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Technological Progress in the Works of Isaac Asimov and Philip K. Dick

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Šárka Štěpánková

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Závěrečná diplomová práce se bude věnovat žánru populární literatury – sci-fi. V úvodu práce studentka tento žánr charakterizuje, stručně nastíní jeho historii, teoretické koncepty a také uvede historický přehled zobrazování technologií (specificky robotů a umělé inteligence) v sci-fi. Zvolená díla do tohoto kontextu zařadí. Jádrem práce bude analýza zvolených děl, v níž se diplomantka soustředí na zobrazení technologií, technologického pokroku a umělé inteligence. Analyzuje také použité literární prostředky. Svá tvrzení bude vhodně ilustrovat primárními texty a opírat o sekundární zdroje či je s nimi konfrontovat. Závěrem své analýzy přehledně shrne, díla porovná a vysloví obecnější závěry o pojetí, způsobu ztvárnění a proměnách obrazu pokroku, technologií či umělé inteligence ve zvolených sci-fi dílech.

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Vedoucí diplomové práce: **doc. Šárka Bubíková, Ph.D.**
Katedra anglistiky a amerikanistiky

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doc. Mgr. Jiří Kubeš, Ph.D.
děkan

Mgr. Olga Roebuck, Ph.D.
vedoucí katedry

V Pardubicích dne 29. listopadu 2019

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ANNOTATION

The master thesis focuses on the depiction of technological progress in the novel *Do Androids Dream of Electric Sheep?* by Philip K. Dick and selected short stories from the collection *The Complete Robot* by Isaac Asimov. The theoretical part defines the genre of science fiction and provides an overview of its history. It also explains how technological progress and artificial intelligence have typically been portrayed in science fiction. The paper subsequently examines and compares how the two authors portray advanced technologies, particularly robots and androids.

KEYWORDS

android, robot, technology, science fiction, progress

NÁZEV

Technologický pokrok v díle Isaaca Asimova a Philipa K. Dicka

ANOTACE

Diplomová práce se zaměřuje na zobrazení technologického pokroku v románu *Do Androids Dream of Electric Sheep?* od Philipa K. Dicka a ve vybraných povídkách ze sbírky *The Complete Robot* od Isaaca Asimova. Teoretická část práce definuje žánr science fiction a poskytuje přehled jeho historie. Rovněž vysvětluje, jak jsou technologický pokrok a umělá inteligence obvykle zobrazovány v science fiction. Práce dále zkoumá a porovnává, jak tito dva autoři vyobrazují pokročilé technologie, zejména roboty a androidy.

KLÍČOVÁ SLOVA

android, robot, technologie, science fiction, pokrok

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Introduction

One of the topics which are commonly explored in science fiction is technological progress. However, the attitudes of science fiction authors toward progress in technology differ. While some writers are optimistic about advanced technologies and describe them as helpful, others portray them as a threat to humanity.¹ One of the technologies which often appear in science fiction works is artificial intelligence. Due to the differing opinions on technological progress, artificial intelligence may be described as benevolent and useful, or as a menace.

This master thesis focuses on the depiction of technological progress in science fiction, a genre of popular literature. The aim of the thesis is to analyze how the authors Isaac Asimov and Philip K. Dick portray advanced technologies, especially artificial intelligence. The subject matter is examined through an analysis of Asimov's short stories collected in *The Complete Robot* and Dick's novel *Do Androids Dream of Electric Sheep?*. In the works, the authors describe technologically advanced societies in which humans make use of various devices and machines. The thesis shortly examines some of the technologies and subsequently explores the way artificial intelligence is depicted. The intent of the analysis is to identify the similarities and differences between Asimov's and Dick's portrayal of sophisticated technologies.

The first chapter, "The Genre of Science Fiction," defines the literary genre. The origin of the term "science fiction" is explained and the problems with defining the genre are summarized. Subsequently, the chapter offers several definitions by different authors and academics and identifies the features which they share. Science fiction is also associated with several themes, which are shortly listed.

In the second chapter, the history of science fiction is briefly outlined. The chapter describes the development of the genre from the utopian texts of the 17th century to the Golden Age of Science Fiction and the New Wave. The period from the 1970's until the 21st century is then also summarized.

The next two chapters concentrate on the two authors of science fiction whose works are analyzed in this thesis. The chapter "Work of Isaac Asimov" introduces the writer Isaac Asimov. This section provides an overview of the author's writing career, his most important works and the themes and topics which appear in his stories and novels. Subsequently, the fourth chapter, "Work of Philip K. Dick," presents the writing of the author Philip K. Dick and describes the themes in his works.

¹ David Seed, *Science Fiction: A Very Short Introduction* (Oxford: Oxford University Press, 2011), 47.

The fifth chapter is entitled “Technological Progress in Science Fiction.” Authors of science fiction often adopt either the viewpoint that technology is a menace, or they see technological progress as beneficial for humanity. The chapter examines these two views and then describes historical portrayal of technological progress in science fiction.

The next chapter, “Technological Devices in Asimov’s And Dick’s Works,” explores how Isaac Asimov and Philip K. Dick portray technologies other than artificial intelligence. The chapter first explains how spaceships are typically portrayed in science fiction, and then explores the spaceships in Asimov’s short stories “Risk” and “Escape!”. Science fiction also commonly takes place in a technologically advanced city. Therefore, the chapter briefly explains how cities are usually depicted and subsequently focuses on the city in Dick’s novel and the technologies which his characters use.

From that point forward, the thesis focuses on artificial intelligence. The chapter “Artificial Intelligence in Science Fiction” defines the terms “artificial intelligence,” “robot” and “android,” and describes the history of robots in science fiction. The chapter is then divided into four subchapters. The first one is entitled “Forms of Artificial Intelligence” and examines what Asimov and Dick’s robots look like. The subchapter also analyzes how humans react to the robots and their appearance and explores relationships between the machines and people.

The following subchapter, “Robots as Slaves,” analyzes how robots in *The Complete Robot* and *Do Androids Dream of Electric Sheep?* are used by humans and what tasks they perform. In the third subchapter, “Rights of Robots,” the thesis focuses on how humans treat the robots and how the intelligent machines perceive their status in society. The subchapter also examines the issue of robot emancipation and identifies the differences between humans and sentient robots.

The final subchapter explores the belief that robots are formidable, cannot be controlled and will eventually turn against humanity. This part is entitled “Robots as a Threat” and examines whether Asimov and Dick depict artificial intelligence as dangerous. The idea that robots are superior to humans is also mentioned.

The last chapter, “Genre Analysis,” shortly explains why *The Complete Robot* and *Do Androids Dream of Electric Sheep?* belong to the science fiction genre, with the help of the definitions provided in the first chapter.

The conclusion of this master thesis summarizes the results obtained from the analysis of the works.

1 The Genre of Science Fiction

The term “science fiction” was coined in 1929 by the magazine editor Hugo Gernsback. In 1926, Gernsback used the word “scientifiction” to describe the stories which he published in his magazine *Amazing Stories*. However, he later changed the term into its current form.² Many authors and critics further use the abbreviation “SF” or lowercase “sf” to refer to the genre. The neologism “sci-fi” is also frequently utilized. However, Gary K. Wolfe, Professor of Humanities and English, notes that numerous authors and fans dislike the neologism and see it as a degrading term.³

There are various definitions of science fiction. In fact, the critic Damon Knight wrote in his book *In Search of Wonder: Essays on Modern Science Fiction* that “the term ‘science fiction’ is a misnomer [...] it will do us no particular harm if we remember that [...] it means what we point to when we say it.”⁴

According to the critic Paul Kincaid, the issue with many definitions of science fiction is that they apply to works which are usually not considered science fiction. At the same time, however, they are not applicable to a number of science fiction stories and novels.⁵ James Gunn, Emeritus Professor of English, further specifies the problem with defining the genre in *Speculations on Speculation*:

The problem of definition also is complicated by the fact that science fiction is not an ordinary kind of genre. Unlike the mystery, the western, the gothic, the love story, or the adventure story, to cite a few of the popular genres, science fiction has no typical action or place.⁶

Nonetheless, several authors and critics have attempted to characterize the genre. Initially, the definitions emphasized mainly science and scientific discoveries.⁷ For instance, Gernsback defined scientifiction as “a charming romance intermingled with scientific fact and

² Brian M. Stableford, John Clute and Peter Nicholls, “Definitions of SF,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified June 15, 2020, http://www.sf-encyclopedia.com/entry/definitions_of_sf.

³ Gary K. Wolfe, “Coming to Terms,” in *Speculations on Speculation: Theories of Science Fiction*, ed. James E. Gunn and Matthew Candelaria (Lanham, Md: Scarecrow Press, 2005), 20-21.

⁴ Damon Knight, *In Search of Wonder: Essays on Modern Science Fiction* (Chicago: Advent Publishers, 1967), 1.

⁵ Paul Kincaid, “On the origins of genre,” in *Speculations on Speculation: Theories of Science Fiction*, ed. James E. Gunn and Matthew Candelaria (Lanham, Md: Scarecrow Press, 2005), 42.

⁶ James Gunn, “Toward a Definition of Science Fiction,” in *Speculations on Speculation: Theories of Science Fiction*, ed. James E. Gunn and Matthew Candelaria (Lanham, Md: Scarecrow Press, 2005), 6.

⁷ Stableford, Clute and Nicholls, “Definitions of SF.”

prophetic vision.”⁸ Furthermore, *The Encyclopedia of Science Fiction* quotes John W. Campbell Jr., the editor of the magazine *Astounding Stories*, who compared writing science fiction stories to using the scientific method:

Scientific methodology involves the proposition that a well-constructed theory will not only explain away known phenomena, but will also predict new and still undiscovered phenomena. Science fiction tries to do much the same – and write up, in story form, what the results look like when applied not only to machines, but to human society as well.⁹

However, during the 1960’s, the importance of science in science fiction began to be downplayed. For instance, the critics Brian W. Aldiss and J. G. Ballard claimed that science fiction does not have much in common with actual science, as was previously believed.¹⁰

In 1972, a new definition of science fiction was provided by the critic Darko Suvin. In his essay “On the poetics of the science fiction genre,” Suvin described science fiction as “a literary genre whose necessary and sufficient conditions are the presence and interaction of estrangement and cognition, and whose main formal device is an imaginative framework alternative to the author’s empirical environment.”¹¹

According to the historian Farah Mendlesohn, the term “cognitive estrangement” may be defined as “the sense that something in the fictive world is dissonant with the reader’s experienced world.”¹² Additionally, Wolfe explains that “cognition” alludes “to those elements of variability and detail drawn from the empirical environment which establish a link between the experienced world of the reader and the world of the fiction.”¹³

An analogous definition is given also by James Gunn. The critic notes that science fiction generally respects the laws of the real world, unlike fantasy. It is not set in a completely new realm: “[...] science fiction [takes place] in the world of everyday experience extended.”¹⁴

In his essay “On What Is and Is Not an SF Narration,” Suvin further mentions that science fiction “is distinguished by the narrative dominance of a fictional novelty (novum,

⁸ Hugo Gernsback, “Editorial: A new sort of magazine,” in *Science Fiction Criticism: An Anthology of Essential Writings*, ed. Rob Latham (London, New York: Bloomsbury Academic, 2017), 11.

⁹ Stableford, Clute and Nicholls. “Definitions of SF.”

¹⁰ Stableford, Clute and Nicholls, “Definitions of SF.”

¹¹ Darko Suvin, “On the poetics of the science fiction genre,” in *Science Fiction Criticism: An Anthology of Essential Writings*, ed. Rob Latham (London, New York: Bloomsbury Academic, 2017), 118.

¹² Farah Mendlesohn, “Introduction: reading science fiction,” in *The Cambridge Companion Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 5.

¹³ Wolfe, “Coming to Terms,” 16.

¹⁴ Gunn, “Toward a Definition of Science Fiction,” 9.

innovation).”¹⁵ According to *The Encyclopedia of Science Fiction*, a novum might be represented for instance by alien attack or scientific or technological discovery.¹⁶ Gunn likewise proposes that the element most characteristic for science fiction is change.¹⁷

Several authors point out that the genre also focuses on the consequences of the novum. For instance, Campbell believed that science fiction authors should be concerned with how the new devices affect humans.¹⁸ Similarly, Mendlesohn claims that exploring the impact of the new elements is one of the basic features of the genre.¹⁹

In *The Seven Beauties of Science Fiction*, Istvan Csicsery-Ronay further suggests that the genre is concerned with two questions related to the novum: “SF thus involves two forms of hesitation: a historical-logical one (how plausible is the conceivable novum) and an ethical one (how good/bad/altogether alien are the transformations that would issue from the novum?).”²⁰

In addition, the genre is associated with several reoccurring themes. In *Science Fiction: A Very Short Introduction*, David Seed, Professor of American Literature, briefly outlines the most common ones. He explains that science fiction is associated with space travel²¹ or extraterrestrial life.²² Technology is another element which regularly appears in science fiction works. Nevertheless, the attitudes of authors towards technological progress differ. While it is frequently praised, technology is also commonly portrayed as dangerous.²³

Another important theme of science fiction is time. For instance, many works focus on the future and its nature.²⁴ Furthermore, in the 19th century, authors began to write about alternate histories. In the works, the writers examine what might have happened if various historical incidents had turned out differently.²⁵ Numerous works also portray disasters and

¹⁵ Darko Suvin, “On What Is and Is Not an SF Narration; With a List of 101 Victorian Books That Should Be Excluded From SF Bibliographies,” *Science Fiction Studies* 5, no. 14 (March 1978), <https://www.depauw.edu/sfs/backissues/14/suvin14art.htm>.

¹⁶ Damien Broderick, “Novum,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified April 2, 2015, <http://www.sf-encyclopedia.com/entry/novum>.

¹⁷ Gunn, “Toward a Definition of Science Fiction,” 7.

¹⁸ Adam Roberts, *The History of Science Fiction*, Second edition, (London, England: Palgrave Macmillan, 2016), 287.

¹⁹ Mendlesohn, “Introduction: reading science fiction,” 4.

²⁰ Istvan Csicsery-Ronay, Jr., *The Seven Beauties of Science Fiction* (Middletown, Connecticut: Wesleyan University Press, 2008), 3.

²¹ David Seed, *Science Fiction: A Very Short Introduction* (Oxford: Oxford University Press, 2011), 6.

²² Seed, *Science Fiction*, 27.

²³ Seed, *Science Fiction*, 47.

²⁴ Seed, *Science Fiction*, 97.

²⁵ Seed, *Science Fiction*, 110.

many of them focus on the extinction of humanity. Nonetheless, Seed points out that they usually contain an element of hope.²⁶

Overall, while there are many definitions of science fiction, there are several features which academics and authors identify as characteristic for the genre. The works typically introduce a previously unknown element, also referred to as a novum. Moreover, unlike fantasy, science fiction follows the laws of the real world. The genre further focuses on the consequences of the new elements and the effects of the change.

²⁶ Seed, *Science Fiction*, 113.

2 History of Science Fiction

There are several theories about the development of the genre. While some academics claim that science fiction originated in antiquity and even consider Lucian of Samosata's *A True Story*, written in the 2nd century, to be a science fiction text, others propose that the genre came into existence in the 16th or 17th century. It is also frequently claimed that science fiction started in the 19th century, with the Industrial Revolution. In addition, several theorists believe that it emerged only during the first half of the 20th century, when the term "science fiction" was coined.²⁷

The first texts concerned with imagining scientific discoveries and progressive technologies were written in the 17th century. According to *The Encyclopedia of Science Fiction*, these texts might be described as "proto science fiction."²⁸ As Brian Stableford explains in his essay "Science fiction before the genre," the first works dealing with possible technological inventions and advances in science were often "utopian fantasies." Francis Bacon's *New Atlantis*, published in 1627, is considered to be the earliest of these types of texts. The publications also included satires, which mocked progress in science and technology. An example of such satire is the third volume of *Gulliver's Travels*, written by Jonathan Swift and published in 1726.²⁹

While authors in the 17th and the 18th century were producing texts about space and space travel, Stableford notes that these types of publications were usually written in the form of dream stories and visionary fantasies. Texts which deal with lunar discoveries include for instance Johannes Kepler's *Somnium* (1634) and Francis Godwin's *The Man in the Moone* (1638).³⁰

In the 19th century, science significantly advanced, and a large number of new technologies was invented. Roberts explains that the genre adopted new elements, including a larger focus on the future as the setting of the story, and that the progress which occurred at that time was mirrored in science fiction.³¹ In 1818, Mary Wollstonecraft Shelley published the novel *Frankenstein; or, the Modern Prometheus*, which is considered to be the first British

²⁷ Seed, *Science Fiction*, 2-3.

²⁸ Brian M. Stableford, "Proto SF," *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified October 24, 2018, http://www.sf-encyclopedia.com/entry/proto_sf.

²⁹ Brian Stableford, "Science fiction before the genre," in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 15.

³⁰ Stableford, "Science fiction before the genre", 16.

³¹ Roberts, *The History of Science Fiction*, 121.

scientific romance.³² According to *The Encyclopedia of Science Fiction*, scientific romance is “a generic term applied to UK sf for the years before the end of World War Two.”³³

Another author of the 19th century that was important for the science fiction genre was Edgar Allan Poe. In 1835, Poe wrote a short story about a journey to the Moon, called *Hans Phaal* and later renamed to *The Unparalleled Adventure of One Hans Pfaall*.³⁴ In the story, Poe’s protagonist constructs a balloon and uses it to travel to the Moon. Even though it is later revealed to be a sham, Roberts points out that Poe wrote about the travel in the balloon in a very creative way which appears quite factual.³⁵

In France, a major author of science fiction stories about advanced technologies was Jules Verne. Verne’s works include novels such as *Journey to the Centre of the Earth* (1863) or *Twenty Thousand Leagues under the Sea* (1870).³⁶ Important inventions in science fiction were provided also by H. G. Wells. Just as Verne, Wells is called the “Father of Science Fiction.”³⁷ His works include for example *The Island of Dr. Moreau* (1896), *The Invisible Man* (1897), and *The War of the Worlds* (1898). Another author publishing in the period was Edward Bellamy, the author of the novel *Looking Backward 2000-1887* (1888).

The label “science fiction” came into use in 1929, when the magazine editor Hugo Gernsback coined the term.³⁸ Until the 1960’s, the most important medium for science fiction were magazines.³⁹ The stories in them were called “pulp,” since the paper on which they were published was made from wood pulp and was inexpensive. The authors were paid to order and the magazines were dedicated to different genres and subgenres.⁴⁰ According to Roberts, the stories published in science fiction pulps greatly influenced the development of the genre. As he notes:

Of all pulps, SF pulps were the most tinselly; partly in the sense that their content was more dazzling, starry, most likely to lift its readers’ eyes, metaphorically, to

³² Stableford, “Science fiction before the genre,” 19.

³³ Brian M. Stableford, David Langford and John Clute, “Scientific Romance,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified August 7, 2020, http://www.sf-encyclopedia.com/entry/scientific_romance.

³⁴ Stableford, “Science fiction before the genre,” 18.

³⁵ Roberts, *The History of Science Fiction*, 142.

³⁶ Stableford, “Science fiction before the genre,” 20-21.

³⁷ John Clute and Brian M. Stableford, “Wells, H G,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified September 10, 2020, http://www.sf-encyclopedia.com/entry/wells_h_g.

³⁸ Stableford, Clute and Nicholls. “Definitions of SF.”

³⁹ Brian Attebery, “The magazine era: 1926-1960,” in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 32.

⁴⁰ Roberts, *The History of Science Fiction*, 254.

the brilliances above us; partly also in the sense that they were *aware* and even reveled in their own cheapness and kitsch (I use the word at its most positive).⁴¹

The first purely science fiction pulp magazine was called *Amazing Stories*. Its editor was Hugo Gernsback and the magazine soon became prosperous.⁴² However, Brian Attebery, Professor of English, notes that since Gernsback believed that the fiction published in his *Amazing Stories* should be didactic and teach readers about science and technology, other aspects were frequently ignored. As a result, the works were often “stylistically weak, awkwardly constructed and marked by a naive ‘gee whiz’ attitude toward its gadgets and settings.”⁴³

Most works in *Amazing Stories* featured a youthful inventor who designed an ingenious device and averted some threat. The stories typically finished on a positive note. *Amazing Stories* inspired establishment of new magazines, including *Astounding Stories*, *Astonishing Stories* or *Marvel Science Stories*. In 1929, Gernsback himself became the editor of several other science fiction magazines, which were later united into *Wonder Stories*.⁴⁴

Science fiction magazines were represented also by John W. Campbell Jr. In 1937, Campbell became the editor of the magazine *Astounding Science-Fiction*, originally called *Astounding Stories*. Both Gernsback and Campbell encouraged their readers to send them letters. Fans and writers soon began organizing meetings, which led to the establishment of groups which might be considered early fan clubs. The authors who published stories in the magazine include for instance Isaac Asimov or Robert A. Heinlein. A typical story printed in *Astounding Science-Fiction* featured an inventor who dealt with issues with the help of his intellect and knowledge.⁴⁵ Campbell also discouraged authors from overly clarifying their ideas.⁴⁶

The time span from 1938 to 1950 is often called the Golden Age of SF. Roberts includes also the 1950's into the Golden Age. As he explains, the term describes a period of “hard SF, linear narratives, heroes solving problems or countering threats in a space-operatic or a

⁴¹ Roberts, *The History of Science Fiction*, 256.

⁴² Marshall B. Tymn, “Science Fiction: A Brief History and Review of Criticism,” *American Studies International* 23, no. 1 (April 1985): 45, <http://www.jstor.com/stable/41278745>.

⁴³ Attebery, “The magazine era: 1926-1960,” 35.

⁴⁴ Attebery, “The magazine era: 1926-1960,” 36-37.

⁴⁵ Attebery, “The magazine era: 1926-1960,” 37-38.

⁴⁶ Attebery, “The magazine era: 1926-1960,” 40.

technological-adventure idiom.”⁴⁷ According to *The Encyclopedia of Science Fiction*, hard SF is concerned with scientific reasoning and deals especially with “hard” sciences.⁴⁸

However, while American works of the period were quite optimistic, British science fiction was pessimistic. According to Roberts, it was due to the fact that while America was thriving, Britain was losing its territories.⁴⁹ Roberts points out that the critic Brian Aldiss called the main style of British science fiction after the war a “cosy catastrophe” and notes: “Whilst American SF (the argument goes) explored increasingly expansive possibilities of global, solar and galactic adventure, British SF projected an increasingly insular aesthetic.” In the stories, British people typically faced a disaster. However, the situation was not truly dangerous, which is why Aldiss called it “cosy.”⁵⁰

According to Brian Attebery, science fiction was initially considered exclusively popular literature. However, in the 1950’s, critics began to consider works by authors such as Aldous Huxley, George Orwell or Kurt Vonnegut science fiction. Damon Knight regarded also Karel Čapek’s *War with the Newts* as an essential science fiction text. Nonetheless, many still believed that works by Orwell or Huxley did not belong to the genre.⁵¹ In fact, in *The Encyclopedia of Science Fiction*, Peter Nicholls labels Huxley, Orwell and Čapek as mainstream authors and explains that the term “mainstream” is frequently used for “those writers of sf works who think of themselves (or are marketed) as simply writing fiction, without adopting either the protection or the stigma of a genre label.” In contrast, the word “genre” is used to describe authors “who think of themselves as writing sf and whose books and stories are marketed as sf.”⁵²

During the 1950’s, several authors also used different techniques in their writing than those typical for the stories in *Astounding Science-Fiction*. Their works were published in newly established magazines, such as *The Magazine of Fantasy and Science Fiction* or *If*. The authors who wrote for these magazines included Walter Miller, James Blish or Alfred Bester. An example of a British magazine devoted to science fiction was *New Worlds*, which published stories by Arthur C. Clarke, Brian Aldiss or J. G. Ballard.⁵³ The magazine *Galaxy Science*

⁴⁷ Roberts, *The History of Science Fiction*, 287.

⁴⁸ Peter Nicholls, “Hard SF,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified March 19, 2019, http://www.sf-encyclopedia.com/entry/hard_sf.

⁴⁹ Roberts, *The History of Science Fiction*, 307.

⁵⁰ Roberts, *The History of Science Fiction*, 309.

⁵¹ Attebery, “The magazine era: 1926-1960,” 44-45.

⁵² Peter Nicholls, “Mainstream Writers of SF,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified September 8, 2020, http://www.sf-encyclopedia.com/entry/mainstream_writers_of_sf.

⁵³ Attebery, “The magazine era: 1926-1960,” 41-42.

Fiction also included works by Damon Knight, Philip K. Dick or Kurt Vonnegut.⁵⁴ However, after the 1950's, the format of science fiction magazines changed from pulps to books and the remaining magazines were often devoted to specific subgenres or writers. Furthermore, longer works began to be published.⁵⁵

The 1960's were marked by the emergence of the so-called New Wave. According to Roberts, the term was used to describe writers who "reacted against the conventions of traditional SF to produce avant-garde, radical or fractured science fictions."⁵⁶ The reason for the reaction was the fact that by the mid-1960's, science fiction has become unoriginal and unimaginative.⁵⁷ As Roberts notes: "What the New Wave did was to take a genre that had been, in its popular mode, more concerned with content and ideas than form, style or aesthetics, and reconsider it under the logic of the latter three terms." However, he mentions that many people protested against the changes and proceeded to compose their works in the same style as before.⁵⁸ According to *The Encyclopedia of Science Fiction*, the New Wave authors focused on topics such as eastern theologies, narcotics, previously forbidden topics and means of mass communication. The works were often gloomy and dealt with the consequences of overcrowding and environmental catastrophes.⁵⁹ Moreover, Roberts explains that several works written in the decade dealt with the topic of a "messiah." These include for example Robert Heinlein's *Stranger in a Strange Land* (1961) or Philip K. Dick's *Ubik* (1969).⁶⁰

In the 1970's, academic studies and criticism of science fiction began to flourish. In 1970, the Science Fiction Research Association was created, and two years later, the Science Fiction Foundation was established. In addition, the journal *Science Fiction Studies* was started in 1973.⁶¹ As Veronica Hollinger explains, in the 1970's, feminist topics also began to appear in science fiction. In 1969, Ursula K. Le Guin published *The Left Hand of Darkness* and other works followed. Feminist authors of the 1970's include for instance Joanna Russ, who wrote *The Female Man* (1975), or Marge Piercy, who published *Woman on the Edge of Time* (1976).⁶² Damien Broderick further notes that an important breakthrough for science fiction came in

⁵⁴ Attebery, "The magazine era: 1926-1960," 44.

⁵⁵ Attebery, "The magazine era: 1926-1960," 46.

⁵⁶ Roberts, *The History of Science Fiction*, 334.

⁵⁷ Peter Nicholls, "New Wave," *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified April 2, 2015, http://www.sf-encyclopedia.com/entry/new_wave.

⁵⁸ Roberts, *The History of Science Fiction*, 335.

⁵⁹ Nicholls, "New Wave."

⁶⁰ Roberts, *The History of Science Fiction*, 335-336.

⁶¹ Roger Lockhurst, *Science Fiction* (Malden and Cambridge: Polity Press, 2005), 167.

⁶² Veronica Hollinger, "Feminist theory and science fiction," in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 128.

1977, when the genre was popularized by the movies *Star Wars* and *Close Encounters of the Third Kind*.⁶³

In the period from the 1980's until the end of the 20th century, science fiction gained many new fans. It no longer had solely the form of short stories and novels, but appeared also in other media.⁶⁴ According to Roberts, significant works written in 1980's include Margaret Atwood's *The Handmaid's Tale* (1985), William Gibson's *Neuromancer* (1984) or Russel Hoban's *Riddley Walker* (1980). However, he points out that many of the works published in the period were profit-oriented and tended to use the themes and techniques of the Golden Age.⁶⁵ As an exception, Roberts mentions Gibson's *Neuromancer* which became influential for the development of the Cyberpunk movement, which sets stories into cities, is usually somber and warns against the threat of computers. Another work from the cyberpunk movement was Bruce Sterling's *The Artificial Kid* (1980).⁶⁶

Roberts explains that in the 21st century, young adult literature became popular. As an example of a successful science fiction series for young adults, Roberts lists Suzanne Collins' *The Hunger Games* (2008-2010).⁶⁷ Other young adult works of the 21st century include James Dashner's *The Maze Runner* trilogy (2009-2011) or Malorie Blackman's *Noughts and Crosses* (2001-2019).⁶⁸

Furthermore, several groups have formed within the science fiction community. These include for example the Mundanes or the New Weird.⁶⁹ One of the styles typical for today's science fiction is steampunk. Unlike cyberpunk, which focuses on the future, steampunk works take place in the past, specifically the 19th century. Steampunk novels include for instance Liesel Schwartz's *A Clockwork Heart*, published in 2013, or Thomas Pynchon's *Against the Day* (2006).⁷⁰

⁶³ Damien Broderick, "New Wave and backwash: 1960-1980," in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 58.

⁶⁴ John Clute, "Science fiction from 1980 to the present," in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Medlesohn (Cambridge: Cambridge University Press, 2003), 64.

⁶⁵ Roberts, *The History of Science Fiction*, 428.

⁶⁶ Roberts, *The History of Science Fiction*, 439.

⁶⁷ Roberts, *The History of Science Fiction*, 480.

⁶⁸ Roberts, *The History of Science Fiction*, 486.

⁶⁹ Roberts, *The History of Science Fiction*, 488.

⁷⁰ Roberts, *The History of Science Fiction*, 500-501.

3 Work of Isaac Asimov

Isaac Asimov was born on the 2nd of January 1920 in Russia. In 1923, Asimov's parents emigrated to the United States and brought Isaac with them. In his autobiography, *I, Asimov: A Memoir*, Asimov mentions that he considers himself to be an American, despite being born in Russia: "I am completely and entirely American by upbringing and feeling."⁷¹ In the United States, Asimov's father bought a candy store, where Asimov used to work and where he started reading pulp fiction and science fiction stories, published in pulp magazines. In 1948, Asimov earned a PhD title in chemistry from the Columbia University and later worked as a professor of biochemistry at Boston University Medical School.

During his lifetime, Asimov produced approximately five hundred works, which he either wrote or edited, and which include both fiction and non-fiction. Despite his other works, Asimov is considered to be mainly a writer of science fiction. The author himself defined the science fiction genre as follows: "By my own definition, SF is the branch of literature which deals with the response of human beings to changes in the level of science and technology."⁷²

Asimov's first published work was a short science fiction story entitled "Marooned off Vesta," which first appeared in the magazine *Amazing Stories* in 1939. In 1941, Asimov sold his short story "Nightfall" to the *Astounding Science Fiction* magazine. "Nightfall" was greatly successful and has been called one of the best short stories written in the science fiction genre.⁷³

Between 1942 and 1950, Asimov published eight short stories in *Astounding Science Fiction*. In the early 1950s, the stories were transformed into the *Foundation* trilogy, which consists of the novels *Foundation* (1951), *Foundation and Empire* (1952) and *Second Foundation* (1953). In 1966, Asimov received the Hugo Award for the trilogy, as the best science fiction series of all time. However, Asimov's first novel was *Pebble in the Sky*, which was published in 1950.

One of the main topics that Asimov focused on in his work were robots. Asimov claimed that his first short story about robots was written in 1939 and was called "Robbie."⁷⁴ In 1950, Asimov published a collection of short stories about robots, entitled *I, Robot*. The book contains a short story "Runaround," which was originally published in 1942 and in which Asimov's

⁷¹ Isaac Asimov, *I, Asimov: A Memoir* (New York: Bantam, 1994), 1.

⁷² Earl G. Ingersoll *et al.*, "A Conversation with Isaac Asimov," *Science Fiction Studies* 14, no. 1 (March 1987): 68, <https://www.jstor.org/stable/4239795>.

⁷³ Roberts, *The History of Science Fiction*, 289.

⁷⁴ Isaac Asimov, *The Complete Robot* (New York: Doubleday & Company, 1982), xi.

Three Laws of Robotics, which he created together with John W. Campbell, the editor of *Astounding Science Fiction*, were first introduced.

Asimov's first novel featuring robots was entitled *The Caves of Steel* (1954). The book is a science fiction novel which includes elements of a mystery novel. In *The Caves of Steel*, a human detective, Elijah Bailey, and a robot, R. Daneel Olivaw, have to work together in order to identify a murderer. The same characters later appeared in three other novels, *The Naked Sun* (1957), *The Robots of Dawn* (1983) and *Robots and Empire* (1985), and one short story, *The Mirror Image*.

In total, Asimov wrote thirty-seven short stories about robots. The stories were published in several compilations, the first one being *I, Robot* (1950), followed by titles such as *The Rest of the Robots* (1964), *The Complete Robot* (1982), *Robot Dreams* (1986) and *Robot Visions* (1990). In *The Complete Robot*, Asimov admits that he had accepted being called "the father of the modern robot story." In fact, he remembers discovering that he coined the word "robotics" and that he was happy about it.⁷⁵ Nonetheless, the term "robot" was coined by the Czech author Karel Čapek.⁷⁶

Even though Asimov is known primarily as a science fiction author, he also wrote two mystery novels, *The Death Dealers*, published in 1958, and *Murder at the ABA*, which was published in 1976. Furthermore, he produced several short stories in the mystery genre. As he admitted in an interview which took place in 1976, Asimov considered mysteries and non-fiction to be easier to write than science fiction:

SF is the most difficult thing there is to write. [...] In SF there are two aspects: first, there is plot, the complications of events; that's the same as in a mystery novel; but, secondly, you have to build a new society, if you want to write a good SF story. This society, if you do it properly, should be just as interesting as the plot itself; in other words, the reader should be just as eager to read about the society and to picture it as to see the development of the plot.⁷⁷

Asimov's non-fiction work includes various essays for *The Magazine of Fantasy and Science Fiction*, and science books, such as *The Intelligent Man's Guide to Science*, which was first published in 1960 and later re-published as *Asimov's New Guide to Science*. Asimov also wrote numerous works focusing on topics such as history and literature. He died in 1992 at the age of 72.

⁷⁵ Asimov, *The Complete Robot*, xii.

⁷⁶ Seed, *Science Fiction*, 59.

⁷⁷ Ingersoll *et al.*, "A Conversation with Isaac Asimov," 72.

4 Work of Philip K. Dick

Philip Kindred Dick was born in Chicago on the 16th of December 1928. Initially, he lived with his family in the San Francisco Bay Area, but after his parents split, he and his mother moved to Washington D.C. Nevertheless, Dick eventually returned to California. In 1949, Dick began attending the University of California at Berkeley, but soon ended his studies. In 1952, he published his first story called “Beyond Lies the Wub.”

Dick’s fiction initially focused mainly on discerning human beings from frauds. The works which deal with the topic comprise for instance “Second Variety” (1952) or “Imposter” (1953).⁷⁸ His short stories appeared in collections such as *A Handful of Darkness* (1955) or *Robots, Androids, and Mechanical Oddities: The Science Fiction of Philip K Dick* (1984). In 1987, his short stories were gathered into five volumes and published with the title *The Collected Stories of Philip K Dick*.

Dick’s first novel, *Solar Lottery*, was published in 1955. In 1963, he won his first prize, the Hugo Award for *The Man in the High Castle* (1962). In the novel, Dick depicts a world in which the Second World War was won by the Nazis. During the 1960’s, Dick wrote over twenty novels, among others *The Three Stigmata of Palmer Eldritch* (1964) or *The Penultimate Truth* (1964).

In 1968, Dick published the novel *Do Androids Dream of Electric Sheep?* The book takes place in a world which was decimated in a world war. In *Do Androids Dream of Electric Sheep?*, Dick explores the differences and similarities between androids and humans. According to the author, the inspiration for the novel came from studying the Nazis when he was preparing for *The Man In the High Castle*. At one point, he came upon a diary of a Nazi officer who visited a Jewish ghetto in Poland. As Dick points out, the diary heavily impacted him:

That was in the late forties when I read that diary and I still remember the one line he had in there: ‘We are kept awake at night by the cries of starving children.’ I still remember that line, and that influenced me. I thought, there is amongst us something that is a bi-pedal humanoid, morphologically identical to the human being but which is not human. It is not human to complain in your diary that starving children are keeping you awake.⁷⁹

⁷⁸ Brian Stableford, *Science Fact and Science Fiction: An Encyclopedia* (London and New York: Routledge, 2006), 128.

⁷⁹ James Van Hise, “Philip K. Dick on BLADE RUNNER,” *Starlog*, no. 55 (February 1982), <https://scrapsfromtheloft.com/2016/11/09/philip-k-dick-on-blade-runner/>.

In the subsequent years, Dick won several more prizes for his literature. Furthermore, in 1983, a year after the author's death, the Philip K. Dick Award was established and is yearly given to the best American science fiction paperback.

Dick described science fiction as a genre which takes place in a world based on real society. However, it is dissimilar in some way:

It is our world dislocated by some kind of mental effort on the part of the author, our world transformed into that which it is not or not yet. [...] this is the essence of science fiction, the conceptual dislocation within the society so that as a result a new society is generated in the author's mind, transferred to paper, and from paper it occurs as a convulsive shock in the reader's mind, the shock of dysrecognition. He knows that it is not his actual world that he is reading about.⁸⁰

As the critic Patricia Warrick states, Dick was largely “concerned about preserving political freedom and humanistic values.”⁸¹ Furthermore, the author David Sandner notes that a chief element of Dick's works is a sense of paranoia regarding technology which is relevant even nowadays: “His works speak to contemporary fears of being continually watched by technology. They speak to the paranoia of modern life in which we watch ourselves and lose our sense of identity.”⁸²

Dick also often explored what is real.⁸³ As Roberts notes, the author demonstrated in his works that what people consider true is often fallacious: “His best novels take thoroughly quotidian characters, often suburban, usually unexceptional, and rake through their (and our) preconceptions about the world around them. Reality and selfhood depend upon perception, says Dick; and perception is radically unreliable.”⁸⁴

In total, Dick published 44 novels and wrote over 120 short stories. Several of Dick's novels have been turned into movies, including *A Scanner Darkly*, *Total Recall* and *Do Androids Dream of Electric Sheep*, which was renamed as *Blade Runner*.

⁸⁰ “The shock of dysrecognition | Philip K. Dick defines science fiction,” Bibliopklept, published September 19, 2017, <https://bibliopklept.org/2017/09/19/the-shock-of-dysrecognition-philip-k-dick-defines-science-fiction/>.

⁸¹ Patricia Warrick, “In Memory of Philip K. Dick,” *Science Fiction Studies* 9, no. 2, Utopia and Anti-Utopia (July 1982): 228, <https://www.jstor.org/stable/4239489>.

⁸² David Sandner, “Introduction to Philip K. Dick Now That He Is Philip K. Dick,” in *Philip K. Dick: Essays of the Here and Now*, ed. David Sandner (United States of America: McFarland, 2020), 1.

⁸³ M. Keith Booker and Anne-Marie Thomas, *The Science Fiction Handbook* (United Kingdom: Wiley-Blackwell, 2009), 147.

⁸⁴ Roberts, *The History of Science Fiction*, 346.

5 Technological Progress in Science Fiction

Progress in technology and science is one of the most commonly explored topics in science fiction. In fact, Roberts notes in his book *Science Fiction* that progressive technology is the feature that defines the genre: “A piece of futuristic, extrapolated technology is most often the technological novum that distinguishes a story as SF in the first place [...]”⁸⁵ Furthermore, Hugo Gernsback, the editor of the science fiction magazine *Amazing Stories*, believed that authors of science fiction stories should predict new technological inventions.⁸⁶

In science fiction, technological progress is depicted in two main ways. Technology is either seen in a positive light, or it is viewed with suspicion and as potentially harmful.⁸⁷ According to *The Encyclopedia of Science Fiction*, the genre was never clear on its stance: “The attitude of sf to technology has always been deeply ambivalent [...]. Sf is, of course, the natural medium of antitechnological fantasies as well as of serious extrapolations of technological possibility.”⁸⁸ In contrast, Patricia Warrick maintains that from the ancient Greece until the 19th century, technological progress was perceived positively. She believes that some of the first works which displayed negativity were Mary Shelley’s *Frankenstein* (1818) and E. M. Forster’s *The Machine Stops* (1909).⁸⁹

In his article “Technology In The Dystopian Novel,” Gorman Beauchamp further explains that the two viewpoints divide people into “technophobes” and “technophiles”:

The technophiles contend that technology is value-neutral, merely a tool that can be used for good or ill depending on the nature and purposes of the user. Man, that is, remains in control, remains the master of his creations - though, of course, he can be an evil master and “misuse” them. The technophobes, by contrast, view technology as a creation that can transcend the original purposes of its creator and take on an independent existence and will of its own.⁹⁰

⁸⁵ Adam Roberts, *Science Fiction*, Second Edition (London and New York: Routledge, 2006), 110.

⁸⁶ Hugo Gernsback, “Editorial: A new sort of magazine,” 12.

⁸⁷ Seed, *Science Fiction*, 47.

⁸⁸ Brian M. Stableford and Peter Nicholls, “Technology,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified December 19, 2017, <http://www.sf-encyclopedia.com/entry/technology>.

⁸⁹ Patricia S. Warrick, *The Cybernetic Imagination in Science Fiction* (Cambridge and London: The Massachusetts Institute of Technology, 1980), 55-56.

⁹⁰ Gorman Beauchamp, “Technology in the Dystopian Novel,” *Modern Fiction Studies* 32, no. 1, Special Issue: Science Fiction And Fantasy Fiction (Spring 1986): 54, <http://www.jstor.com/stable/26281849>.

In addition, the two views on technology often result in utopian or dystopian literature.⁹¹ As Professor Daniel Dinello notes, authors who celebrated technological progress believed that it would improve the world:

Techno-utopians expected that humanity rather than being crushed by the wheels of industry, would be physically liberated and spiritually enhanced by advancing technology. These utopian visions assumed that science would understand, control, and perfect nature, including humans.⁹²

On the other hand, the authors who portray technology negatively tend to see it as becoming dangerous in the long term. According to Stableford, dystopian literature typically depicts societies which are overly reliant on machinery, which results in their degradation.⁹³ Furthermore, Dinello explains that as technologies become advanced, people begin to fear that the machines will exceed them:

Computers now threaten to surpass our intelligence. Cyborgs are stronger and more powerful. Clones portend an unlimited supply of duplicate selves. This reduces the value of our own minds, bodies, individuality, and consciousness. A kind of evolutionary panic ensues, giving rise to being transformed or being taken over by machines. [...] Science fiction taps into these existential fears while reinforcing our concerns about the misanthropic humans who serve as technology's collaborators in dominion.⁹⁴

In general, the writers who are skeptical towards technological progress do not believe that society will benefit from it. According to Barry N. Malzberg, science fiction warns readers about technological advancements: “We know not what we do; the engines can eat us up – this is what science fiction has been saying (among many other things) for a long time now.”⁹⁵ In fact, the author L. W. Michaelson states in his article “Social Criticism in Science Fiction” that literary critics even complained about the negativity of science fiction authors.⁹⁶ In addition, Leila E. Villaverde and Roymieco A. Carter point out that the genre focuses on the relationship

⁹¹ Peter Nicholls, “Optimism and Pessimism,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified April 9, 2015, http://www.sf-encyclopedia.com/entry/optimism_and_pessimism.

⁹² Daniel Dinello, *Technophobia!: Science Fiction Visions of Posthuman Technology* (Austin: University of Texas Press, 2005), 34.

⁹³ Stableford, *Science Fact and Science Fiction*, 134.

⁹⁴ Dinello, *Technophobia!*, 6.

⁹⁵ Barry N. Malzberg, “The Number of the Beast,” in *Speculations on Speculation: Theories of Science Fiction*, ed. James E. Gunn and Matthew Candelaria (Lanham, Md: Scarecrow Press, 2005), 40.

⁹⁶ L. W. Michaelson, “Social Criticism in Science Fiction,” *The Antioch Review* 14, no. 4 (Winter, 1954): 505, <https://www.jstor.org/stable/4609758>.

between people and the engines: “SF has historically always studied the interaction between human and machine [...], raising ethical questions both of imminent concern and forecasting issues to ponder.”⁹⁷

One of the earliest science fiction novels which dealt with progress in technology and science was *Frankenstein; or, The Modern Prometheus* by Mary Wollstonecraft Shelley. The plot of *Frankenstein* revolves around a young scientist who manages to bring to life a creature made of body parts stolen from a cemetery. However, in the end, the creature murders him. As Roberts points out, the novel might be perceived as a work which warns readers about the repercussions of treating science irresponsibly.⁹⁸ In addition, Stableford explains that *Frankenstein* was essential for the development of literature suspicious of science: “The Frankenstein formula of an unruly and unfortunate artefact bringing about the downfall of its creator became established in the last decade of the nineteenth century as the principal narrative form of anti-science fiction [...]”⁹⁹

In her book *The Cybernetic Imagination in Science Fiction*, Patricia Warrick lists several motifs which concern technology and which she claims appear in *Frankenstein* and in other modern science fiction stories. The first theme is the character of a scientist who brings new inventions into existence thanks to his insight and education. As the second theme, Warrick lists the fact that technology can be both good and malevolent. The remaining themes include the consequences of the invention being abandoned by the scientist, and the hierarchical relationship between the maker and the invention, particularly who is the slave and who the commander at the end.¹⁰⁰

One of the authors in the 19th century who were optimistic about the development of technologies was Jules Verne. In his fiction, Verne focused primarily on progressive means of travel.¹⁰¹ However, while both Verne and H. G. Wells are considered important writers of 19th century science fiction, a number of critics did not agree with the perception of Verne as an author of science fiction and claimed that Verne’s stories do not include innovatory technologies.¹⁰² As Timothy Unwin notes, Verne saw the difference between himself and Wells

⁹⁷ Leila E. Villaverde and Roymieco A. Carter, “Singularity, Cyborgs, Drones, Replicants and Avatars: Coming to Terms with the Digital Self” in *Science Fiction and Speculative Fiction: Challenging Genres*, ed. P. L. Thomas (Boston: Sense Publishers, 2013), 119.

⁹⁸ Roberts, *The History of Science Fiction*, 130.

⁹⁹ Stableford, “Science fiction before the genre,” 19.

¹⁰⁰ Warrick, *The Cybernetic Imagination*, 37-38.

¹⁰¹ Tymn, “Science Fiction: A Brief History,” 42.

¹⁰² John Clute, “Verne, Jules,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified October 28, 2019, http://www.sf-encyclopedia.com/entry/verne_jules.

in that “while H. G. Wells invented new metals and defied gravity, he himself needed to invent nothing and respected the laws of physics.”¹⁰³ Nonetheless, Stableford points out that while Verne wrote about technologies which were already invented, the stories were still slightly futuristic.¹⁰⁴

New advanced technologies were depicted also by H. G. Wells. In his novel *Time Machine* (1895), Wells presented a device which allowed people to travel in time. However, *The Encyclopedia of Science Fiction* states that Wells did not come up with the idea of time machines. A machine which enabled time travel was first mentioned in 1887 by the Spanish author Enrique Gaspar in the novel *El anacronópete*, translated as *The Time Ship: A Chrononautical Journey*. However, the machine as described by Wells was more developed than Gaspar’s.¹⁰⁵

Wells’ *Time Machine* may also be considered a dystopian work. As Dinello points out, together with two other Wells’ novels, *The Island of Dr. Moreau* (1896) and *When the Sleeper Awakes* (1899), *Time Machine* proposes that “the technological future might be a hell rather than heaven.” Dinello further notes that in *The Island of Dr. Moreau*, Wells predicts that humanity will misuse technological advancements.¹⁰⁶ However, he admits that while Wells wrote a few dystopian novels, the novel *A Modern Utopia* (1905) is optimistic about science and technology.¹⁰⁷ In fact, Wells himself wrote in “Preface to *The Scientific Romances* that he is “neither a pessimist nor an optimist at bottom.”¹⁰⁸

In general, the prevailing opinion in the 19th century was that progress in technology and science is desirable.¹⁰⁹ Nonetheless, many dystopian works emerged during the 20th century. In fact, Warrick notes that by the 1960’s, pessimistic works almost outnumbered literature which celebrated advances in technology. She states that the first 20th century work which depicted an antiutopia was *The Machine Stops* (1909) by E. M. Forster. As she explains, the novel deals with the question of what would happen if a perfect society was created with the help of science and it went wrong.¹¹⁰

¹⁰³ Timothy Unwin, “Jules Verne: Negotiating Change in the Nineteenth Century,” *Science Fiction Studies* 32, no. 1, A Jules Verne Centenary (March 2005): 6, <https://www.jstor.org/stable/4241318>.

¹⁰⁴ Stableford, “Science fiction before the genre,” 20.

¹⁰⁵ Clute and Stableford, “Wells, H G.”

¹⁰⁶ Dinello, *Technophobia!*, 43.

¹⁰⁷ Dinello, *Technophobia!*, 34.

¹⁰⁸ H. G. Wells, “Preface to *The Scientific Romances*,” in *Science Fiction Criticism: An Anthology of Essential Writings*, ed. Rob Latham (London, New York: Bloomsbury Academic, 2017), 15.

¹⁰⁹ Tymn, “Science Fiction: A Brief History,” 42.

¹¹⁰ Warrick, *The Cybernetic Imagination*, 44.

According to Dinello, the reason why people stopped being optimistic about technology was primarily the destruction which occurred during World War I. As he points out, it became apparent that technological and scientific advancements may not only make life better, but can also end it.¹¹¹ Nevertheless, science fiction stories published in pulp magazines usually had a positive attitude towards science and technology and especially the magazine editor Hugo Gernsback advocated for optimistic portrayal of progress in technology and science.¹¹² In an editorial to *Wonder Stories*, Gernsback stated that although people predict that scientific and technological progress will harm society, they should not be taken seriously since such predictions have usually turned out to be incorrect. He also declared that he would not be accepting stories which “inflamm[e] an unreasoning public against scientific progress, against useful machines, and against inventions in general.”¹¹³

However, *The Encyclopedia of Science Fiction* states that after the invention of the atom bomb, it was no longer possible to see science and technology in a completely positive view.¹¹⁴ In his book *Science Fiction: Its criticism and teaching*, Patrick Parrinder notes that in the middle of the 20th century, stories in science fiction magazines often contained elements of criticism concerning advances in technology. He explains that authors of the stories commented on the fact that science was misused for development of new weapons in the Second World War.¹¹⁵ Dinello likewise mentions that during the war, computers were utilized for warfare purposes. The fact that they were associated with powerful military devices is one of the reasons why the 1950’s was a period suspicious of intelligent machines.¹¹⁶ As Warrick points out: “This negative attitude extends beyond SF to the general population. Technology can now create almost anything man can imagine; and man is horrified and fearful when the products of his imagination become actual.”¹¹⁷

Science fiction authors became truly pessimistic in their works in the second half of the 1960’s during the New Wave movement.¹¹⁸ As Marshall B. Tymn explains: “The ‘New Wave,’ as this group came to be called, warned of the chaos and despair threatened by the potential for war and internal corruption in a technological society.”¹¹⁹ In addition, a new movement

¹¹¹ Dinello, *Technophobia!*, 49.

¹¹² Nicholls, “Optimism and Pessimism.”

¹¹³ Hugo Gernsback, “Wonders of the Machine Age,” *Wonder Stories* 3, no. 2 (February 1931), <https://manifold.umn.edu/read/the-perversity-of-things-hugo-gernsback-on-media-tinkering-and-scientifiction/section/bc974711-0ae6-40e9-ab37-ee0ed7a80790>.

¹¹⁴ Nicholls, “Optimism and Pessimism.”

¹¹⁵ Patrick Parrinder, *Science fiction: Its criticism and teaching* (London and New York: Routledge, 2003), 71.

¹¹⁶ Dinello, *Technophobia!*, 87.

¹¹⁷ Warrick, *The Cybernetic Imagination*, 56.

¹¹⁸ Nicholls, “Optimism and Pessimism.”

¹¹⁹ Tymn, “Science Fiction: A Brief History,” 47.

concerned with technological progress, called Cyberpunk, emerged during the 1980's. It focused mainly on cyberspace, biological engineering and virtual reality. The literature is set in the future, where humans enhance their bodies with mechanical parts.¹²⁰

However, the attitude towards technology in the second half of the 20th century was not only that of suspicion. During that period, technological singularity also became a prominent concept in science fiction.¹²¹ The critic David Langford defines it as “a hypothetical point in time at which human technology – in particular computers, AI super-intelligence and human intelligence amplification via computer interfacing [...] or perhaps drugs – similarly accelerates ‘off the map’ into unpredictable regions.”¹²² As Stableford explains, singularity is optimistic about technological progress: “In this view, technology no longer threatened humankind with a degradation to mere mechanism, but rather with an exaltation to a post-human Heaven [...]” He notes that technological singularity suggests that technology will allow humans to reach perfection.¹²³

As is evident, the attitudes of science fiction authors towards technological progress have historically differed. In their works, Isaac Asimov and Philip K. Dick also focus on progress in technology. While progressive technologies in Asimov's stories in *The Complete Robot* and Dick's novel *Do Androids Dream of Electric Sheep?* appear mainly in the form of artificial intelligence, the works portray also other devices.

¹²⁰ Peter Nicholls, “Cyberpunk,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified April 10, 2015, <http://www.sf-encyclopedia.com/entry/cyberpunk>.

¹²¹ Stableford, *Science Fact and Science Fiction*, 518.

¹²² David Langford, “Singularity,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified August 12, 2018, <http://www.sf-encyclopedia.com/entry/singularity>.

¹²³ Stableford, *Science Fact and Science Fiction*, 518.

6 Technological Devices in Asimov's and Dick's Works

One of the technological inventions that science fiction authors commonly portray is the spaceship. According to Roberts, there are two kinds of spaceships in science fiction. One is lifeless, while the other is intelligent and self-aware.¹²⁴ In addition, Seed calls the spaceship “one of the key icons of SF, with its sleek rocket design, promising freedom and escape.”¹²⁵ He lists several novels which feature spaceships, such as *The Voyage of Space Beagle* (1950) by A. E. Van Vogt or *When Worlds Collide*, published by Edwin Blamer and Philip Wylie in 1933. In the latter, the task of the spaceship is to transport people into safety.¹²⁶

Spaceships appear also in Asimov's stories collected in *The Complete Robot*, specifically in “Escape!” and “Risk.” The spaceship in both stories is an inert machine. Nevertheless, in “Escape!”, it is created and operated by a robotic computer and in “Risk,” the pilot is a robot. Furthermore, in the latter story, the spaceship, called *Parsec*, begins its travel in space. It is also mentioned that it is “the only ship of its kind ever built in the history of man.”¹²⁷ *Parsec* is highly advanced, as it allows humanity to travel through hyperspace. As *The Encyclopedia of Science Fiction* explains, hyperspace is “a kind of specialized space through which spaceships can take a short cut in order to get rapidly from one point in ‘normal’ space to another far distant.”¹²⁸

The spaceship in “Escape!” is built for a similar purpose and also enables interstellar travel. However, while the *Parsec* needs to be operated manually, the spaceship in “Escape!” is even more advanced and can be operated remotely by artificial intelligence, a computer called The Brain. One of the human characters even notes that with the ship, “humanity has the opportunity for galactic empire.”¹²⁹ Overall, both ships are depicted as a symbol of technological progress, since they are the first of their kind and allow humanity to explore the space as never before.

Associated with technological advancement is also the city. As Seed points out, the city is “the supreme embodiment of technological progress,” which makes it a frequent setting for science fiction works.¹³⁰ Although one of the aspects of the Industrial Revolution was

¹²⁴ Roberts, *Science Fiction*, 112.

¹²⁵ Seed, *Science Fiction*, 15.

¹²⁶ Seed, *Science Fiction*, 17.

¹²⁷ Asimov, *The Complete Robot*, 375.

¹²⁸ Peter Nicholls and Tony Sudbery, “Hyperspace,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified January 28, 2016, <http://www.sf-encyclopedia.com/entry/hyperspace>.

¹²⁹ Asimov, *The Complete Robot*, 422.

¹³⁰ Seed, *Science Fiction*, 52.

development of new cities, parts of them soon became squalid. Due to that, industrial cities are often perceived somewhat negatively. In early science fiction, authors commonly portrayed cities in a pessimistic light, such as H. G. Wells in his novel *When the Sleeper Wakes* (1899).¹³¹

Seed further explains that dystopias commonly take place in a city. For instance, Clifford D. Simak's novel *City* (1952) depicts a world in which mankind perishes and cities disappear, and in Philip Wilie's *Los Angeles: AD 2017* (1971), humanity is forced to live below the surface of the earth due to pollution.¹³²

Philip K. Dick's *Do Androids Dream of Electric Sheep?* takes place in the city of San Francisco. The plot of the novel is set in 1992, after World War Terminus which eradicated most living organisms. Since the novel was first published in 1968, it takes place in the future. The novel portrays the city as a technologically advanced, but dismal place. During the war, a radioactive dust has filled the air and over time physically and mentally deteriorates people. To reduce its effects, people use technological equipment such as air-filtering units and glasses, or codpieces, which ensure that the dust does not decrease their ability to reproduce. No one knows where the dust originated or remembers why the war began and who won it. Because of the dust, most people emigrated to space colonies, for instance to New America, the main American colony on Mars. Nonetheless, a number of people decided to stay on Earth and those not intelligent enough were not allowed to leave it at all. They all had to gather in cities: "In any case, thousands of individuals remained, most of them constellated in urban areas, where they could physically see one another, take heart at their mutual presence."¹³³

As Thomas M. Disch explains, a dystopian setting is common in Dick's fiction. He notes that the author was influenced by the destruction caused by the atomic bomb: "When the bomb fell on Hiroshima, he was still sixteen, and the event sent shock waves through the rest of his life. When he began to publish SF in the early '50s, his stories and novels were set, almost as a matter of course, in a post-nuclear-holocaust future."¹³⁴

Despite the omnipresent decay, the city is highly technologically advanced. People use flying vehicles, called hovercars, as a means of transportation, and communicate with each other via vidcalls. They also utilize the Penfield mood organ, a device which allows them to artificially regulate their moods and emotions. At the beginning of the novel, the protagonist

¹³¹ Brian M. Stableford, David Langford and John Clute, "Cities," *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified August 31, 2018, <http://www.sf-encyclopedia.com/entry/cities>.

¹³² Seed, *Science Fiction*, 57.

¹³³ Philip K. Dick, *Do Androids Dream* (London: Gollancz, 2010), 12.

¹³⁴ Thomas M. Disch, *The Dreams Our Stuff is Made Of: How Science Fiction Conquered the World* (New York: Simon & Schuster, 2000), 87.

Rick Deckard is shown to use the device. The organ functions on the basis of electrical brain stimulation: “At his console he hesitated between dialing for a thalamic suppressant (which would abolish his mood of rage) or a thalamic stimulant (which would make him irked enough to win the argument).”¹³⁵

The device has hundreds of functions. During the initial conversation between Rick and his wife Iran, Rick keeps suggesting what mood she should dial:

From the bedroom Iran’s voice came. ‘I can’t stand TV before breakfast.’
‘Dial 888,’ Rick said as the set warmed. ‘The desire to watch TV, no matter what’s on it.’
‘I don’t feel like dialing anything at all now,’ Iran said.
‘Then dial 3,’ he said.
‘I can’t dial a setting that stimulates my cerebral cortex into wanting to dial!’¹³⁶

It is apparent that Rick perceives the mood organ as a quick fix for all problems. When Iran discovers that she can dial depression, Rick is shocked: “It defeated the whole purpose of the mood organ.”¹³⁷ Therefore, it is revealed that the device is primarily used to make people feel better. In fact, one of the moods which can be dialed is 481, a feeling of hope. Iran defines the setting as “awareness of the manifold possibilities open to me in the future.”¹³⁸

Humans evidently feel desperate, since they need to use a technological device to feel hopeful. At one point, Iran argues that it is wrong to have no genuine reaction to the outside world: “[...] I was in a 382 mood; I had just dialed it. So although I heard the emptiness intellectually, I didn’t feel it. [...] But then I realized how unhealthy it was, sensing the absence of life, not just in this building but everywhere, and not reacting – do you see?”¹³⁹

Even though Iran seems to believe that it is not natural to use the device to feel better, her solution is not turning the mood organ off, but looking for “a setting for despair.”¹⁴⁰ Nevertheless, humans are evidently still capable of having real emotions, since Rick feels annoyance after bickering with his wife “even though he didn’t dial for it.”¹⁴¹ Therefore, it may be argued that people in *Do Androids Dream of Electric Sheep?* overly depend on the device and use it even if they do not need to. This is evident also in the fact that the mood organ has more than eight hundred different settings. In fact, Sherryl Vint argues that Rick’s amazement

¹³⁵ Dick, *Do Androids Dream*, 2.

¹³⁶ Dick, *Do Androids Dream*, 4.

¹³⁷ Dick, *Do Androids Dream*, 2.

¹³⁸ Dick, *Do Androids Dream*, 3.

¹³⁹ Dick, *Do Androids Dream*, 3.

¹⁴⁰ Dick, *Do Androids Dream*, 3.

¹⁴¹ Dick, *Do Androids Dream*, 1.

at being angry despite not having used the technology shows that “the artificial simulation of emotions is normalized over their ‘natural’ expression.”¹⁴²

Another technological device which the humans use is the empathy box. The device allows them to access a virtual reality in which they merge not only with other users, but also with Mercer, a figure at the centre of Mercerism, a religion which focuses on empathy. Mercer is described as an old man who repeatedly climbs a hill while being hit by stones. The humans can feel his pain and share their emotions with the other users. As Mercer explains when Rick meets him in the virtual world, the empathy box helps humans to feel less lonely: “‘Then what’s this for?’ Rick demanded. ‘What are you for?’ ‘To show you,’ Wilbur Mercer said, ‘that you aren’t alone.’”¹⁴³

Nonetheless, as Booker and Thomas explain, the empathy box further isolates people: “‘Though the empathy box offers the ability to simulate communion with other humans as they enact Mercer’s struggle, it also has the effect of replacing one-on-one interaction.’”¹⁴⁴ The device hurts people also physically, since they are hit by stones when merged with Mercer. It might even kill the users: “‘People, especially elderly ones, had died, particularly at the top of the hill when the torment began in earnest. [...] Chance of cardiac arrest; be better, [John Isidore] reflected, if I lived in town where those buildings have a doctor standing by with those electro-spark machines.’”¹⁴⁵ While the empathy box is highly advanced, it can be harmful and it is even expected that it will have adverse effects. Nonetheless, people would rather risk their lives than stop using the device: “‘But he knew he’d take the risk. He always had before. As did most people, even oldsters who were physically fragile.’”¹⁴⁶ Humans are clearly dependent on the device, just as they are on the mood organ.

It is eventually revealed that Mercer is only a drunk actor and the entire scene is staged. However, the fact that people believed that their Mercer experience was spiritual demonstrates how advanced the technology is. In addition, humans manufacture artificial humans and electric animals which look completely genuine. Since most animals died due to the dust, people wish to have one of those which survived. If they are unable to buy a real animal, as they are very expensive, they purchase an electric one and pretend that it is real: “‘To say, ‘Is your sheep genuine?’ would be a worse breach of manners than to inquire whether a citizen’s teeth, hair,

¹⁴² Sherryl Vint, “Speciesism and Species Being in ‘Do Androids Dream of Electric Sheep?’” *Mosaic: An Interdisciplinary Critical Journal* 40, no. 1, a special issue: THE ANIMAL, PART II (March 2007): 115. <https://www.jstor.org/stable/44030161?seq=1>.

¹⁴³ Dick, *Do Androids Dream*, 141.

¹⁴⁴ Booker and Thomas, *The Science Fiction Handbook*, 224-225.

¹⁴⁵ Dick, *Do Androids Dream*, 19.

¹⁴⁶ Dick, *Do Androids Dream*, 19.

or internal organs would test out authentic.”¹⁴⁷ As Adam Roberts points out, the artificial replaces the real:

Rick Deckard, the android hunter, is surrounded by inauthenticity: his animals are fake; his wife’s emotions are decanted into her from a machine; he can’t be sure if the people around him are actual or artificial; the god of his religion is nothing more than an elderly actor performing a role.¹⁴⁸

In consequence, it is becoming difficult to distinguish what is genuine. In fact, at one point, the character of John Isidore fails to recognize a real cat and it dies. One of Isidore’s coworkers notes that he does not blame him since “[...] the fakes are beginning to be darn near real [...]”.¹⁴⁹ Rick’s neighbors also do not know that his sheep is electric.

Overall, both Isaac Asimov and Philip K. Dick write about advanced technologies. Asimov depicts technological progress in a positive light. In his stories, humans are able to manufacture spaceships which enable them to explore the deep space and might even allow them to establish a galactic empire. Dick’s *Do Androids Dream of Electric Sheep?* takes place in a futuristic San Francisco, which is depicted as highly technologically progressed. People use technological devices which are able to simulate a spiritual experience and make people feel happier and less lonely. They can also purchase an electric animal which looks authentic. Nonetheless, people have to wear protective gear, since the world is filled with radioactive dust which slowly degenerates their minds and bodies. The reason why humans use the technologies is because they feel hopeless. While the technologies are greatly advanced, their use is often detrimental and even life-threatening and people may overly depend on them. The progress of technology might also cause humans to confuse the artificial with the real.

¹⁴⁷ Dick, *Do Androids Dream*, 5.

¹⁴⁸ Roberts, *History of Science Fiction*, 349-350.

¹⁴⁹ Dick, *Do Androids Dream*, 62.

7 Artificial Intelligence in Science Fiction

Artificial intelligence, often referred to by the abbreviation AI, appears frequently in science fiction. In fact, Adam Roberts notes that along with spaceships, robots and computers are the most important technologies of the genre.¹⁵⁰ In his book *Science Fact and Science Fiction*, Brian Stableford defines AI as follows: “A term used in computer science since the 1970s to describe the development of programs duplicating various aspects of intelligent thought.”¹⁵¹ The Britannica Encyclopedia also explains the label: “The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience.”¹⁵² In regard to computers, *The Encyclopedia of Science Fiction* adds: “Most writers would agree that for a computer or other machine of some sort to qualify as an AI it must be self-aware.”¹⁵³

Artificial intelligence usually has the form of computers, robots or androids. According to Brian Stableford, the word “android” was first used in the 18th century.¹⁵⁴ The word comes from Greek and means “manlike.”¹⁵⁵ The term “robot” was coined by the Czech author Karel Čapek in his play *R.U.R.: Rossum’s Universal Robots*, which was published in 1920.¹⁵⁶ However, there is a difference between the terms “android” and “robot.” Stableford explains that while “android” is typically used for “organic humanoids,” “robot” refers to creatures which are not manufactured from organic material. Nevertheless, he points out that authors often do not abide by this distinction. For instance, Čapek’s robots should be correctly called androids.¹⁵⁷ Isaac Asimov also notes that he does not distinguish between androids and robots: “To me a robot is a robot.”¹⁵⁸

Isaac Asimov notes that the motif of artificial people is not new: “Yet despite the uneasiness human beings feel at the creation of artificial human beings (old science fiction stories used to intone, ‘There are some things human beings were not meant to know’) the

¹⁵⁰ Roberts, *Science Fiction*, 111.

¹⁵¹ Stableford, *Science Fact and Science Fiction*, 34.

¹⁵² B. J. Copeland, “Artificial intelligence,” Encyclopædia Britannica, last modified August 11, 2020, <https://www.britannica.com/technology/artificial-intelligence>.

¹⁵³ David Langford and Peter Nicholls, “AI,” *The Encyclopedia of Science Fiction*, edited by John Clute, David Langford, Peter Nicholls and Graham Sleight, London: Gollancz, last modified April 15, 2016, <http://www.sf-encyclopedia.com/entry/ai>.

¹⁵⁴ Stableford, *Science Fact and Science Fiction*, 22.

¹⁵⁵ Asimov, *The Complete Robot*, 153.

¹⁵⁶ Seed, *Science Fiction*, 59.

¹⁵⁷ Stableford, *Science Fact and Science Fiction*, 22.

¹⁵⁸ Asimov, *The Complete Robot*, 153.

dream of such creation is as old as literature.”¹⁵⁹ As he explains, artificial beings were initially depicted as created by gods. For instance, in *Iliad*, the god Hephaistos owns artificial helpers. The clay golems from Jew mythology may also be considered robots. According to one legend, in the 16th century, a golem was created in Prague by a rabbi. Nonetheless, the creature is portrayed as a menace to humans.¹⁶⁰

According to Warrick, people became interested in real robotic machines, called “automata,” particularly in the 18th century, when many robotic animals were designed. The interest in robots continued also in the 19th century and in 1813, several machines were displayed in Dresden.¹⁶¹ Asimov claims that the first artificial creature in literature, which was completely man-made, was the monster in Mary Shelley’s novel *Frankenstein*. However, he notes that the monster eventually murders its creator.¹⁶² As he states: “Frankenstein could create life but he couldn’t control his creation.”¹⁶³ In his article “The Artificial Alien: Transformations of the Robot in Science Fiction,” Klass similarly proposes that Frankenstein’s monster might be considered a robot, even though it is usually not called such.¹⁶⁴

However, robotic creatures were depicted also in other stories and novels written in the 19th century, such as in the story “The Sandman” by E. T. A. Hoffmann, or in Edward S. Ellis’s novel *The Huge Hunter, or The Steam Man of the Prairies*. The latter was published in 1865 and features a huge steam robotic device.¹⁶⁵ Asimov explains that there were initially two types of stories about robots, the “Robot-As-Menace,” in which the robots are evil, and “Robot-As-Pathos,” in which they are ostracized by humans.¹⁶⁶ He maintains that he was the first author who began writing stories in which the robots were only technological devices and that his type of stories influenced also other authors.¹⁶⁷

In addition, Klass calls robots “manufactured equivalents of humans” and notes: “I emphasize the word ‘equivalent’ because the term introduces an important anthropological

¹⁵⁹ Isaac Asimov, “The Lord’s Apprentice,” in *The Ultimate Frankenstein*, ed. Byron Preiss (New York: eBooks, 2017), chap. 1, para. 10, Kindle.

¹⁶⁰ Asimov, “The Lord’s Apprentice,” chap. 1.

¹⁶¹ Warrick, *The Cybernetic Imagination*, 33-34.

¹⁶² Asimov, “The Lord’s Apprentice,” chap. 1.

¹⁶³ Asimov, “The Lord’s Apprentice,” chap. 1, para. 26.

¹⁶⁴ Morton Klass, “The Artificial Alien: Transformations of the Robot in Science Fiction,” *The Annals of the American Academy of Political and Social Science* 470, Robotics: Future Factories, Future Workers (November 1983): 173, <https://www.jstor.org/stable/1044811>.

¹⁶⁵ Seed, *Science Fiction*, 59.

¹⁶⁶ Asimov, *The Complete Robot*, xi.

¹⁶⁷ Asimov, *The Complete Robot*, xii.

dimension, that of the alien - the person who in many societies is viewed as not of us, not truly human but only an equivalent of the true human.”¹⁶⁸

In Philip K. Dick’s novel *Do Androids Dream of Electric Sheep?* and Asimov’s short stories in *The Complete Robot*, technological progress is represented mainly by artificial intelligence. In Dick’s novel, the bounty hunter Rick Deckard sets out to find and destroy a group of androids who illegally escaped from a space colony on Mars. With the help of the human John Isidore, the androids hide in an apartment in the abandoned San Francisco suburbs. While both Rick and Isidore feel empathy for the androids, Rick eventually eliminates them.

Asimov’s *The Complete Robot* includes short stories about robots which he wrote in the years from 1939 to 1977. The stories are not dependent on each other, but there are reoccurring characters and the artificial intelligence is typically manufactured by the company U.S. Robots. Additionally, in most of the stories, the robots follow the Three Laws of Robotics, which govern their behavior:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.¹⁶⁹

In their works, Asimov and Dick focus on various issues regarding robots and androids. They explore what forms artificial intelligence might have and how humans would react to them. Both also focus on the role of robots and how they would benefit society as servants and free workers. They further examine the differences between intelligent machines and humans and describe how the robots feel about their status as inferior beings. In addition, Asimov and Dick deal with the question of whether artificial intelligence would prove to be dangerous for humanity and explore the fear that humans might feel in regard to the smart technologies.

¹⁶⁸ Klass, “The Artificial Alien,” 172.

¹⁶⁹ Asimov, *The Complete Robot*, 171.

7.1 Forms of Artificial Intelligence

In science fiction, artificial intelligence has various forms. According to David Seed, the term “robot” denotes an “artificial device that mimics the actions and, possibly, the appearance of a human being.”¹⁷⁰ Artificial intelligence is thus often portrayed as humanoid. Stories about androids who are physically similar to humans include for instance “Made in USA” (1953) by J. T. McIntosh or “Synth” (1966) by Keith Roberts. In the stories, artificial intelligence and humans look identical and may be mistaken for one another. Androids may also be depicted as pursuing a romantic relationship with humans, but it mostly fails.¹⁷¹

Robots have also frequently been depicted as inorganic. In her book “Anatomy of a Robot,” Despina Kakoudaki explains that the fact that robots are often portrayed as indestructible is an attempt to fix the shortcomings of the human body:

In such technological fantasies, the fictional body promises to correct what the discourse depicts as body problems. Instead of skin, artificial people are covered in metal or synthetic textures that resist injury or can be repaired easily; their old or damaged body parts can be substituted or upgraded; they have no irreplaceable body fluids; and they experience few bodily needs that couldn't be satisfied with a new power source, updated materials, or better programming.¹⁷²

In addition, in the 1970s, the roboticist Masahiro Mori presented a theory which proposed that humans react better to metallic robots than humanoid androids. As Professor Seo-Young Chu explains: “According to Mori, people are likely to respond more and more positively to a series of increasingly humanlike entities until a certain point - somewhere around 80 percent humanlike - at which the emotional response suddenly becomes extremely negative.” She further explains that the theory is known as the “uncanny valley” and adds: “To experience the uncanny valley is not simply to experience a feeling of disturbing uncertainty as to whether a given entity is animate or inanimate. It is to experience a feeling of disturbing uncertainty as to whether a given entity is human or nonhuman.” Therefore, Seo-Young Chu notes that people are typically fonder of their Roomba vacuum cleaner than the human characters in *Frankenstein* are of the monster. They might even be tempted to name the cleaner.¹⁷³

¹⁷⁰ Seed, *Science Fiction*, 59.

¹⁷¹ Stableford, *Science Fact and Science Fiction*, 23.

¹⁷² Despina Kakoudaki, *Anatomy of a Robot: Literature, Cinema, and the Cultural Work of Artificial People* (New Brunswick, New Jersey, and London: Rutgers University Press, 2014), 69.

¹⁷³ Seo-Young Chu, *Do Metaphors Dream of Literal Sleep?: A Science-Fictional Theory of Representation* (Cambridge, Massachusetts; London, England: Harvard University Press, 2010), 216-217.

In *Do Androids Dream of Electric Sheep?*, the androids look and act exactly like humans. In fact, it is impossible to distinguish them from people at first glance. However, their life expectancy is only four years, in which they are inferior to humans. In Asimov's *The Complete Robot*, the appearance of the robots varies. For instance, in the story "Sally," it is cars that become self-aware. In several Asimov's stories, the artificial intelligence is a computer, such as in "Point of View" or "The Evitable Conflict." In addition, the robots in "Victory Unintentional" resemble neither humans nor any other creature and are unbreakable:

They were low and squat, with a center of gravity less than a foot above ground level. They had six legs apiece, stumpy and thick, designed to lift tons against two and a half times normal Earth gravity. [...] And they were composed of a beryllium-iridium-bronze alloy that was proof against any known corrosive agent, also any known destructive agent short of a thousand-megaton atomic disruptor, under any conditions whatsoever.¹⁷⁴

Despite their non-human appearance, the robots in "Victory Unintentional" act like humans. They are sent to Jupiter, where they communicate with aliens, called Jovians, and with each other, they are able to reason and even act in an amusing way. After one of the robots kills a Jovian creature, he apologizes to the Jovians and complains:

"He attacked me," explained One. "He bit at me without provocation. See!" And he displayed a two-foot fang that ended in jagged break. "He broke it on my shoulder and almost left a scratch. I just slapped it a bit to send it away – and it died. I'm sorry!"¹⁷⁵

As is evident, the robot is able to realize that the Jovians might be insulted and shows remorse for his actions. In that, he displays human behavior. Roberts notes that Asimov typically portrayed his robots as likable and humanlike: "Asimov's robots are supremely ethical machines, governed in the first instance by a desire to preserve and aid human life. Because the ethical imperative is so central to their conception, Asimov's robots are necessarily attractive and humanised creations."¹⁷⁶

Asimov also wrote several stories in which the robots are metallic and resemble humans only in shape. For instance, in the story "Robot AI-76 Goes Astray," the robot is described as "a huge metal monster, seven feet tall, maybe even eight or nine"¹⁷⁷ but talks in a "remarkably

¹⁷⁴ Asimov, *The Complete Robot*, 77.

¹⁷⁵ Asimov, *The Complete Robot*, 82.

¹⁷⁶ Roberts, *Science Fiction*, 117.

¹⁷⁷ Asimov, *The Complete Robot*, 65-66.

mild tone for one so heavily and brutally metallic in appearance.”¹⁷⁸ The robot in “Robbie” is also metallic. In the story, the robot acts as a playfellow for a little girl.

Although human characters describe the robot in “Robot AI-76 Goes Astray” as a metal monster, Dinello explains that the robot from “Robbie” was used in the 1956 movie *Forbidden Planet*. The figure of an adorable robot playfellow subsequently appeared in literature and in various other movies. According to Dinello, it is the metallic appearance that makes the robots non-threatening: “These cute, clangy, metallic-style retro-robots provide a warm, comforting, nostalgic image of artificial humans that sharply contrasts with that of the rampaging cyborgs and angry androids of contemporary science fiction.”¹⁷⁹ In fact, in *The Complete Robot*, humans give metallic robots pet names. For example, in “Galley Slave,” the robot EZ-27 becomes Easy and in “Reason,” QT-1 is called Cutie. In contrast, the more humanlike robots have standard names, such as Stephen or Tony. Similarly, the androids in *Do Androids Dream of Electric Sheep?* have human names such as Rachael Rosen or Roy Baty. The difference between the names suggests that metallic robots are treated more as pets than people.

In addition, many of Asimov’s robots are humanoid. They are either indistinguishable from humans, or they lack facial expressions. Humans might also perceive them as physically attractive. For instance, in “Satisfaction Guaranteed,” a housewife, Claire, is given a robot servant called Tony. The robot is described as “tall and darkly handsome.”¹⁸⁰ Nevertheless, Claire is distraught by the fact that he remains expressionless: “He was only a machine, and if it were only more visible that he were it wouldn’t be so frightening. Or if his expression would change. It just stayed there, nailed on. You couldn’t tell what went behind those dark eyes and that smooth, olive-skin stuff.”¹⁸¹ It may be argued that Claire is experiencing Mori’s uncanny valley since she wishes that Tony would either be more humanlike and expressive of his emotions and thoughts, or looked more like a machine. Currently, Tony appears to be something between a human and a machine and Claire is frightened of him.

Asimov also typically depicts his robots as males. As a roboticist notes in the story “Feminine Intuition”: “Our robots are sexless, of course, and so will this one be, but we always act as though they’re males. We give them male pet names and call them he and him.”¹⁸² According to Thomas M. Disch, science fiction from the end of the 1920’s until the mid-1950’s was considered a male domain and the authors were typically men. During that period, the

¹⁷⁸ Asimov, *The Complete Robot*, 61.

¹⁷⁹ Dinello, *Technophobia!*, 71.

¹⁸⁰ Asimov, *The Complete Robot*, 285.

¹⁸¹ Asimov, *The Complete Robot*, 289.

¹⁸² Asimov, *The Complete Robot*, 474.

female characters who appeared in science fiction were often not treated seriously.¹⁸³ This is reflected also in Asimov's stories, since apart from a small number of females, all of the characters, including the machines, are males.

In "Feminine Intuition," the robopsychologist Madarian manufactures the first robot that resembles a female. He reasons that if men perceive the robot as a woman, they will believe that she is not as clever as them and will not be afraid.¹⁸⁴ The robot, Jenny, is eventually created with a feminine voice. Even though humans on Earth are afraid of artificial intelligence, when they hear Jenny's voice, they change their stance. As Madarian tells Bogert:

[...] we uncrated her and she stepped out of the box. When that happened, every man in the place stepped back. Scared! Nitwits! [...] So then she greeted them routinely. She said, 'Good afternoon, gentlemen. I am so glad to meet you.' And it came out in this beautiful contralto. ... That was it. One man straightened his tie, and another ran his fingers through his hair. [...] They're all crazy about her now. All they needed was the voice. She isn't a robot any more; she's a girl. [...] I should have programmed her for sexy intonations. They'd be asking her for dates right now if I had.¹⁸⁵

While Peter Bogert, Madarian's superior, calls the idea of possible relationships between human men and female robots "perverse notions,"¹⁸⁶ the men respond positively to the robot woman. As Lois Tyson explains in *Critical Theory Today*: "Traditional gender roles cast men as rational, strong, protective, and decisive; they cast women as emotional (irrational), weak, nurturing, and submissive."¹⁸⁷ The men evidently associate Jenny more with a woman than a robot. Therefore, it may be argued that they accept her quicker than other artificial intelligence because they stereotypically perceive her as weaker and more submissive. Furthermore, they apparently find her appealing because of her feminine voice.

In Dick's *Do Androids Dream of Electric Sheep?*, the androids can be either male or female. Over the course of the novel, Rick develops empathy for the androids and begins to question whether it is right to murder them. Similarly to the men in "Feminine Intuition," he responds more positively to female androids and sees them as appealing. For instance, when reading information about two androids that he needs to kill, Rick judges the female android, Irmgard Baty, as pretty, and evaluates the male android as despicable: "The woman, he decided,

¹⁸³ Disch, *The Dreams Our Stuff is Made Of*, 115.

¹⁸⁴ Asimov, *The Complete Robot*, 475.

¹⁸⁵ Asimov, *The Complete Robot*, 483.

¹⁸⁶ Asimov, *The Complete Robot*, 477.

¹⁸⁷ Lois Tyson, *Critical Theory Today: A User-Friendly Guide*, 3rd ed. (New York, London: Routledge, 2006), 85.

looks attractive. Roy Baty, however, is something different. Something worse.”¹⁸⁸ He immediately condemns the male robot, but not the female one because of her looks. At one point, Rick also decides to take the empathy test and realizes that he feels more empathy for female androids.¹⁸⁹

While in “Feminine Intuition” it is only hinted that men might be interested in dating robot women, in Dick’s novel, Rick, as well as another bounty hunter, Phil Resch, are attracted to the androids. As Kevin McNamara observes: “[...] the novel characterizes women almost exclusively by the shape of their breasts.”¹⁹⁰ This applies also to androids. The android women are, therefore, sexualized. When Rick feels sorry for killing Luba Luft, an android pretending to be a human opera singer, Resch tells him that he feels empathy for female androids only because he would like to have a sexual relationship with them, thus implying that Rick’s empathy is not based on perceiving them as equal to humans: “You wanted to go to bed with a female type of android - nothing more, nothing less.”¹⁹¹ As Jill Galvan points out: “[...] Resch exactly perverts Rick’s empathy for Luba Luft into its opposite - into lust, sexual longing: in short, an objectifying *desire*, which undercuts rather than corroborates Rick’s acknowledgment of Luba’s position as subject.”¹⁹²

The public in *Do Androids Dream of Electric Sheep?* shares Peter Bogert’s opinion that relationships with robots are perverse and they are banned. Still, men in the novel pursue sexual relationships with robots and men have android mistresses in the space colonies. One of the androids, called Rachael, eventually seduces Rick. Before he goes to bed with her, she tells him that he has to forget that she is not human: “I understand – they tell me – it’s convincing if you don’t think too much about it. But if you think too much, if you reflect on what you’re doing – then you can’t go on.”¹⁹³ It may be argued that he would experience the uncanny valley, since he would realize that she is a machine which only looks like a human.

Both Dick and Asimov also portray humans as falling in love with robots. In “Satisfaction Guaranteed,” Asimov explores a romantic relationship between a female human and a male robot. While Claire is scared of Tony, she eventually falls in love with him. However, Tony does not make Claire fall for him intentionally. Since the First Law of Robotics

¹⁸⁸ Dick, *Do Androids Dream*, 145.

¹⁸⁹ Dick, *Do Androids Dream*, 113.

¹⁹⁰ Kevin R. McNamara, “Blade Runner’s’ Post-Individual Worldspace,” *Contemporary Literature* 38, no. 3 (Autumn, 1997): 438, <https://www.jstor.org/stable/1208974>.

¹⁹¹ Dick, *Do Androids Dream*, 114.

¹⁹² Jill Galvan, “Entering the Posthuman Collective in Philip K. Dick’s ‘Do Androids Dream of Electric Sheep?’” *Science Fiction Studies* 24, no. 3 (November 1997): 423, <https://www.jstor.org/stable/4240644>.

¹⁹³ Dick, *Do Androids Dream*, 152-153.

states that a robot can never harm a human, Tony only shows affection for Claire to improve her self-confidence. As Warrick notes: “While he can perform faithfully the duties he is programmed to handle, he cannot respond emotionally. Feelings are not an element of pure intelligence.”¹⁹⁴

Claire is terrified of the fact that she is in love with a robot. As Susan Calvin notes to Bogert: “You see, Peter, machines can’t fall in love, but – even when it’s hopeless and horrifying – women can!”¹⁹⁵ Calvin evidently maintains that humans being in love with robots is a dreadful notion and decides to rebuild Tony.

In Dick’s novel, Rick similarly falls in love with Rachael and tells her that if it was legally possible, he would marry her.¹⁹⁶ However, Rachael admits that she was ordered to seduce him by the Rosen Association which manufactures the androids, since the company wants to stop bounty hunters from killing their products. Therefore, similarly to Claire and Tony, the relationship between Rick and Rachael fails.

Asimov and Dick also explore the idea of robots being so advanced that they become indiscernible from humans. In Asimov’s story “Evidence,” a politician, Stephen Byerly, is accused of being a robot by his opponent. Even though Calvin and Alfred Lanning, the Director of the company U.S. Robots, personally meet with Byerly, neither of them is able to tell whether he is a robot. While it is not stated whether Byerly is truly a robot, it is heavily hinted that he is. Distinguishing artificial intelligence from humans is a central issue also in *Do Androids Dream of Electric Sheep?* In the novel, androids resemble humans perfectly and without performing a bone marrow test, androids may be discerned from humans only with a test which measures empathy.

To conclude, artificial intelligence in *The Complete Robot* and *Do Androids Dream of Electric Sheep?* has various forms. Dick portrays the androids as identical to humans, although they are inferior in that their life is extremely short. The appearance of Asimov’s robots differs. Similarly to Dick’s androids, some of the robots in *The Complete Robot* are so advanced that they cannot be distinguished from humans. Asimov’s robots might also resemble humans but remain expressionless, which is unsettling to humans. In addition, some of the robots in Asimov’s stories are metallic. However, the metallic and humanoid robots are treated differently and while the metallic robots are given pet names, the humanoid ones have standard

¹⁹⁴ Warrick, *The Cybernetic Imagination*, 63.

¹⁹⁵ Asimov, *The Complete Robot*, 299.

¹⁹⁶ Dick, *Do Androids Dream*, 155.

names. Nonetheless, even the robots which do not look like humans display humanlike behavior.

Asimov's robots are also mostly male, while Dick depicts both female and male androids. Both authors explore the notion of humans being romantically and sexually interested in the machines. In Asimov's stories and in Dick's novel, the general opinion of people is that such relationships are wrong. In *Do Androids Dream of Electric Sheep?*, the act is banned entirely, and in Asimov's story "Satisfaction Guaranteed," the robot is rebuilt so that women cannot fall in love with him. Still, humans may become attracted to artificial intelligence and even fall in love with it. Nonetheless, while both authors describe humans falling for robots, the relationships are unsuccessful.

7.2 Robots as Slaves

Science fiction authors often portray robots as free workers. In fact, the word "robot" comes from the Czech word "robota," meaning "forced labor," and the robots in Karel Čapek's play *R.U.R.: Rossum's Universal Robots*, in which the term "robot" was first used, work for humans.¹⁹⁷ As Adam Roberts notes, robots in science fiction often embody exploited labourers.¹⁹⁸ According to Morton Klass, robots in mid-20th century science fiction were usually depicted as slaves, even though they were described as increasingly sophisticated. At the same time, people were depicted as less and less capable.¹⁹⁹ As Professor Kevin LaGrandeur points out in his article "The Persistent Peril of the Artificial Slave," the essential role of the robot is to serve people: "Robots were created to perform the same jobs as slaves - jobs that are dirty, dangerous, or monotonous - thereby freeing their owners to pursue more lofty and comfortable pursuits."²⁰⁰

Artificial slaves have appeared already in Homer's *Iliad*. In the poem, Hephaistos, a Greek god, devises animate three-legged stands and artificial female servants. LaGrandeur explains that in his comment on *Iliad*, Aristotle proposed that artificial workers would end the enslavement of people.²⁰¹ Despina Kakoudaki similarly notes that texts about progress suggest that artificial constructs will be used instead of human slaves. According to Kakoudaki, the

¹⁹⁷ Stableford, *Science Fact and Science Fiction*, 442.

¹⁹⁸ Roberts, *Science Fiction*, 116.

¹⁹⁹ Klass, "The Artificial Alien," 175-176.

²⁰⁰ Kevin LaGrandeur, "The Persistent Peril of the Artificial Slave," *Science Fiction Studies* 38, no. 2 (July 2011): 232, <https://www.jstor.org/stable/10.5621/sciefictstud.38.2.0232>.

²⁰¹ LaGrandeur, "The Persistent Peril," 235.

advocates for technology believe that machinery will aid humanity: “Techno-utopian arguments [...] posit that people have always been the slaves of previous historical and material conditions; technology will now free them from these limits and lead to abundance of products and a better life.”²⁰²

Robots in Asimov’s *The Complete Robot* and in Dick’s *Do Androids Dream of Electric Sheep?* are also created for work. In Dick’s novel, androids were originally designed to fight in World War Terminus. In fact, LaGrandeur notes that even in real life, “any truly intelligent artificial servant is most likely to arise from the search for automated weaponry.”²⁰³ However, with the appearance of the radioactive dust, the androids began to be used in the space colonies:

A meagre colonization program had been underway before the war but now that the Sun had ceased to shine on Earth the colonization entered an entirely new phase. In connection with this, a weapon of war, the Synthetic Freedom Fighter, had been modified; able to function on an alien world the humanoid robot – strictly speaking, the organic android – had become the mobile donkey engine of the colonization program. Under UN law each emigrant automatically received possession of an android subtype of his choice [...].²⁰⁴

The main task of the androids is to function as “body servants or tireless field hands.”²⁰⁵ They are legally owned by humans and may thus be considered slaves.

As Klass notes, robots are nearly always portrayed as free workers: “Indeed the roles permitted the robot in science fiction are remarkably restricted: the robot may be a servant, as we have seen, but apparently never an employee.”²⁰⁶ Rick Deckard criticizes the fact that they can only be servants after killing one of the escaped androids, Luba Luft, who was masquerading as an opera singer: “She was a wonderful singer. The planet could have used her. This is insane.”²⁰⁷ In other words, he realizes that androids could be useful also in other roles. However, their only function is to perform monotonous tasks and they are not given the opportunity to help humans in any other way, even if they are talented.

In *The Complete Robot*, robots are also owned by humans and depicted as slaves. They are usually designed for a specific task and similarly to Dick’s androids, they make people’s lives easier by serving them. As is explained in the story “...That Thou Art Mindful of Him,” they take over jobs which are perilous or unpleasant: “We have placed robots only where work

²⁰² Kakoudaki, *Anatomy of a Robot*, 163.

²⁰³ LaGrandeur, “The Persistent Peril,” 232.

²⁰⁴ Dick, *Do Androids Dream*, 12.

²⁰⁵ Dick, *Do Androids Dream*, 13.

²⁰⁶ Klass, “The Artificial Alien,” 176.

²⁰⁷ Dick, *Do Androids Dream*, 108.

is required that human beings cannot do, or in environments that human beings find unacceptably dangerous.”²⁰⁸ For instance, they are used for mining in space. Some robots also work as butlers. In the story “The Bicentennial Man,” it is revealed that robots may become surgeons, although they still work for humans.

In addition, Asimov’s robots help humanity achieve progress. In the story “... That Thou Art Mindful of Him,” they come up with the idea to build robotic animals which would care for the environment. In “The Bicentennial Man,” the robot Andrew begins to manufacture artificial organs and in “Point of View,” a giant computer, called Multivac, helps people solve problems by answering their questions. As is apparent, the use of robots brings humanity many benefits.

Nonetheless, artificial people are seen as valueless if they cannot serve humans. For instance, in Asimov’s story “Lenny,” a new model of a robot is designed to mine boron in space. However, the robot is manufactured incorrectly and is unable to do the job. Peter Bogert, one of the employees of U.S. Robots, states that robots are worthless if they cannot work: “Good Lord, if there’s one object completely and abysmally useless it’s a robot without a job it can perform.”²⁰⁹ As Kakoudaki notes, the fact that robots need to be helpful distinguishes them from humans: “In contrast to real people, whose lives are not prearranged and whose purpose as beings is indeterminate or unknowable, artificial people are designed to do something specific and usually (or ostensibly) productive or useful.”²¹⁰ Bogert proposes to dismantle Lenny, since he does not see the robot’s value if he cannot do his task. Similarly, the runaway androids in *Do Androids Dream of Electric Sheep?* are destroyed.

Since even humanlike androids and robots are used as slaves, it may be argued that they are exploited by humans. In *Critical Theory Today*, Lois Tyson explains: “Undesirable ideologies promote repressive political agendas and, in order to ensure their acceptance among the citizenry, pass themselves off as natural ways of seeing the world instead of acknowledging themselves as ideologies.”²¹¹ The notion that artificial intelligence is valueless if not useful no matter how sentient it is may be classified as an ideology which guarantees that humans see robots only as slaves. Robots and androids, therefore, can never be free, which secures enough free workers for human endeavors. In fact, Sherryl Vint notes about Dick’s androids: “The androids can be understood as the end point of capital’s drive to increase surplus value as they

²⁰⁸ Asimov, *The Complete Robot*, 496.

²⁰⁹ Asimov, *The Complete Robot*, 305.

²¹⁰ Kakoudaki, *Anatomy of a Robot*, 116.

²¹¹ Tyson, *Critical Theory Today*, 56.

are workers who do not need to cease the work day until they die and who have no existence or right to life outside of their capacity to work.”²¹²

A crucial difference between Asimov’s robots and Dick’s androids is that the androids escape from slavery, while the robots fulfill their duties because of the Three Laws of Robotics. The Second Law in particular states that the robots must obey humans, while the First Law asserts that they must not harm their human masters. Therefore, as long as they are properly programmed with the Three Laws, the robots serve their purpose. As Alessandro Portelli explains, the Three Laws ensure that the robots remain servants: “The Three Laws are [...] a strategy for controlling productive labor, for keeping the labor force docile.”²¹³

In Asimov’s story “Robot AL-76 Goes Astray,” a robot manufactured to work on the Moon gets lost on Earth. He is mainly worried that he cannot get to work:

“Where’s Mount Copernicus? Where’s Lunar Station 17? And where’s my Disinto? I want to get to work, I do.” He seemed perturbed and his voice shook as he continued. “I’ve been going about for hours trying to get someone to tell me where my Disinto is, but they all run away. By now I’m probably ‘way behind schedule and the Sectional Executive will be as sore as blazes.”²¹⁴

The robot eventually decides that he will build the Disinto satellite on Earth. As is evident, Asimov’s robots have a built-in desire to work.

“The Bicentennial Man” is the only story in *The Complete Robot* in which a robot decides to obtain freedom despite the Laws. Andrew does not want to be a slave and is eventually declared free. Nonetheless, he still decides to work for his former owner. In fact, the owner’s daughter tells her father: “He’ll still be there. He’ll still be loyal. He can’t help that. It’s built in.”²¹⁵ Andrew cannot disobey humans because of the Laws. As Gwyneth Jones notes, Asimov’s robots are loyal:

While real-world robotic devices proliferate, and the question of ‘machine intelligence’ (intelligent washing machines?) becomes blurred for us, Asimov’s image of the machine as the *good servant* has an abiding charm, and the Three Laws have passed into received sf scripture.²¹⁶

²¹² Vint, “Speciesism and Species Being,” 118-119.

²¹³ Alessandro Portelli, “The Three Laws of Robotics: Laws of the Text, Laws of Production, Laws of Society (Les Trois Lois De La Robotique: Lois Du Texte, Lois De La Production, Lois De La Société),” *Science Fiction Studies* 7, no. 2 (July 1980): 153, <https://www.jstor.org/stable/4239326>.

²¹⁴ Asimov, *The Complete Robot*, 61-62.

²¹⁵ Asimov, *The Complete Robot*, 526-527.

²¹⁶ Gwyneth Jones, “The icons of science fiction” in *The Cambridge Companion to Science Fiction*, ed. Edward James and Farah Mendlesohn (Cambridge: Cambridge University Press, 2003), 167.

In contrast, the androids in *Do Androids Dream of Electric Sheep?* flee from slavery and kill their masters. While not all androids rebel, the number of those who escape is high, since bounty hunters are able to make a living by destroying the runaway androids. Although both Asimov's and Dick's artificial intelligence works in space, Asimov's robots do not mind working even in extreme conditions. The androids, however, detest Mars. The android Pris tells the human John Isidore that it is "an awful place" and adds: "We came back [...] because nobody should have to live there. It wasn't conceived for habitation, at least not within the last billion years. It's so *old*. You feel it in the stones, the terrible old age."²¹⁷ Since performing unpleasant tasks is the main role of the robot, the androids are rebelling against the very reason for their existence.

At one point, Rick wonders whether androids have ambitions: "[...] In actuality [Roy Baty] had probably been a manual laborer, a field hand, with aspirations for something better. Do androids dream? Rick asked himself. Evidently; that's why they occasionally kill their employers and flee here. A better life, without servitude."²¹⁸ It is obvious that the androids dislike slavery and wish to be free. Therefore, the name originally given to them, "Synthetic Freedom Fighters," is quite fitting, since they are essentially fighting for their freedom.

In *Anatomy of a Robot*, Kakoudaki notes that robots are typically imagined as a substitute for human servants:

The fantasy of the robotic servant, worker, or slave promises that if the enslavement of real people can no longer be tolerated in the modern world then mechanical people may be designed to take their place, and their labor will deliver the comforts of a laborless world for the rest of us.²¹⁹

Correspondingly, humans in both *Do Androids Dream of Electric Sheep?* and *The Complete Robot* believe that androids will provide a pleasant life for them and see them merely as servants.

All in all, Asimov and Dick portray robots and androids as slaves. They are mainly tasked with performing unpleasant and tedious jobs and thus make the lives of humans more comfortable. However, in Asimov's stories, robots might also work as doctors. They also help humanity achieve progress, unlike Dick's androids who are allowed to perform only mindless tasks.

²¹⁷ Dick, *Do Androids Dream*, 119.

²¹⁸ Dick, *Do Androids Dream*, 145.

²¹⁹ Kakoudaki, *Anatomy of a Robot*, 116.

In the works of both authors, servitude is the only possible function of artificial intelligence and robots and androids are seen as useless if they cannot fulfill their job. Since the robots and androids are humanlike, it may be argued that they are exploited by humans. In fact, in Dick's novel, androids escape from slavery and rebel against their role as servants. In Asimov's stories, obedience of robots is ensured by the Three Laws of Robotics. Therefore, while Asimov portrays artificial intelligence as aiding humanity, Dick depicts it as defiant.

7.3 Rights of Robots

Science fiction authors often explore what distinguishes humans from the machines that they manufacture. According to Patricia Warrick, robots were initially portrayed as unfeeling and strictly rational. Nonetheless, she notes that many of them eventually became capable of feelings. Subsequently, science fiction works also began to portray humans as increasingly resembling robots.²²⁰

However, the similitude of robots and humans raises the question of whether self-aware robots should still be treated as lifeless technologies. As Gwyneth Jones asks in her essay "The icons of science fiction": "What is the ontological status of a genetically engineered biological human being, mass-manufactured to order?"²²¹ According to Valeria Franceschi, it is difficult to categorize advanced artificial creatures:

[...] the very existence of these beings challenges the categorical distinction between dichotomous dyads such as animate and inanimate, living and dead. These liminal entities cannot be placed in either category as traditionally conceived and defined, which leaves them lingering in an ontological and legal limbo.²²²

Connected to the personhood of robots are also their rights. In fact, Franceschi wonders whether robots would be treated as sentient beings if they became so advanced that they would act and reason like humans.²²³ According to Professor Seo-Young Chu, there would be numerous questions related to robot rights: "Should a sentient robot be entitled, for example, to freedom of thought, conscience, and speech? What about the right to own property? The right

²²⁰ Warrick, *The Cybernetic Imagination*, 113.

²²¹ Jones, "The icons of science fiction," 167.

²²² Valeria Franceschi, "'Are you alive?' Issues in Self-awareness and Personhood of Organic Artificial Intelligence," *Pólemos* 6 (2012): 226, <https://doi.org/10.1515/pol-2012-0014>.

²²³ Franceschi, "'Are You Alive?' Issues," 227.

to vote? The right to a nationality? The right to marry and to found a family?” She also points out that a question would arise of whether artificial people should be allowed to decide what job to perform. In addition, people would need to solve the problem of how to treat a robot that breaks the law: “If a sentient robot committed a crime, how should it be held accountable - as a fully legally responsible entity? As a person of diminished capacity? As an animal? As a defective product?”²²⁴

In Dick’s *Do Androids Dream of Electric Sheep?*, the androids look and behave exactly as humans. However, they are perceived as objects, can be legally owned and cannot possess anything. Furthermore, the humans refer to them as “it,” suggesting that for them, the androids are only things, and thus inferior. In fact, Rick initially thinks of androids as of “something that only pretends to be alive.”²²⁵

People refuse to regard robots as equals also in Asimov’s “The Bicentennial Man.” In the story, a robot, Andrew, wishes to be considered a human. He asks U.S. Robots to give him a humanoid body and manufactures organs for himself so that he can eat and breathe. Moreover, humans start replacing their organs with artificial prosthetics and thus become even more similar to Andrew. Nonetheless, they are still reluctant to declare him a human. As one of the characters tells Andrew, the difference between humans and humanoid robots is that human brains are not artificially created.²²⁶

In *Do Androids Dream of Artificial Sheep?*, Rick similarly perceives the android only as an “artificial construct.”²²⁷ As Jones points out, robots and androids in science fiction are diminished because of their artificiality: “But though mechanical men, immediately read as a futuristic underclass [...], may resemble humans, they remain defined and devaluated by their artificiality.”²²⁸ Evidently, both Asimov and Dick portray their robots as belittled by humans.

Jones further notes that in *Blade Runner*, the movie adaptation of *Do Androids Dream of Electric Sheep?*, the androids are destroyed without constraint.²²⁹ Correspondingly, the androids in the novel have no rights and can be freely killed. In fact, bounty hunters make their living by “retiring” escaped androids. As Franceschi points out, the choice of words in the novel is deliberate: “Words like ‘murder’ and ‘kill’ are not used in reference to androids, as their

²²⁴ Seo-Young Chu, *Do Metaphors Dream*, 214.

²²⁵ Dick, *Do Androids Dream*, 112.

²²⁶ Asimov, *The Complete Robot*, 554.

²²⁷ Dick, *Do Androids Dream*, 112.

²²⁸ Jones, “The icons of science fiction,” 167.

²²⁹ Jones, “The icons of science fiction,” 167.

semantic connotation implies that the affected entity is a live being; you cannot kill something that is not alive.”²³⁰

In Asimov’s stories, robots can likewise be dismantled at will. For instance, in the story “Liar!”, a robot, Herbie, is able to read people’s minds. Since he cannot harm humans due to the First Law, Herbie lies to them to make them happy. He also tells Susan Calvin that the man she loves shares her feelings. When Calvin discovers that the robot is lying, she drives him mad and ultimately breaks him. It may be argued that Calvin killed the robot, even though the robot only did what he was programmed to do. However, Herbie is seen as an object and thus has no right to life.

Even robotic animals are perceived as inferior. In *Do Androids Dream of Electric Sheep?*, many people own electric animals. Nonetheless, Rick detests his electric sheep. For him, the robotic animal is inferior: “The tyranny of an object, he thought. It doesn’t know I exist. Like the androids, it had no ability to appreciate the existence of another.”²³¹

Similarly, in Asimov’s story “A Boy’s Best Friend,” a little boy, Jimmy, owns a robotic dog called Robutt. In contrast to Rick, he feels affection for it. One day, his parents purchase a real dog for him and ask him to get rid of the robot: “Jimmy said, ‘What will the difference be between Robutt and the dog?’ ‘It’s hard to explain,’ said Mr. Anderson, ‘but it will be easy to see. The dog will *really* love you. Robutt is just adjusted to act as though it loves you.”²³²

Jimmy’s parents and Rick evidently believe that real animals are superior due to the fact that they are not artificial. However, the boy suggests that robots are, in a way, alive too: “He does everything I want him to do, Dad. He understands me. Sure he’s alive.”²³³ At the end of *Do Androids Dream of Electric Sheep?*, Rick comes to the same conclusion: “But it doesn’t matter. The electric things have their lives, too. Paltry as those lives are.”²³⁴ In other words, he starts to believe that even though they were manufactured, robots should be regarded as living entities. As Franceschi notes, Rick’s view on androids changes: “Deckard has come to see Rachael and other androids as live beings whose legal situation should be addressed, calling attention to the failings of a legal system that refuses to accept artificial intelligences as sentient beings.”²³⁵

²³⁰ Franceschi, “‘Are You Alive?’ Issues,” 234.

²³¹ Dick, *Do Androids Dream*, 34.

²³² Asimov, *The Complete Robot*, 5.

²³³ Asimov, *The Complete Robot*, 5.

²³⁴ Dick, *Do Androids Dream*, 191.

²³⁵ Franceschi, “‘Are You Alive?’ Issues,” 245.

According to Brian Stableford, many science fiction authors imagined that if robots became intelligent and self-conscious, they would insist on being liberated. The idea appeared in Čapek's play *R.U.R.* and subsequently in other science fiction works, including Walter M. Miller's story "The Soul-Empty Ones" (1951).²³⁶ Asimov and Dick similarly portray their robots and androids as desiring equal rights. In "The Bicentennial Man," Andrew wants to be equal to people. He even decides to obtain his rights legally and is eventually recognized as a human. However, robots do not want to be treated badly also in other Asimov's stories. For instance, in "Someday," the Bard, a device which tells stories, is mistreated by a human boy. When the Bard learns about the existence of other robots, he plays a story in which he complains about being bullied: "Once upon a time, there was a little computer named the Bard who lived all alone with cruel step-people. The cruel step-people continually made fun of the little computer and sneered at him, telling him he was good-for-nothing and that he was a useless object." The Bard then hints that one day, robots might stand up to humans.²³⁷

In *Do Androids Dream of Electric Sheep?*, androids clearly resent the fact that they do not have the same rights as humans. As the android Garland, who poses as a policeman, bitterly tells Rick: "It's a chance anyway, breaking free and coming here to Earth, where we're not even considered animals. Where every worm and wood louse is considered more desirable than all of us put together."²³⁸ It is apparent that they want to be treated with more respect.

Besides the fact that the androids are artificially made, another difference between androids and humans in Dick's novel is that the machines lack empathy. Rick initially justifies killing androids by thinking about them as beings "which had no regard for animals, which possessed no ability to feel empathic joy for another life form's success or grief at its defeat."²³⁹ Even the androids repeatedly claim that they feel no loyalty to each other.

Nonetheless, there are moments when it seems that the androids do care for one another. For instance, the android Pris tells the human John Isidore that the other androids are her "best friends."²⁴⁰ She is distraught by the fact that they did not contact her and when they arrive to her apartment, she seems happy that they are alive. Moreover, the androids Irmgard and Roy Baty are a wife and husband. Apparently, the androids pursue relationships with each other.

²³⁶ Stableford, *Science Fact and Science Fiction*, 22.

²³⁷ Asimov, *The Complete Robot*, 33-34.

²³⁸ Dick, *Do Androids Dream*, 97.

²³⁹ Dick, *Do Androids Dream*, 25.

²⁴⁰ Dick, *Do Androids Dream*, 118.

When Rick kills Irmgard, Roy even displays grief: “‘I’m sorry, Mrs Baty,’ Rick said, and shot her. Roy Baty, in the other room, let out a cry of anguish.”²⁴¹

However, when talking with Rachael, Rick observes that she is emotionally numb: “No emotional awareness, no feeling-sense of the actual *meaning* of what she said. Only the hollow, formal, intellectual definitions of the separate terms.”²⁴² Isidore similarly notices that the androids are cold, “[a]s if a peculiar and malign *abstractness* pervaded their mental processes.”²⁴³ Therefore, it is possible that the androids only pretend to be in relationships. Luba Luft even admits that she is attempting to act like a human: “Ever since I got here from Mars my life has consisted of imitating the human, doing what she would do, acting as if I had the thoughts and impulses a human would have.”²⁴⁴ The fact she has to pretend suggests that human reactions are not natural for her.

In his essay “The android and the human,” Dick points out that he sees a similarity between humans with a schizoid personality disorder and androids. As he adds: “In the field of abnormal psychology, the schizoid personality structure is well defined; in it there is a continual paucity of feeling. The person thinks rather than feels his way through life.”²⁴⁵ Correspondingly, the androids in the novel are equipped with high intelligence, but the human characters describe their emotional reactions as shallow.

Nonetheless, Tony M. Vinci argues that humans in Dick’s novel are similar to the androids: “[...] the humans, perhaps because of their ideological entitlements, demonstrate little to no actual ability to empathize with human and inhuman others. [...] Thus, Dick’s humans have become what they most fear and despise: androids, incapable of feeling for or with others.”²⁴⁶ Similarly, Roberts points out that humans use technologies which allow them to unnaturally choose a mood: “Then again, even Dick’s human characters are almost wholly alienated from their own emotions, relying on synthetic emotions generated by mood organs, a premise handled with characteristic Dick wit.”²⁴⁷

The idea that humans are becoming similar to robots was expressed also by Dick: “[W]e are merging by degrees into homogeneity with our mechanical constructs, step by step, month

²⁴¹ Dick, *Do Androids Dream*, 177.

²⁴² Dick, *Do Androids Dream*, 150.

²⁴³ Dick, *Do Androids Dream*, 124.

²⁴⁴ Dick, *Do Androids Dream*, 106.

²⁴⁵ Philip K. Dick, “The android and the human,” in *Science Fiction Criticism: An Anthology of Essential Writings*, ed. Rob Latham (London, New York: Bloomsbury Academic, 2017), 302.

²⁴⁶ Tony M. Vinci, “Posthuman Wounds: Trauma, Non-Anthropocentric Vulnerability, and the Human/Android/Animal Dynamic in Philip K. Dick’s ‘Do Androids Dream of Electric Sheep?’,” *The Journal of the Midwest Modern Language Association* 47, no. 2 (Fall 2014): 92, <https://www.jstor.org/stable/44066191>.

²⁴⁷ Roberts, *The History of Science Fiction*, 350.

by month, until a time will perhaps come when a writer, for example, will not stop writing because someone unplugged his electric typewriter but because someone unplugged *him*.²⁴⁸

In fact, Rick notices that when faced with destruction, the androids quickly resign. He perceives it as a difference between humans and androids:

She seemed more externally composed, now. But still fundamentally frantic and tense. Yet, the dark fire waned; the life force oozed out of her, as he had so often witnessed before with other androids. The classic resignation. Mechanical, intellectual acceptance of that which a genuine organism – with two billion years of the pressure to live and evolve hagridding it – could never have reconciled itself to.²⁴⁹

However, without the mood organ, his wife Iran also feels inertia.²⁵⁰ As Booker and Thomas point out, technology has altered the relationship between the human and the artificial: “[...] not only has technology made it possible to manufacture androids who are quite similar to humans, but the humans of the book are becoming more and more like machines.”²⁵¹

In the end, it is revealed that humans still differ from the androids. At one point, the escaped androids gather in a building where Isidore lives. When he realizes who they are, he does not turn them in but decides to protect them. Since the androids want to prove that they are not inferior to humans, they disclose that Mercer, the figure at the center of a religion which supposedly proves that humans have empathy, is a drunk actor. The androids cannot use the empathy box and doubt that people are capable of empathy: “Isn’t it a way of proving that humans can do something we can’t do? Because without the Mercer experience, we just have your *word* that you feel this empathy business, this shared, group thing.”²⁵² According to Tyson, religious teachings may sometimes be used as ideologies which enable the privileged classes to keep and account for their position.²⁵³ In a way, the androids perceive Mercerism as an ideology which allows humanity to oppress them.

However, the androids do not realize that by helping them, Isidore is expressing empathy. In comparison to him, the androids are merciless. When Isidore brings Pris a spider, she tortures the animal by clipping its legs off. Pris does not stop mutilating the spider even though Isidore is visibly distressed by her actions. It is obvious that the androids do not mind that the animal suffers and do not care about Isidore and his feelings, despite the fact that he is

²⁴⁸ Dick, “The android and the human,” 298.

²⁴⁹ Dick, *Do Androids Dream*, 157.

²⁵⁰ Dick, *Do Androids Dream*, 4.

²⁵¹ Booker and Thomas, *The Science Fiction Handbook*, 223.

²⁵² Asimov, *Do Androids Dream*, 165.

²⁵³ Tyson, *Critical Theory Today*, 59.

kind to them. As Dinello states, they take advantage of others: “None shows compassion; they see others as objects to manipulate for their interests.”²⁵⁴

Throughout the novel, androids also struggle to understand human reactions. For instance, none of the androids comprehends why seeing the animal suffer upsets Isidore. Irmgard tells him: “What’s the matter? [...] Don’t look so grim. Isn’t that something about Mercer, what they discovered? All that research? Hey, answer.”²⁵⁵ Pris eventually realizes that Isidore is upset about the spider, but tells Irmgard that he “will get over it,” while Roy looks at him with “easy amusement” and even taunts him that the animal might have been the last surviving spider on Earth.²⁵⁶ *The Britannica Encyclopedia* defines empathy as “the ability to imagine oneself in another’s place and understand the other’s feelings, desires, ideas, and actions.”²⁵⁷ Not only is it evident that the androids lack empathy, they also misunderstand what it is, since they do not recognize it when they witness it.

In contrast, Rick and Isidore feel empathy for the androids. Rick feels sorry for them and wonders whether it is right to kill them, and Isidore hides them in his home. At one point, Rachael also claims that the bounty hunters she seduced stopped killing androids,²⁵⁸ which suggests that they developed compassion for them. While it may be said that humans are becoming similar to the machines, many are still able to express empathy, which ultimately makes them different. As Ryan Gillis notes:

Not only is it stated at several points throughout the text that androids refuse to act emphatically even on behalf of androids, but near the end of the novel androids are shown acting against life, out of pure malice. [...] These actions compare in no way to the emotions displayed by the story’s human characters [...].²⁵⁹

In comparison to Dick’s androids, Asimov’s robots are considerate. For instance, in “Satisfaction Guaranteed,” the robot is affectionate to Claire, since he knows that it will make her more confident. In “Liar!”, Herbie deliberately tells lies to avoid hurting humans. The empathy of the robots is caused by the First Law of Robotics which forbids them from harming humans. Therefore, their compassionate behavior does not stem from the ability to imagine

²⁵⁴ Dinello, *Technophobia!*, 108.

²⁵⁵ Dick, *Do Androids Dream*, 166.

²⁵⁶ Dick, *Do Androids Dream*, 167.

²⁵⁷ “Empathy,” Encyclopædia Britannica, last modified November 23, 2016, <https://www.britannica.com/science/empathy>.

²⁵⁸ Dick, *Do Androids Dream*, 156.

²⁵⁹ Ryan Gillis, “Dick on the human: From wubs to bounty hunters to bishops,” *Extrapolation* 39, no. 3 (Fall 1998): 267, <https://www.proquest.com/docview/234921808?accountid=17239>.

themselves at another's place, but from being programmed to help people. Nonetheless, the First Law makes them act compassionately. In fact, when Susan Calvin is asked about the difference between robots and humans, she replies that robots are "decent."²⁶⁰ This contrasts with Rick's remark at the end of *Do Androids Dream of Electric Sheep?* that androids are "life stealers."²⁶¹ As Dinello notes, robots in Asimov's works are often even kinder than people: "Asimov's robots, as they developed in more than forty stories and several novels, became more caring, more sensitive, more human than humans."²⁶²

Asimov's robots also occasionally express emotions. In "Little Lost Robot," a robot is seemingly angry due to being cursed at and in "The Bicentennial Man," Andrew experiences emotions because of the flow of his circuits. For example, he tells his owner that he enjoys carving wood: "It makes the circuits of my brain somehow flow more easily."²⁶³

Nonetheless, a human character tells Andrew that he is still too intellectual and thus misunderstands humans.²⁶⁴ As Warrick notes: "Because his robot intelligence is never muddled by emotions, he can reason clearly and with utmost logic."²⁶⁵ In "Reason," it is also mentioned that robots cannot feel anger.²⁶⁶ The robots are, therefore, generally more rational than humans. In that, they resemble Dick's androids.

To conclude, both Dick and Asimov deal with the question of whether intelligent robots should be treated only as things. In the works of the two authors, people perceive robots and androids as inferior, since they are artificially constructed. They have no rights and can be destroyed at will. However, both writers suggest that artificial intelligence is, to an extent, also alive. They also describe artificial intelligence which does not want to be treated as inert and inferior. In Asimov's stories, some robots even want to fight for equality.

Furthermore, in Dick's novel, it seems that humans are becoming similar to their technologies. Apart from the artificiality, the difference between the robots and humans is the ability to show empathy and express emotions. While the androids appear to have feelings, they are cold and not only lack empathy, but are also unable to understand it. Similarly, while Asimov's robots occasionally display emotions, they are more logical than humans. However, unlike Dick's androids, they are kind and compassionate due to the First Law of Robotics.

²⁶⁰ Asimov, *The Complete Robot*, 431.

²⁶¹ Dick, *Do Androids Dream*, 185.

²⁶² Dinello, *Technophobia!*, 65.

²⁶³ Asimov, *The Complete Robot*, 522.

²⁶⁴ Asimov, *The Complete Robot*, 555.

²⁶⁵ Warrick, *The Cybernetic Imagination*, 72.

²⁶⁶ Asimov, *The Complete Robot*, 234.

7.4 Robots As a Threat

Robots are not always portrayed as obedient servants, but may also be depicted as a threat. According to David Seed, science fiction stories of the 20th century dealt with two worries regarding robots. Firstly, humans were afraid that they would be supplanted by robots. Secondly, they were scared that the robots would begin to look like them. Seed lists Karel Čapek's play *R.U.R.* as an example of a story in which robots become in charge.²⁶⁷ In addition, Stableford mentions *Erewhon* (1872) by Samuel Butler as a novel in which machines become autonomous.²⁶⁸

In his article "The Artificial Alien: Transformations of the Robot in Science Fiction," Morton Klass asks: "Will the robot – the sentient universal machine – ultimately destroy us, or destroy everything that makes life worth living? Or will we be able to remain in control, keeping the robot forever in subjection, as our servant?"²⁶⁹ Similarly, Lee McCauley points out that even *Frankenstein* by Mary Shelley and the stories about golems warned against animating artificial creatures. As he notes: "What has been brought to life here, so to speak, is the almost religious notion that there are some things that only God should know."²⁷⁰

According to Stableford, the fear of advanced technologies which arose with the invention of the nuclear bomb was reflected also in stories about robots. Consequently, science fiction works published in the middle of the 20th century often depicted robots as murderous. The stories include for instance Peter Phillips' "Lost Memory" (1952) or Margaret St. Clair's "Short in the Chest" (1954).²⁷¹ However, the worry that humanity will be exceeded by robots is not limited to fiction. In his article "The Persistent Peril of the Artificial Slave," Professor LaGrandeur reports that even numerous scientists fear that in the future, it might be impossible to govern artificial intelligence.²⁷²

The fear of artificial intelligence is explored also in Isaac Asimov's short stories. In introduction to *The Complete Robot*, Asimov states that he used to dislike works which depicted robots as a threat.²⁷³ He called the fear of robots a "Frankenstein complex," which he defined

²⁶⁷ Seed, *Science Fiction*, 60.

²⁶⁸ Stableford, *Science Fact and Science Fiction*, 34.

²⁶⁹ Klass, "The Artificial Alien," 174.

²⁷⁰ Lee McCauley, "AI Armageddon and the Three Laws of Robotics," *Ethics and Information Technology* 9 (2007): 154, <https://doi.org/10.1007/s10676-007-9138-2>.

²⁷¹ Stableford, *Science Fact and Science Fiction*, 444.

²⁷² LaGrandeur, "The Persistent Peril," 233.

²⁷³ Asimov, *The Complete Robot*, xi.

as “[mankind’s] gut fears that any artificial man they created would turn upon its creator.”²⁷⁴

As Gorman Beauchamp explains, the fear of robots represents the general fear of technology:

[...] the robot, as a synecdoche for modern technology, takes on a will and purpose of its own, independent of and inimical to human interests. The fear of the machine that seems to have increased proportionally to man’s increasing reliance on it [...] finds its perfect expression in the symbol of the robot: a fear that Isaac Asimov has called “the Frankenstein complex.”²⁷⁵

In Asimov’s stories, the public is afraid of artificial intelligence. For instance, in “Feminine Intuition,” there are regulations regarding the use of robots on Earth, and in “... That Thou Art Mindful of Him,” they are prohibited from staying on Earth completely. However, the roboticists believe that robots are useful and attempt to convince people that they are benign. As an employee of U.S. Robots states in “... That Thou Art Mindful of Him”: “We at U.S. Robots firmly believe that human beings need robots and must learn to live with their mechanical analogues if progress is to be maintained.”²⁷⁶ The statement suggests that those who reject robots are hindering progress due to their fear of technology. In fact, the roboticists describe people who are scared of robots as “nitwits,”²⁷⁷ and “idiots.”²⁷⁸ As Dinello points out, Asimov portrays people who fear robots as small-minded.²⁷⁹

Asimov believed that if robots were to be manufactured, they would be built in a way which would make them harmless: “In the first place, I don’t feel robots are monsters that will destroy their creators, because I assume the people who build robots will also know enough to build safeguards into them.”²⁸⁰ Consequently, he created the Three Laws of Robotics:

1. A robot may not injure a human being or, through inaction, allow a human being to come to harm.
2. A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.
3. A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.²⁸¹

²⁷⁴ Asimov, *The Complete Robot*, 497.

²⁷⁵ Gorman Beauchamp, “The Frankenstein Complex and Asimov’s Robots,” *Mosaic: An Interdisciplinary Critical Journal* 13, no. 3/4 (Spring/Summer 1980): 84, <https://www.jstor.org/stable/24780264>.

²⁷⁶ Asimov, *The Complete Robot*, 496.

²⁷⁷ Asimov, *The Complete Robot*, 483.

²⁷⁸ Asimov, *The Complete Robot*, 302.

²⁷⁹ Dinello, *Technophobia!*, 64.

²⁸⁰ Ingersoll *et al.*, “A Conversation with Isaac Asimov,” 68-69.

²⁸¹ Asimov, *The Complete Robot*, 171.

As Patricia Warrick explains, the Three Laws function as moral principles for robots.²⁸²

While the robots in Asimov's stories sometimes behave unpredictably, it is typically because of the interplay of the Laws. In "Escape!", the engineers Donovan and Powell are asked to test an engine which was built by a computer and enables interstellar travel. However, the computer, called The Brain, sets off the spaceship while Donovan and Powell are examining it and kidnaps them. It does not let them communicate with U.S. Robots and refuses to bring them back. Furthermore, the interstellar jump requires that the engineers cease to exist for a moment and while they are dead, they dream of being in Hell.

At first, it seems that Donovan and Powell are in danger. However, the robopsychologist Susan Calvin concludes that in order to cope with the fact that it has to let humans die, The Brain developed humor. It was told by Calvin that she would not mind their death, since it would be only temporary, but the computer still found it unbearable and turned it into a joke. Otherwise, The Brain would have broken down. As Calvin explains: "[...] I had depressed the importance of death to The Brain – not entirely, for the First Law can never be broken [...]."²⁸³ Even though it kidnapped the engineers, The Brain kept them safe. The story thus shows that it is nearly impossible to convince a robot to harm a human being.

The fact that the robots will protect humans at all times is further exemplified in "Runaround." In the story, Donovan and Powell travel to Mercury to find out whether it is possible to open a mining station on the planet. They send a robot, Speedy, to collect selenium from a pool. If he does not bring it, the Sun's heat will kill them. However, the robot does not return and instead runs around the pool and acts as if he was drunk. The two engineers eventually realize that he is confused because of the Laws. On the one hand, the Second Law tells the robot that he has to obey the orders of the humans, but on the other hand, the surroundings are dangerous and according to the Third Law, Speedy has to protect himself. The orders from the engineers were also not said emphatically enough.

Powell eventually figures that the only way to clear the robot's confusion is to make the First Law take precedence over the other two Laws. He decides to go to Speedy, aware that the heat will kill him before he reaches the robot. When Speedy sees that Powell is in danger, he saves him. As Powell tells Donovan: "According to Rule 1, a robot can't see a human come to harm because of his own inaction. Two and 3 can't stand against it."²⁸⁴ In other words, robots

²⁸² Warrick, *The Cybernetic Imagination*, 65.

²⁸³ Asimov, *The Complete Robot*, 421.

²⁸⁴ Asimov, *The Complete Robot*, 224.

must protect humans. As Booker and Thomas note: “As these laws make clear, Asimov’s robots are, by definition, benevolent, meant to be helpers and companions to humanity.”²⁸⁵

The Three Laws, therefore, make the robots docile and helpful. However, Gorman Beauchamp argues that the fact that the Laws are necessary at all means that the robots would harm humans if not for them: “[...] unless Asimov’s robots have a natural inclination to injure human beings, why should they be enjoined by the First Law from doing so?”²⁸⁶ Similarly, Gwyneth Jones notes: “In Asimov’s scenario the fact that the Three Laws are there to protect the humans from their mentally and physically superior creations was always clear.”²⁸⁷

In fact, while people are supposed to be safe from robots, Asimov wrote several stories in which robots hurt a human or attempt to do so. For instance, in “Lenny,” wrong data are given during a manufacture of a robot. As a result, the robot, Lenny, is at the mental level of a human baby. At first, it seems that the fault influenced also the Three Laws, since Lenny breaks a man’s arm in self-defense. Eventually, it is revealed that the Laws are still intact but the robot is too infantile to distinguish between right and wrong. Lenny also did not realize that he is stronger than the human. Nonetheless, his strength makes him dangerous.

In addition, the story “Sally” shows what might happen if robots did not have the Three Laws. As Asimov points out: “You may also notice, however, that in ‘Sally’ there seems to be no hint of the Three Laws and that there is more than a hint of Robot-as-Menace.”²⁸⁸ In the story, artificial intelligence is depicted as robotic cars. The narrator, Jacob, takes care of retired cars on a car farm. One day, he is visited by a dealer who wants to buy the old cars so that he can sell their parts. Jacob does not accept his offer and the man returns at night, threatening to steal and destroy the cars. However, the cars defend their caretaker and brutally kill the dealer. Since they are not bound by the Three Laws, they are able to commit murder. After the events, Jacob begins to fear that the cars will realize that they are slaves and will turn against humans. He cannot even be sure that they will remain loyal to him.

It is obvious in both stories that the robots are capable of hurting humans and that the Three Laws are, therefore, needed, as Jones and Beauchamp proposed. Beauchamp further states that robots naturally detest humans: “Inconsistently - given Asimov’s denigration of the Frankenstein complex - his robots do have an ‘instinctual’ resentment of mankind.”²⁸⁹

²⁸⁵ Booker and Thomas, *The Science Fiction Handbook*, 201.

²⁸⁶ Beauchamp, “The Frankenstein Complex,” 86.

²⁸⁷ Jones, “The icons of science fiction,” 167.

²⁸⁸ Asimov, *The Complete Robot*, 1.

²⁸⁹ Beauchamp, “The Frankenstein Complex,” 86.

However, the dislike usually stems from being mistreated. In “Lenny,” the human was mocking and hitting Lenny, and in “Sally,” the car dealer wanted to hurt the cars and their caretaker.

The robots also typically become dangerous only when the Three Laws of Robotics are modified in some way or the robot is manufactured incorrectly. Therefore, the fault in the Laws is usually caused by human intervention or error. In “Lenny,” the robot malfunctions due to incorrect data. In the story “Little Lost Robot,” the First Law is intentionally modified by the roboticists so that the robots will let humans come to harm. The reason for this change was that the robots repeatedly stopped humans from performing dangerous but necessary tasks. This fact further proves that robots will infallibly protect humans.

The plot of “Little Lost Robot” revolves around one of the robots with the altered First Law. The robot is cursed at by a human and is told to get lost. Since the robot has to obey the human due to the Second Law, he takes the command literally and hides himself. However, Calvin points out that he purposefully refuses to be found, since he is angry that he was yelled at.²⁹⁰ In the end, Calvin finds the robot and he attempts to hurt her. However, he is stopped by the first half of the First Law, which states that robots cannot harm humans. As Alessandro Portelli points out, the Laws ensure that as long as people make no mistake, technology will not become harmful:

The most visible consequence of the Three Laws is a new attitude toward science, now seen as an instrument for the progress of mankind rather than a threat. Should science ever go out of control, it will not be because of its inherent characteristics, but through the fault of mankind.²⁹¹

In general, it may be argued that as long as the robots are properly programmed with the Three Laws, it is needless to fear them. As Klass points out: “Asimov, like many other science fiction writers of the period, was obviously aware of the supposed threat that was, or would be, posed by the appearance of robots among us, but in his work he argued that humans would find a way to retain their dominance over the machine.”²⁹²

Since Warrick points out that the Three Laws are, in a way, the ethical code of robots,²⁹³ it may also be said that without them, they are acting unethically. In fact, in “Evidence,” Calvin explains that there is an analogy between the First Law and human ethics: “[...] every ‘good’ human being is supposed to love others as himself, protect his fellow man, risk his life to save

²⁹⁰ Asimov, *The Complete Robot*, 359.

²⁹¹ Portelli, “The Three Laws of Robotics,” 150.

²⁹² Klass, “The Artificial Alien,” 175.

²⁹³ Warrick, *The Cybernetic Imagination*, 65.

another. That's Rule One to a robot."²⁹⁴ Therefore, a robot without the First Law might be considered an equivalent of an immoral human.

In *Do Androids Dream of Electric Sheep?*, the androids are not programmed with safeguards or protective laws. Therefore, nothing stops them from harming and murdering humans. To escape servitude, they sometimes kill their human masters. However, once they reach Earth, they are tracked down by bounty hunters and eliminated. Similarly to Asimov's robots, the androids are illegal on Earth. However, the escaped androids do not attempt to eradicate humans, they want to live among them. As Rick points out, they mainly want to be free: "Like Luba Luft; singing *Don Giovanni* and *Le Nozze* instead of toiling across the face of a barren rock-strewn field."²⁹⁵

When the android Rachael criticizes the police for not believing that the Rosen company manufactures androids for the benefit of humanity, Rick tells her that technology is a risk: "A humanoid robot is like any other machine; it can fluctuate between being a benefit and a hazard very rapidly."²⁹⁶ Moreover, when Rick starts questioning whether it is morally right to kill androids, the bounty hunter Phil Resch tells him that androids would destroy humanity if people started empathizing with them: "These Nexus-6 types ... they'd roll all over us and mash us flat. You and I, all the bounty hunters – we stand between the Nexus-6 and mankind, a barrier which keeps the two distinct."²⁹⁷ At one point, he also calls the androids "murderous illegal aliens" and points out that humans are only fighting back.²⁹⁸ As is evident, humans in the novel are afraid that androids might become dangerous in the future.

The main risk for humans is that the androids lack empathy. At the beginning of the novel, Rick considers androids to be predators:

For one thing, the empathic faculty probably required an unimpaired group instinct; a solitary organism, such as a spider, would have no use for it; in fact, it would tend to abort a spider's ability to survive. It would make him conscious of the desire to live on the part of his prey. Hence all predators, even highly developed mammals such as cats, would starve. [...] Evidently the humanoid robot constituted a solitary predator.²⁹⁹

²⁹⁴ Asimov, *The Complete Robot*, 435.

²⁹⁵ Dick, *Do Androids Dream*, 145.

²⁹⁶ Dick, *Do Androids Dream*, 32.

²⁹⁷ Dick, *Do Androids Dream*, 112.

²⁹⁸ Dick, *Do Androids Dream*, 108.

²⁹⁹ Dick, *Do Androids Dream*, 24.

Because they have no compassion, the androids would be merciless if it came to killing humans. At one point, Rick observes: “An android can’t be appealed to; there’s nothing in there to reach.”³⁰⁰ As Nigel Wheale notes, the androids might turn into murderers: “Because they don’t possess empathy, the androids represent a potential threat to the human population [...]. The androids are, potentially, manufactured psychotic killers.”³⁰¹

While androids occasionally kill their masters, it seems that they mostly want to hide among humans. However, as Resch implies, there is a danger that they might turn against mankind. Valeria Franceschi explains that feeling empathy for the androids and accepting them amongst humans would mean that they would become unrestrained: “[...] it would create an element of imbalance, as androids, unhindered by ethical and moral constraints, would have a free rein in their actions in favour of or against humanity [...]”³⁰²

Evidently, human characters in *Do Androids Dream of Electric Sheep?* manifest the Frankenstein complex, a fear that machines will destroy humans. In that, they are similar to humans in Asimov’s stories. As Despina Kakoudaki notes, while Asimov fought against the fear of artificial intelligence, he believed that humans would see robots as a threat:

[...] in terms of robot behavior, Asimov’s system of safeguards also solidifies a particular worldview: robots start as a priori dangerous, and people start as a priori fearful of robots, for reasons that often remain undisclosed or resort to stereotypical notions of mastery and supremacy. The idea that robots would be universally feared and disliked presents a sense of anti-robot racism that Asimov and other writers take for granted [...].³⁰³

In *Do Androids Dream of Electric Sheep?*, anti-robot racism is also present. Franceschi points out that empathizing with androids would also mean that humans would no longer be superior: “[...] it would problematize the deeply entrenched assumptions about the intrinsic superiority of the human species [...]”³⁰⁴

In fact, one of the reasons why people in Asimov’s stories detest robots is their fear of being replaced by them. In Asimov’s story “Galley Slave,” U.S. Robots rents a robot, Easy, to a university where he is supposed to work as a proofreader. However, one of the professors accuses the robot of misquoting and replacing words in his academic paper. As a result,

³⁰⁰ Dick, *Do Androids Dream*, 144.

³⁰¹ 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,’” *Critical Survey* 3, no. 3 (1991): 300, <https://www.jstor.org/stable/41556521>.

³⁰² Franceschi, “‘Are you alive?’ Issues,” 233.

³⁰³ Kakoudaki, *Anatomy of a Robot*, 127.

³⁰⁴ Franceschi, “‘Are you alive?’ Issues,” 233.

Professor Ninheimer's reputation is ruined and he decides to take the matter to court. Calvin eventually reveals that Ninheimer let the robot change the words on purpose so that the public would believe that robots are unreliable. When Calvin asks him for his reasons, the professor claims that robots are stealing jobs from people:

For two hundred and fifty years, the Machine has been replacing Man and destroying the handcraftsman. [...] The artist is restricted to abstractions, confined to the world of ideas. He must design something in mind – and then the machine does the rest. [...] Do you suppose the potter is content with mental creation? Do you suppose the idea is enough?³⁰⁵

Ninheimer argues that while the machines are supposed to take over mundane tasks, people might like doing them. As Klass points out, the worry that robots will steal work from humans is common: “The robot in science fiction [...] was portrayed at first as an alien and as a threat, but the danger was perceived as primarily an economic one [...]. The robot may drive us from our jobs and otherwise destroy our economic well-being, it was felt [...]”³⁰⁶

However, robots in Asimov's stories are often better at the job than humans. For instance, in “Galley Slave,” the robot is more efficient in proofreading: “Baker was jubilant. ‘Dr. Ninheimer, it not only caught everything I caught – it found a dozen errors I missed! The whole thing took it twelve minutes!’”³⁰⁷ As Dinello points out, Asimov's robots are depicted as superior to humans: “Asimov imagined the technological creature as a willing slave, yet more powerful and smarter than humans.”³⁰⁸

Occasionally, the robots might realize their superiority. In Asimov's story “The Evitable Conflict,” computers take over the economy. The world has been divided into four regions and four computers, called the Machines, calculate the economic decisions that the sections need to make. The idea is that since the computers are bound by the First Law, they will find solutions most beneficial for humans. As the World Co-ordinator, Stephen Byerly, explains to Calvin:

The Earth's economy is stable, and will *remain* stable, because it is based upon the decisions of calculating machines that have the good of humanity at heart through the overwhelming force of the First Law of Robotics. [...] The population of Earth knows that there will be no unemployment, no overproduction or shortages. Waste and famine are words in history books.³⁰⁹

³⁰⁵ Asimov, *The Complete Robot*, 347.

³⁰⁶ Klass, “The Artificial Alien,” 178.

³⁰⁷ Asimov, *The Complete Robot*, 332-333.

³⁰⁸ Dinello, *Technophobia!*, 64.

³⁰⁹ Asimov, *The Complete Robot*, 450.

Nonetheless, the Machines make a mistake and a few people lose their job. In the story, Asimov introduces also the Society for Humanity, a group which protests against the computers. The group believes that “they’re destroying human initiative”³¹⁰ and that “the Machine robs man of his soul.”³¹¹ In other words, the Society maintains that the computers displace humans.

Eventually, Calvin realizes that the people who lost their job were all members of the Society and the Machines deliberately removed them from their positions. The computers concluded that if the group succeeded in destroying the Machines, it would harm humanity as a whole. As Calvin points out, the Machines focus on all people: “But the Machines work not for any single human being, but for all humanity, so that the First Law becomes: ‘No Machine may harm humanity; or, through inaction, allow humanity to come to harm.’”³¹² She explains that the Machines are now independently making decisions for humans, since they know what is best for them, but will not admit it, since people would likely be upset about it.³¹³ Therefore, the story suggests that people would be revolted by the idea of being controlled by artificial intelligence, even if it was for their own good.

As Warrick points out, “The Evitable Conflict” demonstrates that machines might be better at running the world than humans: “Asimov in this story suggests that machine control is superior to economic and sociological forces, the whims of climate, and the fortunes of war. Mankind, he intimates, has never been free; machine control is just a different – and superior – form of control.”³¹⁴

It may be argued that in “The Evitable Conflict,” Asimov writes about computers which displace humans and assist them at the same time. While the Machines usurp the place of humans, their goal is to help society. As Booker and Thomas explain, the story shows optimism in technological progress, but also hints that technology will surpass humanity:

[The Evitable Conflict] serves as a classic example of technological optimism in science fiction, while at the same time pessimistically suggesting that human beings are not really capable of running their own affairs and that humanity thus needs something like the intervention of the Machines if it is to survive the tribulations that will face it in the future.³¹⁵

³¹⁰ Asimov, *The Complete Robot*, 459.

³¹¹ Asimov, *The Complete Robot*, 464.

³¹² Asimov, *The Complete Robot*, 467.

³¹³ Asimov, *The Complete Robot*, 468.

³¹⁴ Warrick, *The Cybernetic Imagination*, 60-61.

³¹⁵ Booker and Thomas, *The Science Fiction Handbook*, 205.

Another story in which Asimov demonstrates what could happen if robots realized that they are superior is "... That Thou Art Mindful of Him." In this work, the Three Laws have been modified by the roboticists. The company U.S. Robots creates new robots who are supposed to solve the issue of the Second Law. While the Law states that robots must obey humans, the question is who the machines should listen to if there is more than one person. Therefore, the new robots are capable of judging humans. As the robot George Nine explains:

When the Second Law directs me to obey a human being, I must take it to mean that I must obey a human being who is fit by mind, character, and knowledge to give me that order; and where more than one human being is involved, the one among them who is most fit by mind, character, and knowledge to give that order.³¹⁶

However, the robots eventually conclude that they are the most fit to give orders. Since they are manufactured to ignore physical appearance, they begin to consider themselves humans. At one point, the robot George Ten asks George Nine: "'Of the reasoning individuals you have met, who possesses the mind, character, and knowledge that you find superior to the rest, disregarding shape and form since that is irrelevant?' 'You,' whispered George Nine."³¹⁷ Because they are taught to obey only the worthiest humans, they reason that they do not have to listen to actual humans and resolve to wait for the right moment to seize power.

As LaGrandeur notes, the issue with artificial intelligence is that humans often design it as superior to them:

I see the problem with artificial slaves as not merely one of the violent rebellion that is the subject of so much fiction about advanced, self-conscious AI; such rebellion is just a subset of the bigger problem, which is the impulse (or willingness) not just to create servants that are more powerful than oneself, but also to give them too much power, to allow them to be inappropriate proxies for oneself.³¹⁸

In *Do Androids Dream of Electric Sheep?*, the Nexus-6 model of androids is also superior to people. The androids surpass many humans in intelligence: "In other words, androids equipped with the new Nexus-6 brain unit had from a sort of rough, pragmatic, non-nonsense standpoint evolved beyond a major – but inferior – segment of mankind."³¹⁹ The

³¹⁶ Asimov, *The Complete Robot*, 516.

³¹⁷ Asimov, *The Complete Robot*, 517.

³¹⁸ LaGrandeur, "The Persistent Peril," 234.

³¹⁹ Dick, *Do Androids Dream*, 23.

intelligence of the androids is thus another risk for humanity, since they are already smarter than a number of humans.

While LaGrandeur sees it as troublesome that artificial intelligence is created as more powerful than people, Asimov maintained that if robots do exceed humans, they should supplant them:

[...] when the time comes that robots - machinery in general - are sufficiently intelligent to replace us, I think they should. We have had many cases in the course of human evolution, and the vast evolution of life before that, in which one species replaced another, because the replacing species was in one way or another more efficient than the species replaced. I don't think *Homo sapiens* possesses any divine right to the top rung.³²⁰

In general, both Dick and Asimov describe humans as afraid that the machines will turn against them. In their works, artificial intelligence is illegal on Earth. However, robots in Asimov's stories are manufactured with the Three Laws of Robotics which ensure that the robots work for the benefit of humanity. Although Asimov wrote several stories in which a robot harms a human or tries to do so and the robots are potentially dangerous, it is typically because the Three Laws were somehow modified, there was an error during the manufacture of the robot or the robot did not have the Laws at all. As long as the Laws are working, humans are safe. In fact, people who are scared of the robots are depicted as standing in the way of progress. In addition, humans in *The Complete Robot* are scared of being replaced by robots and the robots are often designed as superior to them.

In contrast, in *Do Androids Dream of Electric Sheep?*, the androids do not have any safeguards and sometimes murder humans. Although it seems that they mostly want to hide amongst people, the androids lack empathy, which makes them dangerous. They are also created as more intelligent than many people and thus superior to them, which makes them an even larger threat.

³²⁰ Ingersoll *et al.*, "A Conversation with Isaac Asimov," 69.

8 Genre Analysis

Isaac Asimov's collection *The Complete Robot* consists of thirty-one short stories which are written in the er-form. Several of the stories feature reoccurring characters and take place in the same fictional world. For instance, the robots in majority of the stories follow the Three Laws of Robotics and are developed by the company U.S. Robots. In many stories, specifically those which focus on Susan Calvin or on Donovan and Powell, there is an issue concerning the robots and the human characters are trying to find the solution.

The novel *Do Androids Dream of Electric Sheep?* is also written in the er-form. It focuses on two story lines, one from the viewpoint of Rick Deckard and the other from the viewpoint of John Isidore. Unlike Asimov, Philip K. Dick largely focuses on the feelings, opinions and thoughts of the two protagonists.

The novel *Do Androids Dream of Electric Sheep?* and the stories in *The Complete Robot* belong to the genre of science fiction. According to the definitions outlined in the first chapter of this thesis, one of the main features of the genre is a new element, a so-called novum. In Asimov's stories, the novum is represented mainly by intelligent robots and computers. However, there are also other novums, such as the spaceships in "Escape!" and "Risk." The main novum in Dick's novel is also advanced artificial intelligence. Nonetheless, the author describes also other innovations, such as electric animals which are undistinguishable from the real ones, mood organs and empathy boxes.

Both writers also focus on how the novums impact humans. For instance, Dick deals with the question of how to distinguish humans from androids, since they are becoming indiscernible. In *The Complete Robot*, Asimov explores how humans would react to robots and whether they would be afraid of them. Both authors also explore how the robots would be used, relationships between humans and artificial intelligence, robot emancipation and the question of whether technology would become a threat to humanity.

In addition, the works of both authors take place in a world in which the laws of the real world are still valid. For instance, the robots and androids are constructed by humans with the help of science. Asimov's stories and Dick's novel are further set on Earth or on planets which exist also in real life.

9 Conclusion

This master thesis focused on the depiction of technological progress in science fiction. The topic was examined through a thorough analysis of Isaac Asimov's short stories collected in *The Complete Robot* and Philip K. Dick's novel *Do Androids Dream of Electric Sheep?*. The aim was to examine how Asimov and Dick depict advanced technologies, particularly artificial intelligence, and identify how similar or different their portrayals are.

Science fiction works often describe technological progress. The topic is explored also by Asimov and Dick. In *The Complete Robot* and *Do Androids Dream of Electric Sheep?*, the authors depict different technologies. One of those which frequently appear in science fiction works is the spaceship. Asimov depicts the spaceship as a symbol of successful technological progress, since it enables humans to travel far into the space and explore the universe as never before. In the story "Escape!", he also portrays it as designed and operated by an intelligent computer.

Science fiction works also often take place in a city. Dick's *Do Androids Dream of Electric Sheep?* is set in the future in San Francisco. The city is a center of technological progress and humans utilize many sophisticated devices, including mood organs and empathy boxes, which alter their moods and help them feel less lonely. They also buy robotic animals which look real. However, the human characters have to deal with radioactive dust produced during World War Terminus, they wear protective equipment and many of them emigrated to space colonies. Those who remain on Earth feel desperate and rely on the technological devices. However, the technologies may be harmful and humans might overuse them. People also sometimes confuse what is real and what is a technology. Therefore, Dick shows that technological progress might have also adverse effects.

Nonetheless, technological progress in *The Complete Robot* and *Do Androids Dream of Electric Sheep?* is represented mainly by artificial intelligence. The two authors describe robots as having different forms. In Dick's novel, the artificial intelligence is indistinguishable from humans. However, it is still inferior, since the androids live only four years. The appearance of Asimov's robots varies. Some of them are metallic, others are humanoid and some do not resemble any existing creature. Nonetheless, all the robots have humanlike traits. The metallic robots also have pet names, while the humanoid ones have standard human names, which suggests that metallic robots are perceived more as pets. Similarly to Dick's androids, some of Asimov's robots are so advanced that they cannot be distinguished from humans. In addition, in "Satisfaction Guaranteed," the robot looks like a human but does not have facial expressions.

This makes his owner Claire uncomfortable, since the robot is not human but also does not look like a machine. Claire thus experiences the so-called uncanny valley. Moreover, Asimov usually depicts the robots as males, while the androids in Dick's novel can also be females. However, both authors describe humans as attracted to artificial intelligence. They might even develop romantic feelings for it. However, the relationships fail. In Dick's novel, the android Rachael was ordered to seduce Rick to discourage him from hunting androids and in "Satisfaction Guaranteed," the robot is incapable of falling in love. In Dick's novel, the characters also have sexual relations with androids.

Asimov and Dick further focus on the question of how humanity would use artificial intelligence. Both authors portray the robots as slaves and servants. They are tasked with physically demanding or tedious jobs which people do not want to do, therefore making their lives easier and more comfortable. However, while Dick's androids perform only dull tasks, Asimov's robots help humans achieve further progress. Since the robots and androids display humanlike behavior, it may be said that they are exploited by humans, who see them only as machines. Asimov's robots are programmed with the Free Laws of Robotics, which guarantee that they remain obedient and fulfill their tasks. In contrast, Dick's androids do not want to be servants, dislike working for humans and occasionally escape from slavery and murder their masters.

Asimov and Dick also deal with the question of whether sentient robots should be considered people and have rights. In both Dick's novel and Asimov's stories, humans believe that robots are inferior since they are artificial. The machines have no rights and can be freely destroyed. However, the robots want to be treated well and be equal to humans. In Asimov's story "The Bicentennial Man," a robot fights for his rights and is legally declared human, and in *Do Androids Dream of Electric Sheep?*, the androids are angry at being considered less than humans. Since the robots are intelligent, both Rick Deckard and a human child in Asimov's story "A Boy's Best Friend" suggest that artificial intelligence should not be treated as inert and ought to be considered a living entity. Nonetheless, most humans do not perceive robots as living beings.

There are also other differences between humans and robots. In Dick's novel, androids do not have empathy, which becomes obvious when they cruelly torture a spider. They also do not comprehend empathy, since they do not realize that the character John Isidore is helping them out of compassion. They are also emotionally numb and cold. Unlike the androids, Asimov's robots are kind and helpful, since they follow the First Law of Robotics, which states

that they cannot harm humans and have to protect them. However, similarly to the androids, they are logical and rational and do not feel emotions to the same extent as humans.

In addition, Asimov and Dick focus on the question of whether artificial intelligence is a threat. In Dick's novel and in many Asimov's stories, robots are banned from Earth and humans are afraid and suspicious of them. However, Asimov's robots are built with the Three Laws of Robotics which make the robots docile and harmless. Although robots injure humans or attempt to harm them in several stories by Asimov, it is typically because people made a mistake when the robot was manufactured, they deliberately modified the Three Laws or the Laws were completely absent. Therefore, as long as the robots are properly manufactured with the Three Laws, humans do not need to be afraid of them. In fact, people who are scared of robots are described as stupid and standing in the way of progress. In addition, humans are afraid that the robots will replace them and take their jobs away. However, Asimov describes his robots as more capable than humans and often superior to them.

In contrast, androids in *Do Androids Dream of Electric Sheep?* do not have any safeguards. They sometimes murder their human owners and escape from the space colonies to Earth. They are subsequently hunted down by bounty hunters such as Rick Deckard. Even though the androids mainly want to live among humans, they are dangerous due to the fact that they have no empathy and if they decided to eradicate humans, they would be ruthless. They are also already smarter than a number of humans, which further makes them a threat.

While both authors show that technology might become a menace, Asimov demonstrates that if the machines are properly equipped with safeguards and humans do not interfere with the protective measures, they will be helpful and their use will be beneficial for humanity. In contrast, Dick portrays the machines as having their own will and humans lose control over them. Since they have no safeguards and empathy, they are dangerous.

Overall, both Philip K. Dick and Isaac Asimov portray highly advanced technologies. While Asimov is optimistic about technological progress and his spaceships and robots aid humanity, Dick portrays his human characters as miserable and overly dependent on technology. His technological devices have adverse effects and humans often cannot tell apart what is real and what is fake. Furthermore, Dick's androids are dangerous, compassionless and do not want to serve humans. In contrast, Asimov's robots are kind, helpful and obedient, since they have the Three Laws of Robotics. In general, it may be said that in *The Complete Robot*, Asimov is optimistic about technological progress, while in *Do Androids Dream of Electric Sheep?*, Dick is more suspicious of it and does not celebrate it.

10 Resumé

Tato diplomová práce se zabývala vyobrazováním pokročilých technologií a technologického pokroku v science fiction, žánru populární literatury. Cílem práce bylo porovnat způsob, jakým autoři Isaac Asimov a Philip K. Dick zobrazují technologie, zejména umělou inteligenci, ve svých dílech. Práce se zaměřila na analýzu Asimovových povídek ze sbírky *The Complete Robot* (v překladu „Kompletní robot“) a Dickova románu *Do Androids Dream of Electric Sheep?* („Sní androidi o elektrických ovečkách?“).

První kapitola se zabývala definicí žánru science fiction. Termín „science fiction“ se začal používat ve dvacátých letech 20. století. Pro tento žánr existuje mnoho definic a někteří akademici a autoři tvrdí, že je těžké ho charakterizovat. Zpočátku byly za hlavní rysy science fiction považovány věda a technologie. V roce 1972 se pokusil žánr definovat Darko Suvin, na nějž navázali další autoři. Podle těchto akademiků lze science fiction charakterizovat jako literaturu, která se odehrává ve světě, v němž stále platí přírodní zákony. Od skutečného světa se však liší přítomností nového prvku, který Suvin nazval „novum“. Někteří autoři se také shodují na tom, že science fiction se často zaměřuje na následky, které tento prvek má na lidi a na společnost. Kapitola rovněž vyjmenovává témata, kterými se tento žánr zabývá.

Druhá kapitola popisuje historický vývoj žánru science fiction. Práce charakterizuje historii žánru od 17. století do vzniku časopisů, které se zaměřovaly výhradně na science fiction. Dále charakterizuje takzvaný Zlatý věk science fiction, Novou vlnu, která se objevila v 60. letech, a další vývoj žánru až do 21. století.

Následně jsou představeni autoři, jimiž se práce zabývá. Nejprve je uveden Isaac Asimov. Ačkoliv se Asimov zabýval i literaturou faktu a napsal několik mysteriózních románů, znám je především pro svá díla spadající do žánru science fiction, zejména pak pro své příběhy a romány o robotech. Jeho největším přínosem pro žánr byly takzvané „Tři zákony robotiky“, které se často objevují v jeho dílech. Čtvrtá kapitola se zabývá americkým spisovatelem Philipem K. Dickem a jeho tvorbou. Kapitola popisuje témata, která jsou pro tohoto autora specifická. Dick se zabýval například politickou svobodou či otázkou, co je skutečné a čemu lze věřit. Pro jeho díla je rovněž typická paranoia.

Následující kapitola popisuje, jak je technologický pokrok popisován autory science fiction. Zatímco v některých dílech jsou technologie vyobrazovány pozitivně a autoři je popisují jako užitečné, jiní spisovatelé je vnímají jako risk a věří, že se vymknou kontrole a zničí lidstvo. Kapitola dále vysvětluje, jak byl v různých obdobích science fiction technologický pokrok vnímán. Zatímco v 19. století spisovatelé popisovali technologie

převážně optimisticky, ve 20. století, zejména po druhé světové válce, se objevila řada děl, v nichž byly technologie vyobrazovány jako hrozba. Někteří autoři však přesto věřili, že technologický pokrok povede ke zdokonalení lidstva.

V šesté kapitole jsou zkoumány technologie v povídkách Isaaca Asimova a v románu Philipa K. Dicka. V science fiction se často objevují vesmírné lodě a vyskytují se i v povídkách od Asimova. Asimov je popisuje jako velmi technologicky pokročilé a jeho lodě umožňují lidem prozkoumat vesmír tak, jako nikdy předtím. Vesmírné lodě v povídkách Isaaca Asimova jsou tedy symbolem úspěšného technologického pokroku. Science fiction se rovněž často odehrává ve městě. Román Philipa K. Dicka se odehrává v San Franciscu po světové válce, jejímž následkem byl vznik radioaktivního prachu. Mnoho lidí tak emigrovalo do vesmírných kolonií. Postavy v Dickově románu využívají mnoho pokročilých technologií, například přístroj, který je schopen měnit jejich nálady. Další technologie, vyskytující se v Dickově románu, je přístroj, který přenáší uživatele do virtuální reality, v níž mohou sdílet své pocity se spirituální postavou Mercera a s ostatními uživateli. Lidé si rovněž kupují elektrická zvířata, která jsou k nerozeznání od skutečných. Ačkoliv jsou tyto technologie velmi vyspělé, mohou mít neblahý vliv a lidé je používají i když nepotřebují. Lidé mají navíc často potíže rozpoznat, co je skutečné a co je technologie. Dick tedy v románu ukazuje, že technologický pokrok může lidstvu i uškodit.

Diplomová práce se dále věnuje umělé inteligenci. Sedmá kapitola nejprve definuje pojmy „umělá inteligence“, „robot“ a „android“ a popisuje historii zobrazování robotů v science fiction. Kapitola je dále rozdělena do čtyř podkapitol, které analyzují, jak je umělá inteligence vyobrazována v dílech Asimova a Dicka. První podkapitola zkoumá, jak jejich roboti vypadají. Roboti mohou mít v science fiction různou podobu. Existuje také teorie, že lidé preferují roboty, kteří vypadají více jako stroje než jako lidé. Dickovi androidi vypadají zcela jako lidé, jsou však podřadní v tom, že žijí pouze čtyři roky. Roboti v povídkách Asimova mají různé formy. Někteří z nich jsou z kovu, zatímco další vypadají jako lidé. Kovovým robotům dávají lidé roztomilé přezdívky, zatímco humanoidi mají lidská jména. To ukazuje, že roboti z kovu jsou vnímáni více jako domácí zvířata než lidé. Někteří Asimovovi roboti se sice podobají lidem, nemají však mimiku. To může v lidech vyvolat negativní pocity, neboť nevypadají ani jako lidé, ani jako stroje. Asimov a Dick se rovněž ve svých dílech zabývají myšlenkou, že by lidem mohli roboti připadat fyzicky přitažliví. V Dickově románu mají muži s ženskými androidy dokonce sexuální poměry. Oba autoři také ukazují, že se lidé mohou do robotů zamilovat. Asimov i Dick však popisují tyto vztahy jako neúspěšné. Dalším podobným rysem v dílech obou autorů je vyobrazení některých robotů jako nerozeznatelných od lidí.

Druhá podkapitola se zabývala rolí, kterou roboti mají v lidské společnosti. V science fiction i v reálném světě je umělá inteligence využívána především jako pracovní síla. Roboti v dílech Asimova i Dicka jsou sluhové a otroci. Jejich úkolem je sloužit lidem a vykonávat práci, kterou lidé dělat nechtějí, a usnadňovat jim tak život. Roboti v povídkách Asimova také pomáhají lidem dosáhnout dalšího pokroku. V díle obou autorů je však umělá inteligence definována pouze svou rolí otroků a je považována za zbytečnou, pokud nepracuje. Lze tak říci, že ji lidé vykořisťují, neboť se tak chovají i k robotům, kteří vykazují lidské vlastnosti. Hlavním rozdílem mezi roboty v Asimovových povídkách a androidy v Dickově románu je to, že Dickovi androidi se bouří proti otroctví, utíkají od svých majitelů a zabíjejí je. Asimovovi roboti mají nastavené Tři zákony robotiky, které zajišťují, že jsou poslušní a vykonávají svou práci rádi.

Ve třetí podkapitole jsou řešena práva robotů. Pokud by se umělá inteligence stala natolik vespělou, že by měla vlastní pocity a myšlenky, vyvstala by otázka, jak se k takovému stvoření chovat. Lidé v díle obou autorů považují roboty za podřadné a nevnímají je jako živé bytosti. Roboti a androidi mohou být libovolně zničeni a nemají právo na život. I robotická zvířata jsou považována za méněcenná. Oba autoři však skrze některé postavy naznačují, že i roboti mají své životy. Asimov i Dick také zobrazují umělou inteligenci, která touží mít stejná práva jako lidé a chce, aby s ní bylo zacházeno dobře. Dick se rovněž zabývá otázkou, co odlišuje roboty od lidí. V Dickově románu nejsou roboti schopni cítit empatii a ani jí nerozumí. Mohou se tak chovat krutě. Jsou také chladnější než lidé. Roboti v povídkách Asimova jsou laskavější než Dickovi androidi, neboť se řídí Prvním zákonem robotiky, který říká, že nesmí ublížit lidem a musí je chránit. Stejně jako Dickovi roboti se však řídí především rozumem.

Poslední podkapitola se zabývá otázkou, zda je umělá technologie hrozbou pro lidstvo. V dílech Asimova i Dicka se lidé umělé inteligence bojí. Asimovovi roboti se však řídí Třemi zákony robotiky, které slouží jako pojistka, že se roboti nevymknou kontrole a zůstanou poslušní. Ačkoliv Asimov v některých povídkách popisuje roboty jako nebezpečné, je to vždy kvůli tomu, že roboti nemají naprogramované Tři zákony, tyto zákony byly lidmi záměrně pozměněny nebo jsou kvůli lidské chybě neplatné. Dokud však roboti mají tyto zákony, lidé z robotů nemusí mít strach, a ti, kdo se jich bojí, jsou popisováni jako hlupáci, kteří stojí v cestě pokroku. V Dickově románu jsou androidi vnímáni jako hrozba zejména proto, že nemají schopnost empatie a kdyby se rozhodli zničit lidstvo, neměli by soucit. Na rozdíl od Asimovových robotů se Dickovi androidi neřídí žádnými zákony. V Asimovových povídkách mohou lidé roboty vnímat jako nebezpečné také proto, že jim přebírají práci. Asimov však ukazuje, že roboti jsou často schopnější než lidé a v některých případech jsou jim i nadřazení.

Dickovi androidi jsou podobně vytvářeni tak, aby byli inteligentnější než velká část lidstva, což z nich činí ještě větší hrozbu.

Isaac Asimov i Philip K. Dick zobrazují ve svých dílech pokročilé technologie a zabývají se technologickým pokrokem. V jejich vyobrazení technologií je mnoho podobností. Oba autoři popisují svět, v němž jsou lidé schopni vytvořit vysoce pokrokové technologie. Oba rovněž popisují, že lidé mohou navazovat vztahy s roboty a zamilovat se do nich. Asimov i Dick také poukazují na to, že vyspělá umělá inteligence by mohla žádat stejná práva, jako mají lidé, a ukazují, že lidé by se robotů báli. Zatímco Asimov však technologický pokrok ukazuje především v pozitivním světle, Dick poukazuje na to, že technologie mohou být nebezpečné. Dickovy přístroje jsou sice pokročilé, mohou však lidem škodit. Díky Zákonům robotiky Asimovovi roboti věrně slouží lidem, pomáhají jim dosáhnout dalšího pokroku a nepředstavují pro lidi nebezpečí. Dickovi roboti naopak utíkají z otroctví, postrádají empatii a nelze nad nimi udržet kontrolu.

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