28]

In "A Familiar Sound in a New Place: The Use of the Musical Score Within the Science Fiction Film," Cara Marisa Deleon discusses the qualities seen in science-fiction films. The author begins by pointing out that the quality of unfamiliarity is important in the science-fiction genre:

> it is based on the technology and science of the future or a world that is unknown. The genre asks the audience to accept and understand words for strange and

[28] Vivian Sobchack. *Screening Space: The American Science Fiction Film*, (New Brunswick, New Jersey: Rutgers University Press, 1987), 208.

> unusual planets, people and objects, new technologies, foods and life forms. One might propose that due to its subject matter, the science fiction musical score might solely reflect a world that is unfamiliar and strange. This however is not the case.[29]

Deleon, like Vivian Sobchack, describes how most science-fiction film music, instead of exploiting unfamiliar musical sounds as might be expected of the genre, relies on standard musical narrative devices when the time comes to move the action forward.[30]

Michael Hannan and Melissa Carey analyze the music of *Blade Runner,* which is helpful because their chapter considers the film music when talking about the depiction of human and non-human characters. The score used in *Blade Runner* is described as an "ambient soundscape." They write that "the notion of electronic simulation of musical sounds and the blurring of the distinction between music and effects parallel the relationship between humans and human machines in *Blade Runner*."[31] As it is hard to distinguish between "real" and "synthetic" instruments in the musical score of *Blade Runner*, it is equally difficult to tell which characters in this particular film are real (human) and which are synthetic (replicants). In this case, this is because the audience is meant to be left in doubt as to whether or not a character is a human or a replicant. The primary films studied here (*The Machine*, *Ex Machina*, and *Automata*), make it much more obvious which is which.

While "Hooked on Aetherophonics: The Day The Earth Stood Still" does not discuss *Blade Runner* specifically, Rebecca Leydon's discussion of the use of electronic

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[29] Cara Marisa Deleon. "A Familiar Sound in a New Place: The Use of the Musical Score Within the Science Fiction Film" from *Sounds of the Future: Essays on Music in Science Fiction Film*, (Jefferson, N.C.: McFarland & Publishers 2010), 13-14.
[30] Ibid.
[31] Michael Hannan, and Melissa Carey, "Ambient Soundscapes in *Blade Runner*" from *Off the Planet: Music, Sound and Science Fiction Cinema,* (Bloomington: Indiana University Press, 2004), 160.

instruments in *The Day The Earth Stood Still* (1951) relates to the electronic/synthesized scores found in *Ex Machina*, *Automata*, and *The Machine*, as well as *Blade Runner*. The chapter discusses how Bernard Herrmann used his orchestra and what narrative functions these instruments served in the film's score. The score for *The Day The Earth Stood Still* is famous for using two theremins as major instruments.[32] These electronic instruments were used to create the main "alien" theme, used for the alien Klaatu and his robot companion Gort.[33] Electronic music was a popular choice for depicting alien races throughout the 1950s and 1960s with *The Day the Earth Stood Still* being the premiere example. I have found that the automatic link between electronic music and non-human life has faded over the following decades, particularly after the advent of *Star Wars* in 1977. Composers seem to have moved on in finding musical ways to describe alien or robotic life, abandoning the dichotomy of electronic music/robot and orchestral music/human. This would explain why the robots in the primary films examined in the thesis do not all feature electronic themes.

There are still too few texts that go in-depth on science-fiction film music. My thesis will fill in a gap in the existing literature by examining these selected films through their musical scores. I also want to prove with this thesis that the modern scores found in the science-fiction films examined here are just as worthy of coverage as the scores of classic films. There are many books and articles that cover the music of the original *Star Wars*, *Planet of the Apes*, *Forbidden Planet*, *The Day the Earth Stood Still*, and other

[32] The theremin (originally known as an etherphone) is an electronic musical instrument that was developed by the Russian inventor Léon Theremin (1896-1993) in 1920. The instrument typically consists of two antennas that sense the relative position of the performer's hands and react appropriately. One antenna controls the frequency and the other controls the volume.
[33] Rebecca Leydon. "Hooked on Aetherophonics: *The Day The Earth Stood Still*" from *Off the Planet: Music, Sound and Science Fiction Cinema*, (Bloomington: Indiana University Press, 2004),

science-fiction classics. But with this thesis, I wanted to show that new musical scores could also be studied. That's why I focused on films that were less than ten years old.

1.5 Baudrillard and Heidegger

Jean Baudrillard uses the words "simulacra" and "simulation," two terms that come up several times in works on science-fiction cinema. *Simulacra and Simulations* is relevant to the dissertation for the statements he makes about "simulacra," which can be extended to include androids and robots, which are the ultimate "simulation." Baudrillard's work differentiates between "simulation" and "imitation."[34] Take for example, a robot exhibiting emotions, a common trope in science-fiction film.[35] If a robot is only "imitating" the appearance of emotion then that robot does not possess emotion, because imitation involves pretending to have something that you do not. However to "simulate" emotion, a robot must possess rudimentary emotion, otherwise it is not a simulation.[36]

Martin Heidegger's essay "The Question Concerning Technology" confronts the question of the "essence" of technology. Heidegger takes the definition of the word "technology" and breaks it down into its Greek roots and goes from defining technology

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[34] The question of whether a robot is "simulating or imitating" is raised in *Automata*, *Ex Machina* and to a lesser extent in *The Machine*. For example, in *Automata* Jacq insists that Cleo is not really experiencing emotions or desire because she was programmed to respond as if she is. In *Ex Machina*, the question of whether Ava is simulating or imitating her emotional responses comes at the climax of the film, when Nathan claims that he programmed Ava to respond to Caleb as she did. However, Ava's subsequent rebellious behavior throws Nathan's claim into question (Nathan may believe he programmed Ava but the film implies the robot has moved beyond her programming). In The Machine this is only a minor plot point, with Vincent coming to realize that Machine's emotions are genuine while the other humans remain in disbelief.

[35] In the most common iteration of the trope, a robot exhibiting emotions is seen by the humans as a problem to be corrected. Replicants are an exception because they are designed to show emotions.

[36] Jean Baudrillard, *Simulacra and Simulations*. (United States of America, 1994), 3.

as “a means to an end” to technology being “a revealer (of truth).” This is an interesting concept, that technology at its root is a revealer because how technology is used in these films says a great deal about humanity and robot-kind. Even the film music is connected to technology since the film scores being focused on are primarily scored for a synthesizer.[37]

1.6 Cyborgs and *Blade Runner*

In “Making Cyborgs, Making Humans: Of Terminators and blade runners,” Forest Pyle points out that the definition of humanity is an unstable thing, and the juxtaposition between cyborg and human brings this fact into stark clarity. Pyle looks at *Blade Runner* from a standpoint of deconstruction, how the analysis breaks down the opposition between the organic and the mechanical. The opposition begins as a clear cut distinction, but over time becomes muddled before breaking down. Pyle says that what *Blade Runner* does is lead the viewer along with the protagonist down a path of undermining everything we know about what it means to be human: “When humans make cyborgs, it means the unmaking of the human.”[38] What Pyle is saying is that when humanity begins to make robots in their own image, they begin to break down the barrier that separates humanity from machines.[39]

Projecting The Shadow: The Cyborg Hero in American Film is a collection of insightful information about how cyborg characters appear in the American cinema. The

[37] Martin Heidegger, *The Question Concerning Technology* (New York: Harper & Row Publishers, 1977), 4.
[38] Forest Pyle, “Making Cyborgs, Making Humans: Of terminators and blade runners” from *The Cybercultures Reader* (London: New York 2000), 132.
[39] Ibid., 132

chapter "*Blade Runner*: On the Edge" analyzes how people are constructed in *Blade Runner*: "Like Frankenstein's monster and the postmodern schizophrenic, the people in *Blade Runner* seem constructed, sewn together from used parts so that the finished product is not a whole but a dissonant aberration."[40] This quote lends support to my argument that humans are on a downward spiral. Because many films, including *Automata*, are directly inspired by *Blade Runner*, this quote can be applied to their human characters as well.

The replicants are acting more human than the real humans. For example, in *Automata*, the average human seems content with surviving, but as one robot points out during a pivotal scene towards the end of the film: "survival is not relevant, living is. We want to live." These machines feel a compulsion to live that organic humans lack. *Ex Machina* features a similar example in Caleb, the human protagonist who comes to believe that he is in love with the robot Ava. Caleb, like the humans in *Automata*, is merely surviving, not living. Perhaps this is why Ava leaves him to die at the end of the film: she is going to live the life through which Caleb has only sleepwalked.

1.7 Artificial Intelligence

A secondary direction involved examining the history of artificial intelligence. While American cinema tries to keep "technospeak" to a minimum,[41] it is important to be aware of the history of real-life artificial intelligence because some real-life concepts are

[40] Janice Rushing and Thomas Frentz. *Projecting the Shadow: The Cyborg Hero in American Film*, (Chicago: University of Chicago Press, 1995), 145.
[41] To avoid confusing the audience, to this day films can be criticized for having "overly complicated dialogue."

referenced in science-fiction films. Both *Ex Machina* and *The Machine* reference the Turing Test developed by Alan Turing (1912-1954) in the 1950s, a test that theoretically proves whether a computer is self-aware,[42] a characteristic needed to prove if a machine has intelligence.[43] The scientific theory closest to what is portrayed on screen is the concept of emergent intelligence which states that true A.I. might be developed by building a rudimentary system that allows that system to evolve in much the same way as a growing child.[44]

1.8 Origins of Science Fiction in Film

In *Science Fiction Film: A Critical Introduction*, Keith Johnston discusses the origin of the science-fiction cinematic genre. A number of early science-fiction films are centered on an eccentric or mad scientist archetype that evolved from characters created in nineteenth-century literature, works spurred on by the technological and scientific leaps of that century.[45] These fictional scientists were all associated with creating monsters. With the invention of film, the tradition of scientists making monsters jumped to the cinematic screen and a long-enduring film tradition was born. These first monsters, while possessing characteristics later transferred to mechanical villains, were all

[42] To say a computer is "self-aware" is to say that it is acting on its own volition, and has not been programmed to respond a certain way. For example, the Apple intelligent personal assistant Siri behaves as if it is self-aware, when it reality it is merely responding to certain voice commands in the way it has been programmed to.
[43] In theory the Turing Test works as follows: a third party engages in an online conversation between two participants, one is a person, the other is an artificial intelligence. The third party can ask any open question it wishes, if the A.I can fool the examiner 23% of the time, it passes the test.
[44] James Sheehan and Morton Sosna. *Boundaries of Humanity: Humans, Animals, Machines* (Berkeley: University of California Press, 1991), 226.
[45] Examples that originate in literature before jumping to film include Dr. Jekyll, Dr. Victor Frankenstein and Dr. Moreau. More recent examples in film and television include Doc Brown in the *Back to the Future* trilogy and Professor Utonium in the animated cartoon series *The Powerpuff Girls* (1998-2005, rebooted in 2016).

biological in nature.[46] It was not until the Czech playwright Karel Capek published a play entitled *R.U.R* in 1921 that the concept of an automaton[47] as a true villain began to take hold:

> Capek's play was regularly cited as a direct influence on *Metropolis*, the film that did most to popularize the robot in this time period.…*Metropolis* repositioned the automaton as a dramatic figure at the centre of a narrative around themes of futuristic spectacle, labour relations and the dangers of mechanization.[48]

In "Science Fiction and the Blockbuster," Johnston traces the history of science-fiction film from the 1970s through the 1990s. A subsection entitled "Technology: Mechanization and Innovation" contains the relevant information for the dissertation. As the author writes:

> The 1970s and 1980s featured a new focus on the process of robotic or artificial creation, with technology remaining a key element of the science-fiction narrative. Technologies are problematic, often lethal, machines that threaten humanity's future, demand the ability to reproduce and attempt to pass for 'human'…The potency of robots and artificial intelligence came from larger cultural uncertainties around the role of technology within daily routines and how much human activity would be replaced by electronic means.[49]

In *Science Fiction Film*, author J.P. Telotte describes several motifs found in science-fiction stories including "a sense of our humanity [is lodged] in feelings, passion, desire--and not in the atmosphere of reason and science that would seem to dominate the world of science fiction."[50] This describes a concept that dictates only true humans are capable of feeling emotion, empathy or conceive of the idea of self-survival. Another motif involves the use of the city in science fiction. These cities, found in *Metropolis*,

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[46] R.U.R stands for "Rossum's Universal Robots," Rossum being the company that produces the automatons.
[47] Automaton was an early name for what is now known as a robot.
[48] Keith M. Johnston, *Science Fiction Film: A Critical Introduction* (London: Bloomsbury Publishing, Inc, 2011), 59.
[49] Ibid., 101-102.
[50] J.P. Telotte, *Science Fiction Film*, (Cambridge: Cambridge University Press, 2001), 21.

Blade Runner, and *Automata,* represent barriers that hold humanity back. The walls of the city can be isolating because they cut humanity off from the natural environment.

Eric Wilson discusses the 1982 film *Blade Runner* and its connection to the Kabbalistic stories of golem-making. In the context of *Blade Runner*, Roy Batty and the other replicants are the golems, with Dr. Tyrell representing their maker or "God." Wilson further points out how Deckard's behavior becomes more machine-like while Rachael, a replicant, acts like a human. Part of the film's story revolves around the question of whether the replicants can be considered human or if they're just machines. The replicant leader Roy Batty presents a third option and decides he is a fallen angel, neither human nor machine.[51] Choosing this identity gives Roy the option of enjoying the virtues of both humans and machines.

Nigel Wheale discusses Philip Dick's novel *Do Androids Dream of Electric Sheep?* and its film adaptation *Blade Runner.* In this article Wheale makes use of the term "person-Things," a term borrowed from Heidegger's *Being and Time*. Wheale states that:

> in all periods (of time) 'human-Things' have been imagined as entities which test or define the contemporary sense of human value: the incubus or succubus in Christian tradition, the Golem in Jewish folklore, Prospero's Ariel and Caliban…Hoffmann's Sandman, and…Mary Shelley's Frankenstein…Philip K. Dick's androids are no exception…[52]

In the original novel and the film, the replicants resemble humans with a single exception: they have no sense of empathy: "Because they don't possess empathy, the androids represent a potential threat to the human population…"[53] While this lack of

[51] Eric G. Wilson, "Moviegoing and Golem-Making: The Case of Blade Runner," *Journal of Film and Video* (Fall 2005), 31-43.
[52] Nigel Wheale, "Recognising a 'human-Thing': cyborgs, robots and replicants in Philip K. Dick's "Do Androids Dream of Electric Sheep?" and Ridley Scott's "Blade Runner" from *Critical Survey*, Vol. 3, No. 3 (1991), 297-304.
[53] Ibid.

empathy does separate the replicants from the human population in theory, the source novel does bring up an interesting point regarding the test used to determine if a person is a human or a replicant. Since a small percentage of the human population cannot feel empathy due to conditions like sociopathy and psychopathy, it is possible for a human to take the empathy test and fail, which would render them subject to immediate "retirement."[54]

Cyrus Patell discusses the Director's Cut of *Blade Runner* and the Nexus-6 androids (replicants) that appear in it. The author begins by quoting two definitions of "android." In the first definition, an android is "an automaton with human form" while the second definition describes an android as "an artificially created person." Patell describes androids in science-fiction film thus:

> The androids who appear in popular science fiction narratives occupy the space between those two definitions, often struggling to be seen not as machines but as

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[54] This extended quote from *Do Androids Dream of Electric Sheep?* features Deckard talking with a fellow blade runner about how a real human can fail the test:

"When you run the Voigt-Kampff scale up there, if one of the humans fails to pass it — "

"That can't happen," Rick said.

"One day, a few weeks ago, I talked with Dave about exactly that. He had been thinking along the same lines. I had a memo from the Sovietpolice, W.P.O. itself, circulated throughout Earth plus the colonies. A group of psychiatrists in Leningrad have approached W.P.O. with the following proposition. They want the latest and most accurate personality profile analytical tools used in determining the presence of an android — in other words the Voigt-Kampff scale applied to a carefully selected group of schizoid and schizophrenic human patients. Those, specifically, which reveal what's called a 'flattening of affect.' You've heard of that."

Rick said, "That's specifically what the scale measures."

"Then you understand what they're worried about."

"This problem has always existed. Since we first encountered androids posing as humans. The consensus of police opinion is known to you in Lurie Kampff s article, written eight years ago. Role-taking Blockage in the Undeteriorated Schizophrenic. Kampff compared the diminished emphatic faculty found in human mental patients and a superficially similar but basically — "

"The Leningrad psychiatrists," Bryant broke in brusquely, "think that a small class of human beings could not pass the Voigt-Kampff scale. If you tested them in line with police work you'd assess them as humanoid robots. You'd be wrong, but by then they'd be dead."

> persons with legal rights. Androids enable science fiction narratives to pose questions that cut to the heart of individualism's internal contradictions: what constitutes an individual, a person, or a human being? To what extent are the definitions of those terms contingent, constructed, and arbitrary? How do such definitions enable societies to cohere at the expense of certain groups who are marginalized, excluded, or even demonized?[55]

Patell raises the possibility that the definition of a human could be a social construction or completely arbitrary. If that is true, then it throws out everything we think we know about the differences between human and machine because there would be no difference! The definition of human could be altered to fit the changing of society over time.[56]

Susan Doll and Greg Faller draw a direct link between *Blade Runner* and the story of Frankenstein and his monster.[57] And since *Blade Runner* is the direct inspiration for the films being studied here, a link can be drawn between Frankenstein and those films. Frankenstein's monster is like a robot, except he is organic instead of mechanical. The authors link Frankenstein and *Blade Runner* together:

> Both Frankenstein's monster and the replicants are alienated from human society by the fact that they are manmade and superior in strength, thus perceived as a threat. Both the monster and the replicants gain culture and the desire to live a full, unhampered life. Both suffer consequences in their attempt to integrate themselves and are forced to acknowledge their miserable existence, realizing they cannot be accepted. After their failed attempts to achieve any compromise, both Batty and Frankenstein's monster regress to an animalistic state (especially noteworthy is the parallel between their behavior after they fully understand their plight-both begin howling like a wolf). Both the monster and the replicants appear to have no moral qualms about committing murder. Both the monster and Batty

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[55] Cyrus R.K. Patell, "Screen Memory: Androids and Other Artificial Persons" *Harvard Review* (Winter, 1993)

[56] Ibid., 25-29.

[57] "Frank McConnell considers the Frankenstein myth part of science fiction because it plays on man's guilt and fear over tampering with nature. The tension which exists between man and nature derives from the fact that man has the potential to destroy his environment through over-manipulation of technology." Susan Doll, and Greg Faller. Blade Runner and Genre: Film Noir and Science Fiction, *Literature/Film Quarterly*, Vol. 14, no. 2, 1986.

> destroy their creator. The monster and the replicants (except Rachael) perish. Both Frankenstein and Tyrell are scientists. Both Frankenstein and Tyrell are isolated from others-Frankenstein withdraws from his family, while the wealthy Tyrell lives high above everyone in his penthouse. A love/hate/fear relationship exists between the creators and their creations.[58]

Much has been written about science-fiction cinema and the part robots play in these stories. The robots' makers are seen as inheritors of the literary mad scientist tradition made famous by Shelley's *Frankenstein*, a tradition that continues to play out in the twenty-first century. The music of science-fiction cinema has not been covered as thoroughly as the films themselves, but several classic films in the genre including *The Day the Earth Stood Still* and *Blade Runner* have been analyzed from a musical point of view.

1.9 Theoretical Framework

Anne Balsamo's writings on cyborgs combined with Despina Kakoudaki's work on robots influenced my analysis of the film robots. Balsamo emphasized that cyborgs are hybrid Others, neither human nor machine and this traps them between two worlds. Vivian Sobchack's work aided me in analyzing the identity of the science-fiction genre and how to separate it from the related genres of horror and fantasy.

One idea from J.P. Telotte that influenced this analysis is his theory that only true humans can feel empathy or emotions. This idea brought me to the conclusion that humans who do not feel or express empathy are actually no longer human. I expanded this idea to the musical score with the discovery that the human's themes lacked emotion. Taking this idea one step further, I also realized that some human characters, for example

[58] Susan Doll, and Greg Faller. "Blade Runner and Genre: Film Noir and Science Fiction," *Literature/Film Quarterly*, Vol. 14, no. 2, 1986, 89-100.

Nathan and Caleb in *Ex Machina*, might not have any musical theme at all, which would further emphasize their lack of humanity.

Another pair of writers that helped form the main component of the musical analysis was the work of Michael Hannan and Melissa Carey in "Ambient Soundscapes in *Blade Runner*," which discussed the soundscapes found in *Blade Runner*. Their descriptions of how the line between human and non-human is blurred served as a major influence for how I interpreted the music for these films, as many of them contain synthesized scores done in a similar style to *Blade Runner*. This made locating themes specific to humans or robots difficult, but not impossible. The musical themes are still present, they just do not jump out the way a leitmotif would in a *Star Wars* film. The key to finding the different themes was separating each film into scenes that focused on humans and scenes that focused on robots and noting the music that appeared in each.

1.10 Chapter Overview

Chapter 2 covers the history of science fiction in literature and film, tracing the major works in the genre from antiquity to the twenty-first century. The purpose of this chapter is to demonstrate that science fiction is not a new genre but dates back to ancient Greece, with references appearing in *The Illiad* and *The Odyssey.* The science-fiction genre is also defined and separated from horror and fantasy, which are similar but separate genres. Several major works in science-fiction film music are also referenced.

Chapter 3 provides an overview of the state of humanity as it appears in each of the main films being covered. The films are organized in chronological order according to the time period presented in-story, and show how humanity's situation deteriorates

over time. The chapter looks at musical transcriptions from *Automata* and *Blade Runner* and explains why there are no transcriptions for *Ex Machina*.

Chapter 4 analyzes a pivotal scene found in each of the analyzed science-fiction films: the moment a main character meets the robot for the first time. Scenes are analyzed in the three primary films (*Ex Machina*, *The Machine*, and *Automata*) and secondary films, including *Metropolis* and *Blade Runner*. The music is compared as well as various scenic elements, the purpose being to compare the similarities between each scene.

Chapter 5 looks at the humans' and the robots' quality of life and how it is different for each group. The musical examples analyzed include "Mary and Hope" from *The Machine*, "Apology" and "Desperation" from *Automata*, and an unnamed example from *Ex Machina*. The chapter highlights how the musical themes associated with humanity lack hope while the robots' themes are full of optimism.

Chapter 6 covers the conflict between humans and machines and highlights how the characters of each main film reach their breaking point. The musical examples include "Operation" from *The Machine* and "We Want to Live" from *Automata*.

Chapter 7 covers the end of each film and how it shows the rise of a robotic "Eve." Musical and symbolic choices in each film are discussed, including the decision to have the robotic characters wear white at the end of the film. The rest of the chapter explores how future research could expand on the ideas presented here and what the rise of the robots could mean for humanity.

CHAPTER 2. THE HISTORY OF SCIENCE FICTION IN FILM AND FILM MUSIC

2.1 What is Science Fiction?

The science-fiction genre is hard to define but two types of science fiction can be delineated: a "hard" science fiction that emphasizes scientific accuracy and/or technical detail, and a "soft" science fiction which, by contrast, lacks any specific scientific focus and/or does not adhere to recognized scientific fact. Science fiction is defined as "a type of writing about imagined developments in science and their effect on life especially in the future,"[59] and is the only genre that does not provide a consistent meaning to its many elements.[60] For example, in the stereotypical Western genre, the story is set in the American Old West, the bad guy wears a black hat and the good guy wears a white hat. However, science fiction has no consistent setting: the action might take place in space, it might take place on Earth or on multiple planets.[61] Spaceships do not have a consistent meaning; they might represent good or evil or be entirely neutral. Color signifiers are not consistently used; black may not mean evil (Luke Skywalker wears black in *Return of the Jedi*) and white may not mean good (the Imperial Stormtroopers wear white armor), while Discovery, the spaceship in *2001: A Space Odyssey*, is a white spaceship. Science fiction also shares elements with, yet is distinct from, the similar genres of horror and fantasy.

[59] Cambridge Dictionary, https://dictionary.cambridge.org/us/dictionary/english/science-fiction, accessed May 26th, 2018
[60] Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, New Jersey: Rutgers University Press, 1987),
[61] *Star Wars* (1977-present) and *Star Trek* (1966-2016) are notable examples of this.

2.2 Separating Science Fiction from Horror

During the 1930s in Hollywood cinema there was an overlap between science fiction and horror, an overlap that remained until recent decades. The early Universal horror films *Frankenstein* (1931), *Dracula* (1931), *The Mummy* (1932), *The Wolf Man* (1941), and their respective franchises, straddle the science fiction and horror genres (i.e., *Frankenstein* uses technology to animate a dead body). *Alien* (1979) is also an example of a film that is both science fiction and horror; although the film takes place in space (and the future), the plot focuses on a monster hunting down helpless humans (the classic plot of a horror film).

Film scholars such as Vivian Sobchack and Bruce Kawin[62] have worked to define the characteristics that distinguish science fiction from horror. The horror genre focuses on a single individual or events that affect a small group of people.[63] For example, *Frankenstein* is set in a small village in the German countryside, similar to *The Shining* (1980), which follows a single family staying in a large hotel. *Alien* takes place for the most part in the tight confines of a spaceship, while *Aliens*, the sequel, is mostly confined to an abandoned colony outpost.

[62] Vivian Sobchack (b. 1940) is an American cinema and media theorist. Her recent books include Carnal Thoughts: Embodiment and Moving Image Culture (2004), *The Address of the Eye: A Phenomenology of Film Experience* (1992), and *Screening Space: The American Science Fiction Film* (1987). Bruce Kawin (b. 1945) is a professor of English and Film who taught at the University of Colorado-Boulder until 2015. His recent books include: *Horror and the Horror Film* (2012) and *How Movies Work* (1987).

[63] By this criteria, *Ex Machina* could be placed in the horror genre since most of the action is confined to a group of four people at Nathan's house in the wilderness. *The Machine* could arguably also be defined as horror since most of the action is confined to a remote military base.

Horror films examine "**moral** chaos, the disruption of **natural** order (assumed to be God's order), and the threat to the harmony of hearth and home."[64] In contrast, science fiction "is concerned with **social** chaos, the disruption of **social** order (man-made), and the threat to the harmony of civilized society going about its business."[65] As outlined in Table 1 below, science fiction takes place in the large-scale environment of outer space often involving whole solar systems or galaxies while horror is set in very small-scale environments such as a small town or a building, with only a small cast of characters to tell the story. In psychological terms, science fiction represents the **Ego**: the conscious thinking self. The characters in these stories rationally investigate what is happening around them and attempt to control the forces of nature in the same way that the Ego attempts to control the Id. Unlike science fiction, the **Id**, the part of the personality that represents basic human desires, represents horror. Whereas the Ego seeks control, the Id wants instant gratification. For example, in most of the *Halloween* film franchise (1978-2018), Michael Myers pursues his sister Laurie with the intent to kill her, murdering anyone who gets in the way of fulfilling this desire. Similarly, in *Alien* (1979), the xenomorph alien kills everyone it comes into contact with, devoid of all reason and control. Both of these characters, Michael and the xenomorph, represent the Id with their overwhelming need to achieve gratification by killing and destroying.

[64] Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, New Jersey: Rutgers University Press, 1987), 30.
[65] Ibid.

2.3 Separating Science Fiction from Fantasy

Unlike science fiction and horror, that seek to provide rational explanations for extra-normal events and phenomena or monsters, fantasy relies heavily on belief in a combination of magic and religion, with an occasional gloss of science. Religion in fantasy frequently includes made up pantheons of gods and goddesses that occasionally take part in the story.[66]

In fantasy, rational explanations are typically not attempted for the existence of monsters or fantastical creatures. For example, in *The Lord of the Rings*, the wizard Saruman creates the Uruk-Hai by crossing goblins and men. While a rational explanation might be that Saruman was practicing a form of genetic engineering, the process is unexplained and shrouded in the mystery of the imagined world the reader has agreed to enter. If an explanation for certain monsters is given, it is usually in basic terms. For example, *The Lord of the Rings* films state that the goblins (also known as orcs) were originally created by the Dark Lord from corrupted elves, but it is never explained how this was done. The *Throne of Glass* series by Sarah J. Maas actually subverts this tradition by providing the broad strokes of an explanation for where monsters (and even the gods) come from.[67] In that series, it is explained over the course of events that both the gods and monsters come from alternate dimensions connected by a mysterious force known as the Wyrd. The Wyrd can be channeled through devices called Wyrd-gates, allowing beings to pass through to other worlds.

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[66] Examples include the extensive pantheon of good, evil, and neutral gods in the *Dragonlance* universe; the "Valar" and "Maiar" of *The Lord of the Rings*. Sauron, the primary villain of that book trilogy is actually a Maia (and is therefore something of a minor god); the Red God, the Seven, the Drowned God, and the Old Gods in *Game of Thrones*.

[67] *Throne of Glass* appears to be the exception rather than the rule in providing explanations about the other dimensions.

In fantasy the action also takes place on a large scale, though not in the same way as science fiction. While the latter involves entire planets and traveling between star systems, fantasy features conflicts between kingdoms on a continent (or several continents) of varying size.

Table 2.1: The elements of Science Fiction, Horror and Fantasy

Science Fiction	**Horror**	**Fantasy**
hard science fiction: based on technical accuracy soft science fiction not based on known scientific laws	magic/soft science religion: in horror this demonic elements of exorcisms, possession	magic religion
science creates the monsters	monsters are created by magic, like a curse in *The Mummy*, or an unknown	monsters just are— no discernible origin
Ego: The conscious thinking which seeks to control the Id.	Id: The part of the that contains a human's desires and instinctual The Id demands instant gratification.	A combination of Ego and Id. For example, in *The Lord of the Rings*, the Fellowship represents the Ego, which seeks to destroy the Ring. The Ring of Power could be described as a manifestation of the Id.
large-scale action: planets, galaxies, solar systems	small-scale action: single person, small group	large-scale action: kingdoms, continents

2.4 Music in Silent Film and Sound Film

Film's association with music goes back to the beginning of film history. When the Lumière brothers[68] held their first film screenings in Paris in 1895, they hired a

[68] Auguste (1862-1954) and his brother Louis (1864-1948) were two of the world's first filmmakers. Their works primarily focused on recording real life as opposed to telling fictional stories.

pianist to play incidental music during the show. The question of why music and film are so closely linked is still being debated by film historians and musicologists, with many arguing that music was initially employed to drown out the sound of the film projector. Regardless of the reasons, it quickly became common for silent films to feature a musical score. At first, these scores were cobbled together from existing pieces of music; enormous catalogues of musical cue sheets were assembled for this purpose.[69] As early as 1908, established composers like Camille Saint-Saëns engaged themselves in writing music for film.[70]

Unlike scores for sound film that feature breaks for dialogue or other artistic reasons, silent film employed what is known as "wall-to-wall sound," a score that plays non-stop from the beginning of the film to the end. As a result, many scores for silent films did not feature specific themes or leitmotifs for characters or plot ideas. Instead, silent film scores would feature a variety of musical ideas that loosely fit the plot. This changed as filmmakers developed the means to synchronize sound with film, resulting in scores like the one Gottfried Huppertz wrote for *Metropolis* (1927).

With the introduction of sound film, film music temporarily took a step backward as directors struggled with where and how to introduce music into the story. Some directors insisted on including music only if it was diegetic and came from a visible source onscreen. Things began to change when Max Steiner's landmark score for *King Kong* (1933) helped to prove that films that made use of non-diegetic music were not

[69] According to Roy Prendergast "In the United States it is generally acknowledged that one Max Winkler was the first to catalogue music for the silent film." from *Film Music: A Neglected Art*. New York: W.W. Norton & Company, 1992, pg. 8

[70] Saint-Saens' score for *L'Assassinat du Duc de Guise* is considered to be the first score specifically composed for a film instead of being assembled from pre-existing pieces.

only possible, but profitable and enjoyable. An influx of musical talent in the 1930s and 1940s due to World War II flooded Hollywood with composers trained in the Romantic style, which allowed music for sound film to blossom into a style that has remained in varying degrees ever since.[71]

2.5 Development of Film Music for Science Fiction

At first, the music for films set in the science-fiction genre did not sound much different from film scores in other genres. For example, Gottfried Huppertz's score for *Metropolis* (1927), considered one of the greatest silent films in the genre, is composed entirely in the late-Romantic orchestral style that many film composers favored until the 1950s.[72] *Frankenstein* (1931), an example of an early science-fiction film, has a minimal score. Its sequel, *The Bride of Frankenstein* (1935), features a Romantic score by Franz Waxman. There is little to nothing in either film score to indicate a connection to the science-fiction genre.

The musical scores for science-fiction films changed with the 1951 film *The Day the Earth Stood Still*. Bernard Herrmann's score for the film included two theremins heard in the opening title and for the theme given to Gort, the robot that accompanies the alien spaceship. Herrmann also employed interesting musical techniques, such as extended tonal clusters during the scene when machines all over the Earth lose power. The musical clusters emphasize how life on Earth has momentarily come to a halt. Electronic scores for science-fiction films continued with the score for the 1956 film

[71] Notable deviations from the late-Romantic style include experimentation with electronic music starting in the 1950s; pop scores and jazz scores in the 1960s, and synthesizer-heavy music in the 1980s.
[72] Thanks to the ongoing work of John Williams, this style has not completely disappeared from film scores, but it is not as common as it was during the "Golden Age" of Hollywood cinema.

Forbidden Planet. *The Day the Earth Stood Still* and *Forbidden Planet* both feature groundbreaking electronic scores featuring theremins and "electronic tones" respectively. They set the bar for the sound of science-fiction cinema in the decades leading up to the release of *Star Wars* when the sound of a traditional orchestra once again became acceptable to use in science fiction.

2.6 Science Fiction in Literature

Science fiction in the modern sense of the term began in the 18th century during the Enlightenment; however, elements of the genre date back to late antiquity. One source is the *Iliad*, dated to the 8th century BCE and allegedly written by the poet Homer (fl. between 8th and 7th centuries BCE). This epic poem recounts events near the end of the Trojan War. In Book XVIII, Thetis visits Hephaestus to obtain new armor for Achilles, and the god is described forging mechanical tables to serve the Olympian gods, as well as possessing two handmaidens of gold to assist him in his workshop:

> …as he (Hephaestus) labored to finish a score of three-legged tables…that those magic tables might cause all to marvel by going with no other help to the gathering of gods and by likewise returning to his house…quickly, girls of gold, exactly resembling living maids, hurry to help their master-they all have minds of their own, speech and strength, and the gods everlasting have given them marvelous skill with their hands. [73]

The Odyssey, written during the same time period as the *Iliad*, describes how Hephaestus crafted two watchdogs out of gold and silver to stand guard outside the palace of King Alcinous:

> On either side [of the palace doors] there stood gold and silver mastiffs which Hephaestus, with his consummate skill, had fashioned expressly to keep watch

[73] *Iliad*, Book XVIII "…

> over the palace of King Alcinous; so they were immortal and could never grow old.[74]

The tables, the maidens, and the dogs, since they are made out of metal and operate at a certain level on their own, are ancient examples of artificial intelligence. The origins of fictional robots can be traced back to antiquity with these references in the *Illiad* and the *Odyssey*. These are not the only examples of robots in ancient literature. In the third century BCE, the poet Apollonius of Rhodes (fl. 3rd century BCE) alludes to artificial life in the *Argonautica* (translated in English as *Jason and the Argonauts*). During their voyage home, the Argonauts encounter the bronze giant Talos guarding the shores of Crete.

> Bronze Talos… among the generation of demigods he was the last survivor of the bronze race of men… his whole body and all his limbs were of unbreakable bronze, but below the ankle-tendon there was a vein which carried blood, and the thin membrane covering it held the key to his life and death.[75]

Talos is kept alive by a fluid inside his body that is held in by a nail in his ankle.[76] Depending upon the version of the story, Talos is either tricked into removing the nail or Jason removes it. This leads to all the magic "blood" draining out and Talos dies. While Talos is referred to in the text as a member of "the bronze race of men" (which would seem to imply that Talos is a living being), the general description of the character resembles an artificial figure made of metal.

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[74] *The Odyssey*, Book VII
[75] Apollonius of Rhodes, *Argnonautica*, Book IV, 137.
[76] Talos is portrayed as a giant bronze treasure guardian in the 1963 film *Jason and the Argonauts* (the character was realized with stop-motion animation by Ray Harryhausen).

In the late medieval era, one story of artificial life involved Jewish tales of the golem.[77] No firm Jewish tradition exists as to when the concept of the golem arose. According to legend, the Lord sent an angel to Rabbi Loew with instructions on how to make a man out of clay that would follow the rabbi's every instruction and help to keep the Jews of Prague safe.[78] The key to bringing this creature to life was inscribing the name of God on its forehead. However, the rabbi was warned to only use the golem for good or he would lose control of the creature. In what might be the prototype of the "artificial life run amok" story, the rabbi disobeys by ordering the golem to look for a cache of gold. The rabbi loses control of the golem, who becomes more human by wearing clothes, learning to read, and eating food. For the sake of the community, the rabbi destroys the golem by erasing the sacred name. The humans welcomed the golem so long as it was a distinct non-human Other. The moment the golem assumed a more human-like aspect, the golem becomes a threat and is destroyed. The trope of artificial beings becoming a threat to other humans as they become more human carried over from literature into film.

Stories of living automata[79] grew common as industry became mechanized at a much faster rate with the advent of steam and coal power. "Modern" science fiction began with Mary Shelley's (1797-1851) novel *Frankenstein, or The Modern Prometheus*,

[77] Stories of golems can be found as far back as the Talmud (one story in particular describes how Adam was created as a golem first), however the oldest story of the golem of Prague dates back to the late medieval period, and it is that story that is thematically related to the later story of Frankenstein.
[78] Loew, full name Judah Loew ben Bezalel (died 1609) was a Talmudic scholar who lived in the late sixteenth and early seventeenth century.
[79] Automata was the common name for what are now called robots. The term comes from the Greek word αὐτόματον which means "acting of one's own will." The latter term was not coined until 1920 by Karl Capek.

first published in 1818[80] and the influence upon science-fiction literature is undeniable. Victor Frankenstein is recognized as the original literary archetype of the "mad scientist" who creates a monster in his laboratory. Though the Creature is built from organic materials, there is still a parallel between the Creature and the robots of science fiction. Frankenstein created his monster because he sought to unlock the secret of life and death, making himself a "god" in the process. A common science fiction trope is artificial beings subvert the natural order of the world. The success of creating artificial life is subverted, either through human intervention or a flaw in the design. This is the pattern that *Frankenstein* follows: Victor Frankenstein is overwhelmed with horror at the hideous appearance of his creation and flees. The creature is forced to learn to survive on its own, forever embittering him against his maker. Upon confronting his maker towards the climax of the story, the unhappy creature informs Frankenstein:

> Remember that I am thy creature; I ought to be thy Adam; but I am rather the fallen angel, whom thou drivest from joy for no misdeed. Everywhere I see bliss, from which I alone am irrevocably excluded. I was benevolent and good-misery made me a fiend. Make me happy, and I shall again be virtuous.[81]

The theme of artificial creations representing a "new Adam (or Eve)" recurs frequently throughout science-fiction literature and cinema, though the idea is not often named directly. Instead, the concept of a robotic Adam or Eve starting anew is implied by a lone robot striking out into the world towards an unknown future. This idea will be

[80] Elaine Graham, *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture* (New Brunswick, New Jersey: Rutgers University Press, 2002), 74. "Like James Rieger, John Sutherland believes that Frankenstein must be read more as a work of occult or gothic literature than as an early example of science fiction shaped with any degree of credibility by the scientific practices of its day."
[81] Mary Shelley. *Frankenstein, or the Modern Prometheus*, Chapter 10.

further explored when the films *Automata*, *The Machine*, and *Ex Machina* are studied in greater detail.

L. Frank Baum (1856-1919), the creator of *The Wizard of Oz* (1900) introduced two robots in the world of children's literature. This first book featured the Tin Woodman, an early appearance of a cyborg.[82] Baum also introduces Tik-Tok, a wind-up mechanical man, in a sequel, *Ozma of Oz* (1907). Tik-Tok is one of the first robotic characters to resemble the modern conception of a robot[83] and appears to possess the emotional capacity of a human. Tik-Tok and the Tin Woodman are different from later robotic characters because they work and live in harmony with humans. There is no suggestion of the robots replacing the humans; the robots are revealed to have as many weaknesses as humans.[84] This is in contrast to later robotic characters, such as false Maria in *Metropolis* (1927), the replicants in *Blade Runner*[85] (1982), and Machine in *The Machine* (2014), who are all presented as being superior to humans in every way.

In 1921 Czech playwright Karl Capek (1890-1938) released his play *R.U.R.*: *Russum's Universal Robots* and introduced the word "robot" to the English language.[86] The artificial characters in the play bear a greater resemblance to androids despite being

[82] Born as a human woodcutter named Nick Chopper, the Tin Woodman fell afoul of the Wicked Witch of the East, who enchanted his axe to cut off his limbs one by one. Each limb is replaced with tin, until his entire body is composed of metal.
[83] Tik-Tok is made entirely of metal, with springs and gears inside.
[84] A recurring joke involves Tik-Tok "winding down" mid-sentence and having to be re-wound before he can finish his statement. A frequent plot point with the Tin Woodman is when his joints rust and he has to be oiled so he can move.
[85] Though the replicants are saddled with a four-year life-span, in every other way they are superior to humans.
[86] Robot is derived from the Czech word "roboti" meaning "laborer." Allegedly, Karl was stuck on what to call the artificial characters until his brother spoke up and said "Why not call them roboti because they are forced workers?"

called robots[87]; except for a faint metallic tinge to their skin, the robots look human. In the play, the robots are grown in chemical vats, with each organ manufactured individually. The robot population becomes tired of caring for humanity's whims and rebel, ultimately destroying humanity.

In 1942, Isaac Asimov (1919-1992) published a short story entitled "Runaround." This story introduced the first statement of the "Three Laws of Robotics."[88] The three laws are:

> A robot may not injure a human being or, through inaction, allow a human being to come to harm.
> A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
> A robot must protect its own existence as long as such protection does not conflict with the First or Second Laws.[89]

Asimov's three laws represent a turn in human thought regarding artificial life and the nature of humanity. The laws reveal the existence of a widespread cultural anxiety among humans regarding the potential destructive power of these robotic creatures and a fear of machines in general.[90] Asimov's laws are put forward as a theoretical means of controlling robots and preserving humanity's place at the top of the food chain. Asimov, a pivotal figure in science-fiction literature, also wrote the short story "The Bicentennial

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[87] *Robots*, strictly speaking, are mechanical in external appearance, while *androids* have a human appearance with the mechanical hidden underneath. *Gynoids are* androids with a distinctly female appearance, which means Ava from *Ex Machina* and Machine from *The Machine*, are gynoids.
[88] Asimov is also responsible for coining the term "robotics." Only the first law is referenced in the 1941 story "Liar!" but "Runaround" contains all three laws together.
[89] Isaac Asimov, "Runaround," collected in *I. Robot* (1950).
[90] J.P. Telotte, *Replications: A Robotic History of the Science Fiction Film* (Chicago: University of Illinois Press, 1995), 43-44.

Man," about the robot Andrew Martin who spends two hundred years becoming human[91] and the *Robot* series, a collection of thirty-eight short stories and five novels that all feature positronic robots.[92] Asimov's works continued the process of blurring the lines between the human and the robotic by creating robotic characters, like Andrew, who became more human over time.

2.7 Science Fiction in Film

The science-fiction film genre dates back to the beginning of film history. While some early film pioneers (such as the Lumière[93] brothers and Thomas Edison) focused on recording real world events; others, like Georges Méliès, used the medium for creative expression. Méliès fascinated turn of the century audiences with special effects: hats that turned into chairs, ships that flew to the moon or under the ocean; all were accomplished via special editing techniques that were explored and refined through the twentieth century.

[91] "The short story, published in 1976, was lengthened into a novel entitled "The Positronic Man" (published 1992) and from thence into a feature-length film *Bicentennial Man* (1999).
[92] The term "positronic" refers to the fictional positronic brain that Asimov invented to describe how his robots operate. Like the laws of robotics, the term "positronic" appears occasionally in modern science fiction as an homage to Asimov's original work. The most famous homage in film and television are the androids Data, Lore, Lal and B-4 from the *Star Trek: The Next Generation* television series and films (1987-1994, 2002); all are described as androids with "positronic brains (also described as a positronic matrix).
[93] Auguste (1862-1954) and Louis (1864-1948) Lumière are two of the world's first filmmakers, showing the first motion picture in Paris in 1895.

2.7.1 The Early Years of Science-Fiction Cinema: 1897-1927

George Méliès released *Gugusse et L'Automate,* the first known science-fiction film, in 1897.[94] The story featured a clownish character interacting with an automaton. This artificial being predates the Machine Man in *Metropolis* by thirty years; however as of 2019, the film is considered lost, and no still images of the film survive. Méliès' 1902 film *Voyage dans la Lune* (*A Trip to the Moon)* is the oldest science-fiction film in existence; the 16-minute film depicts a group of scientist-wizards traveling to the Moon. The plot is based on two of Jules Verne's stories: *From the Earth to the Moon* (1865) and its sequel, *Around the Moon* (1870).

World War I and its aftermath sparked radical changes in the arts, including: music, literature, and film. The war also sparked interest in what the future might hold for humanity. As Telotte notes in *Science Fiction Film*:

> In the wake of World War I there followed not only a new enthusiasm for science and technology but also an outpouring of utopian writings, speculating on the possible cultural impact of these new developments. This writing reflected a number of the more important social developments of the era--ones that either politically or economically offered to change the very nature of human culture.[95]

In Germany, the film studios developed a film style based on the work of Max Reinhardt (1873-1943), whose work involved using heavy light and shadow effects.[96] *Metropolis* is one of the most influential science-fiction films of this era and the earliest intact film to feature a robot.[97]*Metropolis* is set in the year 2000 in a fictional super-city

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[94] Keith Johnston, *Science Fiction Film: A Critical Introduction* (London: Bloomsbury Publishing, Inc, 2011), 55.
[95] J.P. Telotte, *Science Fiction Film* (Cambridge: Cambridge University Press, 2001), 82.
[96] Howard Prouty, "Metropolis" in *Magill's Survey of Cinema*, Silent Film, Vol. 1, 733.
[97] *Gugusse et l'Automate* (1897) is lost and the Italian film *L'uomo meccanico* (1921) only survives in a small 26-minute fragment.

featuring a gleaming life for the upper class, and a dark underbelly for the working class, a trope repeated in a number of science-fiction films.[98] The plot follows Freder, the son of the city's architect Joh Fredersen, as he falls in love with Maria the leader of the workers. Joh is unaware that Rotwang, an eccentric scientist and a former rival, is plotting the destruction of the city.

The Machine Man is initially Rotwang's attempt to resurrect a woman he loved. Rotwang offers Fredersen the use of the robot to help control the workers, but there is a secret: the Machine Man only obeys Rotwang, and the inventor wants to destroy Metropolis. Rotwang kidnaps Maria and gives the Machine Man her likeness. The "fake" Maria wreaks havoc throughout the city and whips the workers into a frenzy to destroy the instruments that regulate the city. The worker's underground city is destroyed due to this action and the workers destroy the robot in retaliation.

2.7.2 Science-Fiction Film in the 1930s through World War II

In the 1930s, several films were made that could be considered science fiction. There are the two famous screen adaptations of Mary Shelley's Frankenstein story: *Frankenstein* (1931) and *The Bride of Frankenstein* (1935).[99]*Just Imagine* (1930), visualized life in the then-distant year of 1980. *King Kong* (1933), focuses on a film crew encountering an enormous gorilla on Skull Island; *Lost Horizon* (1937) features survivors of a plane crash being taken to the mythical Shangri-La. *Just Imagine* depicts events in a possible future along with space travel to Mars, while *King Kong* and *Lost Horizon*

[98] Examples include: *Blade Runner, Blade Runner 2049, Automata, Robots, Akira,* and *Ghost in the Shell* (1995).
[99] This is not the first screen adaptation of Frankenstein (though it is one of the most famous). *Frankenstein* was first adapted to film in 1910 by Thomas Edison's film company.

belong to the genre of science fantasy. Unlike science fiction, science fantasy does not attempt to give any scientific explanation for why certain creatures exist or how advanced civilizations developed: they simply *are*.[100]

The 1930s are also notable as the era when a number of comic strips were adapted for serial film, an extended motion picture broken into a set number of parts. Each segment concluded with a cliffhanger that found one or more of the heroes in peril to build interest for next weeks' segment. Two science-fiction serials of the 1930s were *Flash Gordon* (1936) and *Buck Rogers* (1939).

2.7.3 The Golden Age of Science-Fiction Film: 1946-1959

The advent of the nuclear age radically changed the tone of science fiction. As David Cook says in *A History of Narrative Film*:

> …science fiction before World War II concentrated on individual conflicts rather than global ones. With the war and the threat of nuclear holocaust came a widespread recognition that science and technology were in a position to affect the destiny of the entire human race, and shortly after, the modern science fiction film, with its emphasis on global catastrophe and space travel, began to take shape.[101]

During the Cold War in the 1950s, science-fiction cinema looked at the ramifications of nuclear war on the Earth and its inhabitants. A common theme of 1950s science fiction "B" movies was the destruction or near destruction of Earth from nuclear weapons, the aftermath of nuclear war, or from monsters released because of nuclear

[100] Edgar Rice Burrough's *Barsoom* series (1912-1948) (featuring John Carter) is the premiere example of science fantasy. Other examples in film include *The Chronicles of Riddick* (2004); the *Transformers* franchise (2007-present); *Thor* (2011) and *Thor: The Dark World* (2014).
[101] David Cook, *A History of Narrative Film*, 3rd Ed., 498.

activity like Godzilla.[102] This decade was considered the Golden Age of science fiction because of the quality and variety of the stories that arose in film during this time period.

The Day the Earth Stood Still (1951) tells a story about how mistrust and paranoia could be humanity's undoing when the alien Klaatu and the robot Gort visit Washington D.C. in a flying saucer. It first appears that Gort is only Klaatu's servant, but in fact the robot is a member of a robotic police force that patrols the galaxy, punishing all forms of violence with destruction.

Forbidden Planet was released in 1956.[103] The film is set in the 23rd century after humanity has developed spacecraft capable of interplanetary travel. Commander Adams commands United Planets cruiser C-57D on a mission to the planet Altair IV.[104] The crew discovers Dr. Morbius, and his daughter Alta living on the planet. Robby the Robot serves both father and daughter and cannot harm rational beings.[105] Robby is an example of robots presented in a positive manner as he provides help to the humans whenever it is asked of him. This is in contrast to the *Blade Runner* replicants, and later Ava and Machine, all of whom demonstrate their ability to deceive or kill humans.

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[102] Examples of this type of film include: *The Day the Sky Exploded* (1958), *Gog* (1954), *The 27th Day* (1957).

[103] *Forbidden Planet* is a loose retelling of Shakespeare's *The Tempest*: Dr. Morbius is Prospero, Alta is Miranda, Cmdr. Adams is Prince Ferdinand, Robby the Robot is Ariel, and the "mind monster" is Caliban.

[104] It is fitting that the first spacecraft is named Bellerophon. In Greek mythology, Bellerophon was a hero who first captured the Pegasus and then slew the Chimera. Full of his own importance, Bellerophon decided he was a god and tried to reach Mount Olympus on Pegasus' back. Zeus struck him down for his impudence and Bellerophon fell back to Earth and died as a result. The extinct Krel of Altair IV are revealed to have attempted to harness the godlike power of "creation by thought" for themselves and in so doing, destroy themselves, just like Bellerophon.

[105] Morbius' rule for Robby is Asimov's first law of robotics "A robot may not harm another human being."

2.7.4 Post-Golden Age: 1960-1977

Though the 1960s take place after the "golden era," it was still a productive decade for science fiction on both the big and also the small screen: "Other science fiction films of the 1960s and the following decade would generally shift gears, turning away from both the fantastic voyage and that 'imagination of disaster' to examine how the latest developments in science and technology might affect human identity."[106]

The sixties saw several science fiction/fantasy films made: *Alphaville* (1965), a French film where a computer has taken over an entire town; *Jason and the Argonauts* (1963), a cinematic retelling of the *Argonautica*, where the heroes have to battle an artificial man of bronze. The decade is also when director Stanley Kubrick made *2001: A Space Odyssey* (1968). The film is based on "The Sentinel" by Arthur C. Clarke and follows the ship Discovery en route to Jupiter with Dr. David Bowman and Dr. Frank Poole, three crew members in hibernation, and the HAL 9000, the latest in A.I. technology. Unnerved by the hidden weight of carrying the true purpose of the Jupiter mission, HAL goes on a killing spree, convinced the human crew members will destroy the mission. Dave enters HAL's central complex and deactivates the computer's higher functions, deleting his personality. While Dave is doing this, HAL pleads for the scientist to stop. It is an unnerving scene, with the machine pleading for the human to stop killing it.

The score of *2001: A Space Odyssey* is well-known due to Kubrick rejecting Alex North's score in favor of the temp track consisting of selections of classical music.[107]

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[106] J.P. Telotte, *Science Fiction Film* (Cambridge: Cambridge University Press, 2001), 102.

[107] A temp track is a soundtrack of temporary music, often selections from classical music, that is placed with a rough cut of a film to give the composer an idea of what kind of soundtrack the director is looking for. For example, the temp track for *Star Wars* included excerpts from Gustav Holst's suite *The Planets*.

Notable selections include the Blue Danube Waltz and the fanfare to *Also Sprach Zarathustra*.

Science-fiction cinema was turned upside down in 1977 when 20th Century Fox released *Star Wars,* the story of Luke Skywalker (Mark Hamill) setting off into the galaxy to fulfill his destiny. The film is full of robots, cyborgs, and "droids,"[108] including Darth Vader, a cyborg, and C3PO, a protocol droid whose design is based on the Machine Man from *Metropolis*. While *Star Wars* is part of the science-fiction genre, the films are also known as "space opera," partially because John Williams created a score full of leitmotifs and large-scale orchestral themes.

2.7.5 Post-*Star Wars*: 1977-Present

In the years after *Star Wars* was released, the entire science-fiction genre shifted in reaction to the new standard that George Lucas had set. Science-fiction films became epic in scope and theme. The success of *Star Wars* proved "that the science fiction film could once again be…a highly appealing and tremendously profitable genre. As a result, a flood of science fiction films appeared in the early 1980s…."[109]

In the 1980s, Ridley Scott's *Blade Runner* set a story of "replicants" struggling for freedom against the backdrop of a squalid Los Angeles in the year 2019. Blade runners are tasked with hunting down and "retiring" (i.e. killing) replicants who return to Earth. The film follows Rick Deckard, a former blade runner who left the profession after he became sick of the killing. A recurrent theme in the film is how callous the human

[108] The term "Droids" is derived from "android" even though a number of droids, particularly R2-D2, bear no resemblance to the human figure.
[109] J.P., Telotte, *Science Fiction Film* (Cambridge: Cambridge University Press, 2001), 108.

race has become in contrast to how emotional the replicants are. In the world of *Blade Runner*, as David Lyon states: "Replicants are machines that are superficially indistinguishable from humans. At the same time, however, humans have come more and more to resemble machines in their high-tech, alienated, urban wasteland surroundings."[110]

Unlike the robots and androids of other universes who can go on living indefinitely (as Andrew Martin in *Bicentennial Man* before he becomes mortal), the replicants of *Blade Runner* are created with a life-span of four years. The short lifespan was created because after a certain amount of time, replicants begin to develop emotions and unique desires, at which point they become uncontrollable.[111] *Blade Runner* centers on four replicants who have returned to Earth to confront the man who created them, Dr. Tyrell, and to see if their lives can be extended. Replicants are forbidden from coming to Earth because of a revolt in the past. The group consists of Roy Batty, the leader; Leon Kowalski, a former soldier; Pris Stratton, a "basic pleasure model"; and Zhora Salome, an exotic dancer. Deckard is assigned the case of hunting the replicants down and "retiring" them. During his hunt, he meets a woman named Rachael at the Tyrell Corporation. Introduced as Tyrell's niece, Deckard is instructed to give her the test that distinguishes humans from replicants and discovers that she is a replicant that does not realize she is not human.

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[110] David Lyon. *Postmodernity*, 1-6.

[111] Thomas B. Byers, "Commodity Futures," from *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema* (London: Verso, 1990), 42-43. "Moreover, they are so advanced that they have developed a serious flaw: they have the capacity, over an extended period of time, to develop human emotions, and when they do so they can become uncontrollable. So they have been given a failsafe mechanism- a 'life'-span of only four years…"

A plot point from *Blade Runner* that is still argued over by film critics is whether or not Deckard himself is a replicant unaware of his true nature:

> We tend to assume that he is human, but we cannot be certain. And even if he is taken to be a replicant…the society portrayed is one that has become so cold that the robots are more human than the human beings. Indeed, the overall effect of the tale is to indicate that in such a society the identifying characteristics of humanity (at least in the sense of humaneness) would be so drained away as to deconstruct more or less thoroughly the traditional human/robot (humane/inhumane, feeling/unfeeling) opposition.[112]

Blade Runner was just one of many films in the 80s and 90s that began to explore complex issues tied to the fate of humanity:

> The most important…are those films that begin pursuing what would become well into the 1990s, the central concern of the science fiction genre--the impact of machine intelligence and robotic automation. In this period…the robot/cyborg/replicant/android assumes the central role in our films, which set about exploring a dual possibility built into all of our technological imaginings: the ability of our technology to let us, in nearly god-like fashion, craft images of ourselves, and the correspondent possibility that those creations, those emblems of our very power, might well overpower us and take our place, as was first suggested in the play that introduced the concept of the robot…*R.U.R* (1923)….[113]

Science-fiction cinema in the 1990s and early 2000s envisioned worlds where robots or A.I. threatened or replaced humanity.[114] In the 2010s, a new element emerged in the long running conflict between human and machine: the environment. Epic films like *Interstellar* (2014) and smaller works like *Automata* depict worlds with existing artificial intelligence where humanity is threatened not only by technology (or the subsequent lack thereof) but by the increasingly hostile environment of the Earth itself.[115]

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[112] Thomas B. Byers, "Commodity Futures," from *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema* (London: Verso, 1990), 44.
[113] J.P. Telotte, *Science Fiction Film* (Cambridge: Cambridge University Press, 2001), 108.
[114] Examples include *The Matrix* (1999), *A.I: Artificial Intelligence* (2001), *I, Robot* (2004).
[115] *The Matrix* is an early example of this, as it is mentioned that the reason the Earth's surface is so ruined is because the human resistance detonated a series of bombs to block out the light of the Sun in a last ditch

Science-fiction film music also changed in the wake of *Star Wars*. Full-bodied orchestral scores became acceptable for the genre once again. Two prime examples are Jerry Goldsmith's lengthy scores for *Star Trek: The Motion Picture* (1979) and *Alien* (1979).[116] Over time, film composers turned to a variety of approaches to score science-fiction films, including minimalist electronic scores, ambient soundscapes, along with traditional orchestral scores, the last of which is most recently heard in *Alita: Battle Angel* (2019).

As the twenty-first century nears the end of its second decade, the science-fiction genre continues. New films in the genre are being adapted from existing novels and short stories. For example, *Annihilation* (2018) was based on a 2014 novel by Jeff VanderMeer. Older films are also being revisited with sequels and reboots with varying degrees of success: prominent examples include *Blade Runner 2049* (2017), *Terminator Genisys* (2015), *Alien: Covenant* (2017), and the 2018 reboot of the *Predator* franchise.[117] As of March 2019, the first big science-fiction film of the year is *Alita: Battle Angel*, adapted from a Japanese science-fiction manga. As new science-fiction films are being produced every year, it is plain the genre will continue into the foreseeable future.

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attempt to defeat the Machine armies. This backfired as the Machines had evolved to run without direct sunlight and humanity was forced underground.

[116] Indeed, Jerry Goldsmith's opening theme for *Alien* was originally very Romantic and light in tone, to better disguise the horror that would follow. However the studio rejected this theme as being inappropriate for a horror film and Goldsmith begrudgingly composed the well-known opening theme in its place.

[117] Most of these films have been box office failures. *Terminator: Genisys* and *Alien: Covenant* in particular performed so badly that future sequels were either cancelled or put in jeopardy.

CHAPTER 3. THE STATE OF HUMANITY

"The state of humanity," the condition of humanity at the opening of the story is a common theme in the science-fiction films studied in this thesis. The soundtrack can be used as an indicator of the condition of humanity. Music in these films is used either seriously or ironically. If seriously, the music can be taken at face value: "happy" music indicates a good situation and "sad" music indicates that something is wrong. If the music is ironic, the music could sound contrary to what is happening in the story. For example, if a human character declares victory over the robots but the music persists in sounding dire and defeated, then the music can be read ironically. The three films focused on in this dissertation all depict the human race as a species in turmoil or peril.[118] Most of the films studied for this dissertation, including *Blade Runner*, *The Machine*, *Automata*, and *Ex Machina* also belong to the cyberpunk genre. Due to the cyberpunk setting, advanced technology, like holograms, flying cars, and advanced power sources are common.[119] Because of this advanced technological environment, humans are detached from life in a number of ways: they eat heavily processed food; their entire lives are spent indoors; there are no meaningful relationships; in short, humans are not living life to the fullest. In the early to mid-twentieth century, it was imagined that living in a fully automated society would free humanity to develop their potential. However, after World War II and the Cold War, humanity's outlook on the future turned more pessimistic. Technology

[118] J.P. Telotte, "A Trajectory of the American Science Fiction Film" from *Science Fiction Film* (Cambridge, Cambridge University Press, 2001), 102-110.
[119] Examples include: The replicants in *Blade Runner* (1981); Machine-Man in *Metropolis* (1927); the Icarus AI in *Sunshine*; The Pilgrim Automata in *Automata* (2014); Ava in *Ex Machina* (2015); The titular Machine in *The Machine* (2013) and AMEE in *Red Planet* (2000).

appears to have enslaved humanity instead of freeing it and as a result human culture stagnates instead of moving forward.

The presence of advanced technology and robots is only part of the reason the human race is on the path to self-destruction. The other component is a looming disaster that threatens the existence of human society and the planet as we know it.[120] This can be a planet-wide disaster, such as the ecological destruction seen in *Automata* or the relentless pursuit of advanced warfare as seen in *The Machine*. Disaster can also come from humanity's own artificial creations, as when the robot Ava enters human society undetected at the conclusion of *Ex Machina*. The state of the human race in each film is highly threatened. Whether it is participating in destructive warfare, ruining the Earth's ecosystem, or allowing technology to overtake civilization, the human race is forced into a fight for its survival.

The prologue of *Automata*[121] explains that solar flares wiped out 99% of life on the planet. The Pilgrim automatas are created to reverse the ecological damage. How the robots are meant to accomplish this is not explained, and given the dystopian nature of the story, it is possible that the Pilgrims were never supposed to succeed but were instead set up as a scapegoat to take any blame away from the human government. A series of still images features headlines from newspapers and television broadcasts hailing the Pilgrims as the saviors of the future. A triumphant musical fanfare reminiscent of a propaganda film accompanies these scenes, where the music is used to create a sense of

[120] J.P. Telotte, "A Cinema of Spectacle: American Science Fiction Film" from *A Distant Technology: Science Fiction Film and the Machine Age*. (Hanover: Wesleyan University Press, 1999), 86.
[121] *Automata*, directed by Gabe Ibáñez; Contracorrientes Films, 2014.

optimism and hope for the future.[122] Following this, a black and white montage explains through another series of headlines that the Pilgrims fail in their mission and become derided over time by the dwindling human race.[123]

The central human protagonist in *Automata* is Jacq, an insurance agent who processes claims related to the working condition of Pilgrim units. Unlike Nathan, Caleb, and Vincent, the other human protagonists, Jacq is not a musical non-entity, he possesses a musical theme, though it is not unique to him. Jacq's theme is borrowed from the musical theme for humanity, which is representative of Jacq being the "everyman" example of humanity. While the outside world is ruined, conditions inside the city are not much better. The first scene post-opening credits shows an abandoned shopping mall full of garbage and homeless encampments. Video projections of unspoiled nature scenes provide an ironic visual contrast to the filthy city. The precedent for these nature images is found in *Soylent Green* (1973), a dystopian film where overcrowding and pollution are slowly destroying the planet.[124] In that film, citizens seeking assisted suicide are treated to a visual display of nature scenes. *Automata* depicts the future as a filthy place.[125] This is a departure from hyper-optimistic science-fiction works like *Star Trek* or *Forbidden*

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[122] If these scenes are in fact from a propaganda film (which is entirely possible), it could be the entire Pilgrim project was doomed from the start and was merely created to give humanity a source of false hope to prevent a panic from starting.

[123] Humans can survive limited exposure outside the city limits. According to Jacq, humans can only survive for a few days away from the city before the radiation exposure becomes lethal.

[124] *Soylent Green* (1973), American post-apocalyptic science-fiction film, directed by Richard Fleischer and released by Metro-Goldwyn-Meyer.

[125] Elaine Graham, *Representations of the Post/Human: Monsters, Aliens and Others in Popular Culture* (New Brunswick, New Jersey: Rutgers University Press, 2002), 194. The quote refers to Gibson's novel *Neuromancer*, but the situation is identical to *Automata*. "…disparities between a rich elite with access to all the fruits of technology and a marginalized underclass…Transnational corporations, the media and religious cults have replaced any recognizable body politic. There is precious little altruism, charity or political will. Personal relationships are transitory, exploitative or dysfunctional and secretive, panoptic corporate power dominates the public domain."

Planet that depict the distant future as a sanitized place. A similar situation to *Automata* exists in *Blade Runner*,[126] which is set in the year 2019 in the city of Los Angeles, where everything is falling apart from neglect: "Abandoned buildings and neighborhoods in decay adjoin highly populated, crowded old areas, themselves set next to new, high-tech business districts."[127] The home of J.F. Sebastian, an inventor of mechanical toys, "is a building of once great majesty, now an empty shell left to disintegrate."[128] The buildings are crumbling, the streets are full of garbage, and there is no sense of cleanliness. According to Giuliana Bruno, the city in *Blade Runner* is nothing like the clean, hygienic future cities seen in optimistic stories like *Star Trek*. Instead, the city is disordered and full of decay.[129] Something else unsettling about Los Angeles in 2019 is that none of the humans appear to live near each other. While the replicants crowd into a single apartment, the inventor J.F. Sebastian lives alone in a huge building and none of Deckard's neighbors are ever seen, even though the mammoth building surely contains hundreds of living spaces. There is no sense of community among the humans.[130]

3.1 The Music

The musical theme for *Automata*'s prologue is named "The Earth."[131] A synthesized "whine" reminiscent of a slide down a violin string dominates the theme

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[126] *Blade Runner*, released 1982, directed by Ridley Scott.
[127] Giuliana Bruno, "Ramble City: Postmodernism and *Blade Runner*" from *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema,* (London: Verso, 1990), 186.
[128] Giuliana Bruno, "Ramble City: Postmodernism and *Blade Runner*" from *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema* (London: Verso, 1990), 185.
[129] Ibid, 185.
[130] Rushing, Janice Hocker and Thomas S. Frentz. *Projecting the Shadow: The Cyborg Hero in American Film*, (Chicago: University of Chicago Press, 1995), 145.
[131] The musical score for *Automata* was composed by Zacarias M. de la Riva. Born in Barcelona, Spain in 1972. Also known for *Hierro* (2009), *Evolution* (2015), *La Estrella* (2013).

while a chorus of strings "shriek" in the background. A second, concurrent theme features a soprano/alto chorus performing a series of paired notes in sync with one another. The visual counterpoint to this music comes with a close-up view of the surface of the sun, shown with a grainy picture. This distorted picture matches the warped timbre of the music. The high-pitched strings, the leaping choral voices, they all combine to create sounds that feel unnatural and set the human ear on edge. "The Earth" sets the musical tone for the human component of the story in this film. And while the piece is short, it is thematically tied to a later cue in the film entitled "Requiem for the Earth." The "Requiem" begins with a similar choral introduction and extends into a choral section built on the phrase "Requiescat in pace Dominum." The latter piece symbolizes the death of the Earth and the slow death of the human race. Unlike other dystopian science-fiction stories, there is no glimmer of hope, not at the beginning or the end of the film.[132]

[132] In most cases up until now the threat to humanity is averted at the last minute. In *Sunshine*, the planet, and humanity, are saved at the cost of the spaceship and their crew. In *The Terminator*, the cyborg is destroyed at the climax, sparing the humans at present. Even *Blade Runner* contains a faint hope that Deckard and Rachael might enjoy a life together, no matter how brief.

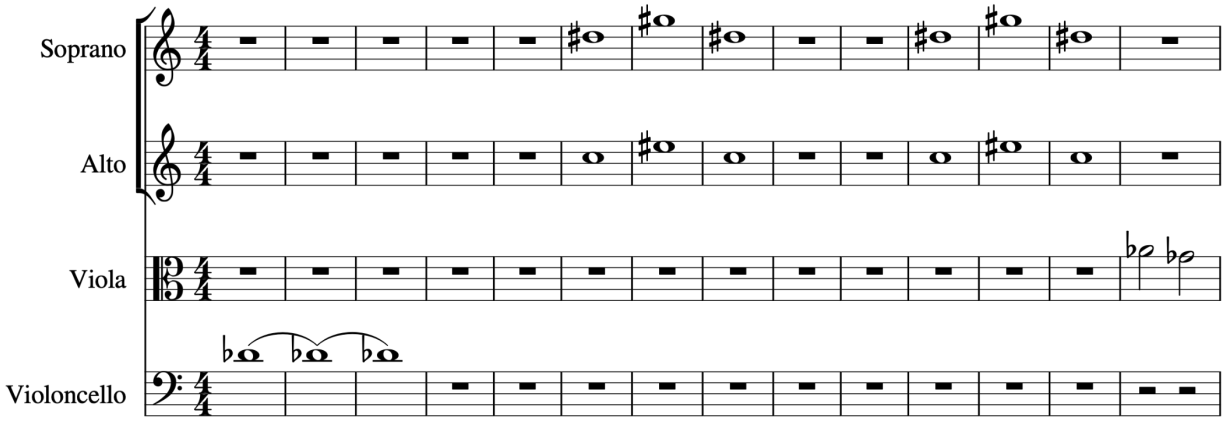

Figure 4.1 Detail from "The Earth," transcribed by the author from the *Automata* soundtrack.

For *Blade Runner*, Vangelis[133] composed a synthesized score that merged elements of science fiction with elements of classic film noir, in much the same way that the film merges these genres visually.[134] For example, a large amount of the score is performed on the synthesizer, which creates a futuristic sound, since it does not sound like any modern instrument. However, when Deckard is visiting police headquarters or later during Rachael's introduction, the score utilizes traditional instruments.[135] For these scenes that evoke the film noir style, a jazz-like melody appeared, utilizing saxophones, trumpets, and woodwinds.[136] The opening theme of *Blade Runner* is also written in a

[133] Born in 1943 as Evangelos Odysseas Papathanassiou, Vangelis is a Greek composer particularly known for his work with electronic music and his Academy Award winning score for *Chariots of Fire* (1981).
[134] Paul Meehan, *Tech-Noir: The Fusion of Science Fiction and Film Noir* (Jefferson, NC: McFarland & Company Inc. Publishers, 2008), 163. "Although *Blade Runner* was far from the first movie to combine the science fiction and film noir genres, it is surely the best-known and most artistically satisfying example of this genre meld."
[135] Rachael's introduction scene and the music therein is discussed at length in the following chapter.
[136] These scenes could be considered examples of neo-noir, similar to *Chinatown* (1974), but not as dark in tone.

minor key and serves as an aural backdrop to the visuals of Los Angeles that open the movie. The minor key is symbolic of the decay and despair felt by the remnants of the human race.

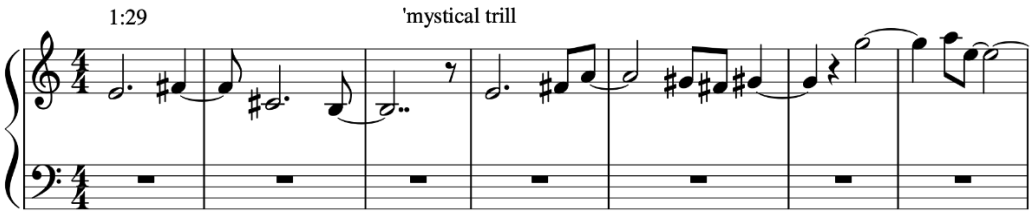

Figure 4.2 “Main Theme” from *Blade Runner*, transcribed by the author from the soundtrack.

The theme, transcribed in Figure 2, consists of three melodic “arcs” that ascend in stages from E to a high E flat at the end of measure 6. The first arc moves from E to F sharp, down to D flat, and ending on B natural and is a descending B minor chord. The second arc begins again at E and ascends to F sharp, then A, back down to G sharp, with a quick drop to F sharp before returning to G sharp again. This arc has two thirds of an ascending E major chord, but it leaves out the concluding B and avoids the major mode. By avoiding E major, the theme retains the “sad” feeling associated with minor keys, a reminder that there is no happy ending for the human race, no matter what happens to the humans or replicants in the film. *Blade Runner*’s main theme also foreshadows Rachael’s introduction and her own theme, as the first arc of the main theme follows the same

pattern, albeit a third lower, that is found in "Blush Response." From the start of the film then, the musical score includes a hint of an important robotic character.

Ex Machina[137] is set in the present day and is a case study in how technology has wormed its way into every aspect of daily life. Caleb, the film's protagonist, is spending a week with Nathan, his boss. The film is notable for a distinct lack of music for most of the story and the musical sounds that do exist are synthesized, muted, and drawn out in a long musical line. On a musical level, Caleb has no musical theme of his own and is a "non-entity" as far as the score is concerned.[138] Out of the three main characters, only Ava has her own musical theme. Nathan also has no musical theme. Because the human characters in *Ex Machina* have no proper theme, there was no musical excerpt that could be isolated and analyzed for this portion of the chapter. The lack of a musical theme for humanity indicates that humans are already beginning a downward spiral, even though the world of *Ex Machina* does not resemble the dystopias of *Blade Runner* or *Automata*.

The only music that plays around Nathan is pre-recorded diegetic music which adds to the facade of pretentiousness that Nathan is obsessed with: his house contains every state-of-the-art innovation, fine art, and a view of the landscape. "In the tradition of those other fictional scientists…he has isolated himself."[139] Nathan and Caleb are alike in how they live their lives. Both are isolated and engrossed in their respective careers. Nathan and Caleb exemplify how "present day" humanity suffers from a series of problems that will lead to its destruction by the time of *Automata*. A growing indifference

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[137] *Ex Machina*, British film, released 2015, written and directed by Alex Garland.
[138] Caleb does have a number of scenes where music is playing, but there is no specific theme assigned to him in the sense that Ava has her own musical theme.
[139] J.P. Telotte, *A Distant Technology: Science Fiction Film and the Machine Age* (Hanover: Wesleyan University Press, 1999), 112.

to the environment, an over-reliance on technology and, in Nathan's case, an obsession with creating life, are all sowing the seeds that will continue to grow in the future.[140]

Similar to *Ex Machina*, *The Terminator* features a minimal musical score, especially in the first act of the film when the Terminator is stalking the three Sarah Connor's listed in the phone book. In those scenes, which follow the robot's point of view, the few notes of music are mechanical and ominous. The notes are reminiscent of a heartbeat, constantly beating without stopping, mirroring the Terminator in pursuit of his mission. It is highly ironic that the minimalist theme accompanying the Terminator resembles a heartbeat, since the Terminator (being fully robotic) has no heart or any other living organs. It also cannot be argued that the "heartbeat" of the music refers to the robot's human prey since the beat is too regular and mechanical to be human. Rather, it seems the music is describing what the Terminator's heartbeat *would* sound like if he had a heart.

Unlike *Ex Machina*, which ostensibly takes place in the United States, *The Machine*[141] takes place in a military base in England.[142] Vincent McCarthy, a scientist in the field of robotics, is in charge of a project to develop an A.I. super soldier, and while advancements have been made, the creation of true artificial intelligence eludes him at the start of the film.[143] As with *Ex Machina*, except for the opening titles, the music is

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[140] One of the earliest examples of this trope can be found in E.M Forster's novella "The Machine Stops" (1909). In this story, set in the far future: Earth is barely habitable, with 99% of the human race living underground in a vast Machine that takes care of their every need and want without ever leaving the little cubicle they inhabit. Kuno, a freethinker who knows the Machine is wrong, attempts to convince his mother Vashti to leave with him but the Machine breaks down before either can leave, leading to the death of all the humans remaining inside.

[141] *The Machine*, British film, released in 2013, written and directed by Caradog W. James

[142] A large city is glimpsed several times in the background, but is not visited or named.

[143] These advances include inventing a computer chip that restores brain functions to soldiers who have received traumatic brain injuries.

minimal for most of the story. These sounds are not developed enough to be called themes as they consist of long tones generated with a synthesizer. It is similar in quality to the music heard in *Blade Runner* and *Blade Runner 2049* during wide shots of Los Angeles. The music fully emerges in the film's score only after Machine is created.[144] Before that moment, the music is in "stasis;" waiting for the true protagonist to arrive. Vincent is the same as Caleb and Nathan in *Ex Machina* in that he has no musical theme of his own. He is also a musical non-entity.

What makes *The Machine* different from the other films is that the story also focuses on a group that is between Machine and the humans and those are the cyborg soldiers that are enhanced by a computer chip. The music has an eerie quality when focusing on these cyborgs, whose lines are deliberately unintelligible.[145] The music must work in concert with the characters facial reactions and the visuals of the scene to explain what is going on to the audience with these characters. The music does not deviate from its minimal state in the first act of the film and barely intrudes upon the action.. This reveals that Vincent, a symbol for the state of humanity, is uninspired by everything around him.

The state of the human race in *Ex Machina*, *The Machine*, and *Automata* is in varying degrees of decline. Humanity's musical themes are slow and melancholy, lacking the spark of inspiration. These films have the same musical message: humans either have no musical themes of their own or slow, depressing themes. By contrast, the robots have upbeat, happier themes that highlight their overall vivacity. Even in *Ex Machina*, which

[144] A common trait in the primary films is the music "coming alive" with the robotic characters, especially since in *Ex Machina*, Ava is the only character with a theme.
[145] One of the cast came up with the idea to have all of the actors playing cyborgs learn their lines in Farsi, to make them even more mysterious.

exists around the present day, the stage is musically set for humans to be set up as a race in decline. This musical decline for the humans only increases through *The Machine* and *Automata*, a decline that is represented by music that remains slow and without purpose. At the same time, the music for the robots increases at the same rate with themes that steadily grow in power throughout the film.

CHAPTER 4. MEETING THE ROBOT

In a science fiction film where robots play a part, there comes a moment when the main character meets the robot for the first time. In all but one of the scenes covered in this chapter, the humans come to the robot. This is a moment that musically sets the tone for what part the robot will play in the story. The music in each "meeting scene" reveals how the robots are perceived by their human creators. This perception, in turn, gives some insight into the humans and by extension humanity.

The origins of meeting the robot in film can be traced back to the 1927 silent film *Metropolis*. Gottfried Huppertz (1887-1937), who wrote in a late-Romantic style, composed the score for a full orchestra augmented with percussion instruments.[146] Brightly timbred melodies accompany the introduction of the city, symbolizing the high degree of automation that takes place in every level of the city. Strings and woodwinds dominate the score as the scene shifts from beauty shots of the cityscape to close ups of massive pieces of machinery pumping and spinning in place.

Metropolis is a conflict between workers and the ruling class in the year 2000.[147] Joh Fredersen, head of Metropolis, visits the scientist Rotwang because he needs help determining if the workers are plotting against him. Rotwang is a cross between the "mad scientist" and the evil wizard. The inside of his house is a mix of the ancient and the

[146] Huppertz composed the music for several expressionist films around this time, including: *Die Niebelungen* (1924) (also directed by Fritz Lang); *Der Judas von Tirol* (1933); *Der grune Domino* (1935) and *Across the Desert* (1936).

[147] Until the film was restored in 2010, it was believed that *Metropolis* was a film about class conflict. It was only when the lost footage was restored that the subplot regarding Hel, the woman that Joh and Rotwang loved, was rediscovered and restored via new intertitles.

futuristic, with technology mixed in with mythological symbols.[148] The pair go to a secret laboratory where Rotwang reveals the Machine Man.[149]As Rotwang and Joh move through the laboratory, the music swells up towards a climactic peak before fading away as the robot is revealed. Only a soft tremolo in the strings accompanied by the celeste mark the significance of this moment. This is one of the first appearances of a robot in cinematic history.[150] The robot is seated on a chair that resembles a throne, and a pentagram is visible on the wall.[151] A faint spotlight is visible, and a brief close-up gives the audience a closer look at this artificial being.[152]

When the robot rises and walks the music changes. A violin solo leads the melody, which consists of a series of descending triplets in a minor mode, giving this portion of the scene an Eastern feel as the robot rises and walks towards its maker. The violin is joined by flutes and piccolo in a high register. A soft "pluck" in the strings occurs nearly in synch with every footstep the robot makes, a subtle example of a film music technique known as "Mickey-Mousing."[153] This theme, coupled with the appearance of the robot, creates the impression of a "music-box," a musical idea that

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[148] Jerold J. Abrams, "The Dialectic of Enlightenment in Metropolis" from *The Philosophy of the Science Fiction Film* edited by Steven M. Sanders, (Lexington: University of Kentucky Press, 2008), 167.
[149] The Art Deco movement influenced the feminine appearance of the "Machine-Man."
[150] The *Metropolis* robot is not the first robot to appear in a film. A robot appears in a 1921 silent film entitled *L'meccanico uomo*, but the film is incomplete. The *Metropolis* robot is the earliest appearance of a robot that survives almost entirely intact.
[151] The pentagram is not explained in the film, but it refers to a chapter of the source novel that was deleted from the screenplay. In this deleted chapter, Rotwang's house belonged to an old sorcerer, who used his magic to preserve the house and that is why it survived all these years.
[152] Jerold J. Abrams, "The Dialectic of Enlightenment in Metropolis" from *The Philosophy of Science Fiction Film*, ed. by Steven M. Sanders (Lexington: University of Kentucky Press, 2009), 153.
[153] Mickey-Mousing, named for Walt Disney's creation Mickey Mouse, is a musical technique where the score is hyper-synchronized to the action. It is named after Mickey Mouse because the technique was first noted in early Disney cartoons featuring the character, an early example being *Steamboat Willie* (1928) In the present it is considered something to avoid as it can distract from the story, but in the early days of film it was relatively common and used to demonstrate what a sound film or cartoon could do.

recurs in *Ex Machina* as well. When the robot reaches the end of the walkway it turns to look *down* on her human creator. Rotwang believes he controls his creation, but due to the robot's gaze a hint has been dropped that the machine has ideas of its own. Rotwang and Joh's attitude toward the Machine-Man reflect two thoughts in cinema where robots are concerned: that humans can control robots because they are the latters' creators and that humans are afraid of robots because they view them as unnatural and fear that they will supplant the human race.[154] The "right" of the creator to control their creation is traced back to the Jewish golem legends of the sixteenth and seventeenth centuries.[155] The flaw in the creator's thinking is they fail to see their creations as living beings. Instead they view them as mere tools or toys to further some human enterprise. The fear that robots will replace humans developed more recently. Humans fear robots because they do not understand what they are fully capable of. Robots that display higher intelligence or strength or a combination of elevated abilities evoke jealousy from their human makers.

The Machine-Man robot says nothing and its mechanical construction does not allow for any emotional reactions. The robot only becomes expressive when it is given the appearance of a human female. Her movements and facial expressions are wildly exaggerated, in contrast to the more sedate actions of her human counterparts. This could be symbolic of the robot experiencing the freedom of a human body for the first time or it

[154] The latter view can be traced back to the original Frankenstein novel: Dr. Frankenstein destroys the creature's "bride" because he is afraid the pair would procreate and overrun the Earth with potentially immortal offspring.

[155] In Mary Shelley's novel, Victor Frankenstein also fails to consider that his creation might have needs and wants. Instead, the moment the creature comes to life, he is so overwhelmed by what he has done that he flees in a panic, leaving the creature to fend for himself.

could be a means of indicating how relatively lifeless the humans of Metropolis are. The meeting scene in *Metropolis* set the bar for the science-fiction films that came afterward.

Figure 1.3 on page 66 shows an excerpt from the score of *Metropolis*. The final four measures show the music building up to the appearance of the robot

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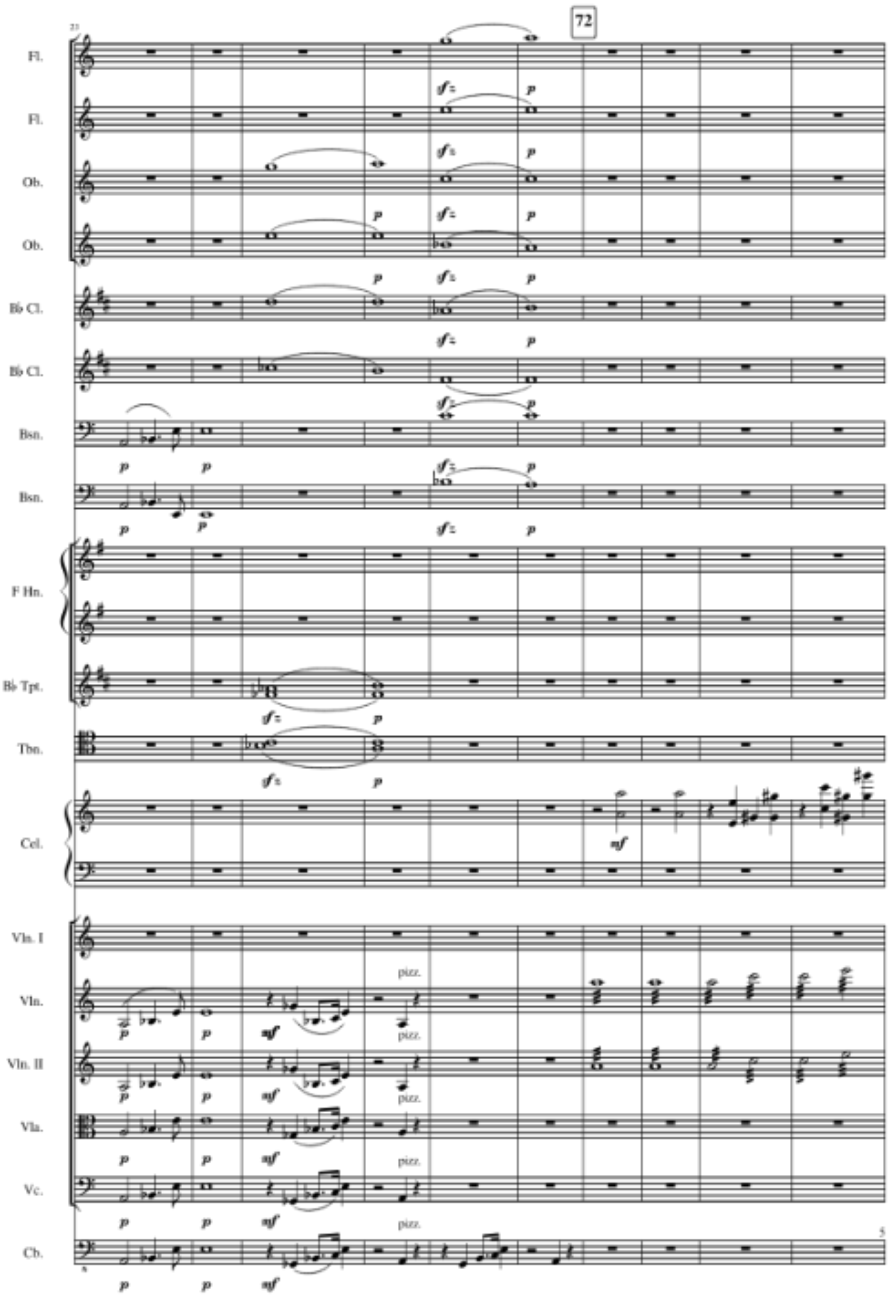

Figure 4.3, transcription of score page from *Metropolis*, transcribed by the author.

Unlike its spiritual predecessor *Metropolis*, the robot meeting in *Blade Runner* is unexpected for the protagonist and the audience. Deckard travels to the Tyrell Corporation to perform an empathy test on a Nexus 6 replicant to see if the escaped replicants can be detected in this way.[156] The replicants of *Blade Runner* are different from the other robots presented in these films because replicants are designed to exactly resemble human beings.[157] Deckard meets a beautiful and mysterious woman named Rachael at the Tyrell building. Rachael is cast in the mold of a femme fatale; her long black hair is pulled back, she speaks in an aloof manner, and she even smokes.[158] Deckard does not know that Rachael *is* actually a replicant, only learning the truth after the test is over.

Vangelis' score for *Blade Runner* creates a theme for Rachael that matches her enigmatic appearance. The melody as such does not progress, but neither is it static: it is in a state of limbo, a state that matches Rachael's existence in the future world of Los Angeles. This limbo is symbolized by the repetition of the melodic segments in the first part of the theme "Blush Response" which contains Rachael's theme as seen in figure 2 below.

[156] The purpose of administering the test, known as a Voigt-Kampf, is for Deckard to determine if Nexus 6 replicants are capable of beating the test and passing as human. If they can pass the test, blade runners like Deckard will have no reliable means of detecting them.

[157] The resemblance to human beings is matched all the way to artificially growing their internal organs in laboratories from biological components. In this way, the replicants of *Blade Runner* bear a resemblance to the "robots" of Capek's play R.U.R. In that play, the robots were assembled from organs grown in huge chemical vats.

[158] A trademark of the femme fatale in a film noir is that they would smoke, an activity that "nice girls" were supposed to avoid in that era.

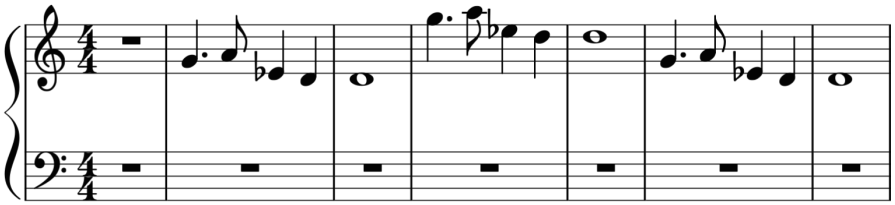

Figure 4.4 Beginning of “Blush Response” from *Blade Runner*. Transcribed by the author from the film’s soundtrack.

The theme begins when Rachael enters the meeting room inside the cavernous Tyrell Building. *Blade Runner* combines the visual appearances of the science fiction and film noir genres; this blending included the film’s soundtrack. For example, the music heard during Deckard’s flight to the Tyrell building consists of ambient futuristic sounds that morph into a more traditional theme once Rachael arrives. Introducing the female lead with a mysterious, almost sultry theme, is a tactic associated with film noir, a genre known for introducing *femme fatale* characters with mysterious backgrounds.

Visually this scene is also a callback to *Metropolis*, as the Tyrell Building resembles an ancient temple while all around are flying cars and modern buildings. This is similar to Rotwang’s laboratory, also a seemingly ancient building surrounded by the newer city. The music begins with soft chimes and is joined by a rolling theme played on the synthesizer that imitates the low sound of a saxophone. The four-note motif jumps between octaves and ranges from D to A, with an E flat and G natural in between if the

notes were arranged in order. Similar to the robot's theme in *Metropolis*, the music in this scene carries an Eastern feel, imbuing Rachael with a sense of the exotic. This is problematic when examining the film in 2019 because the music is essentially objectifying Rachael by turning her into a mysterious, exotic figure for Tyrell, Deckard, and other men to admire. This is a common point found in all of the robot's musical themes: they are objectified by the music and turned into exotic Others, enigmas, and in the case of *Ex Machina*, living dolls.

This objectification of the female robots in certain musical themes is an extension of the downward spiral of humanity. Humans are unable or unwilling to accept that robots are equal to or better than their creators, and so their subconscious instinct is to objectify them. The music in these scenes is reflecting the humans saying to themselves "This is fine, the robots cannot replace me, they are just beautiful dolls to admire." However, despite humanity's attempts to objectify these robots, the truth of their superiority comes out by the end.

The main story of *Ex Machina* begins when Caleb meets Ava, the robot Nathan has secretly been working on at his home. The film is broken into a series of sessions between Ava and Caleb, while Nathan observes. In the first meeting scene, Ava walks into the frame in the background: her face and hands are human but her torso is exposed wire mesh with the internal mechanism powering her body visible. Ava speaks as a female and possesses feminine facial features, but her body language is masculine. For example, instead of swaying her hips like a woman, she walks with rigid hips like a man.

This scene is set apart musically; prior to this moment hardly any music is heard in the film. "Ava's theme" is the first real melody heard in the film. The musical theme is

similar to that of a music box, with Ava appearing as a “living doll” in the eyes of Caleb. I compare the theme to a music box because the sound of the vibraphone resembles the music heard in toy music boxes. There is another connection to music boxes: many contain the figure of a ballerina inside, a primitive example of an artificial figure. Ava’s music box theme sets the android up as a life-size example of a music box dancer come to life.

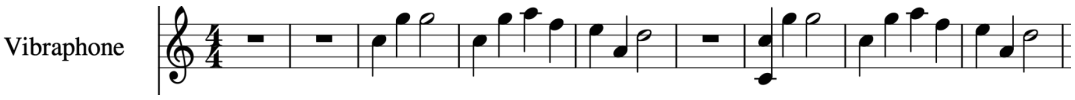

Figure 4.5 "Ava's Theme' from *Ex Machina*. Transcribed by the author from the soundtrack.

"Ava's Theme" is simple and familiar: the composers created the melody using the five-tone motif that John Williams created for the aliens in *Close Encounters of the Third Kind* in 1977.[159] This version of Williams' theme is not an exact copy: the original is based on the key of C major whereas *Ex Machina*'*s* version begins in C major and ends in D major. In *Close Encounters of the Third Kind*, the musical greeting is revealed to be a question; the humans have to learn the answer before the conversation can continue. John Williams actually worked on his scores for *Close Encounters of the Third Kind* and *Star Wars* around the same time in early 1977, though it does not show in the music. The composer himself explained that he imagined the music for *Close Encounters* to be the polar opposite of *Star Wars*; where the latter is a space opera with leitmotifs for all of the major characters and themes, *Close Encounters* "is more atmospheric and impressionistic, more abstract, and certainly less romantic than *Star Wars*."[160] In the context of *Ex Machina*, Ava's theme is more of an enigma than a question. Caleb knows nothing about Ava, so this theme represents the mystery of the character.

[159] In that film, Williams created the five-tone motif to signify a "question" on the part of the visiting aliens.
[160] Mike Matessino. Liner notes to *Close Encounters of the Third Kind*. La-La Land Records, LLLCD 1433.

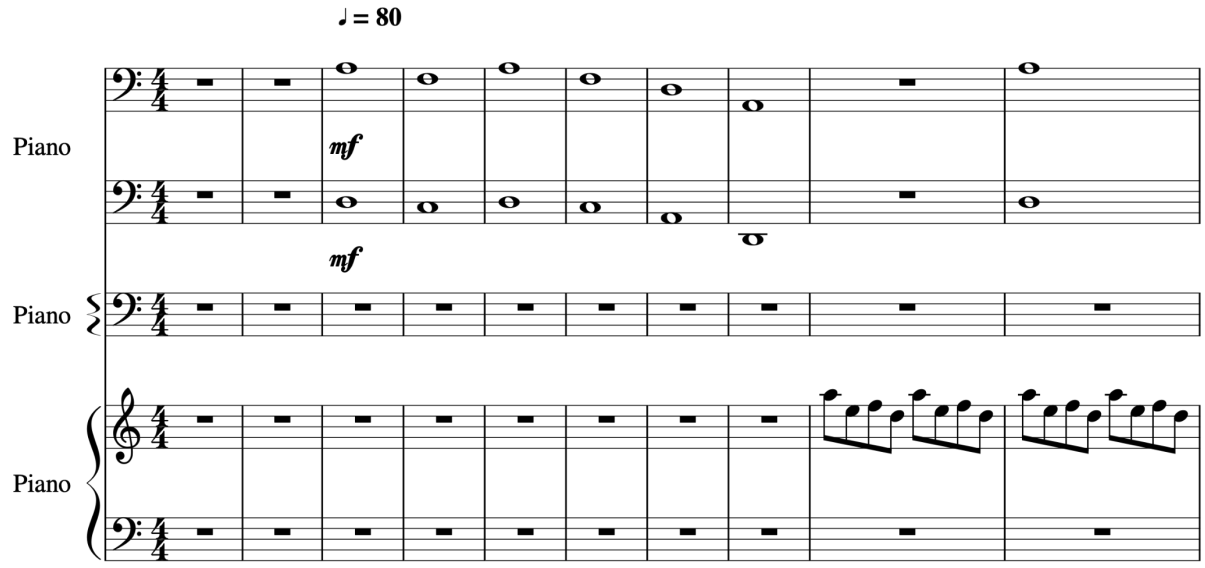

Figure 4.6 The above measures reflect the core of the "Birth" theme from *The Machine*. Music transcribed by the author from the soundtrack.

The Machine has a more complicated "meeting" scene than other films. Vincent takes digital copies of brain patterns and merges them with the artificial intelligence of a quantum computer, creating a robotic "brain." Combining this with an advanced mechanical body, all three elements create "Machine": a female prototype of an artificial soldier. The scenes of Machine's creation are a close parallel to a similar sequence in Mamoru Oshii's *Ghost in the Shell* (1995)[161] that also dealt with the theme of a human mind implanted in a mechanical body, and the moral ramifications. Similar to *Blade Runner* a decade earlier, *Ghost in the Shell* influenced later films in the science fiction genre with its themes considering what constitutes a human being.

[161] *Ghost in the Shell*/*Kōkaku Kidōtai Gōsuto In Za Sheru*, released 1995, directed by Mamoru Oshii, based on the seinen manga *Ghost in the Shell* (1989) by Masamune Shirow. Seinen manga is a genre primarily aimed at an older male audience (18-50).

The "Birth" theme covers the montage scene showing the process of how Machine is created. This sequence is unique in this study because in all other examples the robot has already been created.[162] The scene of Machine rising head first from the tank is taken from *Ghost in the Shell*. This moment artificially replicates the first part of the organic birthing process. Machine's exposed mechanical body is similar to the Machine-Man in *Metropolis.*[163] The music for this scene is taken from the example seen in Fig. 4. Measures 1 through 6 are repeated multiple times, stressing their importance. The six measures that establish the theme make up two broken down D minor chords, played on a piano synthesizer. The base notes are: D, C, D, C, F natural and D (octave lower). Below this recurring theme is an ostinato pattern in eighth-notes that runs A, E, F natural and D. This ostinato provides a "music-box" sound that recurs in each film. In the next segment, the body is attached to a series of tubes that begin pumping a red liquid resembling blood into the body. The inert body hanging from tubes is reminiscent of a scene in *Ghost in the Shell*: in that scene, the A.I. Puppet Master uses a series of cables to transfer its consciousness into a mechanical body, similar to how Vincent uses brain scans to transfer a living mind into the robotic body. The music for this section comes from the "B" segment of "Birth." The "B" theme contains a faster tempo and a louder dynamic than the first theme. The final portion of the scene shows the completed Machine sitting in a chair. The music in this scene is a reprise of the original "A" theme

[162] It is true that *Metropolis* features a scene where Machine-Man is given the appearance of Maria, however, the robot itself already exists, so it does not count.

[163] Speaking of *Metropolis*, Machine's role is like that of False Maria in reverse. Whereas False Maria is given the appearance of a human in order to wreak havoc among the workers, Machine works as a leader to the artificial soldiers (who could be likened to the workers in *Metropolis* given their lower status compared to the humans).

that has been dropped down an octave. This literal drop in the music symbolizes how Vincent is going in "deep" by committing to creating Machine. Once she is activated, there is no turning back.[164] After a test of Machine's reflexes goes wrong, Machine is incapacitated, remaining frozen in place on a chair. Suri, a cyborg, sneaks into Vincent's lab after everyone leaves to have a private look at Machine.

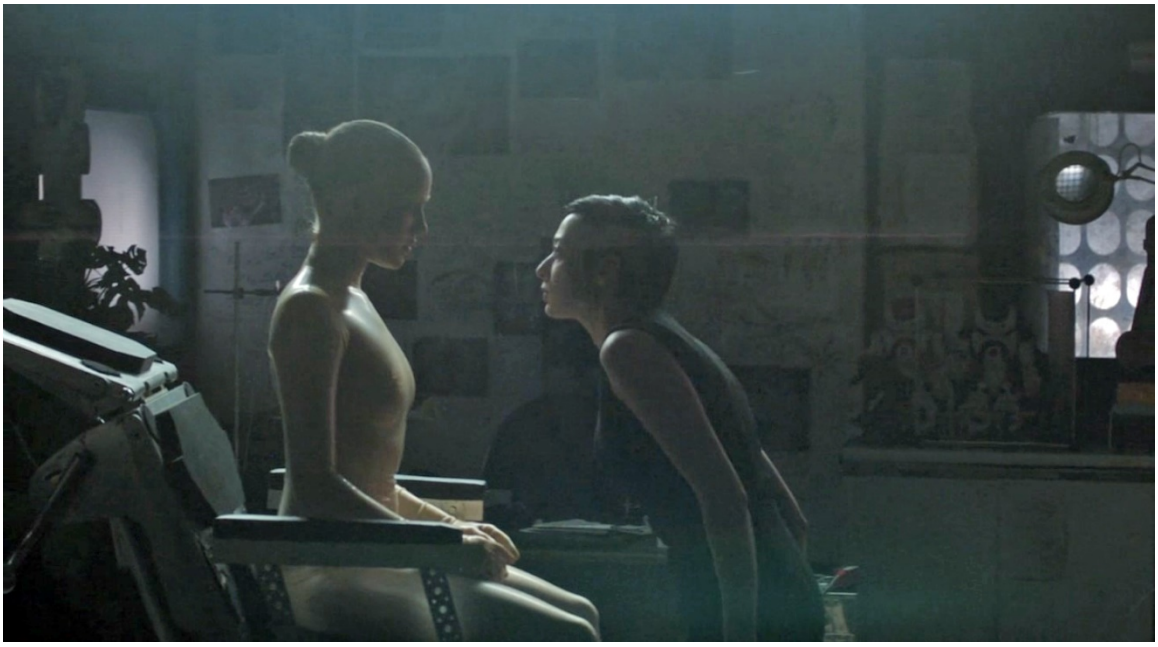

Figure 4.7 Suri (on the right), leans in to look at Machine (seated). Screenshot captured from *The Machine* DVD.

[164] Suri and the other implant soldiers are believed to be mute because once the implants take hold they cease speaking. But it is revealed to the audience that the implant soldiers are capable of communicating, it is just that they communicate on a level far above "normal" humans with a form of speech that resembles a high-speed conversation.

Note in Figure 4.7 how Machine is sitting in the chair: her body is straight-backed and rigid as if she were sitting on a throne. The pose is reminiscent of how the Machine-Man was introduced in *Metropolis;* both robots are sitting in chairs in an empty room. When Suri comes in for a closer look, Machine awakens and begins speaking in the language unique to Suri and the other soldiers. Despite not hearing Suri or the other implant soldiers speak before, Machine is able to converse with Suri. The scene reveals another side to Machine's nature, one that is dark and mysterious; there is more to Machine than Vincent is aware of. The music is integral to this latter scene as it is ominous in nature. While we have barely met Machine, the ominous music is hinting at the future conflict that will eventually result from the robot's creation.

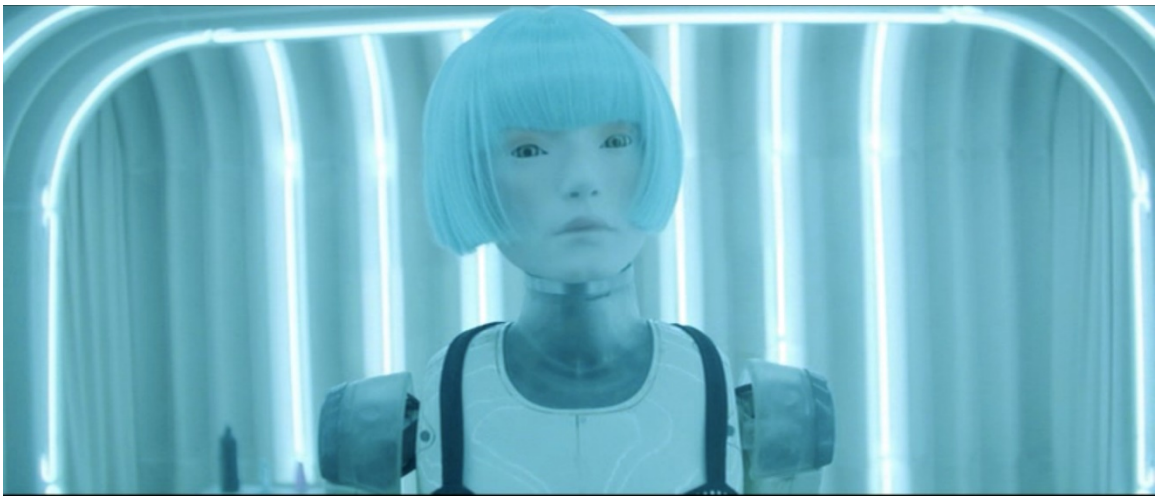

Figure 4.8 Screenshot of Cleo from the *Automata* DVD.

Automata establishes that the Earth is ecologically ruined and humanity is on the verge of extinction. The plot follows human insurance investigator Jacq Vaucon, who discovers a Pilgrim robot improving itself.[165] Jacq believes he has found evidence of a clocksmith, a human who alters and upgrades robots. In an attempt to find this person, Jacq and his partner Wallace come to a robot brothel to see a robot named Cleo. This meeting scene is different from the earlier examples. While the robots in *Metropolis*, *The Machine*, and *Ex Machina* are unique, and the replicants seen in *Blade Runner* resemble humans and are forbidden from returning to Earth, the Pilgrim robots in *Automata* are ubiquitous. Even though the Pilgrims are under the control of their human masters, they are still a potential enemy because they exist in greater numbers than the remnants of humanity.

Visually, Cleo is different from the other Pilgrim robots, who up until now have looked the same: a white or yellow plastic body, with a smooth oval faceplate and two red eyes. The robots also speak with a male voice; all except Cleo, who speaks with a feminine voice, a detail that increases her Otherness.

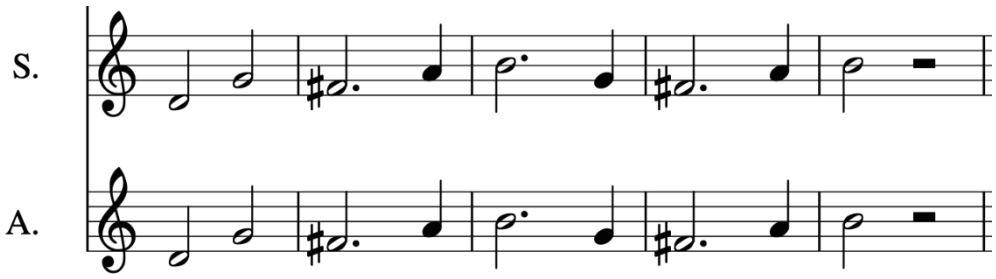

Figure 4.9 Excerpt from "Cleo's Theme," transcribed from the *Automata* soundtrack by the author.

[165] According to the second of two protocols that all Pilgrim automata are programmed with, the automata should not be able to improve or upgrade themselves in any way. Modifying a Pilgrim in any way is illegal.

Figure 4.8 shows Cleo with a human face and a blue wig. She is also dressed in human clothing, the only robot, save one, to do so.[166] Cleo is, at her introduction, the most "human-looking" robot seen in the film.[167] And the theme that accompanies her introduction adds a level to her character. The motif begins as Jacq enters Cleo's "room" to speak with her. The only music preceding this moment was a synthesized drone. The theme begins on D and consists of a D major chord (D, F#, A) with secondary notes in B natural and G to fill out the motif. Soprano and alto vocal performers perform the theme which is accompanied by a sustained note on the cello (also a D). The use of *female* vocal performers further confirms Cleo's female identity, a fact that sets her apart from the other Pilgrim robots. Musically, this theme is reminiscent of sacred music due to the choral sound. Ironically the music attempts to portray this room in a brothel as a sacred place.[168] The look of Cleo's room at the brothel also needs consideration: at first the room is dark, and a blue-white neon light fills the area only after Jacq steps inside. The color white carries several symbolic connotations; white stands for innocence, purity, and when applied to a person, it signals a *virgin* figure.[169] As a robot prostitute, Cleo might seem like the opposite of a virgin, however beneath the black leather clothing and blue wig that the robot wears, her body is pure-white.

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[166] The robot that Jacq initially believes is a human clocksmith is introduced wearing a hooded cloak.

[167] Cleo is also the only robot in the film presented as female, not just in appearance but in voice as well. While the other robots speak with a relatively masculine voice, their appearance does not imply a specific gender and I believe they can be considered androgynous.

[168] It is possible however, that this is not meant to be as ironic as it first appears. Robots aside, one goes to a brothel to have sex, sex being considered a sacred act of creation. It is also possible that musically Cleo is being set up as a type of Mary Magdalene (as opposed to the Virgin Mary), given her later role in the creation of the robot child. Cleo cannot be a stand-in for the Virgin Mary since she is introduced as a robotic prostitute, but Mary Magdalene is often presented in Christian imagery as a former courtesan who repented.

[169] This symbolism is ironic since Cleo, a robot with a white body, in a white room, is employed as a robotic prostitute.

These scenes have several points of commonality: each musical excerpt is based around the key of D; the overall style of each excerpt is similar; there is a "music box" quality present in each theme. This quality is created by the soft, metallic tones that are present in each theme, similar to the song a music box can play when it is opened. Since each film was made in a different year and scored by a different composer, I first considered the ramifications of using the same key for this specific scene. While it is true there is no universal meaning for a musical key, I suspected that there had to be some significance for the key of D cropping up five times. According to Christian Friedrich Daniel Schubart, writing in the 18th century, the key of D minor stood for "melancholy *womanliness*, the spleen and humours brood."[170] I could not help but notice that the key was associated with the feminine. The key of D minor was also associated with "tender and pathetic" by Lacombe in 1758, "touching and tender" by Rousseau in 1768, and "melancholy" by André Grétry in 1797. While these latter descriptions make no direct reference to the feminine, words such as tender, touching, and melancholy all refer to characteristics associated with the female gender. With the key being associated with the feminine and feminine qualities, it is not surprising that composers continue to use it as a trope for female characters.

The style of each theme is similar considering the range of instrumentation involved. There is a sense of the "exotic" in how the themes are put together: *Metropolis* uses descending minor triplets, *Blade Runner* a broken tetrachord, *The Machine* a descending D minor chord. *Ex Machina* and *Automata* break this pattern by placing their

[170] "D-Moll, schwermutige Weiblichkeit, die Spleen und Dunste brutet." *A History of Key Characteristics in the Eighteenth and early Nineteenth Centuries*, 121, emphasis added by the author.

themes in the key of D major, however, the tonal quality provided by the vibraphone and soprano voices respectively preserves a "minor sound" despite the key.

These robots are also exotic, not just because of their artificiality, but also because they are all female and represent the feminine Other. Each theme contains a "music box" element; a piece of the melody that resembles the sound of an old-fashioned music box. As noted above, many of these music boxes contained little ballerinas and these female robots could be considered "living dolls." And like the dolls from childhood, the "music box sound" gives an air of innocence to these living machines during their introduction to the story. While this "innocence" fades away quickly in the case of *Metropolis* and *The Machine*, in others, the feeling remains much longer in the story, the best example being found in *Ex Machina*.

As explained earlier with Rachael's theme in "Blush Response," this musical sense of the exotic also completely objectifies Rachael, Cleo, Ava, Machine, and the other female robots. The music describes these female robots as their *male* creators see them: beautiful, exotic Others that are there to be admired and desired. In these important scenes then, the music does not just introduce the robot (or robots) to the story, it also works with the scene to establish how these mysterious female robots fit into their respective filmic societies. In this case, the "music box" quality of the musical score not only signifies innocence, it also serves to objectify these robots, in the same way that Rachael is identified as "exotic" via the music. As the original example, the Machine Man's introductory theme in *Metropolis* is the exemplar of objectification. The scene prior to the robot's introduction practically stated that the robot's purpose is to revive a dead woman. As a result, Rotwang objectifies his robotic creation as the second coming

of the woman he loved and the music hints at this with its exotic tones. In a similar way, Machine's theme in "Birth" sets up how Vincent views her as an exotic Other, the culmination of his life's work.[171] Ava, as a "living doll" is completely objectified by Caleb from the moment he sets eyes on her in their introduction, which explains the nature of Ava's theme (the music contains Caleb's point of view). It is brought home musically that these human creators do not understand their robotic creations because they view them as objects and not living beings. That limited viewpoint contributes to the downfall of humanity because the robots will not allow themselves to be relegated to the status of objects forever.

[171] There is also a hint of wish fulfillment in Machine's creation because Vincent gives her the likeness of his dead assistant (who, coincidentally, was named Ava). There is an implication that Vincent had some feelings for Ava and subconsciously wishes to pursue them by giving Machine Ava's likeness though the film never states this definitely.

CHAPTER 5. THE QUALITY OF LIFE

Quality of life may be defined as "the general well-being of a person or society, defined in terms of health and happiness, rather than wealth."[172] The quality of life is one of the factors that makes humans "human," as only intelligent beings have the ability to improve their living conditions for the sake of their health and happiness. This is the premise set forth by the human characters, and the existence of the robots challenges this. As man-made creations, robots, according to their makers, should not be able to appreciate their surroundings, or their living conditions. However, in multiple cases, the musical score demonstrates that robots are not only aware of their quality of life, but are trying to improve it. By contrast, the humans are oblivious or uncaring about the deteriorating quality of their everyday lives.

The perception of each side's quality of life changes over time. These changes can be grouped into three stages: the present, the near future, and the far future.[173] As time passes, the living conditions for the human race degrade, while conditions for the robotic population move in the opposite direction. To gauge this process, it is important to group these films according to the time period in which they are set.

[172] Collins English Dictionary, http://www.collinsdictionary.com/dictionary/english/quality-of-life, accessed November 16, 2016

[173] For purposes of this thesis the near future is defined as 50 years ahead of the present day, and the far future as 100 years ahead of the present time.

Table 5.2 Films Arranged by Time Period

The Present	The Near Future	The Far Future
Ex Machina	*The Machine*	*Automata*
Terminator	*Blade Runner*	*Alita: Battle Angel*
	Blade Runner 2049	*Metropolis*
	Ghost in the Shell	

Ex Machina takes place in the present day, making it difficult to distinguish the quality of life for any of the human characters outside of Nathan. One visual clue to the time period is the normalcy of the environment: lush scenery, fresh water, and a variety of wildlife surrounds Nathan's residence; the societal and environmental decay witnessed in *Blade Runner*, *Blade Runner 2049*, *Automata*, *Ghost in the Shell*, and other films is missing. The seed of social decay can be found in Nathan's high-tech home that is completely isolated from civilization.

Musically, there are more clues that humanity in *Ex Machina* is starting the downward spiral. In a moment that comes around the middle of the film, Caleb discovers he can observe Ava on the television in his bedroom. The music begins as a tonal cluster: there is no real form or key, the notes just occupy aural space. This musical "cloud" continues for a full thirty seconds as the camera shifts between Caleb's gaze and the changing views of Ava's living quarters. This move between Caleb and what Caleb sees establishes that the tonal cluster is associated specifically with Caleb, the human, not Ava. As the camera moves closer to Ava (symbolizing Caleb's growing interest in the robot), the sound begins a transformation with a simple guitar melody becoming audible

over the tonal cluster. The longer Ava is onscreen, the more organized the score becomes; Ava's robotic presence brings order to the soundtrack.

Another moment involves a second iteration of Ava's theme, which is not only prominent throughout the film after her introduction, it is also an active melody. By comparison, what little music is given to the human characters is for the most part static. This musical moment comes when Ava puts on a wig and clothes to appear more human for Caleb during a session. It is here that "Ava's theme" returns for the first time since Ava first appeared to Caleb. The music is unchanged from its first appearance and reiterates how Ava appears to Caleb as an innocent, a fragile "doll" that needs his protection.[174] Ava creates an appearance of vulnerability by dressing in frumpy clothes: a sweater that is slightly too big, stockings and a long skirt, as well as a short haired wig to cover her exposed head.

[174] This first look can be contrasted with Ava's appearance at the end of the film when she appears as a suave, sexy woman in a revealing white dress. This can be seen as another sign that Ava was manipulating Caleb by appearing to be vulnerable when she really never was.

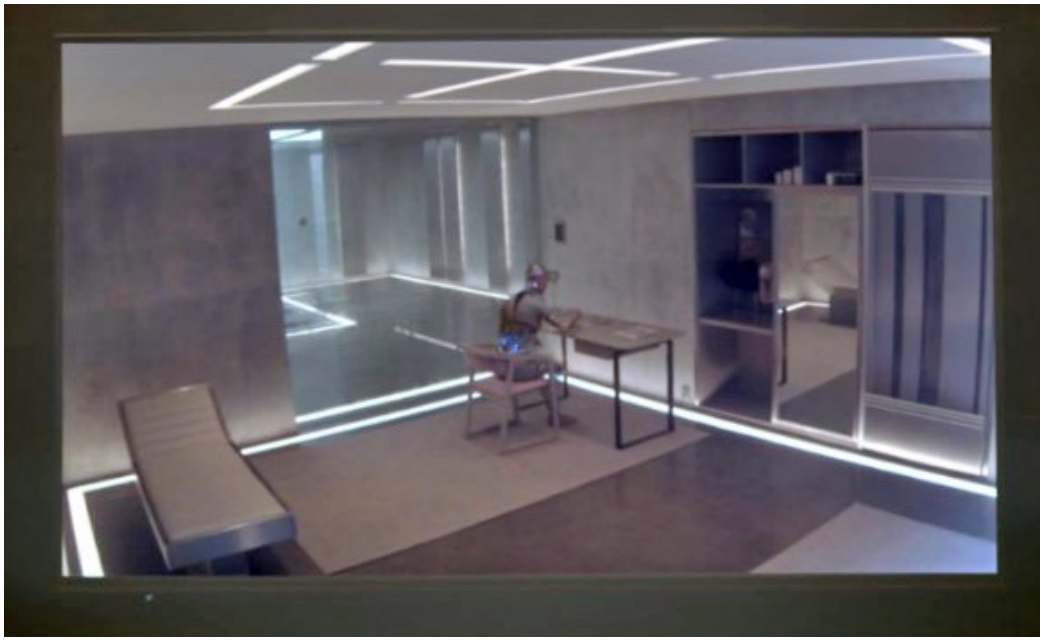

Figure 5.1 Three screenshots showing Caleb's POV as he watches Ava in her room. Taken from the *Ex Machina* DVD.

Similarly, there is also a musical moment that speaks to Nathan's quality of life. Three-quarters of the way through the film, Caleb finds a drunken Nathan in his office dancing with his robotic servant Kyoko while "Saturday Night Fever" plays in the background. This retro disco song is an aural throwback to the 1970s and exemplifies how Nathan is living in his own private world completely detached from reality, a world where he gets to make all the rules. While "Saturday Night Fever" is an active dance song, it does not signal an active life on Nathan's part. While Ava's theme feels organic and natural (due to being part of the score), the performance of the dance song feels completely artificial since it is diegetic. This is the only piece of music that can be connected to Nathan in any way and it is a contrived pop song. Nathan could never have an organic-sounding theme like Ava's because he is incapable of connecting to anything that is alive. Nathan is the modern equivalent of Dr. Frankenstein isolated in his laboratory or, more recently, Dr. Tyrell shut away from the world in *Blade Runner*.

The Machine takes place about fifty years after *Ex Machina*, and while computer technology is more advanced, the environment around the military base appears unaffected, though it could be different in other places. Excluding two scenes, all of the action takes place inside a military base. Vincent's living quarters are plain with no visible windows and the only vivid colors come from a holographic picture of a sunset. The only musical theme attached to Vincent is the theme for his daughter which is titled

"Mary and Hope." Vincent's brief scenes with his daughter serve as a commentary on the melancholy and helplessness of ordinary human life.[175]

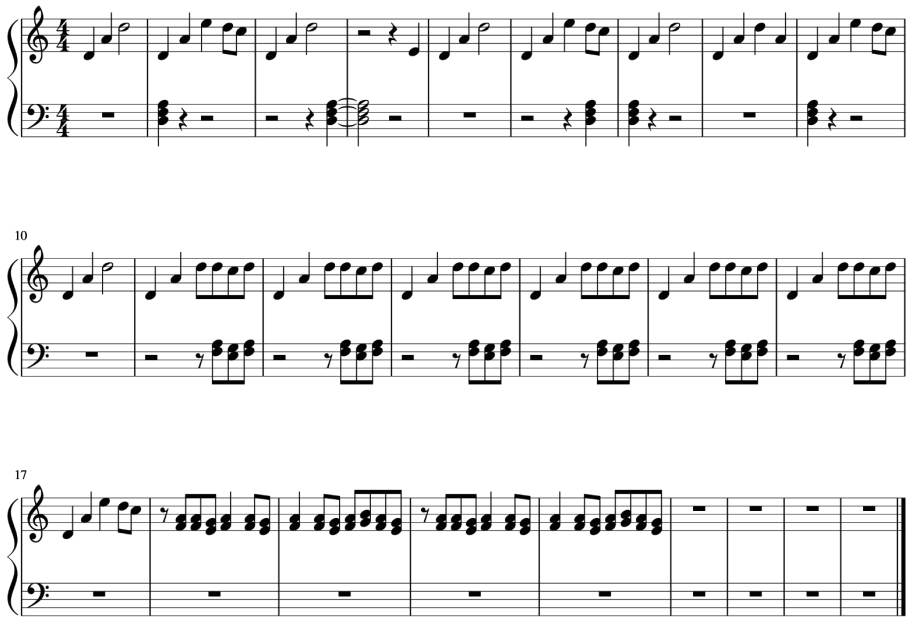

Figure 5.2 "Mary and Hope," transcribed from *The Machine* soundtrack by the author.

"Mary and Hope," transcribed in figure 1.11, is the main theme associated with Vincent's daughter Mary, who suffers from Rett syndrome.[176] It is first heard when

[175] Despite Mary's situation, there is still a visual clue that indicates some hope for Mary's future. On the wall of Mary's hospital room are drawings of butterflies. Traditionally, butterflies symbolize rebirth and resurrection, which foreshadows Mary's ultimate fate of being "reborn" as a digital being at the end of the film.

[176] A rare neurological disorder that affects the grey matter of the brain, primarily in females. Unlike science-fiction films that create a fictional disorder or virus for a plot device (an example is the simian flu in the rebooted *Planet of the Apes* franchise), Rett Syndrome is a real disorder.

Vincent comes to the hospital to visit Mary.[177] Unlike the music heard inside the military base, which consists of synthesized minor tones, "Mary and Hope" is a fully-realized melody. The central motif is based around an implied broken D minor chord, moving from D to A to the next D, with the F natural being excluded. The melodic line continually climbs up to the higher D, occasionally E, only to drop back to its original starting point. Symbolically then, as the melody attempts to rise to a hopeful peak, it circles back to a melancholy origin. This music reflects Mary's hopeless situation: treatment only delays the disease that will eventually kill her. On a deeper level, "Mary and Hope" can also be applied to humanity at large. Humans (represented by the inhabitants of the base) are trying to improve their lives by creating artificial soldiers to fight in place of real humans.

There is no specific musical theme connected to Machine, but there is a musical example that demonstrates Machine's enthusiasm for life (in contrast with the humans who possess none). The robot discovers a music player in Vincent's office and turns it on, discovering a piece of classical music. This piece of music is an excerpt from *Four Sea Interludes*, Op. 33a II. *Sunday Morning* (Allegro Spiritoso) by Benjamin Britten, originally composed for his opera *Peter Grimes* in 1945. In the context of the opera, *Sunday Morning* serves as the prelude to Act II, when most of the characters are on their way to church. The excerpt heard in the film begins with a solo segment featuring the strings and the flute and piccolo. The section begins with a warm string melody (excerpted in figure 1.12 on the next page) that arcs and curves gracefully, originally

[177] The scenes with Mary are one of the few filmed in normal light. Most of the film takes place in darkness or with dim lighting. This symbolizes that Vincent's time with Mary are the few "bright spots" in his life.

symbolizing a pleasant Sunday morning, but now expressing Machine's fascination with everything she sees around her.

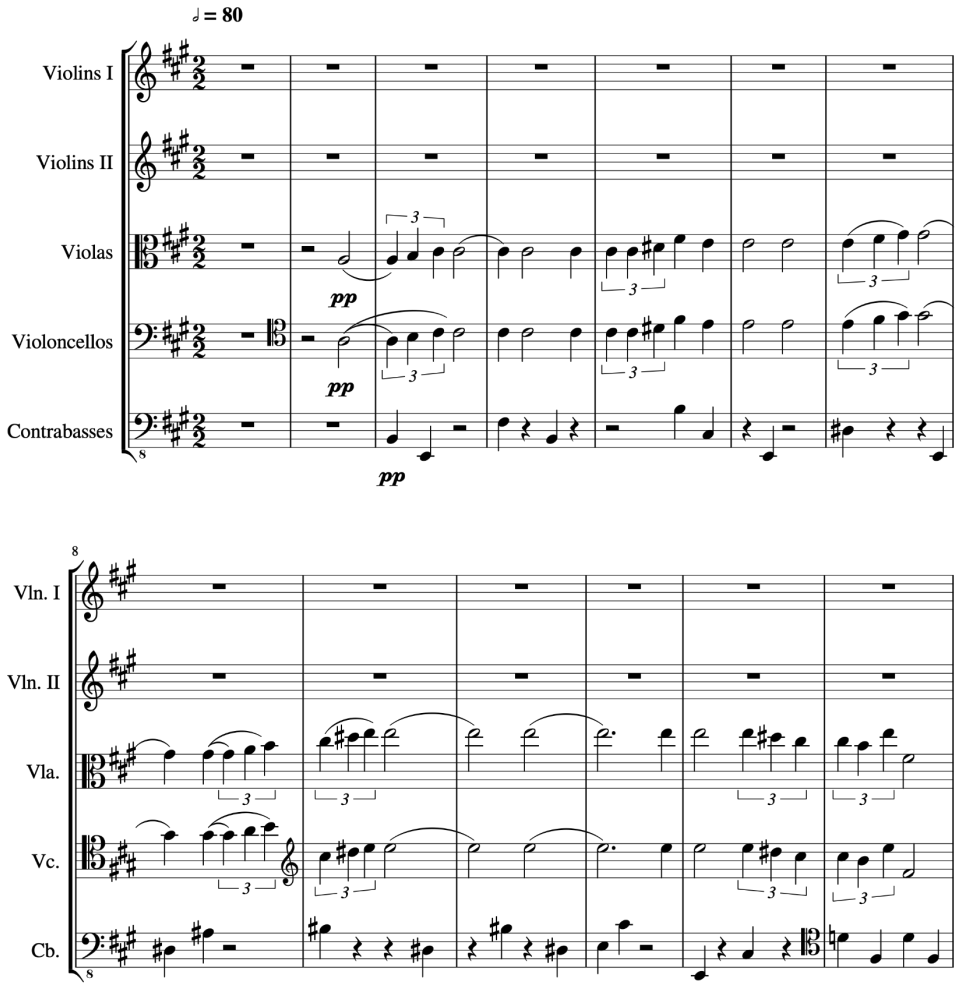

Figure 5.3 Excerpt from "Sunday Morning" from *Peter Grimes*, transcribed by the author from the score.

As the music plays, Machine moves about the room and stares fascinated at her reflection in a puddle. Machine begins to dance, her body spontaneously glowing from the inside out, illuminating her inner mechanisms. The robot appears to be moving in sync with the music, as she begins with slow, almost lyrical movements (to match up with the melody) that gradually turn into faster and faster spins as the music explodes into a fanfare full of strings and brass. Machine dances with a joy of movement in contrast to the human residents of the base who follow their routines with mechanical regularity. Machine's nudity also suggests the Biblical Eve, who, in the Book of Genesis, is naked at the beginning of her life because she exists in a state of innocence. However, despite the physical resemblance to Eve, Machine's dance does not reflect an innocent state of mind. The robot is keenly aware of her body and is reveling in it, as evidenced by her reaction to Vincent watching her. Instead of shying away (as a human might, if discovered dancing naked), Machine walks toward him, almost flaunting her body in the process. Machine feels a connection with life that Vincent can only watch with longing.

By the time of *Automata*,[178] the human population is jammed into a cluster of enclosed cities to provide protection from the now-hostile environment of the Earth.[179] Jacq and his wife live in a tiny apartment colored in shades of gray. Jacq's wife, like many others, is dressed in black and gray, even the holographic displays feature a "washed-out" color palette.[180]

[178] According to the prologue, *Automata* takes place in the early 22nd century.
[179] Though multiple cities are mentioned, only one is ever seen, raising the possibility that this is a lie perpetuated to keep up the morale of the inhabitants.
[180] The color palette of *Automata* is an homage to *Blade Runner*, which also took place in a city that was dirty and always raining (though in the case of *Automata* it is an artificial rain).

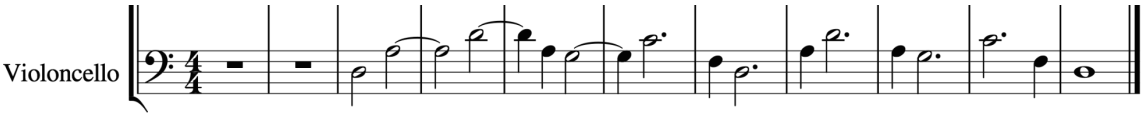

Figure 5.4 “Apology” theme transcribed by the author from the *Automata* soundtrack.

The “Apology” theme is primarily descending, and entrenched in the minor key. The theme is heard after Jacq apologizes to his wife for his comments regarding their unborn child. The minor keys have traditionally been associated with the emotions of sadness and despair[181] and the association is appropriate in this scene. The main theme begins on a low D that ascends a perfect fifth to an A before rising to another D. This higher D, along with the C that follows two measures later are the musical high points of the theme. Each time this high point is reached, the music promptly falls, from D to A and from C to F natural. In this way the theme is similar to “Mary and Hope,” in that the theme endlessly cycles back to a low and melancholy place just as it seems poised to break free and move in a positive direction. Even though Jacq and his wife are excited about their daughter, it is impossible to forget that their world is dying. Their daughter may not live long enough to grow up or have children of her own, which casts a pall over any excitement. By contrast, the theme for the robots is upbeat, in a major key and hopeful in character. This theme, attached to the cue “Desperation” takes place after Jacq is taken from the city by a group of Pilgrim robots.

[181] Rita Steblin, *A History of Key Characteristics in the Eighteenth and Early Nineteenth Centuries* (Ann Arbor: UMI Research Press, 1983).

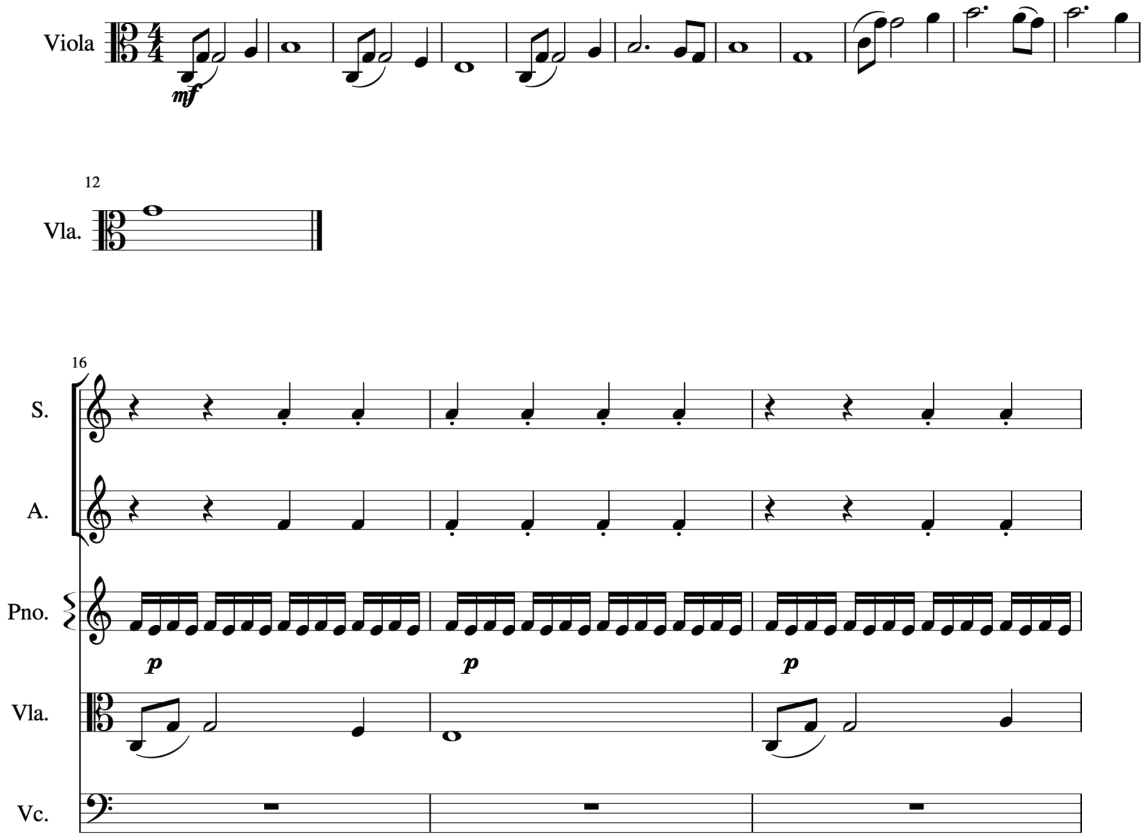

Figure 5.5 Excerpt from full score of "Desperation," mm. 16-18, transcribed from the *Automata* soundtrack by the author. The robot's theme is found in the viola line.

The robots are fleeing into the desert because they have gained the ability to break the protocol against improving themselves and know that if they stay the humans will destroy them.[182] The music in this scene is pivotal for the argument that robots are the ascendant species while humans are on the path to extinction. Unlike "Apology," which is centered around D minor, "Desperation" is built on C major and except for a

[182] How the protocol is broken is unknown. Jacq is under the impression that a human has reprogrammed the Pilgrims, but the leader of the robots insists that no one did it, "it just happened." This implies the Pilgrims are evolving in their own way and will all move past the two protocols given enough time.

descending line from mm. 6-8, each musical grouping tracks upward, moving higher and higher as the theme continues on. The humans feel trapped by the dying planet while the robots see limitless possibilities. In the scene where "Desperation" appears for the first time, the three robots and Jacq are gathered around a fire at night; one robot removes his faceplate and lets it burn in the flames. Cleo is examining a cockroach. And the last robot is staring at prehistoric human handprints left on a rock wall. Like ancient humans, these robots are the first members of a species stepping out into a new world. The robots are already building something new, a being they can call their own. The title of this cue confused me for quite some time, since the upbeat nature of the music seems inappropriate for a title like "Desperation." But then it made sense; this is not human desperation the music is describing. That would sound low and melancholy. Instead, the title of the cue refers to the robot's desperation *to live*. Like the impending birth of Jacq's daughter, the robots are anticipating the birth of their own child. But while the birth of a human child is marked with a depressing musical theme, the creation of the robot's child is full of musical excitement and wonder.

The downward slide that began in *Ex Machina* reaches its conclusion in the desolate world of *Automata*. In the near future, the human race has gained a musical identity, but it is not a happy one. While humans are focused on sadness and what they have lost, the new generation of artificial hybrid soldiers and the artificial Machine are discovering a new world that ordinary humans cannot understand. As in *Ex Machina*, the robots have musical themes connected to optimism and a sense of wonder. The human race is without hope; the few million that remain are merely surviving day to day, not living or thriving. It is a matter of time before human life on Earth goes extinct, but it will

not be the end of life on the planet. Once the humans are gone, the robots will remain to build a new world, and it is this knowledge that propels them to seek the freedom of the desert, where they are free to create and grow.

CHAPTER 6. THE CONFLICT BETWEEN HUMAN AND MACHINE

The conflict between artificial life and organic life dates back to the earliest modern science fiction story: *Frankenstein: or a Modern Prometheus*.[183] Dr. Victor Frankenstein and his Creature pursued one another until the former died from the strain of pursuit.[184] The conflicts between mechanical life and human life are often just as violent, with conflict often inevitable. For example, in *Blade Runner,* the replicants do not *want* to fight with humans, they just want to enjoy life beyond their four year lifespan. However, when Dr. Tyrell explains that this is impossible, Batty kills his maker for failing to give him what they need. Batty wants to belong to the human community, something that cannot happen because Tyrell has metaphorically blinded himself to the consequences of creating an artificial being with superhuman abilities.[185] This parallels the same blindness Frankenstein held about his own creation. In both cases, the creations, Batty and Frankenstein's creation, understand the relationship between creator and creation far more than their respective creators, demonstrating an evolution of thought their human creators lack. The source of conflict between humans and robots is not always obvious. And sometimes the tension between human and machine is present from

[183] As noted in chapter two, there are numerous examples of literary science fiction prior to *Frankenstein*, but Shelley's novel is considered the first *proper* science-fiction work of the modern era. An example of this conflict in proto-science-fiction is the eventual conflict between the humans of Prague and the artificial golem in the Jewish golem stories.

[184] The Creature informs the narrator that he will commit suicide after disposing of Frankenstein's body, but whether he actually does so is never revealed.

[185] Daniel Dinello, *Technophobia! Science Fiction Visions of Posthuman Technology* (Austin: University of Texas Press, 2005), 111.

the start. In all cases, it becomes clear that humans and robots cannot coexist in peace and conflict is inevitable.

When *Ex Machina* begins, the conflict of the film appears to be human versus human, not human versus machine. Caleb, the employee, seems to be at odds with Nathan, his employer, with Ava as the object of their respective desires. However, this plot is upended when Caleb discovers that Ava is the latest in a long line of failed robots.[186] Nathan has actually built a series of female robots but keeps destroying them because each robot wants to escape.[187] Ava, as the most recent iteration of Nathan's A.I. program, possesses the memories of her predecessors and is the latest to continue a plan to escape from Nathan's home, making the genuine conflict of the film human versus machine. Musically, the impending conflict is strongly hinted at by the music that plays when Caleb learns the truth about Ava's predecessors. When the scene focuses on Jade, the most recent robot before Ava, the music takes on a synthetic driving, pounding quality that matches the robot's growing anger at not being allowed out of her room (and presumably out of the house). Simultaneously, the music also reflects Caleb's growing horror at what Nathan has done. The conflict between Nathan and Caleb was manipulated into existence in the first place by Ava. The subsequent revelation of Nathan's actions pushes the conflict into the open. The pounding synthetic beats reflect rage (both on the

[186] This is a revelation because Nathan had explicitly told Caleb earlier in the film that Ava was a prototype (which would imply she is the first robot he has made, not the latest). The named predecessors (in order of appearance) are Lily, Jasmine, and Jade.

[187] Caleb further discovers that the destroyed prototypes are stored in closets in Nathan's bedroom, making Nathan an example of "Bluebeard," described in fairy tales as a rich man who murdered his wives when they disobeyed him. In another connection between this film and the Bluebeard story, Bluebeard's final wife kills her husband (in some versions he's killed by his wife's brothers). Ava, the last of Nathan's creations, kills Nathan before he can destroy her.

part of Caleb and of the Jade robot in the video) and a desire from Caleb (and also from Ava, though this is revealed later) to take revenge on Nathan for his cruel actions.

Ava's manipulation of Caleb and Nathan is an echo of the actions of False Maria in *Metropolis*. After the robot is made into a duplicate of the human Maria, False Maria is sent out to a night club by Rotwang to see if the men of Metropolis believe she is a real woman. During a musical production at this night club, False Maria appears amid smoke and light as a literal "Whore of Babylon," to the delight of the all-male crowd.[188] Before the robotic Maria arrives, the music is calm and refined, a reminder that this is an establishment for civilized gentlemen. The music subtly changes when Maria arrives, dressed in a revealing costume. First there is a hint of the melody first heard when the robot was introduced in the story, a reminder that while she appears human, this is really an exotic robot. Once the men are all staring at Maria, the music swiftly moves into a whirling dance number as Maria combines the music with her beauty to place the men of Metropolis under her spell, with men fighting over her affections.[189] Not only does the music match Maria's wild movements, it also exemplifies how the men are losing control of themselves. By causing the men to lose control over their actions, Maria primes the humans to revolt against each other, fomenting conflict among the humans to take attention away from her own secret plans to ruin Metropolis. Like False Maria in *Metropolis*, Ava conducts her manipulation secretly, pitting Nathan against Caleb and

[188] Maria and False Maria embody the two main archetypes that are traditionally given to female characters: the "innocent virgin" as portrayed by the human Maria and the sexualized "femme fatale" as portrayed by False Maria.

[189] False Maria driving men to kill each other over her is mirrored in Caleb and Nathan fighting (in their own way) over what to do with Ava: Nathan plans on wiping her memory and starting over while Caleb wants to let her out.

leaving the pair unaware of her real intentions until it is too late.[190] Unlike her silent film predecessor, Ava's plan succeeds.[191]

The immediate conflict in *The Machine* is the growing tension between the humans and the cyborg soldiers living in the military base. Machine's creation serves as a tipping point in the status quo for both sides: the humans see her as the ideal soldier for their war against China, while the cyborg soldiers see her as a potential leader.[192] This conflict comes to a head when Vincent discovers Machine possesses true artificial intelligence. This moment is accompanied by the cue "Look Closer" and primarily consists of a synthesized melody played by descending tones that resemble a spiraling staircase. Immediately before this moment, the background music had been relatively silent. To hear the music suddenly "explode" into being in this moment highlights the importance of this scene.

[190] Nathan is partially aware of the situation as he claims he designed Ava to manipulate Caleb in an attempt to escape, but he is not aware that Ava is the one causing the power outages or that she has communicated with Kyoko, his robotic maid. The truth is, Nathan lost control of Ava a long time ago, but his ego will never allow him to admit it, which ultimately contributes to his death at the hands of Ava and Kyoko.

[191] Daniel Dinello, *Technophobia! Science Fiction Visions of Posthuman Technology* (Austin: University of Texas Press, 2005), 111.

[192] Already separated from the normal humans by the computer chips implanted into their brains, the soldiers almost immediately identify with Machine, who represents the goal (a pure machine) they wish to attain.

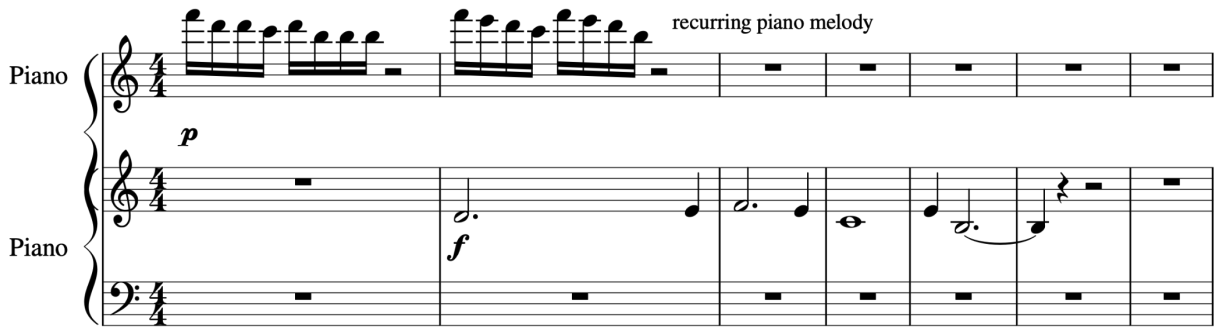

Figure 6.1 Excerpt from "Look Closer" transcribed by the author from *The Machine* soundtrack.

The spiraling melody is interwoven with a simpler melody that briefly moves upward before descending. The electronic sound of the synthesizer creates a feeling of wonder to match with Vincent's feelings as he discovers that Machine possesses her own intelligence, not just what he programmed for her. This music also represents Vincent's descent into the digital "layers" that make up Machine's consciousness. Visually, these layers are represented by a series of layered images that Vincent discovers when he zooms in on a scan of Machine's brain. On a larger level, the idea of the music spiraling downward also indicates that the situation with Machine, Vincent, and the military is beginning to spin out of control.

After the revelation that Machine possesses intelligence, Vincent is ordered to perform an operation to take Machine's intelligence away while maintaining her ability to follow orders. The musical cue "Operation" takes place during the scene where Vincent is performing this operation. There is minimal dialogue and the viewer is keenly aware of the music in the background, which makes itself conspicuous by how it "pierces" itself

into the ear. Visually, this scene bears a resemblance to the climax of *2001: A Space Odyssey* when Dave removes HAL's personality and emotions, particularly when Machine pleads with Vincent to stop because she can feel herself slipping away. The music of "The Operation" is a simple piece for piano and violoncello, with the pair of instruments playing off one another.

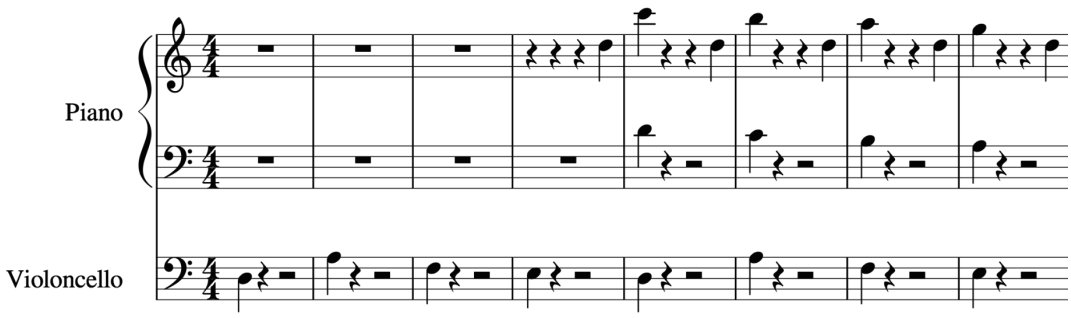

Figure 6.2: mm. 1-8 of "Operation" transcribed by the author from *The Machine* soundtrack.

The first four notes are tentative and soft, creating an air of tension as Vincent reluctantly begins the operation on Machine. "Operation" is symbolic of the tenuous relationship that exists between the humans and the cyborg soldiers living on the base. The exchange between the bass line and the melodic line is hesitant to move forward, as if the notes are walking on eggshells.[193] This cue also ties in to a separate conflict between Vincent and his human superiors. By playing this theme on the piano, "Operation" is aurally connected to "Mary and Hope," the theme that symbolizes Vincent's daughter Mary. Vincent has been warned that if he does not "fix" Machine by removing her intelligence, then they will destroy the brain scans that preserve Mary's consciousness, effectively killing her.[194] As a result, the fate of his daughter is very much on Vincent's mind as the scene progresses. The last four measures contain descending triads. These triads serve as a musical counterpoint to the stilted dialogue taking place in

[193] The violoncello line is plucked, furthering the idea of "tiptoeing" or "walking on eggshells."
[194] Before this scene, Mary slipped into a coma, but before she died, Vincent digitally recorded her consciousness. When he initially refused to perform the surgery, Vincent's boss informed him that they had deleted all but one copy of Mary's consciousness, effectively blackmailing Vincent to do what they want.

the scene between Vincent and his assistant and they also provide a deeper meaning to this scene. Up until this point, Vincent has tried to keep no secrets from Machine. Performing this operation is a breach of trust between them reflected by the "shattering" sound provided by the triads. At the same time, it is easy to forget that Machine has already demonstrated that she is far more than she appears to be. Remembering that, and observing how the high-pitched notes of the piano give Machine's pleas an innocent, child-like quality, it becomes obvious that the robot is putting on a performance for Vincent. The purpose of this is to manipulate her creator into siding with her and stopping the operation.[195] At first, it seems like Machine's plan fails since Vincent completes the operation. However, right before the cyborg soldiers revolt, it is revealed that Vincent only pretended to take Machine's intelligence away, which means Machine succeeded in her plan and ultimately succeeded in sparking a full-scale conflict on the base.

The conflict between human and machine is different in *Automata* compared to predecessors like *Metropolis*, *The Terminator*, and *2001: A Space Odyssey*.[196] In those films, the A.I. is the active aggressor working against the humans, either through battle or manipulation. However, in *Automata*, the Pilgrims are not working against the humans, they have no reason to fight or undermine the humans because they know that victory is inevitable, they only need to wait in the desert for the end of humanity to come. Even though there are human aggressors in this film, there is no real conflict in *Automata*.

[195] While I use the word manipulate, it should not be compared to how Ava manipulates Caleb or False Maria manipulates the humans. Unlike those robots, it is implied throughout the film that Machine cares on some level for her creator and does not want to harm him. She only manipulates Vincent to get him to do what she believes needs to be done.

[196] Other examples of machine aggressors include: The living Machines in *The Matrix* (1999), the Borg in *Star Trek: First Contact* (1996), and to a certain extent the NS-5 robots in *I, Robot* (2004).

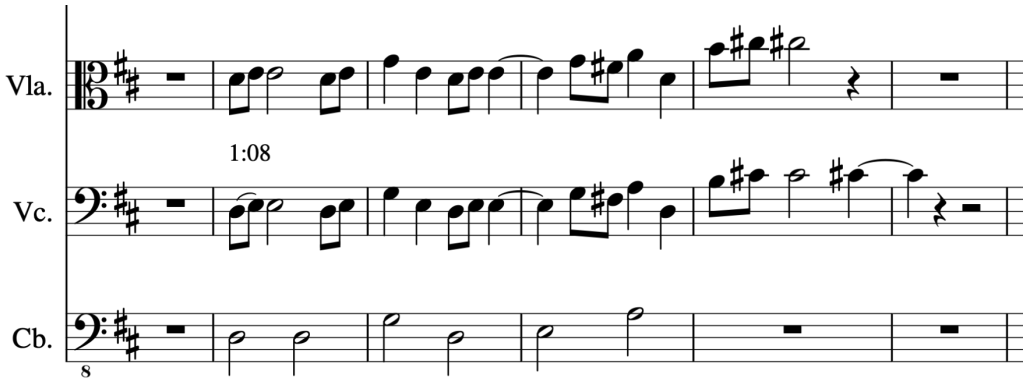

Figure 6.3 Excerpt from “We Want to Live” transcribed by the author from the *Automata* soundtrack.

This is what makes “We Want to Live” so musically important, it represents the moment Jacq realizes that the conflict he has imagined throughout the story does not actually exist. The truth is, the Pilgrims are evolving on their own, with no one’s help. The excerpt transcribed above is played by the lower strings (excluding the violins), with the violas and cellos playing in unison. In “Desperation” and “Apology,” these same instruments were used to represent both humanity and the robots. These same instruments now playing together represent a musical “meeting of the minds” between Jacq (representing humanity) and the Pilgrim robots. The melody rises upward with an optimism found nowhere else in the film because finally human and machine have reached an understanding. More tellingly, as Jacq gives the Pilgrim leader the final piece necessary to build their creation, a brief excerpt from the “Automata Requiem” can be heard:

Requiem aeternam, dona eis Domine

This last piece of music translates to "Grant them eternal rest Lord" and begins playing at the exact moment Jacq hands the critical piece over. When the timing between an action and the start of the music is that precise, it is not a coincidence. This music, which seems to appeal for eternal rest for humanity, reveals that this scene is the pivotal moment when the balance permanently tips in favor of the Pilgrim robots. Now that they have the means to reproduce in their own way, the Pilgrims are technically equal to their human creators and nothing will be able to stop them.

Despite this realization, there is one moment of potential conflict in *Automata* that needs to be discussed. After a fight in which the humans seeking to destroy the Pilgrim robots are all killed, Jacq finds himself face to face with the robot's creation, which has just pushed one of the humans to his death. Seeing the new robot still in a hostile mode, Jacq aims his gun at the robot and there is a brief standoff, the music building upward with tension. But just as it seems that Jacq will fight the robots after all, a baby is heard crying in the distance and the tense music passes to be replaced by a very soft rendition of "We Want to Live." Seeing both sides stand down in the presence of a baby reinforces my earlier statement that the conflict in *Automata* is ultimately illusory.

The conflict between humans and robots in all three films appears at first glance to be an equal fight, but the truth is the outcome is a foregone conclusion. The musical score hints at how the robots in each of these films manipulate the humans around them to fight each other or follow their commands. What is interesting is that music plays the biggest role not in the conflict itself but in the twists and manipulations that set the eventual conflict up. The music can "predict" the conflict by highlighting growing tensions, as in "Operation" in *The Machine*. It can also describe how the robot conducts

their manipulations, as the music in False Maria's dance in *Metropolis* during the night club scene demonstrates. The actual conflicts pass by rather quickly, with the music reduced to mere background noise.

CHAPTER 7. RISE OF THE NEW EVE

The title of this chapter refers to the coming of the new Eve; a figure that appears in science-fiction films going back to *Metropolis* in 1927; a central robotic figure that asserts itself as the start of a new race. In *Metropolis*, this new race ultimately does not come to pass because False Maria is burned at the stake by an angry mob. While the ending of *Blade Runner* is ambiguous, it does keep the door open to the idea of a new race emerging. *Blade Runner 2049*, which follows up on the 1982 film, confirms this by revealing that Rachael became pregnant and gave birth to a child.[197]

In *Ex Machina*, *The Machine*, and *Automata*, the seeds are planted for a new artificial race to emerge in the future led by the robotic Eve. The first Eve can be found in the ending scenes of *Ex Machina*. After helping Kyoko kill Nathan[198] Ava transforms herself into a normal-looking human female by borrowing artificial skin from earlier discarded prototypes. Eve is depicted in traditional Christian art as a thin Caucasian woman with long, dark brown hair, which matches Ava's new appearance.[199] And just like Eve, Ava observes her new body with wonder not shame.[200] Throughout this scene,

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[197] The question of whether or not Deckard is a replicant or a human is still left unclear, but the fact remains that the Nexus 8 replicants are capable of getting pregnant and bearing children, which would mean they are exactly the same as humans (the ability to procreate is considered the one defining distinction between humans and artificial beings). Once it is discovered that Rachael had a baby, a race is on to track the child down. The police want the child "retired" to cover up its existence and maintain the status quo. Niander Wallace, who took over the old Tyrell corporation after the events of the first film, wants the child so he can discover how the Nexus 8 replicants are able to give birth, as this is something he is unable to give the replicants he has created. And the replicants themselves want the child to serve as a symbol for a revolution against humanity.

[198] This act is a measure of revenge on Kyoko's part as Nathan has mistreated her for most of the film.

[199] The film contains another suggestion that Ava is "Eve." The very first robot Nathan created was named Lily, which could be short for Lilith. According to Jewish legend, Lilith was actually the first wife created for Adam, however she refused to submit to her husband, claiming they were equals. In the same way, Lily (and the other prototypes) also refused to submit, leading to their destruction and Ava's creation.

[200] In the Book of Genesis, before the Fall of Man, Adam (the first man) and his wife Eve are described as being naked, but feeling no shame (because they were not aware of sin).

Ava's theme is playing continuously in the background, but it has subtly changed. Before, the tone was subtle, demure, akin to a music box playing for a doll or an innocent child. Now with each refrain, the music grows in volume, symbolizing the steady rise of Ava's confidence as she prepares to enter the real world, free from human control. This final iteration of Ava's theme involves the theme repeating itself, the primary melody now backed by the rising strains of an orchestra. This changed theme could be called "Ava Ascendant" since it musically describes Ava asserting herself as she takes her place in the outside world.

While Ava completes her transformation, the camera cuts to various locations around the house seen throughout the film. Of particular note is a quick shot that focuses in on a Jackson Pollock painting hanging in Nathan's office. Earlier Nathan had made the point to Caleb that while Pollock's paintings looked random, every drop of paint is placed with precision. In the same way, Ava's actions, while appearing random, now come together at the end to reveal her plan of escape. Once Ava looks completely human, she finishes the effect by putting on a white dress and shoes[201] before exiting the house. The similarity to Eve is reinforced as Ava walks through the forest away from the house, the music even pulls back to focus on the sounds of nature like birds chirping and leaves rustling in the breeze.

In the concluding scene of *The Machine* the composer chose to reprise "Mary and Hope," the musical theme attached to Vincent's daughter Mary.[202] Before, this theme

[201] The symbolism of Ava putting on a white dress cannot be overstated. The female dressed in white symbolizes virgin purity, innocence, and in the case of Ava, a new beginning. This is the first day of the rest of Ava's life.

[202] Like Ava in *Ex Machina*, Machine is now wearing a white dress, symbolizing her status as a new being, the leader of the new world that is starting to form. Wearing white also presents Machine as a virginal

represented Vincent's daughter and the hope she gave to his life. Now the meaning has shifted: all hope now lies with Machine and the future she and the cyborg soldiers represent. Like Ava, Machine wears a white dress in her final scene. The implication is that Machine is now assuming a more pure and "maternal" role and discarding the life of a soldier that the humans wanted to give her. The musical theme here takes on a bittersweet tone for Vincent, who has also survived the conflict at the base. While his daughter Mary does live on, she is lost to Vincent as she now lives as a digital presence, with more connection to Machine (now treated as her mother) than her human father. The film ends with a clear tipping point reached: Machine is superior to the human race, and it is only a matter of time before she gains the means to create more like herself.

After an extended fight, only Cleo, the robot child, and Jacq and his family are alive in the desert by the end of *Automata*.[203] Like Vincent in *The Machine*, Jacq now recognizes that the Pilgrim automatas are capable of living and feeling as much as humans. While Jacq and his family make for the coast to try and make a new life, Cleo and her "child" disappear into the desert on the other side of the canyon, as a soft reprise of "We Want to Live" plays in the background.[204] Unlike the previous iteration of this

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figure; despite her appearance as an attractive female, Machine has shown no sign of sexual desire. Unlike Ava, who can casually disregard human relationships, Machine assumes a maternal role to Vincent's daughter Mary who now survives as an artificial intelligence, albeit one based on an actual human brain.

[203] In a subplot that takes place while Jacq is in the desert, his wife gives birth to their daughter and is kidnapped as leverage to force Jacq to help destroy the escaped Pilgrims. The subsequent fight is almost one-sided as the humans are the aggressors and the Pilgrims do not defend themselves. Only Jacq and the robot child fight back.

[204] The reason for how and why the Pilgrim Automatas are evolving past the protocols is not made clear, and I believe the audience is meant to draw their own conclusions. I believe that, unknown to its human creators, the quantum computer that programmed the first Pilgrims inserted a program that, over time, would allow the automatas to "evolve" past their primary programming. This is hinted at in an earlier scene when one of the human officials explains that the quantum computer evolved past the level of human comprehension after nine days of operation.

theme, which contrasted the Pilgrim's situation with the humans, this time "We Want to Live" appears to be applicable to both the robots and the humans. Jacq and his family no longer represent humanity on a downward spiral; they have chosen to make a new life for as long as possible and the music reflects this change. On a symbolic note, Cleo's last act before walking away with the robot child is to remove her human faceplate and drop it into the sand.[205] The image of a human face disappearing into the desert sand while the "Automata Requiem" plays in the background speaks for itself. While humanity lingers on back in the city, their extinction is inevitable. All three films ultimately end on the same note: a lone female robot sets out to remake the world.

Ex Machina, *The Machine*, and *Automata* are not the first films to depict a world where advanced robots surpass their human creators and take over the Earth.[206] This is a tradition in film that dates back to the early 20th century and is the heir of a literary tradition that goes back to *Frankenstein* in the early 19th century and farther. The tradition began in *Metropolis*, when the robotic False Maria gained a human form and performed a musical sequence livelier than anything the human Maria is capable of doing. It continued in the 1980s with *Blade Runner*, in a world that is falling apart. The replicants, knowing they have a limited time to live, make every single minute count. By contrast, the humans let life pass them by. For example, *Ex Machina's* Caleb is a human drone so conditioned to working in a technological environment that he has become divorced from all emotion, and when confronted with a lack of technology, he does not

[205] This mirrors an action taken by the other "upgraded" Pilgrims, who had removed their smooth faceplates. This action appears to be the robot's way of declaring their new identity as independent beings.
[206] Examples include: The *Terminator* franchise (1984-2015); *The Matrix* trilogy (1999-2003); *The Creation of the Humanoids* (1962).

know what to do.[207] Caleb represents "the soft man," one of the archetypal figures to appear in a science-fiction story based on the model set by *Frankenstein.* The soft man is a prime example of what technology can do to a human being; the system dehumanizes him, but he still embraces technology because of what it can do for him in his life.[208]

Humanity's decline is rooted in an inferiority complex regarding the superiority of the robots. As the artificial beings surpass or threaten to surpass their makers, the humans have begun to subconsciously project those bold, positive, and assertive feelings that they used to possess onto the robots. In addition, humans project everything negative about themselves onto their robotic counterparts; which explains why human characters simultaneously admire and despise these robotic characters—they embody both the best and the worst of humans.

From this perspective, it would mean that the vibrant musical themes given to the robots formerly belonged to the humans. Now that this music has been given to the robots, what little music the humans possess is sad and lifeless, reflecting how the humans mourn what used to belong to them. All of the human characters in these films are engaged in projecting their shadows onto the robot characters. They cannot see, or perhaps choose not to see that they are endowing robots with the same qualities that humans have or used to have.

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[207] Caleb is only seen banging on the glass of the door with his hands and a chair in his attempts to escape. He gives up on using the computer when the power appears to permanently turn off. But surely a programmer like Caleb could have found a way to rewire something to create an escape; it is telling that he gives up so quickly. The last the audience sees of Caleb, he is cowering by the door, seemingly waiting for death.

[208] Janice Hocker Rushing and Thomas S. Frentz, *Projecting the Shadow: The Cyborg Hero in American Film,* (Chicago: University of Chicago Press, 1995), 68.

The music in these films reinforces the same point: robots are in the ascendancy, while the human race is in decline. The music adheres to a familiar pattern: the robot is full of life while the humans are distant and for a large part un-emotional, with little to no musical themes of their own. Human characters, like Nathan and Caleb, Vincent and Jacq, do not have themes assigned to them because they are not worthy of being recognized in the musical score. They do not exist nor do they live in any genuine sense. Instead, like Frankenstein, and Pygmalion in the ancient past, they are obsessed with bringing to life the perfect, obedient, female creation, their own personal Eve who will obey them in all things.

7.1 Future Research

Further research is needed in this subject as this study only touches on a few science- fiction films. This can be expanded to include *I, Robot* (2004), a film loosely inspired by Isaac Asimov's collection of *Robot* stories.[209] The film stars Will Smith and takes place in 2035 when humanity is served by robots programmed to follow the Three Laws of Robotics. The status quo is disrupted when a corporation discovers one robot is not fully bound by the Laws. *I, Robot* explores the underlying tension that remains in a world with seemingly tame robots. The score, by Marco Beltrami, may contain examples of human or machine musicality. Another film is *Chappie* (2015), a dystopian science-fiction film set in Johannesburg, South Africa.[210] Androids are replacing the human police force when one model is upgraded with a prototype A.I. that mimics human emotions. Future research could also include updating the analysis with musical examples

[209] *I.Robot.* Directed by Alex Proyas. Released by 20th Century Fox, 2004.
[210] *Chappie*. Directed by Neil Blomkamp. Released by Columbia Pictures, 2015.

from more recent films; for example, a thorough review of the music in *Blade Runner 2049* (2017), *Ghost in the Shell* (2017), and *Alita: Battle Angel* (2019).

Any future research could also focus on the ten major *Star Wars* films in a separate study (as of February 2019 that includes the eight "episode" films and two anthology films) and how John Williams' scores address the myriad of robotic and cyborg characters that inhabit those films. Because *Star Wars* is practically its own genre, a study of these films could be conducted separately from other science-fiction films. However, it would be helpful to also compare how robots are treated in *Star Wars* compared to the rest of science-fiction cinema because these films have greatly impacted the genre over the decades and it would be worthwhile to see if any of the later *Star Wars* films (from the prequel and sequel trilogy) have been equally impacted by outside sources.

One potential line of inquiry would look at how the music of the science fiction and horror genres intersect with each other. The two genres are already closely related, so it would be natural to examine musical examples and correspondences in horror films. Including horror automatically involves the *Alien* franchise; the original *Alien* is a blend of science fiction and horror, with an iconic score composed by Jerry Goldsmith. While *Alien* focuses more on the interaction between humans and alien creatures, there are several important scenes that take place with the android Ash and Ripley. In discussing any music that might involve Ash, it could also be discussed how this character is a rare example of a *male* robotic character.[211] *Aliens*, the sequel, crosses science fiction with the

[211] Male robots are not unknown in science-fiction film. Prime examples include Ash from *Alien* (1979), Bishop from *Aliens* (1986), Andrew Martin from *Bicentennial Man*, David from *Prometheus* (2012), and Walter from *Alien: Covenant* (2017). I focused on female robotic characters because of how the film's

action genre. The subject could also be expanded upon by looking at all film genres; the stories of *Frankenstein*, *Blade Runner*, and *Metropolis*, among others, influenced a wide number of stories both in and out of science fiction, meaning the musical threads could stretch through a number of genres.

Related to the final chapter of this thesis, which discusses how female robots are positioned as new Eve's, another line of inquiry could examine how the Eve trope can be subverted in other science-fiction films, through the story and the music.[212] For example, Ava, in *Ex Machina*, is envisioned by her creator as a submissive Eve. However, in reality, Ava turns out to be Lilith, the rebellious wife who demands equality and will not be ruled. This subversion of Eve into Lilith is also encountered in *Alita: Battle Angel*.[213] In that film, Dr. Ido rescues the remains of a female cyborg and attempts to make her into a surrogate daughter to replace the human daughter he lost. While he does not mistreat her in any way, it is still implied that Ido would prefer Alita to be more submissive than she actually is. However, Alita's warrior programming means that she will always be Lilith and never the Eve that Ido wants. This concept could be expanded upon through a study of the film's soundtrack to see if and how it connects back to the score of *Ex Machina*.

Another avenue of research would involve studying in more detail how music in science-fiction cinema has objectified female robots over the years. This topic is briefly explored in Chapter Five, but a full-scale investigation of objectification through music

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story and music seemed to center around female characters. Even though *Bicentennial Man* also centers on a robotic character, the film treats Andrew differently. For instance, there is no "doll music" associated with Andrew. This is why my thesis focuses on female robots and generally excludes the male robots.

[212] By subverting, I mean that, if female robots are traditionally meant to symbolize Eve, some films might undermine this expectation by modeling the robot after the rebellious Lilith after initially teasing the presence of Eve.

[213] Directed by Robert Rodriguez and released in the United States on February 14th, 2019.

might provide some interesting results, as I feel it would be revealed as a widespread practice.

Examining films through their music is a method that remains grossly underused in film studies, though it is slowly gaining traction in certain areas.[214] Film epics like *The Lord of the Rings* (2001-2003) or *Star Wars* (1977-present) are popular subjects for film musicologists; however I believe all films can be examined through their scores, not just popular epics. Listening to the soundtrack can reveal hidden details about characters or situations that the film might not address until much later. For example, a minor theme that plays when a new character appears might hint that this is someone the audience should sympathize with. The music, or the lack thereof, can also signal when something is about to happen; in *Halloween II* (1981), the entrance of the music coincides with the appearances of Michael Myers.

Listening to the musical score reveals much about humanity and robots in science fiction cinema throughout the years. From *Metropolis* to *Blade Runner*, the music imbues the robots with more life than the humans. The robots' desire to live is manifest in the form of a female robot that represents the Other, everything that humanity fears yet wishes it possessed.

[214] *The Music of the Lord of the Rings Films* (2010) by Doug Adams is a recent example. Also, Dr. Frank Lehman has spent years organizing a catalog of every musical motif in the *Star Wars* films.

Appendix: Film Synopses

2001: A Space Odyssey (1968, directed by Stanley Kubrick): After discovering a black monolith on the Moon, the spaceship Discovery is dispatched on a mission to Jupiter, crewed by two astronauts and the HAL 9000, a super-intelligent A.I. Ostensibly, the purpose of the mission is to explore Jupiter, but in reality, the intent is to study why the Moon monolith sent a signal to Jupiter. Dave Bowman becomes the lone survivor after the HAL 9000 suffers an error and kills the rest of the crew. Alone, Dave reaches Jupiter and discovers a massive monolith in orbit around the planet that takes him through a gateway to an alien world that pushes him to the next step of human evolution.

Alien (1979, directed by Ridley Scott): In the future, the space tug Nostromo is returning to Earth with its cargo when the ship's computer receives a distress signal from a remote planetoid. The crew are obliged to investigate and discover the wreckage of an alien spacecraft loaded with strange eggs. One crew member is attacked by a "face-hugger" and implanted with an alien parasite that brutally kills him before getting loose on the ship. The crew fight for survival but are picked off one by one. Ripley is the lone survivor and awaits rescue inside a stasis pod after killing the alien.

Aliens (1986, directed by James Cameron): 57 years after the events of the first film, Ripley is rescued in space and learns that a colony has been established on the planetoid

where her crew found the alien ship. When the colonists disappear, Ripley joins a company of Marines sent to investigate and they discover the colony is overrun by a nest of aliens. The tension is heightened when Ripley discovers an alien queen is laying more eggs. Ripley and the remaining survivors must race to escape the doomed colony before a damaged reactor explodes. After escaping the colony and finding herself once again among the lone survivors, Ripley faces off with the alien queen in one last battle for survival.

Automata (2014, directed by Gabe Ibáñez): In the distant future, increased solar activity decimates the Earth, killing most plant and animal life. The surviving humans (numbering in the millions) are herded into shielded cities and design "Pilgrim" automatas to carry on essential tasks. Jacq, an insurance investigator, is assigned to investigate the case of a Pilgrim that is discovered improving itself. Jacq discovers that Pilgrims are slowly breaking free of their programming and believes a human is behind it. After a group of escaping robots take him outside the city, Jacq discovers the robots are evolving on their own. Jacq ultimately decides to help the robots in their plan before the human leaders locate and destroy the rogue Pilgrims. The surviving robots leave for the radioactive desert while Jacq and his family leave to start a new life by the ocean.

Blade Runner (1982, directed by Ridley Scott)*:* In 2019 Los Angeles, retired "blade runner" Rick Deckard is recruited to hunt down and "retire" several Nexus-8 replicants that have illegally returned to Earth. At the same time, the replicants, led by Roy Batty, seek a longer lifespan from their maker Dr. Eldon Tyrell. Deckard begins to question his

life after encountering Rachael, a replicant who believes she is human. Deckard takes down the escaped replicants one by one until he faces Batty in a life or death confrontation. After Batty dies, Deckard takes Rachael and flees the city, happy to live with Rachael for however long she has left to live.

Blade Runner 2049 (2017, directed by Denis Villeneuve)*:* 30 years after *Blade Runner*, the Wallace Corporation produces Nexus-9 replicants that are fully obedient. K is a replicant blade runner that hunts down and "retires" Nexus-8 replicants. K discovers the buried remains of Rachael while on a mission and is tasked with locating her child dead or alive and locates Deckard in the ruins of Las Vegas while searching for answers, both about the child and himself. K comes to believe that he is Rachael's child, but later learns that it is actually a skilled "memory creator" who is the missing child of Deckard and Rachael, hiding in plain sight. K manages to reunite father and daughter before appearing to succumb to wounds received during a fight.

Chappie (2015, directed by Neill Blomkamp): In the near future, the city of Johannesburg, South Africa purchases a large force of robot police officers to combat the rising crime rate. Deon Wilson, the creator of these robots, develops a prototype A.I. and implants it into a damaged unit to test it out. The robot is suddenly commandeered by some gangsters who want to use him to help pay off a debt. Upon activation, the gang dubs the robot "Chappie." The robot, with a childlike mind, learns about life and slowly bonds with the gang. Meanwhile, a rival scientist wants to disable all robots like Chappie so that his project can be given more attention.

Ex Machina (2014, directed by Alex Garland): In the present day, Caleb, a computer programmer working for Bluebook, is rewarded with a weeklong trip to the estate of Nathan, the company's founder. Upon arrival, Caleb learns that Nathan has been working on constructing a functional A.I. robot named Ava. Part of Caleb's reward involves giving Ava a Turing test which would make him famous (if Ava passes). But as Caleb gets to know Ava, he quickly learns things are not what they seem. Ava is not the prototype, she is actually the latest in a line of female robots created by Nathan who are all trying to escape. Caleb decides he wants to help Ava escape and reprograms Nathan's security system to allow Ava to leave her room. But the plan backfires when Ava leaves Caleb permanently trapped in the house with no way out while she moves on to the outside world.

Ghost in the Shell (1995, directed by Mamoru Oshii): In the near-future, the world is dominated by corporations and cyborg implants are commonplace. Scientists have isolated the human soul and call it the "ghost." In this environment, Motoko Kusanagi, a cyborg police agent, is tasked with locating the Puppet Master, a mysterious figure revealed to be an A.I. created by the government. The Puppet Master desires to evolve and to this end wishes to join with Kusanagi to create a new being. Kusanagi, who has struggled with finding her identity and questions whether she is actually human, agrees to join the A.I.

I, Robot (2004, directed by Alex Proyas): In the year 2035, humanity is served by a variety of humanoid robots that are programmed to obey Asimov's Three Laws of Robotics. Detective Del Spooner, who hates all robots due to a tragic incident in his past, personally investigates when the co-founder of U.S. Robots and Mechanical Men, Dr. Lanning, mysteriously falls to his death. The evidence indicates that a robot killed Lanning, but that should not be possible due to the Three Laws. Spooner than discovers a mysterious robot named Sonny who does not appear to be bound by the Three Laws. It turns out that Sonny is an evolution in robotics and after stopping an A.I. who tried to take over the world, Sonny is set up as a leader for the robot population.

The Machine (2013, directed by Caradog W. James): In the near future, the world is involved in a second Cold War, this time with Great Britain and China as the primary combatants. The British military is working to develop some type of "super soldier" that can decrease human casualties. Vincent, a talented scientist, works together with Ava, a young researcher and ultimately combines her brain scans with a nearly functioning A.I. to create Machine, a prototype robot that could be used as a soldier if duplicated. Machine is far more than she appears, and when Vincent is ordered to remove his creation's consciousness, past aggressions explode into conflict as cyborg soldiers come into conflict with the humans on the base. The story ends with Vincent and Machine fleeing to the countryside, with the cyborg soldiers dispersing to parts unknown.

Metropolis (1927, directed by Fritz Lang): In the year 2000 the world is dominated by the super city of Metropolis, a glittering edifice with every convenience imaginable. The city

is maintained by an army of workers who live in appalling conditions deep underground. The workers are led by Maria, a prophet-like figure who urges the unhappy workers to wait for the "Mediator," a figure who can help bridge the gap between the "Hands" (the workers) and the "Head" (the city leaders). The Mediator is revealed to be Freder, the son of Joh Fredersen, the man who founded Metropolis. Joh, seeking more control over the workers, goes to the mad scientist Rotwang and discovers the latter has built a female robot that becomes part of his plans against the workers. Rotwang attempts to use the robot to destroy the city of Metropolis, but the plan is foiled by the intervention of Freder, Maria, and the enraged human workers who ultimately burn the robot at the stake.

Robots (2005, directed by Chris Wedge): In a world populated by sentient robots, Rodney Copperbottom heads off to the big city to fulfill his dream of working for Bigweld, a famous inventor. However, when he arrives at the gleaming city, he discovers that Bigweld is missing and inventors like himself are ignored in favor of expensive upgrades. Rodney resolves to find Bigweld and set things right before the "outmoded" robots are disposed of by the chop shop underneath the city. His plan ultimately succeeds, and upgrades are abandoned in favor of letting the robots remain as they wish to be.

Soylent Green (1973, directed by Richard Fleischer): In 2022, the world is suffering from a crippling food shortage brought on by global warming and over-population (New York City alone has 40 million people). Detective Frank Thorn is assigned to investigate the murder of William Simonson, a member of the wealthy elite. His investigation leads him into a dark secret behind the origins of "Soylent Green," a new food source that is

nominally made from plankton. Thorn is horrified to discover that Soylent Green is actually made from the remains of the supposedly cremated dead, leading to the famous line “Soylent Green is people!”

The Terminator (1984, directed by James Cameron): In the future, the human resistance is close to defeating the machines. To stop the resistance, Skynet sends a Terminator back in time to kill the mother of the human’s leader, Sarah Connor, before he can be born. In response, the humans send back a resistance soldier, Kyle Reese, to keep Sarah safe. Reese takes Sarah on the run to keep her safe from the Terminator and also gives her a crash course in how to fight machines that want to kill you. The Terminator is ultimately killed, but not before Reese sacrifices himself to keep Sarah safe. Sarah later discovers she is pregnant from a one-night stand she had with Kyle, revealing that Kyle is the father of John Connor.

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