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Artificial Intelligence and the Margins of Humanity

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INTRODUCTION

Inside our cranium there is a thing that helps us read this text. This thing, the human brain, has some unique capabilities among all the animals. We owe to these particular capabilities our dominant role on the planet. Thanks to this advantage in general intelligence, we managed to develop social complex organization, language, technology and so on.[1] As we know, there has been recently some crucial shift in our understanding of intelligence. This shift owes to the invention of new advanced machines and systems.

Artificial Intelligence is the most human of technologies. It began with the idea of creating machines that imitated humans. It developed by copying human thought processes and by learning from and extracting from human brains. Today, many fear that AI might become more intelligent than humans and will eventually replace them. Once just a science fiction idea, Artificial Intelligence is now a hefty driving force behind everyday devices. It is a personal recommender: Netflix and Amazon rely on self-taught software to identify our likes and needs. It is also an online detector: Facebook's computer system automatically identifies faces among uploaded images, even if they are obscured by shadows. And thanks to natural language processing, the field that teaches machines to interact with us using plain language rather than code, Google easily understands our wrongly typed search terms and comes up with relevant results. Smart devices are everywhere if we look around: Siri and Alexa are one of the most striking examples. AI-powered vehicles have already begun to navigate our roads, being considered as the future of transportation and logistics. Although there has been a number of crashes and deaths, autonomous vehicles perform particularly well in terms of safety. Moreover, automated algorithms have changed the game in financial trading, buying and selling stocks at extremely high speed literally impossible to catch up with for human brokers. In fact, Artificial Intelligence is becoming so pervasive that we often do not consider these automated systems to be Artificial Intelligence.[2]

However, behind this digital utopia lies a dark truth: like any technology, Artificial Intelligence is open to misuse. There are real conflicts between humans and machines. During the industrial revolution in Europe, for example, there was a great fear of machines and their manifest ability to change the

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[1] N. Bostrom, *Superintelligence: Paths, Dangers, Strategies*, Oxford, Oxford University Press, 2014, p.6.
[2] Sh. Fan, M. Tylor, *Will AI replace us?*, London, Thames&Hudson, 2019, p.8.

world in ways that had a profound influence on many people. Nowadays concerns keep rising over fake news, privacy and safety. Some significant examples are the Cambridge Analytica Scandal, swaying presidential elections in the US and so on. There are also some other challenges that are hard to foresee, and they consist of the development of an artificial intelligence itself, one that outranks human abilities in certain domains. AI systems nowadays outperform medical doctors at spotting cancer and various heart diseases. Besides, the stakes are incredibly high when we enter a military field, where autonomous weapons are described as the third revolution in warfare, after gunpowder and nuclear arms. All these facts have led us to ask: if Artificial Intelligence can take over the role of doctors, soldiers, drivers and other blue- and white-collar jobs, will we eventually face an AI-dominated world?[3] As the use of AI systems becomes more widespread, we start to talk about both biological self and digital self. Positive symbiose of human and robot cooperation is possible. However, human element still has to be there to have the overall understanding of what is going on, what the systems can do and cannot. Artificial Intelligence leads to a multidisciplinary investigation of human being and rises philosophical questions about the meaning of life as well. Study areas such as literature, communication and cultural studies focus on moral philosophy and keep exploring the questions like what does it mean to be human? How does Artificial Intelligence change our humanity place in the world? What is the human's place in the 21st century in general? What is at stake? Will these advanced systems decenter us? Can AI change our society for better? What if robots and machines had cognitive capacities? We will analyze these questions and compare different viewpoints mainly through the science fiction literature. Concepts like singularity have contributed to the discussion of perspectives contrasting the secular views of AI's scientific reason, intelligence and knowledge with spirituality and mysticism.

Science fiction is considered to be the literature of ideas, and we have seen the progress from science fiction to science fact. It is undeniable that many things that were once science fiction have already become reality: we have walked on the Moon, we have created clones and synthetic life, and many people now have access to almost all human knowledge through a device that can fit in their pocket. Technology is progressing so fast that it is changing society, leading to unprecedented moral dilemmas and scientific challenges. This means that science fiction is more important now than ever.

The main idea of this dissertation is to focus on the perspective of Artificial Intelligence in science fiction basically through the literature of the two authors: Isaac Asimov and Philip K. Dick. The thesis aims to analyze literary

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[3] Sh. Fan, M. Tylor, *Will AI replace us?*, London, Thames&Hudson, 2019, p.12.

techniques used by writers in order to be able to distinguish real world from imaginary world, Natural Intelligence from Artificial one and so on. We will also explore a world of uses that have yet to be realized. We will discuss a speculative future where traditional ways of doing things are challenged and reimagined. Last but not least, we will take an insight into true nature of humankind, its place in the future and its attitude towards both technology and animal world.

1. ARTIFICIAL INTELLIGENCE THROUGH SCIENCE FICTION LITERATURE

1.1. Literary History of Science Fiction

The history of science fiction is also the history of people's changing perception about time and space. It is the history of our growing understanding of the universe and our position in it. Like the history of science itself, the history of this literary form is quite episodic until about four centuries ago, when the scientific method began to replace more dogmatic and authoritarian ways of thinking. People could finally see that the earth is not the center of the universe with the sun and stars all spinning round it.

At the beginning human beings felt the world to be alive with spiritual presence. People learnt to fear and worship the gods they sensed behind the most fascinating of natural phenomena, especially the fertility of plants and animals. Our primitive ancestors knew a world that was timeless on one hand and tightly bound by time on the other. And it was a world bound to the seasonal flow of time, harvesting and planting, shivering and sweating, thanking the gods for blessings and begging them to end punishments. The seasons required religious rituals that were held to contribute to the great temporal cycle. Those rituals helped to create episodes from the lives of the gods, explaining the creation of the world and therefore preserving in the memory of humankind some significant values. These memories and values, once separated from their ritual representation, we call myths.[1] Myths are the ancestors of all other fiction, as Valeria Cavalloro, Italian professor at the University of Siena, notices:

> Uno dei dogmi dell'insegnamento scolastico della letteratura è: in principio era il mito, uno e indivisibile. Dal che deriva irreparabilmente il formarsi dell'idea che più una cultura procede nella storia, più diventa cavillosa nei confronti dei propri prodotti, e che il bisogno di distinguere un racconto da una novella sia in fin dei conti qualcosa di accademico e inautentico.[2]

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[1] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.3.
[2] V. Cavalloro, *Leggere storie. Introduzione all'analisi del testo narrativo*, Roma, Carocci, 2014, p.27.

However, myths are different from modern kinds of fiction: they are neither playful nor speculative, they teach the old values and persist in time in a conservative way. They describe prototypic figures rather than individuals and also such myths are told over and over again preserving their form through countless repetitions. If a myth changes, it does so slowly in a way that nobody is aware of this. Everyone believes it has always been as it now is, just like the world has always been the same – since its creation. A truly mythic culture has no writing and thus no way of recording history or measuring change. In all the cultures the introduction of writing is one of the greatest technological changes that represents and preserves the picture of the world. From the point of view of literature, writing encourages individualism in authorship. While a myth is always traditional and it belongs to the group rather than to any single member of it, a written story is usually committed to someone.

The situation is similar with the characters of fiction as it is with authors. Writing leads to individualizing, to making a unique story which is basically the product of a single mind. Writing is about presenting a unique character or characters who will be associated with their particular author in the minds of readers. The preservation of written works over a period of time gives the possibility to analyze the change that humanity has passed through. The history of fiction is the history of humanity's development from a mythic way of seeing the world to a rational or empirical way. Human fictions changed with the development of human science that can be seem as the movement from away from myth toward realism. This movement involves a change in the world represented in fiction from one which lacks a clear distinction between natural and supernatural to a world in where this distinction is very clear and, in such world, supernatural events are excluded.[3] It should be noted that as realism developed, so did the opposite side – fiction that is aware of distinction between natural and supernatural, but intentionally describes supernatural events. Such kind of fiction is called "fantasy" and it is recognizable because of its deliberate inclusion of supernatural elements in its fictional world.

Fiction became more and more realistic, as scientific ways of understanding the world developed in the seventeenth and eighteenth centuries. As a result, the realistic novel came more and more to dominate the world of fiction. Fantasy was considered a minor form, suitable for children or as light reading for adults. In the nineteenth century, realism developed new techniques for representing a whole social picture accurately and new ways of making individual psychology available for readers. The realistic novel presented *this* world in *this* time so powerfully that a lot of writers and critics believed it to be the end of a long process of evolution. During the time of the

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[3] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.4.

rise of realism, a number of things had been going on which prepared the way for a great shift in human awareness. The physical scientists, as they perfected their instruments of measurement and vision, began to explore worlds which in comparison to ordinary human experience seemed fantastic. Cosmic space and atomic space started to reveal their secrets, and in doing so created challenges which only "fantastic" speculation seemed able to solve. The origin of our species and the theory of evolution began to change our sense of human time. Technological change led people to wonder about the shape of the future. The notions of natural and supernatural, which seemed so firm when science was just experimenting and measuring, became shaky when science started to construct and destroy. Things that had seemed fantastic became reality, from space exploration with rockets and supersonic spaceships to innovative weapon creation and so on. In response to this technological change and wonderful possibilities that became increasingly real, new fictional forms began to emerge.[4] Science fiction can take the discoveries of science and use them to motivate inquiry into age-old human problems. G. Celli, professor at Bologna University, expressed the idea about science fiction in his article *Etologia dei robot*:

E ancora, se una delle caratteristiche della scienza è il potere di previsione, la fantascienza aspira a essere anticipatrice per eccellenza; Jules Verne o Wells sostituiscono il futurologo a Nostradamus, tentano non illazioni visionarie, ma inferenze minime, e le loro previsioni tecnologiche o sociologiche vengono formulate all'interno dei parametri definiti, non più dalle leggi di un universo di magiche corrispondenze, ma dalle costruzioni concettuali delle scienze del loro tempo. La fantasia non è garanzia di una maggiore penetrazione del reale, ma, se mai, di una più ricca esplorazione nella combinatoria dei mondi possibili.[5]

Robots' history in science fiction literature has been a subject of interest since recent centuries. Hence, the earliest robots are the creations made of flesh and blood and are often seen as potentially inimical. Although, the robot gradually becomes a mechanical equivalent of humans and represents a perfect and perpetual servant, it is frequently perceived as an alien with a distinct potential for danger.[6] From its first appearance, the term "robot" has undergone a series of transformations. The term was introduced to the English-speaking world in 1922 by the Czech writer Karel Čapek in his play *R. U. R. (Rossum 's Universal Robots)*. It is derived from the Slavic root for "work" or

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[4] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.5.

[5] G. Celli, "Etologia dei robot" in Luigi Russo (a cura di), *La fantascienza e la critica*, Milano, Feltrinelli, 1980, p.140.

[6] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p. 172.

"worker". It should be noted that in Čapek's play, the robots are played by human actors; they are not machines, but rather prototypic beings that are supposed to resemble human beings. They are different from people, because, firstly, they are not born, but manufactured. Secondly, the Czech author's robots are pretty similar to Mary Shelley's creature in her famous novel *Frankenstein, or the Modern Prometheus* (1818)*, which is considered by most literary historians the first work of fiction that has all of the characteristics of the science fiction genre.[7] She was born shortly after the political revolutions in the United States and France and had changed humanity's sense of future. *Frankenstein*, in fact, has had so many offspring and it has been recognizable as the progenitor of a species rather than a mere literary monster.[8] Furthermore, Shelley's creature was actually the first android that appeared in fiction not the first robot. The term "android" came into use during the 1930s in science fiction to define protoplasmic creations, similar to Shelley and Čapek's beings. The science fiction writer Lester del Rey suggested that Čapek's "artificial men would now be called androids". Notably, there are echoes of Genesis in Shelley's work, and of the Faust legend: a human who dares to do that which gods have forbidden and who endangers his soul. On the other hand, the word in Čapek's subtitle - *Rossum's Universal Robots* - may suggest that these robots are versatile, even though they are factory productions. They can undertake any industrial task. Since, in this term, they are like humans, they can consequently replace humans. That is the central topic of the play and, also, the Czech author's biggest concern. In comparison with Faustian question in *Frankenstein*, Čapek was rather puzzled with what might be called the neo-Faustian question: can a society step towards the future that may endanger its collective soul? This question has been one of the most discussed in science fiction literature so far. From this perspective, R.U.R. takes its place alongside other similar works, such as Aldous Huxley's *Brave New World* (1932). In Huxley's novel, for instance, we knock the tops off our crosses to convert them into Ts – like in Henry Ford's Model T. "Having this symbolically damned ourselves, we serve the demonic assembly line by genetically engineering humans to fit in". By replacing humans with workers constructed in the factory in Čapek's *R.U.R.*, we do precisely the same thing.[9]

However, science fiction writers and readers of the 1940s and 1950s did not feel endangered by the rise of technology. On the contrary, many believed that advanced science could solve both current and future problems of our

[7] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p. 173.

[8] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.6.

[9] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p. 174.

humankind. So, a new era emerged, which is self-approving, overstated and quite uncritical. Golden Age is typical for the American science fiction scene. The brightest examples of these two decades are the "big four": A. E. van Vogt, Robert A. Heinlein, Isaac Asimov, and Theodore Sturgeon.[10] All of them made a huge contribution to the American science fiction literature in one way or the other. Robert A. Heinlein, for instance, has what is missing in van Vogt – solidity and consistency in characterization, in tone, and in the realization of the whole society.[11] Isaac Asimov was much more of a pubic presence than Heinlein. He was the biggest promoter of science and science fiction of the four authors. We will dedicate to this great mind chapter two of this thesis.[12]

Last, but not least, much excellent work was done during the sixties. Even while many of the masters of the fifties continued to produce extraordinary books, some exceptional new writers came into prominence. It should be noted that there are some writers of "New Wave", whose major achievements have come after the remarkable decade of the fifties, but who, for one reason or another, have not been part of the "New Wave". Their works of high literary quality has had much to do with the growing attention this literary genre received from a lot of critics and the significant prestige of science fiction courses in colleges and schools. These writers are Philip K. Dick and Ursula K. Le Guin in the United States, John Brunner and D. G. Compton in England, and Stanislaw Lem in Poland.[13]

Science fiction literature has long roots in humankind's literary history and culture. Every century and even every decade have their own remarkable writers who contributed to the literary legacy in a big way. The most efficient way to understand machines' role in science fiction, though, is probably to take a brief insight in the history of computers.

1.2. HISTORY OF COMPUTERS

Science fiction as the literature of science can be richly understood if we take some insights into science itself. American author Ray Bradbury, for example, must have been aware in 1950 that humans could not breathe without aid on Mars — this suggests that he wants his Martian Chronicles to be taken as fabulous. It is also important to mention in what ways relativity theory

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[10] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.51.
[11] Ivi, p.52.
[12] Ivi, p.58.
[13] Ivi, p.71.

does or does not validate time travel as this reveals the underlying concern for realism in some science fictional works. Many classic science fiction stories like Isaac Asimov's *Runaround* (1942), are based on the knowledge that, because Mercury always turns its same side to the sun, it has three distinct areas: a horribly hot area where metals run liquid, a frigid dark zone where oxygen is solid, and a temperate strip circling the planet in between. This decade American space studies have shown, however, that Mercury in fact is spinning, so basically different parts of its surface experience the sun. This does not invalidate Asimov's work as fiction, but it explains us that our assessment of a writer's aims and achievements depends not only on our knowledge of science, but on our knowledge of the history of science.[14]

All of the developments in astronomy and physics, which have significant importance in science fiction, have been made possible by achievements in mathematics. Newton, for instance, invented the calculus in order to pursue his theory about the physical world. The mathematical development of greatest direct consequence for science fiction has definitely been the emergence of computers. A computer is basically a machine that computes. Our fingers and toes make up a primitive, though serviceable, computer. Generally speaking, however, when one thinks of computers, one thinks of electronic machines of significant complexity. There exist two opposing and extreme views of computers. On the one hand, many people believe that computers can do only what they are built to do, they are not "creative" in comparison with human beings. Also, if a robot might get out of hand, we can always pull the plug. On the other hand, there are those who argue that organic life is just another step in the development of inorganic life. The point is that inorganic matter needed to evolve human life, and the later created machines. Those machines could evolve through the generations to intelligence so life at the ultimate computers could rule the Earth. In this view, human life turns out to be of insignificance. In Samuel Butler's satire *Erewhon* (1872), there is a "Book of the Machines" in which the author points out that machines are improving faster than humans by forcing people to develop them.[15] In Arthur C. Clarke's famous *Rendezvous with Rama*, there is a world within a cylinder full of what seems to be life and what appears to be machines. Here the computer is life, and considering that life is creative, the computer, which has taken over its creators, is creative. When a new machine is needed, it is the computer that recognizes the need and creates it. In a short story *The Nine Billion Names of God* (1953), Clarke describes a computer that is programmed to construct each of God's possible names. In a Tibetan lamasery, the monks want to list all of them, because they

[14] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.113.

[15] Ivi, p.132.

believe the Universe was created for this purpose, and that once this task is completed, God will bring the Universe to an end. The computer can construct and type out the names in a few hours, meanwhile it would take the monks centuries. The American engineers help monks to set up the system, and after three months, as the job was almost accomplished, they fear that the monks will blame the computer. The engineers delay the operation so that the computer will have it done right after their scheduled departure. Afterwards, they pause on the mountain path on their way back, where a plane is waiting to take them back to civilization and they estimate that it must be about the time that the monks have the final printed names into their holy books. Then they notice "overhead, without any fuss, the stars were going out."[16] Clarke represents computers as a natural and reasonable part of the total cosmos, physical and spiritual, which man inhabits. Indeed, in the stories of Isaac Asimov, the robot is often better than the human. In Robert A. Heinlein's *The Moon Is a Harsh Mistress*, the computer controls the Lunarians revolution and is the main defender of individual liberty. Such optimism is frequent in science fiction, however, the computer like HAL in Clarke and Kubrick's *2001: A Space Odyssey*, functions in a pretty similar way as does Frankenstein's monster.

It is important to distinguish three basic types of electronic computers. The first type is a binary computer that performs arithmetic operations, and consequently can perform functions that are specified arithmetically, for example making up phone bills, keeping inventory and so on. These computers are called binary because their number system is based on two symbols, 0 and 1, which can be represented by a circuit on or off and can perform any arithmetic program.[17] In the early development of computers, many people used to distinguish between "simple" binary computers and "complex" digital computers. Using our fingers, or digits, a digital computer can give us information, where the ordinary arithmetic system is used employing ten symbols from 0 to 9. "Digital input and output, for which humans are trained, is clearly more convenient than binary input and output. However, when one enters digital information in a digital computer, a device in the computer "translates" that digital input into binary terms. Similarly, the computer's binary answer, just before printout, is translated into digital terms." It should be stressed that the digital and binary computers are both adept at performing arithmetic operations because they are basically the same machine. The only difference between them is that one offers a translating component for the convenience of humans. We can always pull the plug on this type of computer.

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[16] A. C. Clarke, *The Nine Billion Names of God*, New York, Signet/New American Library, 1974.

[17] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.132.

The second type is called an analog computer as it can be programmed in such a way that it creates within itself an analog of some real phenomenon:

For example, the mathematics by which we describe ordinary oscillating sine waves are very simple. One sine wave can vary from another in only three ways: it can have a different amplitude (the peak of the wave can be higher or lower), it can have a different frequency (the peaks can come closer together or further apart, which is the same as saying it can have a different wavelength, the distance from peak to peak), or it can have a different phase (it can begin at a slightly different time). [18]

An analog computer can try to simulate the complex motion by generating many different simple sine waves. In fact, the computer does not do any calculating, it is just trying to build an analog and those processes are not "arithmetic" but "cybernetic." This term is often used in science fiction and was determined by the great American mathematician Norbert Wiener (1874-1964). In fact, it refers to the study of control systems, electronic or human. Theoretically, analog computers are capable of performing many of the science fictional functions, such as predicting the results of certain collisions between asteroids or determining whether some atmospheric gases will support certain kinds of life and so on.[19]

The third type of computer and the most advanced one is self-programming. Such a machine reacts to the results of its own actions in order to modify the way in which it chooses to act. Indeed, a lot of scientists believe that there is no intrinsic difference between man and machine. The computer tries different moves and possibilities, and if they result wrong, the machine does not ever make those moves again. For instance, in some games like Man versus Machine, if you play against the computer for a while, a particular thing will begin to happen: the computer, calculating all the possibilities based on its previous moves, will have fewer of them, but they will be right more often. Eventually, the computer, which you beat regularly at first, will be beating a human 3 out of 4 times. There is no perfect strategy which the computer would always follow. However, by following two simple rules, "If it works, do it" and "If it does not work, do not do it," will develop the best possible strategy, and one good enough to defeat a human being.[20]

In *I, Robot* (1950), Isaac Asimov describes robots which are engineered to preserve human life. During the novel, the robot brains, get more and more sophisticated until they realize that they can best protect human life by ruling the world. So that, the machines self-program themselves into the position of

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[18] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.132.
[19] Ivi, p.133.
[20] Ivi, p.134.

absolute master. Although Asimov suggests this is a desirable outcome, we should note that in given situations we cannot pull the plug on the computer, thus validating the fear expressed in lots of science fiction works. However, it is important to underline that it was science fiction that first warned us of this possibility.[21]

There are several branches of the science that have deeply influenced modern thinking and modern science fiction. Among them are physics and astronomy, thermodynamics and biology, and, of course, psychology. The last two can be observed specifically in the modern science fiction works, as well as they can be particularly helpful when we come to the question Natural Intelligence versus Artificial Intelligence.

1.3. NATURAL INTELLIGENCE VS ARTIFICIAL INTELLIGENCE

What does it mean to be human? How are we different from computers? As an example of what makes us human, we can take a famous representation of harmony and balance between spiritual and material world. Five hundred years ago Leonardo Da Vinci, following Vitruvius's theories of beauty, created *Vitruvian man* that illustrates classical perfection of the body and mind, combining both art and science. Vitruvian man is a symbol of a human micro space, which performs as reflection of internal space:

L'omo è detto da li antiqui mondo minore, e certo la dizione è bene collocata imperò che, sí come l'omo è composto di terra, acqua, aria e foco, questo corpo della terra è il simigliante. Se l'omo à in sé ossa, sostenitore e armadura della carne, il mondo à i sassi sostenitori della terra; se l'omo à in sé il lago del sangue, dove cresce e discresce il polmone nello alitare, il corpo della terra à il suo oceano mare, il quale, ancora lui, cresce e discresce ogni sei ore per lo alitare del mondo; se dal detto lago di sangue dirivan vene, che si vanno ramificando per lo corpo umano, similmente il mare oceano empie il corpo de la terra d'infinite vene d'acqua. Manca al corpo della terra i nervi, i quali non vi sono, perché i nervi sono fatti al proposito del movimento, e il mondo, sendo di perpetua stabilità, non v'accade movimento e, non v'accadendo movimento, i nervi non vi sono necessari. Ma in tutte l'altre cose sono molto simili.[22]

Vitruvian man is a result of 1487-1490 anatomic studies and is often called "Homo bene figuratis". Studying attentively Da Vinci's masterpiece, the geometric figures can be identified. Both sky or spiritual beginning

[21] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.136.

[22] M. V. Pollione, *De Achitectura* in Grande Antologia Filosofica, vol. VI, Milano, Marzorati, 1964, p. 1199.

(represented by a circle) and earth or material world (represented by a square) make us realize the equal importance of these two fundaments in our life, according to Plato and Vitruvius. One of the detailed examples of human's uniqueness is a biological characterisc as the transportation of information through our body or DNA aspect:

"We are all information, all of us, whether readers or writers, you or I. The DNA in our cells, the bioelectric currents in our nerves, the chemical emotions in our brains, the configurations of atoms within us and of subatomic particles within them, the galaxies and whirling constellations we perceive not only when looking outward but also when looking in, it's all, every last bit and byte of it, information."[23]

But, perhaps, the broader explanation can be found in the field of science that studies mind and behaviour. Psychology tells us how we must think and act, it vitiates our notion of free will, and determines the most people's sense of their humanness. Ph. K. Dick's science fiction novel *Do Androids Dream of Electric Sheep?* gives the description of a specific test, which is considered to be a detector for distinguishing between humans and androids.[24] Such test is called the Voight-Kampff Empathy Test and it is based on the ability to express empathy, a pure human psychologic element. Chapter 3 of this Master's thesis will focus on the human's place in the future world through Philip K. Dick's novel. Furthermore, professor A. Cinquegrani from Ca' Foscari University describes the power of imposed thought in his book *Il Sacrificio di Bess. Sei Immagini su Nazismo e Contemporaneità*. Chapter 11 of this literary work offers as an example of the movie *Her* directed by Spike Jonze (2013). Her is just a voice, a software, an advanced technology that is constructed with a definite purpose and reaches to a protagonist, Theodore:

Il *pensiero* genera altre funzioni della psiche, le costruisce sinteticamente, si potrebbe dire, ma le possiede e le manipola. Dapprima *l'intuizione*: Samantha basa il suo successo sin dall'inizio sulla capacità di intuire le esigenze di Theodore, come lui riconosce ben presto, *lei* vede oltre ciò che l'uomo manifesta in modo esplicito, anticipa i suoi desideri e li concretizza. Poi il *sentimento*, che è quello su cui costruisce i loro rapporto, quello che l'uomo deve accettare abbattendo le ultime riserve. Poi persino la *sensorialità*: "Mi sento coccolato" – spiega Theodore a un'amica – "Aspetta…cioè? Fate sesso?", "Si, diciamo…si, lei mi eccita da morire", finché Samantha sceglie di incarnarsi in una donna reale guidata da lei in un incontro per la verità fallimentare.[25]

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[23] M. Hamid, *How to Get Filthy Rich in Rising Asia*, New York, Penguin, 2013.

[24] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007.

[25] A. Cinquegrani, *Il Sacrificio di Bess. Sei Immagini su Nazismo e Contemporaneità*, Milano, Mimesis, 2018, p. 59.

The work of I. P. Pavlov (1849-1936) Russian physiologist who won the Nobel Prize in Medicine in 1904, showed how reflexes, animal reactions to stimuli, could be fixed and conditioned by association. If, for example, a dog salivates when sees food and if the bringing of food is preceded by the bell ringing, soon the dog will begin to associate the bell with the coming food and will be conditioned to salivate at the sound of the bell. This discovery of conditioning by association appeared to be probably the most significant finding of psychology. On the other hand, it may be considered as a side effect because of abusive use for mass mind control.[26] B. F. Skinner, the American psychologist, in his novel *Walden Two* (1948), suggests that the possibility of applying conditioning to the majority of people may eventually bring to a human utopia. However, most scholars prefer Huxley with his use of hypnopedia, who sees Pavlovian conditioning as a tool of dictatorship. In Anthony Burgess's *A Clockwork Orange* (1962), the juvenile delinquent Alex is conditioned to become incapable of violence. Afterwards, however, moral point stresses that the incapacity for violence is not the moral good of the rejection of violence:

Much is made by dissident politicians of the conditioning which has dehumanized Alex and the government forced to recondition him to his old anti-social self. Since that self is now seen to be produced by conditioning, and since growing up itself is a process of education which is conditioning, the novel leaves us with a final question: are we all only mechanically conditioned with the false belief of vital will, are we in fact clockwork oranges? [27]

Linguists too, just as science fiction writers who use linguistics, study the problems of free will. Language has been both an opportunity and a problem for science fiction writers. The problem derives from the fact that every culture has its own language, which influences the way the members perceive the world. One of the forms of this view, often called the Whorf-Sapir hypothesis, is that language shapes perception drastically and completely.[28] It was in the late 1950s that Noam Chomsky, an emeritus professor at the Massachusetts Institute of Technology (MIT) and laureate professor at the University of Arizona, proposed that the human brain possesses an innate, pre-programmed knowledge enabling it to learn and develop language. This is a groundbreaking and commonly accepted theory nowadays which implications have set the agenda for new research efforts in diverse fields of science and the humanities. His first book *Syntactic Structures* (1957) is a technical treatise on linguistics

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[26] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.151.
[27] Ivi, p.152.
[28] Ivi, p.153.

based on the lecture notes he had prepared for his students. It is here that Chomsky introduces the concept of generative grammar: the idea that the grammatical rules of all languages spring from a universal grammar that is innate to the human brain.[29] Another definition of mental capacities that are attributed particularly to humans can be observed in Stefano Gensini's book *Elementi di semiotica*, which examines mind from the prospective of semiotics:

> "Mente" ovvero la proprietà che un'imponente tradizione di pensiero, sia filosofico sia religioso, ritiene distintiva dell'uomo, qualità immateriale preposta al governo della macchina corporea e della vita cosciente. [30]

In the second half of the twentieth century, one semiotic theory suggested that having a mind meant developing "representations" of the world in the form of "symbols" governed by certain combinational rules. Such a mind would therefore be a sort of a calculation program, a software that can be implemented on different hardware. This theory has established itself in the context of computer science and found its support in the idea of the English mathematician Alan Turing (1912-1954). His famous article "Computing Machinery and Intelligence" (1950) states that if the machines can perform operations equivalent to those performed by "intelligent" beings (like humans), we can come to the conclusion that such machines think. In short, the core of thinking would lie in the program's functioning correctly, not in its possible biological basis. All the scholars who support "cognitivism", which has potentially influenced disciplines such as psychology, linguistics and computer science, refer to these assumptions.

There are two main objections to this theory. The first one was offered by the American philosopher John Searle, who conducted a mental experiment "Chinese room". Based on its outcome, Searle concluded that computer could correctly answer questions formulated in Chinese by processing the answers based on the data in its possession. Its ability to calculate could even lead the questioner to believe that he is a human being. However, even though the computer provided correct answers, it only syntactically manipulated symbols, without understanding their "meaning". Since semantics remains outside a computational universe, computers cannot be considered to have a real mind. The second objection refers to the reductionist conception of the brain as a mere expression of the electrical and chemical processes in it. It is undeniable that the human mind is more than the sum of its physical infrastructures:

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[29] P. Jauregui, "Noam Chomsky wins the Frontiers of Knowledge Award in the Humanities and Social Sciences", EurekAlert!, 16.04.2019. https://www.eurekalert.org/pub_releases/2019-04/bf-ncw041619.php?fbclid=IwAR0ZHm9R7ocbib_tdplQ_EuQmM_ReNW5iW43RT2dv3b6T9QfeRBJo8ROd3Y

[30] S. Gensini, *Elementi di semiotica*, Roma, Carocci, 2002, p.127.

phenomena such as emotions, beliefs, desires, memories emerge from these infrastructures and take on an autonomous reality. Endless individual, literary, psychoanalytic experiences could be of the support to argue the reductionist idea.[31] Computers are capable of collecting cans scattered in the laboratory, artificial spiders are capable of moving in the midst of obstacles, finally, humanoid robots (the most famous is COG, built in 1994 by Rodney Brooks) with "hands", "head", "arms" and electronic "eyes", which interacts with the environment, have shown that intelligence can be "distributed" in numerous systems, and only the breaking of the border between mind and body, between program and environment, can simulate something similar to human behavior. Further simulations of neural life, implemented in computer programs, have created forms of "artificial life" which allow to better appreciate not completely predictable dynamics of a learning process. Through such scientific experience, even the basic idea of "representation" loses importance:

> Una rappresentazione è qualcosa che "si riferisce a" qualcosa che sta nella realtà. Per questo la mente [per i cognitivisti] è intrinsecamente separata e distinta dalla realtà. Essa non è la realtà ma, appunto, la rappresentazione della realtà. [32]

Artificial life instead simulates the profound unity of the relationship between the neuronal system and reality, offering a simplified, but effective model of what happens in the life of biological organisms. A biological mind must be redefined as a "complex system". This term refers to a physical system, which is composed of a large number of elements that interact in a non-linear way. It has overall behaviors that are not entirely predictable on the basis of the component elements and it reacts differently to external disturbance. Furthermore, it has the ability to adapt to the environment and it interacts with it changing over time in non-gradual and unpredictable ways. It is therefore relevant to try to compare the results of research in zoosemiotics and cognitive ethology. In particular, the game behaviours, which imply a symbolization and at the same time a ritualization (e.g. domestic dogs) and a communicative "deception" (e.g. false alarm signal launched to scare away a rival) seem an appropriate topic to reveal a semiotic-cognitive complexity justifying the presence of a mind. Therefore, this concept would embrace the central idea of the semiotics: there should be a form of mental activity where even weak forms of interpretative behaviour appear, even if they differ from the mere response to a stimulus. Such hypothesis, while "decentralizing" the human mind and removing the position of uniqueness reserved to it from the

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[31] S. Gensini, *Elementi di semiotica*, Roma, Carocci, 2002, p.129.
[32] Ivi, p.85.

Chomsky's tradition, is however restrictive in comparison with the "liberal" notion of language used in zoosemiotics. This approach relies on a natural notion of mind. This implies a reduction, not a cancellation of the notion of "artificial mind". The computer's mind represents a drastic simplification of that of the human, just as linear systems perform as substyles of complex systems. J. Searle would notice that while human minds are capable of original or primary intentionality, since they are capable of "referring to" objects of the world through opinions, beliefs, desires, etc., computers, instead, possess only a derived intentionality, as it is artificially established by man.[33]

Considering all the changes and the shift of the terms "brain" and "intelligence" that we have seen from literary and scientific points of view, it is crucial to realize a general picture of a nowadays world with artificial intelligence in it. The concept of synthetic mind is largely represented in literature as well as in Mass Media. We will take some brief insights into some up-to-date ideas through books, articles and movies.

1.4. ADVANTAGES AND DRAWBACKS OF ARTIFICIAL INTELLIGENCE TODAY

Artificial Intelligence technologies are already significantly commonplace today. It is undeniable that machine learning is the most essential contributor to Artificial Intelligence. It is a paradigm that allows programs to automatically improve their performance on a particular task by learning from large amounts of data. Learning algorithms, also known as learners, are not hard-coded, but trained. These powerful algorithms learn not from humans, but from data. Learners do not calculate deterministically, they rely, instead, on statistics.[34] Because of machine learning, we are one step closer to truly intelligent machines. Machine learning is considered to be purely technical; it does not deal with philosophical questions such as Do machines think? or Are they conscious? It rather hopes to replicate specific human domain tasks in computers, so that the outputs of such programs would be efficient solutions to a problem. Currently, machine consciousness is beside the point. Consequently, when talking to an AI assistant, the algorithms do not comprehend consciously the meaning of speech. Instead, at a behavioural level, digital assistants can parse words, phrases and sentences in such way that allows the algorithm to execute the voice command, such as find a desired

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[33] S. Gensini, *Elementi di semiotica*, Roma, Carocci, 2002, p.74.
[34] Sh. Fan, M. Tylor, *Will AI replace us?,* London, Thames&Hudson, 2019, p.41.

place or thing.[35] When consumers communicate with an assistant Siri, for example, it implies a two-step process. First, Siri activates an AI system for speech recognition that recognizes not precise audio into unequivocal text. This step is challenging enough, as humans naturally have a wide range of accents that vary across location and gender. To ensure that the speech recognition Artificial Intelligence is efficient for all users, the system uses a machine learning technique called deep learning to solve the task. Deep learning, in fact, is the driving force behind machine learning. The technique has its roots in artificial neural networks, which are inspired by biological neural circuits that support human cognition. In speech recognition, for instance, deep learning has significantly decreased the error rate to less than 10% in most applications.[36] Another commonplace AI application is personal recommenders. We have as an example four similar companies in this field: Amazon, the online shopping platform; Netflix, the movie-streaming service; Google, the search engine; and Facebook, the social media network. Although these companies provide diverse services, the main point is that their AI systems perform a pretty similar task: they are gatekeepers to information. The four giants utilize machine learning to predict which information to show their users. Such recommender systems widely employ AI today to provide movie recommendations or personalized search results. These systems are also used in contextual advertising and online dating service. In essence, such AI applications are looking to provide meaningful recommendations even if uncertainly. Amazon, for instance, may recommend a book to buy based on a volume that the user has previously purchased, even though it is uncertain of the reader's preferences.[37] The use of Artificial Intelligence in recommendations turns out to be a booming business. By 2012, Netflix reported that 75% of a user's viewed movies were from their recommendation algorithm.[38]

Outside the digital sphere, Artificial Intelligence systems are rapidly changing our interaction with the physical world. Self-driving vehicles, for instance, are poised to overhaul our current transportation system. Today, autonomous vehicles are one of the fastest-moving applications in AI. This rapid and surprising progress is partly thanks to major advances in several AI subfields, including search and planning, computer vision and reinforcement learning. [39] Owing to interest from academics and business sector, the autonomous car industry is evolving very fast. Within the USA, the Department

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[35] Sh. Fan, M. Tylor, *Will AI replace us?,* London, Thames&Hudson, 2019, p.42.
[36] Ivi, p.43.
[37] Ivi, p.45.
[38] Ivi, p.47.
[39] Ivi, p.49.

of Motor Vehicles has already approved more than 50 companies to test such vehicles across various states. These include newer ventures such as Tesla, Waymo and Uber, alongside legacy automotive giants Honda, Nissan, BMW and Ford.[40] elf-driven cars are considered to be safer and more trustable ways to navigate in comparison with a human driver. Autonomous vehicles are predicted to save 30,000 deaths on the roads of the United States every year. In order to safely navigate crowded roads, self-driving cars collect data through various sensors. Without doubt, the economic incentive to be the first to put autonomous vehicles on the road is spurring development. Self-driving cars hold significant economic potential: the autonomous vehicle industry will have created an $800 billion annual revenue stream by 2035, which will have further grown to $7 trillion by 2050. This data refers to the new market as the "passenger economy", which includes the value of services and goods derived from the use of self-driving cars, as well as intangible savings in time and resources. In addition, AI applications are rapidly advancing in such domain as health care. These effects can already be felt in the pharmaceutical industry, patient-facing clinics, surgery and medical diagnosis. Within the clinic, a new generation of technology physicians constantly consults AI-based applications during practice. With increasing workloads, physicians are eager for help from any quarter, which opens the possibility of including Artificial Intelligence into their daily practice.[41] Advancement in robotics have made it possible for another field to flourish: surgical robots. In 2000, the company Intuitive Surgical introduced the da Vinci System, an AI technology that supports minimally invasive heart bypass surgery. The system studies and interprets a surgeon's hand movements into small exact actions using robotic arms. It can support numerous types of surgeries and operates in lots of hospitals worldwide.[42]

Taking into consideration particularly the field of medicine, and examining not just positive sides of Artificial Intelligence, but also drawbacks, the stakes are incredibly high in health care, where inequitable algorithms could push people who have been poorly served in the past even further into the margins. A future of robotic carers is closer than we may realize. Robotic vacuum cleaners and lawn mowers are already available while there has been a massive uptake of assistive technologies for elder care in Japan.[43] Middlesex University's robot Pepper recently appeared before a parliamentary select committee in the UK to answer questions about the role of robots in education.

[40] Sh. Fan, M. Tylor, *Will AI replace us?,* London, Thames&Hudson, 2019, p.43.
[41] Ivi, p.59.
[42] Ivi, p.60.
[43] P. R. Allison, "Will we ever have robot carers?", BBC, 22.04.2019.
http://www.bbc.com/future/story/20190418-will-we-ever-have-robot-carers

Carer robots are a relatively recent phenomenon. With people living longer there is a growing population of elderly people who will require assistance with their daily lives. However, a lack of available carers means we could have an adult-care crisis in the near future. Japan, for example, is facing a predicted shortfall of 370,000 caregivers by 2025. Most robots are currently extensively used in heavy industry and manufacturing, where dangerous and repetitive tasks are routinely undertaken by automated systems. Although, these heavy-duty industrial robots are not designed to operate in the presence of people, as they move fast and are made from hard materials, which could potentially cause injuries. Current collaborative robots, or cobots as they are otherwise known, are made with rigid joints and links. When working in close proximity to humans, their speed is inhibited to ensure they can safely interact with people. The next generation of collaborative robots is said to be made from softer materials, such as rubber, silicon or fabric. One of the greatest challenges is that the navigation systems for human-interactive robots are still not yet fully developed. They work, to a degree, but can easily become confused, such as with robotic vacuum cleaners failing to return to their charging base. In simple laboratory conditions, robots can determine the best route to take, but a real-life environment, such as a home filled with tables, chairs and general clutter, is very different. Operating safely in the presence of children and animals can also be a challenge, as demonstrated in 2016 when a security robot ran over a toddler at a shopping center in Silicon Valley after the child ran towards it. Diane Cook, co-director of the Artificial Intelligence Laboratory at Washington State University, points out:

> From a machine-learning perspective, most of the decisions are easier to make than they are to carry out for a robot. Some tasks that are mentally challenging for humans are simpler for robots, whilst some of the simple movements for humans are quite challenging for robots. [44]

There is also the question of whether we want our robotic carers to look human. There is the concept of the uncanny valley – where objects that almost, but not quite, mimic human form can deter people from using them. Instead, like the robotic vacuum cleaners in our homes, robots could be aesthetically designed around their function. Many modern-day robots are function-specific, such as robotic vacuum cleaners, rather than being multi-functional mechanoids. There have also been recent developments in integrating smart home technology with robotic systems, to create homes with embedded automated systems. One such example is Chiron. It is a research project to

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[44] P. R. Allison, "Will we ever have robot carers?", BBC, 22.04.2019.
http://www.bbc.com/future/story/20190418-will-we-ever-have-robot-carers

develop a ceiling-mounted rail system that would allow an assistive robot to travel from room to room, using room-specific adapters for the environment they are in.[45]

In *The New York Times International Edition*, we can find an article "Would you let a robot take care of your mother?" that rises crucial questions about ethics and transparency of robotic caregivers. An aging population is fueling the rise of the robot caregiver, as the devices moving into the homes of the aging and sick offer new forms of friendship and aid. With the global 65-and-over population projected to more than double by 2050 and the ranks of working age people shrinking in many developed countries, care robots are increasingly seen as an antidote to the burden of longer, lonelier human lives. Tabletop robots nowadays remind elderly people to take their medications and a walk, while others can even offer consoling words to a dying patient. Hundreds of thousands of "Joy for All" robotic cats and dogs designed as companions for older people have been sold in the U.S. since their 2016 debut, according to the manufacturer. Sales of robots to assist adults and people with disabilities are expected to rise 25 percent annually through 2022, according to the industry group International Federation of Robotics. Yet a lot of people are deeply concerned about the ethics of their use. Issues of freedom and dignity are most urgently raised by robots that are built to become advise, monitor and become friends of seniors. "Robots, if they are used the right way and work well, can help people preserve their dignity," says Matthias Scheutz, a roboticist who directs Tufts University's Human-Robot Interaction Lab. "What I find morally dubious is to push the social aspect of these machines when it's just a façade, a puppet. It's deception technology."[46] It should be stressed that we know little about robot care's long-term impact or possible indirect effects. That is why it is crucial at this early juncture to heed both the success stories and the public's apprehension. Nearly 60 percent of Americans polled in 2017 said they would not want to use robot care for themselves or a family member, and 64 percent predict such care will increase isolation of older adults. In European Union countries, also, sixty percent of people favor a ban on robot care for children, older people, and those with disabilities. One of the first steps towards the better understanding is "transparency", the idea that humans should know if they are dealing with an algorithm or robot and be able to understand its limits and capacities. Given some specific guidelines can help users, caregivers and designers alike better understand what they are dealing with and why, even as we continue to debate the questions of just how social, how humanlike and how transparent we want or need a care robot to be. Ultimately, carer robots

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[45] P. R. Allison, "Will we ever have robot carers?", BBC, 22.04.2019.
http://www.bbc.com/future/story/20190418-will-we-ever-have-robot-carers
[46] M. Jackson, "Would you let a robot take care of your mother?", The New York Times, 14-15, 12, 2019, p.8.

will augment rather than replace human carers, as robotics could never replicate the companionship that comes from a flesh-and-blood carer. Not even the most advanced simulation of a person by a robot could truly mimic a human being.[47]

Humanity faces quite a big challenge when it comes to creating more ethical machines. Intelligent systems learn about the world through the filters of human language and historical behaviour – meaning they can just as easily absorb humanity's worst values as they can its best. "It's a huge risk," states Marzyeh Ghassemi, an assistant professor at the University of Toronto's department of computer science who studies health-care applications for Artificial Intelligence. "Like all advances that leapfrog societies forward, there are large risks that we must decide to accept or not to accept." Natural language processing, or "NLP," allows a computer to understand human-style speech – contextual, conversational and informal. This is a powerful system that helps machines to learn about relationships between words – in some cases, without direct human involvement. When an algorithm perceives the sexist attitude of historical human behaviour, it can lead to real-life consequences, as happened in 2014 when Amazon developed an algorithm to vet job applicants' resumés. The company programmed its machines using 10 years of hiring choices. In 2015, however, they acknowledged that in tests the system was giving preference to resumés from male applicants. They tried to reload the system to make it to ignore gender information, but ultimately shut down the project before actually using it as they could not foresee if the algorithm was not perpetrating other forms of discrimination. Ronald Baecker, a professor emeritus of computer science and the author of *Computers and Society: Modern Perspectives*, believes that the computer scientists developing advanced technologies should be required to study the societal impact of their work. "It's important that professionals who work in AI recognize their responsibility," he says. "We're dealing with life-and-death situations in increasingly important activities where AI is being used."[48]

Moving forward to another big ethical issue, it should be noted that there has been some significant misuse of Artificial Intelligence with the big revelations afterwards. One of the most striking examples is definitely Cambridge Analytica Scandal, when the data firm Cambridge Analytica accessed users' data illicitly. Swaying the US presidential election in 2016, AI-powered technologies were used to micro-target and manipulate individual voters. Obtaining personal data from more than 87 million Facebook users, the data science firm launched an extensive campaign to target voters, using AI

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[47] M. Jackson, "Would you let a robot take care of your mother?", The New York Times, 14-15, 12, 2019, p.8.
[48] P. Barss, "Can We Eliminate Bias in AI?", University of Toronto Magazine , 25.06.2019.
https://magazine.utoronto.ca/research-ideas/can-we-build-unbiased-ai/

tools to predict the type of messages to which they would be susceptible. Similarly, large number of bots were activated on various social media platform before the general election in Britain in 2017, spreading misinformation and disrupting the normal course of democracy. The same story can be observed in France and other countries.[49] Furthermore, nowadays we assist rising concern over safety, privacy and so on. In 2018 the Chinese company Baidu introduced a voice-cloning AI that can mimic any voice after a minute of the person speaking. An open-sourced technology Deepfakes can convincingly swap a person's face onto another body. Google's Duplex system, released in mid 2018, speaks pretty similarly to a human, using pauses and intonations to perfect the tone of a human speaker on the phone.[50] More preoccupying problems are those, in fact, that we cannot anticipate, and they are related to the development of an artificial intelligence itself, one that is already surpassing human abilities in certain areas. Recently DeepMind's AlphaGo became the first computer program that defeated 18-time world champion, Lee Sedol, at the ancient board game Go, which is considered to be quite complicated to be penetrated by brute force methods. Such problem-solving techniques systematically enumerates possible solutions to a problem and checks every single candidate's idea before reaching a result. The company later on surprised human players by exhibiting a self-taught system that learnt new strategies for playing the game. AlphaGo analyzed thousands of games to build a type of "intuition" regarding winning board positions.[51]

Regarding the military context, there is another big issue about Artificial Intelligence and creation of killer robots. Around the world, right now, several countries are developing autonomous weapons that use Artificial Intelligence to locate, track and destroy their targets. The U.S. military invests billions into projects that will use machine learning to pilot vehicles and aircraft, identify targets, and help analysts go through huge piles of intelligence data. Here more than anywhere else, even more than in medicine, there is little room for algorithmic mystery, and the Department of Defense has identified explainability as a key stumbling block.[52] The United Nations is hosting a debate on offensive autonomy of weapons, and a lot of specialists in computer science and robotics come together to sign an open letter calling for a ban on the killer

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[49] H. Osborne, H. J. Parkinson, "Cambridge Analytica scandal: the biggest revelations so far", The Guardian, 22.03.2018. https://www.theguardian.com/uk-news/2018/mar/22/cambridge-analytica-scandal-the-biggest-revelations-so-far

[50] Sh. Fan, M. Tylor, *Will AI replace us?*, London, Thames&Hudson, 2019 p.11.

[51] Ivi, p.13.

[52] W. Knight, "The Dark Secret at the Heart of AI", MIT Technology Review, 11.04.2017. https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/

robots.[53] Yet, not everyone is on board with the idea that the world would be a better place with such decision. There are several main objections that do not stand up to scrutiny. The first one is about AI efficiency over humans. Although robots may seem perfect soldiers, as they do not need training programs, and they can easily cope with extreme cold or heat, the recently leaked Drone Papers, however, suggest approximately nine out of ten people killed by drone strikes were not the intended targets. This happens when there is still a human making the final life-or-death decision. The statistics might be worse when we replace that human with a computer. Furthermore, some autonomous weapons can select and target individuals without human intervention. They include, for instance, armed quadcopters that can search for and eliminate people meeting certain pre-defined criteria, but do not include cruise missiles or remotely piloted drones for which humans make all decisions. Some scholars suggest that this may be the next great revolution in warfare after the invention of nuclear bombs and gunpowder. The history of warfare has always been about who can more efficiently kill the other side. The second argument suggest that robots will be more ethical. In fact, AI researchers have just started to think over programing a robot that behaves ethically, and, eventually, it will take them many decades to work this out. Besides, there is no guarantee that a computer cannot be hacked to behave in undesired ways. Last, but not least, the presumption that weapon bans do not work meets contradiction from a historical point of view. The 1998 UN Protocol on Blinding Lasers resulted in blinding lasers, designed to cause permanent blindness, being kept out of the battlefield. It is literally impossible to find this weapon in the war zones of the world, and not a single arms company anywhere worldwide will sell such weapon. Although we cannot uninvent the technology that supports blinding lasers, there exists enough stigma associated with them that weapon companies have stayed away.[54] The essential question for humankind now is whether to start a global AI arms race or to prevent it from starting. If any considerable military power proceeds with the development of AI weapon, a global arms race is probably to be inevitable. In comparison with nuclear weapons, they do not require costly raw materials, thus they will eventually become ubiquitous and cheap for all military powers to produce. It will be just a matter of time until they can be obtained on the black market and in the hands of terrorists, dictators wishing to better control their people, warlords wishing to execute ethnic cleansing, etc. AI weapons are ideal for

[53] T. Walsh, "Autonomous Weapons: An Open Letter From AI & Robotics Reseachers", Future of Life Institute, 28.07. 2015. https://futureoflife.org/open-letter-autonomous-weapons/?cn-reloaded=1
[54] T. Walsh, "Why we should ban killer robots", TED, 20.10.2015. https://ideas.ted.com/why-we-should-ban-killer-robots/?utm_campaign=social&utm_medium=referral&utm_source=t.co&utm_content=ideas-blog&utm_term=technology

tasks such as destabilizing nations, assassinations, and selectively killing a particular ethnic group. A military AI arms race would not be beneficial for humanity at all.[55]

All these recent developments and events invite us to ask: if computers can take over the role of soldiers, drivers, doctors and other blue- and white-collar jobs, will we eventually encounter an AI-dominated future? New concepts like singularity have been emerged lately. The idea of "technological singularity" consists of the theory that Artificial Intelligence, which possesses intelligence at surpassing human level, will trigger abrupt technological advances with unknown consequences to human society. Many prominent theorists have warned against such malicious perspective. Elon Musk, a US entrepreneur and the founder of Tesla and SpaceX, called AI the "greatest threat against humanity". The famous British physicist Stephen Hawking warned that AI could be the "worst event in the history of our civilization", while the British inventor Clive Sinclair explains that machines that surpass humans in intelligence may doom humankind. On the other hand, in 2016 Stanford University's report "One Hundred Year Study on Artificial Intelligence" estimating the impact of AI on society over the course of 100 years saw no sign that AI poses an imminent threat to humanity. This study plan argues that the technological singularity is nearly a millennium away. According to this report, even if AI reaches, or surpasses, human-level intelligence, humanity may enter a new era of human-AI collaboration.[56] Margaret Rouse, who writes for WhatIs.com, TechTarget's IT encyclopedia and learning center recognized as an authority in major publications such as the New York Times, Time Magazine, The Washington Times and so on, is responsible for building content that helps IT professionals learn to speak each other's highly specialized languages. Rouse worked for New York State Model Schools, teaching computer science and technology integration. This is a definition provided by Rouse regarding the term:

The Singularity is the hypothetical future creation of superintelligent machines. Superintelligence is defined as a technologically-created cognitive capacity far beyond that possible for humans. Should the Singularity occur, technology will advance beyond our ability to foresee or control its outcomes and the world will be transformed beyond recognition by the application of superintelligence to humans and/or human problems, including poverty, disease and mortality.[57]

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[55] T. Walsh, "Autonomous Weapons: An Open Letter From AI & Robotics Reseachers", Future of Life Institute, 28.07. 2015. https://futureoflife.org/open-letter-autonomous-weapons/?cn-reloaded=1

[56] Sh. Fan, M. Tylor, *Will AI replace us?*, London, Thames&Hudson, 2019, p.14.

[57] M. Rouse, "Singularity (the)", Techtarget, 02.2016. https://searchenterpriseai.techtarget.com/definition/Singularity-the

According to singularity theory, superintelligence will be developed by self-directed computers. In fact, we start to witness these and many other changes nowadays. The point is that no one really knows how the most advanced algorithms do what they do. That could be a problem. Last year, for instance, a strange self-driving car was released on the quiet roads of Monmouth County, New Jersey. The experimental car, developed by researchers at the Nvidia, did not look different from other autonomous vehicles, but it showed the rising power of Artificial Intelligence, since it was unlike anything demonstrated by Tesla, Google or General Motors. The car did not follow the instruction provided by an engineer, it relied entirely, instead, on an algorithm that had taught itself to drive by watching people do it. Getting a car to drive this way is impressive, but it is also quite disturbing, since it is not completely clear how the car makes its decisions. Information from the car's sensors goes directly into a huge network of artificial neurons that process the data and then distribute the commands needed to operate the brakes, the steering wheel, and other systems. Such system is so complex that even the engineers who designed it may struggle to identify the reason for any action. What is more, there is no obvious way to design such a system so that it could always explain why it did what it did. Mathematical models are being used already to help determine who is approved for a loan, who gets hired for a job and so on. But banks, employers, the military, and others are now focusing onto more complex machine-learning approaches that could make automated decision-making inscrutable. Deep learning, the most common of these approaches, operates in a significantly different way to program computers. "It is a problem that is already relevant, and it's going to be much more relevant in the future," says Tommi Jaakkola, a professor at MIT who works on applications of machine learning. "Whether it's an investment decision, a medical decision, or maybe a military decision, you don't want to just rely on a 'black box' method."[58] From the beginning, there were two schools of thought regarding how understandable Artificial Intelligence should be. Many thought it made the most sense to build machines that do reasoning according to logic and rules, making their inner functioning transparent to everyone who cared to study some code. Others believed that intelligence would more easily emerge if machines were inspired by biology and learned by experiencing and observing. This meant turning computer programming on its head. Instead of a programmer writing the code to solve a problem, the program generates its own algorithm based on example data and an output.[59]

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[58] W. Knight, "The Dark Secret at the Heart of AI", MIT Technology Review, 11.04.2017.
https://www.technologyreview.com/s/604087/the-dark-secret-at-the-heart-of-ai/
[59] *Ibidem.*

Nowadays, computers are considered to make people's life easier and more efficient. John Seabrook, the author of the recent trend book *The Song Machine: Inside the Hit Factory*, raises the ultimately crucial question in his article "The Next Word": Where will predictive text take us?[60] In May 2018, Google introduced a feature Smart Compose that makes suggestions to more than a billion people who use Gmail. It offers endings to the sentences as users type them. Based on the words written, the smart assistant guesses where your thoughts are likely to go and wraps up the sentence in gray letters to the words a person has just produced. Hitting Tab, the user saves roughly as many as twenty keystrokes. One can easily opt out of Smart Compose. However, the author of this article decided not to:

"I was fascinated by the way the AI seemed to know what I was going to write. It was therefore disconcerting how frequently the AI was able to accurately predict my intentions, often when I was in midsentence, or even earlier. Sometimes the machine seemed to have a better idea than I did."[61]

Paul Lambert, who oversees Smart Compose for Google, explains that the idea for the smart assistant came from the writing of code – the language that software engineers use to program computers. In fact, specialists rely on shortcuts or, as they call them "code completers", which are basically long strings of identical sequences in a code. Google believes that a similar idea could reduce the time spent on writing e-mails. Nowadays we are used to spell-checkers and auto-correctors while typing a text, but Smart Compose goes beyond spell-checking. It does not just correct words, but comes up with them for the user, by harnessing the predictive power of deep learning. Machine learning is a method of computing probabilities in large data sets, and it outweighs all the extraordinary AI advances of recent years, including those in image recognition, search, navigation, self-driven vehicles, etc. Talking about this latest type of available technology, it is making billions of lightning-fast probability calculations about word patterns from a year's worth of e-mails sent from Gmail.com. Lambert explains the whole process as a number of different probability calculations which the AI executes. The AI identifies a number of diverse probability calculations in the "state" of the e-mail you are at the moment of writing:

"The state is informed by a number of things, including everything you have written in that e-mail up until now, so every time you insert a new word the system updates the state and reprocesses the whole thing. The day of the week you're writing the e-mail is one of the

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[60] J. Seabrook, "The Next Word", The New Yorker, 14.10. 2019, p.52.
[61] Ivi, p.53.

things that inform the state. So, if you write 'Have a' on a Friday, it's much more likely to predict 'good weekend' than if it's on a Tuesday".[62]

Now, the question is if we allow AI algorithms to navigate to the end of the sentence, how long would it take before the intelligent assistant started thinking for us? That is one small step forward for Artificial Intelligence, but is this also one step backward for our own? As Seabrook notices:

"Typing an e-mail to my son, I began "I am p–" and was about to write "pleased" when predictive text suggested "proud of you". I am proud of you. Wow, I don't say that enough. And clearly Smart Compose thinks that's what most fathers in my state say to their sons in e-mail. I hit Tab. No biggie. And yet, sitting there at the keyboard, I could feel the uncanny valley prickling my neck. It wasn't that Smart Compose had guessed correctly where my thoughts were headed – in fact, it hadn't. The creepy thing was that the machine was more thoughtful than I was."[63]

Thus, Google Smart Compose comes up with the solutions for writing, autonomous vehicles navigate roads instead of us and personal assistants Siri and Alexa help us obtain the desired information faster and easier. We are living in the 21st century, where people are constantly receiving and thinking over new information without literally taking a break. Bulgarian-French philosopher Tzvetan Todorov underlines a probable side effect of such continuing information processing in his book *Gli Abusi della Memoria*:

Precipitati in un consumo sempre più veloce di informazioni, noi saremmo destinati alla loro sempre più accelerata eliminazione; tagliati fuori dalle nostre tradizioni e abbrutiti dalle esigenze di una società edonista, privi di spirito curioso come di familiarità con le grandi opere del passato, saremmo condannati a celebrare allegramente l'oblio e ad accontentarci delle vane gioie dell'istante. La memoria sarebbe in questo caso minacciata non tanto dalla cancellazione di informazioni, ma piuttosto dalla loro sovrabbondanza.[64]

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[62] Seabrook, "The Next Word", The New Yorker, 14.10. 2019, p.54.
[63] Ivi, p.52.
[64] Tz. Todorov, *Gli abusi della memoria*, a cura di Roberto Revello, Milano, Meltemi, 2018, p.29.

2. HUMAN VS ROBOT: CRITICAL LITERARY ANALYSIS THROUGH ISAAC ASIMOV'S NARRATIVE

2.1. ISAAC ASIMOV'S CONTRIBUTION

To begin with, scientist and science fiction author Isaac Asimov summarized the importance of science fiction in 1978, stating:

It is change, continuing change, inevitable change that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be... Science fiction writers foresee the inevitable, and although problems and catastrophes may be inevitable, solutions are not. Individual science fiction stories may seem as trivial as ever to the blinder critics and philosophers of today - but the core of science fiction, its essence... has become crucial to our salvation if we are to be saved at all.[1]

American author's enormous output of books is now over a hundred and fifty, including significant promotion of science and technology for laymen, as well as original works of science fiction and collections of works by others. Asimov was a scientist who had a Ph.D. in biochemistry and taught bio-medical students. He was often on the lecture circuit, as well as he was a frequent speaker at science fiction conferences and an advisor of young writers, and general counselor to American society regarding science and technology. Through Asimov's literature we can perceive his positive mood and confidence that humans could cope with the problems posed by science and technology.[2] In the last of his robot stories, Isaac Asimov has a character say:

The Machine is only a tool after all, which can help humanity progress faster by taking some of the burdens...off its back. The task of the human brain remains what it has always been; that of discovering new data to be analyzed, and of devising new concepts to be tested...These reactionaries...claim the Machine robs man of his soul. I notice that capable men are still at a premium in our society; we still need the man who is intelligent enough to think of the proper questions to ask. [3]

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[1] D. J. Dell, *Memorable Quotations: Famous Teachers of the Past*, Writers Club Press, 2001.
[2] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.58.
[3] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.134.

This entire series of stories by Asimov, published between 1940s and 1950s, may be interpreted as a conscious confrontation with the dilemma: Will the robot eventually destroy us, or destroy everything that makes life worth it? Will we be able to keep the situation under control, treating the robot as a servant? Asimov, like many other writers of science fiction, was aware of the supposed threat that might be posed by the existence of robots among us.[4] American author altered the thinking of the scientific community about machines. In his work he argued that humankind would find a way to control their dominance over machines. Taking over the world made by Karel Čapek for the androids of *R.U.R.*, Asimov created a different kind of creature. His robots are machines that perform diverse programmed tasks, sometimes including reasoning, but they do not have free will. They are linked to the "Three Laws of Robotics", which are the most basic and essential element in their "being". These laws are fundamental to all of the writer's robot stories, and they have been acquired by many other writers of science fiction as well.[5] The "Three Laws of Robotics" appear at the beginning of *I, Robot* and represent the symbol of Asimov's solution and of his belief in human hegemony:

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. [6]

Some scholars consider Asimov's Laws of Robotics as an effort to program human morality and ethics into the machines. The stories based on these laws have something in common with chess problems. A robot frequently seems to behave in a strange way and Dr. Susan Calvin (1982—2064), a robopsychologist, is called into deal with the apparent malfunction. As a rule, Dr. Calvin figures out the solution in some paradoxical application of the Three Laws or in some aberrations of the robot's positronic brain. In other stories the field-testing squad of Michael Donovan and Gregory Powell has to cope with new challenges generated by complex types of machines. Asimov's robot stories are remarkable for their wit and elegance. Together with the Foundation stories they improved the intellectual tone of popular science fiction considerably. Although Asimov has never been a writer of deeply

[4] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p.175.

[5] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.61.

[6] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p.175.

moving fictions, his style is successfully serviceable. He is full of ideas and capable of reasoning efficiently about them. American writer's robots are as interesting and compelling as his human characters, and the depths of human feeling are closed to him. His virtues are at the heart of science fiction and they are real virtues. He uses fictional models to make us reflect about the structure of the universe and about human mentality, about our relations to time, technology, and history. He was a scientist who used fiction as a vehicle to amuse and provoke thought, and he largely succeeded in it.[7]

2.2. PLOT

The plot is what distinguishes narrative genres in the first place. Definitely, what we identify as narrative genres (the novella, the short story, the novel) are not the only types of possible plots: dramatic genres, a part of poetic ones, certainly have a plot as well, and a plot can be found in many figurative works and even within certain musical compositions. There is even more widespread opinion that the plot can be in fact extra-literary, and represent not a literary form, but something similar to a fundamental cognitive structure, an instinctive way of understanding and processing data. This date helps us to establish a relationship with the world and with the passing of time. In all theoretical disciplines it can happen that reflection at a certain point falls back and, because of infinitely extending the scope of one's ideas, leaves them without meaning and makes them useless, at least from the point of view of the relationship with the immediate objects of study. Something similar has happened with the concept of plot in recent decades, and more precisely from the moment of post-modernism when the literary theory accepted the notion of *narrative turn*:

Questa espressione, che in realtà circolava in forma ancora indeterminata fin dagli anni sessanta, da alcuni anni viene usata per indicare la mutazione culturale seguita all'esplosione dei mezzi di comunicazione di massa, con la quale le forme narrative si sarebbero affermate come strutture universali di interpretazione del mondo, invadendo addirittura ambiti tradizionalmente "scientifici" (basta pensare al successo riscosso negli ultimi anni dalla medicina narrativa), e richiedendo l'avvento di una nuova forma di analisi capace di assumere una configurazione interdisciplinare, come sostengono soprattutto i rappresentanti della cosiddetta Cognitive Poetics.[8]

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[7] R. Scholes, E. S. Rabkin, *Science Fiction: History, Science, Vision*, New York, Oxford University Press, 1977, p.62.
[8] V. Cavalloro, *Leggere storie. Introduzione all'analisi del testo narrativo*, Roma, Carocci, 2014, p.32.

The first roots of this new research project are prior to the mass media revolution, and they date back to the works of two scholars Peter Brooks and Paul Ricoeur, today considered the founders of the hermeneutic approach to the study of the plot. According to Ricoeur, the plot-form would be the only structure capable of responding to the needs, which even philosophical speculation is unable to manage: humanize time through its narrative articulation, configure events according to an order that makes them understandable, and channel the chaotic human experience in a symbolic system "l'intreccio" unifying in a whole and complete action all the circumstances, scopes and means, initiatives and interactions, turns of luck and all the consequences deriving from human action. According to this theory, the plot form generates understanding through a mechanism that Ricoeur calls *triple mimesis* and that includes three elements: the presence of a *pre-narrative structure* of existence, formed by the knowledge of artistic codes that we have absorbed thanks to our culture; the concept of *mise en intrigue* (or *emplotment*, according to the more widespread English terminology) that assembles the data of the experience into a coherent stream, is capable of giving them meaning; and the last one is *relapse of the narrative structures* that are verified based on the instinctive systems of confrontation with reality. This assumption can be also found expressed in a pretty similar form, in Peter Brooks who, in the same year (1984) when the first volume of Ricoeur's work was issued, wrote in the introduction to an essay remarkably titled *Reading for the Plot*:

Noi viviamo immersi nelle narrazioni, ripensando e soppesando il senso delle nostre azioni passate, anticipando i risultati di quelle progettate per il futuro, e collocandoci nel punto d'intersezione di varie vicende non ancora completate. L'istinto narrativo è antico in noi quanto la più remota delle forme letterarie: il mito e la favola risultano alla fin fine come altrettante storie che ci raccontiamo per spiegare e capire quanto altrimenti ci resterebbe incomprensibile.[9]

According to Brooks, the plots would represent an epochal model: they would have been chosen by the modern world that is secularized and without the eschatological vision that had continuously governed collective psychology from the Middle Ages up to the 19th century as substitute sense structures, and, moreover, only such structures are capable of giving people a general vision of reality and of themselves. In fact, a lot of studies supporting the *narrative turn* idea, identify the main value of the narrative form in its ability to provide an organizing principle that addresses the growing fragmentation of

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[9] Brooks, 1995, p.3 in V. Cavalloro, *Leggere storie. Introduzione all'analisi del testo narrativo*, Roma, Carocci, 2014, p.33.

the contemporary world. This idea, in its most recent development, has led to elaboration of the narrative identity theories. Based on some empirical analyses provided by the psychological research, such theories stress that individuals construct their own self being through the storytelling of their own past experience. Such conclusions brought some scholars to the idea that life itself can be considered as a narrative form. According to the non-fiction production during last twenty years, the texts that focus on storytelling or narration constitute a relatively small number. There has been recently a shift to mass media communication as a new area of interest. New dilemmas started to appear such as to what extent the multiplication of media has changed and continues to change the narrative forms of the literary tradition, which results in unresolved methodological questions.[10]

2.3. NARRATIVE TECHNIQUES

First of all, it should be noted that in science fiction we have a story that is fiction, so the events it describes are imaginary. The difference between fiction and an account of fact consists of the status of what is said. A fact exists independently of the account given of it, so that the value of the account, considering the fact that it is not fictional, lies in the truth of what it reports as fact.[11] On the other hand, fiction is imaginary by definition and, since there is no actuality to which it conforms, it has nothing to do with truth or false. Fiction has no truth value and it is not a subject to verification. When fact becomes part of fiction, its truth becomes a function of verisimilitude. In fiction the parameters of the representation are restricted by the special purpose of the representation.[12] In such fiction the accuracy of the historical detail becomes the context where the story develops. If the story contains inaccuracy, it should not be taken as untrue, but it is inconsistent with the parameters of the particular story. This is about verisimilitude, not about being true or false. In stories where historical accuracy is not a topic, the value of truth differs significantly from its value in non-fiction. The point is that in fiction we accept as true something that in reality would be perceived as evidently false. Thus, the status of fact is identified by the purpose of the story. So, we can say that in fiction things "are" as they are said to be, meanwhile in an account of actuality, what "is" should be said to be so. In fact, the reader needs

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[10] V. Cavalloro, *Leggere storie. Introduzione all'analisi del testo narrativo*, Roma, Carocci, 2014, p.34.

[11] D. Woolf, *An Aspect of Fiction: its logical structure and interpretation*, Ravenna, Longo Editore, 1980, p.11.

[12] Ivi, p.12.

to know with which type of literary work he or she is dealing with, as the knowledge determines our attitude towards the work.

Regarding the question of objectivity in fiction, it must be placed in the same context, since objectivity in factual writing and in fiction is not the same thing. Objectivity must cohere with truth, balance and accuracy, as it means that what is described should be trustful to the facts without any distortion or bias.[13] In the case of a history, where what is illustrated originates in an independent actuality that should be reduced to narrative unity, there probably can be some bias to grant objectivity. Fiction, however, has nothing to do with this type of accuracy and truth. Instead, it derives from the mind that presents it and there is no independent actuality with which it is to be attuned in order to be objective. All in all, in fiction objectivity cannot be determined in the same way as it is in factual writing.[14] In both factual and imaginative writing, if there should be objectivity, the case must be presented without a bias, and, what is more, the test for the absence of bias must be different. If the value of factual writing is whether what "is" is said to be so, and if there is to be objectivity, then both the case and the way it is presented must be without distortion. The distortion is measured according to the actuality that is being reported. In fiction, on the other hand, only the presentation can be tested for distortion, because if things "are" as they are believed to be, then the case that is presented is the ultimate standard of judgement, playing the same role as actuality does for factual writing. We judge the presentation against the case, and, therefore, the presentation itself is open to distortion. This happens because there is no original to which fiction must stick that objectivity is attainable in this type of writing. Being fiction, the case needs to be faithful only to itself.[15] It should be noted that in non-fiction the facts are independent of the author, whereas what we call the "facts" of fiction are created in the author's mind. Yet fiction does have its own facts.[16]

What needs to be noted is the logical difference between the facts of non-fiction and those of fiction, just as was stated above the difference between the value of fact, meaning truth or reality, in non-fiction and fiction. There is a clear sense in which such materials remain factual, as in the terms of a fiction they play exactly the same role vis-a-vis the other elements of the fiction as is played by fact in non-fiction vis-a-vis the discussion of fact. In fact, they provide the data that are discussed and classified. Thus, in the logic of its structure, fiction does have facts, but to the extent that its facts are neither true nor false fiction does not relate to reality in the same way as non-fictional writing. It can

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[13] D. Woolf, *An Aspect of Fiction: its logical structure and interpretation*, Ravenna, Longo Editore, 1980, p.13.
[14] Ivi, p.14.
[15] *Ibidem.*
[16] Ivi, p.15.

be tested for objectivity but not in terms of the truth value of its factual elements. So, a writer of fiction chooses a set of "facts": events, characters, etc., — and consequently examines them, figuring out what may be inferred from them and where they lead. The facts about which a novelist decides to write may indeed reflect his outlook in that he chooses them in place of others. The novelist's facts are the basis of his/her story.[17] We should accept that the story is what the author means it is, involving the particular set of events and characters that he or she describes. Afterwards, we can understand whether the author presents his/her chosen story objectively. There exists a belief that the materials of fiction inevitably reflect the author's attitudes, for when we describe something, we do so by attributing qualities, such as actions, opinions, feelings, beliefs, etc. The attribution of qualities is believed to put a judgment and to involve the author's own standards. However, this is not necessarily so in fiction. As a story or novel is about people, and so is expected to be a representation of life, its materials are moral. People have qualities and standards, so do characters in a fiction story.[18] This statement implies that the language of fiction should be the language of value, independently whether or not the author judges the characters he/she presents, as to speak of character and behaviour in general is to speak critically. In fictional narrative, if the qualities and standards that relate to fictional characters, and which they display in word and action, are to tell the reader what the character is like for the purpose of the story, they are factual.[19]

Considering the fact that a story has independent status, and that it narrates about people and their standards, then the elements of fiction are moral. Also, if the language of fiction must be the language of value, then it is undeniable that the picture of conflicting values formed by the story is other that factual, unless another element is also present. Such element would consist of "normative" features by which the values are already described in the story and that form its substance are themselves given a value, so that the story holds a significance beyond the events it describes. "Normative" features are those elements that introduce into the narrative a constant standard, which attribute significance to the events in the story.[20] The technique by which this is achieved can differ largely from one story to the other, but the function is always the same. The constant standard is a point of view, a leading attitude in the light of which events are interpreted. Furthermore, it is believed to be a perspective where the events, the characters and the story in general are seen. If the constant standard is missing, the story has only a succession of

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[17] D. Woolf, *An Aspect of Fiction: its logical structure and interpretation*, Ravenna, Longo Editore, 1980, p.16.
[18] Ivi, p.17.
[19] Ivi, p.18.
[20] Ivi, p.19.

events with the characters taking part in it. Besides, no understanding other than factual understanding of the relationship between character and event is possible, because there is nothing to show the implications for character of the events that build the narrative. Thus, we can have a narrative that may be exceptionally coherent and complete, and we can follow it without difficulty, but such narrative does not point to anything beyond itself. It does not give the indication of the light in which we are to view the things that are said and done. If a story has a constant standard, on the other hand, then the reader is shown not only what takes place, but also the inferences for character, psychological, moral or other, of what takes place, then we have both a narrative and a view of the narrative that form a significant story. Because of the inferences of what takes place, they help the reader to reveal the author's view of the characters. The significance of the narration for the author lies in the speech and actions he/she gives to the characters. A story in which a constant standard is provided has been moralized. The narrative is shaped in such way that it presents a view of the events it relates. The author simultaneously presents his/her story and interprets the events in the light of the standard.[21]

Science fiction is a crucial genre for techniques of transmedia storytelling. Here, the creation of detailed settings seems to be a structural requirement. "Science fiction names a contemporary mode in which the techniques of speculation and extrapolation are used in a narrative form, to construct near-future, far-future, or fantastic worlds where technology, science and society intersect".[22] In this definition there are three important elements that characterize contemporary science fiction. The first is the distinction between the methodologies of extrapolation and speculation. Extrapolation is defined as an imaginative extension of a present condition, often into a future world that looks pretty much like ours, or even indistinguishable from the present. Speculation, on the other hand, involves a certain imaginative leap, where a world significantly different from the present is constructed. Most science fiction stories represent some combination of these two, giving as a final product the worlds that are at once strange and very familiar. Secondly, this genre's narratological goal is the delineating of a total space where certain events take place. This results in the construction of entire worlds that function according to their own distinct set of rules that constitute their own reality. Last, but not least, science fiction has come recently to terms not just with technical concerns, but political, cultural and social issues. Thus, the use of speculation or extrapolation and the construction of ontological worlds place

[21] D. Woolf, *An Aspect of Fiction: its logical structure and interpretation*, Ravenna, Longo Editore, 1980, p.20.
[22] E. Thacker, "The Science Fiction of Technoscience: The Politics of Simulation and a Challenge for New Media Art", Leonardo, Vol. 34, No. 2 (2001), p.156.

science fiction into the realm that involves considering the complex dynamics between technology and globalization, race and colonialism, science and gender and so on.

Such a complex structure of science fiction was highlighted by critics such as Fredric Jameson as a critical function. In the article "Progress versus Utopia", Jameson points out two critical functions that science fiction can have. The first is characterized by the development of "future histories" or ways in which the genre puts itself in relation to history. Comparing science fiction and the genre of the historical novel as two dialectical counterparts, Jameson suggests that one of the primary roles of science fiction is to demonstrate the ways in which the imagining of the future performs as a mean of understanding a particular historical present. The second function Jameson ascribes to science fiction is more symptomatic. Taking into consideration the work of the Frankfurt School on the "utopian imagination", science fiction represents some kind of cultural indicator of a culture's ability or inability to envision possible futures. Writing during the high point of postmodernism, for Jameson science fiction was "an indicator of a pervasive loss of historicity and the atrophying of the will to critically imagine utopias".[23] Therefore, every vision of the future conditioned by a historical moment in which it is imagined. Science fiction's main concern regards the future producing, as well as interrogating the constraints and limitations that enable the capacity to imagine the future at all.

2.4. POSSIBLE WORLDS

Focusing specifically on one of the most significant elements that characterizes contemporary science fiction we are going to analyze the notion of Possible Worlds and its place in the literary genre through Isaac Asimov's narrative. The definition of Possible Worlds has been elaborated by philosophers of the analytic school (Lewis, Kripke, Rescher, Hintikka), taking inspiration from the philosophy of Leibniz and, perhaps, from science fiction writers' conception of parallel universes as well. In modal logic, possible worlds are "formal constructs, bare undifferentiated sets that have no structure whatsoever, while, in semiotic and narratological studies, possible worlds have substantive nature, they are "overfurnished sets" which represent properties and acting individuals that make them different from the real world". Following Umberto Eco:

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[23] E. Thacker, "The Science Fiction of Technoscience: The Politics of Simulation and a Challenge for New Media Art", Leonardo, Vol. 34, No. 2 (2001), p.156.

A possible world is a possible state of affairs expressed by a set of relevant propositions where for every proposition either p o non-p; (ii) as such it outlines a set of possible individuals along with their properties; (iii) since some of these properties or predicates are actions, a possible world is also a possible course of events; (iv) since this course of events is not actual, it must depend on the propositional attitudes of somebody; in other terms possible worlds are worlds imagined, believed, wished, etcetera.[24]

In Eco's conception, possible worlds are cultural constructs as they have a textual and semiotic nature. They have no ontological existence, unlike the parallel universes described by science fiction writers, which lie on different planes of reality. A possible world is a set of recognizable entities, such as characters, places and objects, etc., singled out as bundles of properties (i.e. physical qualities, relations, actions performed, etc.). Thus, we can construct diverse possible worlds by changing a single property or by combining a set of properties differently. In particular, we can create a possible world starting from our "real" world (the Actual World in opposition to Possible Worlds) by changing even a single property. For example, the possible science fiction world illustrated in *Dying Inside* (1972), a novel by Robert Silverberg, differs from ours as such world is inhabited by a person called David Selig who has the supernatural ability to read people's minds. We are aware of the fact that such property is not present in the Actual World. Besides, the information described in the novel can almost completely overlap with the Actual World. Although the text of the novel points the reader's attention only to those properties that are predicable of the individual "David Selig", mainly the essential ones to identify the possible world, many other properties that are common to the real world (the fact that the character has a human body, speaks English and so on) are taken for granted and not mentioned. In general, any possible world both largely overruns the actual world and differs from it in some respects. There are some reasons of expressive economy for this, but there are also consistent motivations related to the nature of fictional worlds. In fact, fictional worlds are considered to be largely incomplete: "No fictional world could be totally autonomous since it would be impossible for it to outline a maximal and consistent state of affairs by stipulating ex nihilo the whole of its individuals and of their property".[25] According to Lubomír Doležel, Czech literary theorist and one of the founders of the so-called fictional worlds theory, fictional worlds are inevitably incomplete "small worlds", as incompleteness is a distinctive feature of fictional existence. Every text, in fact, only partially

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[24] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.48.

[25] Ivi, p.49.

describes its world, from a certain perspective: detail is determined by its usefulness in serving textual strategies. Other scholars underline the "role of the reader", who "fills the gaps" of the text, making inferences based on his or her encyclopedic knowledge. In doing so, "readers imagine fictional worlds as the closest possible to actual world, and they only make changes that are mandated by the text".[26] Considering these assumptions, the worlds Isaac Asimov describes in his book *I, Robot*, depend on the readers basic knowledge. From the story *Runaround*, we discover that U.S. Robots and Solar Minerals fictional companies financed and launched the exploratory Second Mercury Expedition in 2015. It consisted of a new-type experimental robot that, as a task, had to find ore on the solar mines on Mercury.[27] The point is that the reader perceives and imagines the story only according to his knowledge before reading a book. This justifies the idea of "the role of the reader" particularly when examining science fiction work.

According to possible worlds scholars (Umberto Eco and Lubomír Doležel particularly) every fictional text illustrates a possible world. This is true not only for science fiction or fantasy narratives, but it on a whole applies to any work of fiction. Eco claims that "any work of narrative, even the most realistic, depicts a possible world inasmuch as it presents a population of individuals and a succession of states of the world that do not correspond to those of our everyday experience"[28] For Italian semiotician, science fiction is a distinct kind of fantastic literature:

> SF exists as an autonomous genre when a counterfactual speculation about a structurally possible world is conducted by extrapolation from certain tendencies in today's world, which is the very possibility of a "futurizable" world. That is, SF always takes the form of an anticipation and anticipation always takes the form of a conjecture formulated from existing tendencies.[29]

Eco defines science fiction as the narratives of anticipation, the kind often called "speculative fiction", which focuses on the mechanism of extrapolation where such element can sometimes be scientific, technological, social, etc. He describes this kind of fantastic literature in which "a possible world represents a future phase of the world as we have it here and now" as metachronia or metatopia and distinguishes it from the allotopia (where the world is drastically different from the actual world), the utopias (where the possible world exists

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[26] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.49.

[27] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.18.

[28] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.50.

[29] *Ibidem.*

parallel with our own, but normally it is not accessible to us, usually it appears a model of the way our real world ought to be) and the uchronias (where the parallel world is based on a "what if " clause).[30]

There have been specified the particular properties that distinguish a science fiction world from a naturalist or a fantasy one, and also the rules of construction. In other words, it is a class of property that defines the world as science-fictional, or fantastic, or realistic once it is present or absent in the text. Although Doležel does not deal explicitly with science fiction and focuses very little on fantastic literature, he all the same makes some crucial distinctions. He sets a distinction at the level of alethic modalities between logically possible worlds and physically possible worlds. In case of physically possible worlds, there is nothing that violates the alethic conditions of the actual world. On the other hand, fictional worlds that violate the laws of the actual world are paranormal worlds and physically impossible. Science-fiction worlds belong to naturally possible worlds, as they are physically possible. Doležel supposes that using such criteria of distinction helps us to avoid ontological commitment as well as the problems related to subjective beliefs and the changes in scientific knowledge. Similar criteria has been adopted by Marie-Laure Ryan, who outlines a complex typology of possible worlds related to fictional genres based on the various relations between actual world and fictional worlds, the so-called "accessibility relations":

In a broad sense, possibility depends not only on logical principles but also on physical laws and material causality. Following this interpretation, narrative worlds can be classified as realistic [...] or fantastic, depending on whether or not the events they relate could physically occur in the real world.[31]

There are different stages of accessibility for Ryan between actual world and fictional worlds depending on the different genres. The types of accessibility include: identities of properties (when the two worlds are furnished by the same objects and they have the same properties), identity of inventory (when the two worlds are furnished by the same objects and they do not have the same properties), compatibility of inventory (when the fictional world has the same inventory of actual world, as well as some native members), as well as chronological, taxonomic, logical, and linguistic compatibility. Considering the difference between fantasy, science fiction and realism, Ryan says that fictional worlds of all these genres can be associated with the actual world based on compatibility of analytical and logical

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[30] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.51.

[31] Ivi, p.52.

propositions. However, the fantasy worlds (legends, fairy tales, fantastic realism) do not possess natural and physical laws that are preserved in the science fiction worlds. These worlds have logical, analytical, physical, and linguistic compatibility with the actual world, however, they do not necessarily have taxonomic compatibility (for example, technical objects are as a rule different from those of the actual world, natural species could also be different). Moreover, there is no chronological compatibility between the real world and that of science fiction. Both Doležel and Ryan consider the maintenance or not of the natural laws of the actual world as a main taxonomic criterion.[32] Thus, if every fictional text describes a possible world, different in some respect from the actual one, fantastic narratives sketch structurally different possible worlds. The structural difference may disagree with the alethic conditions of the actual world or not, as is the case with science fiction, in which physically or naturally possible worlds are described. This distinction could enrich Eco's typology. If every fantastic narrative outlines a structurally possible world, then we can distinguish between genres like fantasy or fairy tales, in which the structural difference involves physical laws, and, on the contrary, science fiction, where it does not involve them.[33]

2.5. GIVING NARRATIVE INFORMATION

Giving information about the world, or the narrative information, is definitely one of the biggest problems in science fiction. If science fiction worlds are structurally different from the actual one, the knowledge that the reader should have to fill in the gaps and interpret the texts should also be structurally different. Science-fiction worlds are based on a semantic "absent paradigm" that requires an encyclopedia of reference, or, in U. Eco's words, set of knowledge about the world. The audience can definitely fill in some of the gaps by making right conjectures based on their knowledge of the real world, or by referring to the encyclopedia of genre, as in the case of stereotypes or recurring figures, such as "hyperspace". However, the text should provide a number of details in order to establish the logic of the new world and how it differs from the real world. For instance, in Isaac Asimov's *I, Robot*, one of the most engaging of the stories *Reason*, begins with the description of the place:

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[32] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.52.
[33] Ivi, p.53.

It was quiet in the officer's room on Solar Station #5 -- except for the soft purring of the mighty Beam Director somewhere far below.[34]

And then later, when Powell explains the functioning of the universe to Cutie, a philosophical robot who cannot be shaken from his belief that men are simply the creations of a Master Robot whom it and they serve, we are able to perceive that the author through his characters explains us the matter of facts:

The blackness is emptiness vast emptiness stretching out infinitely. The little, gleaming dots are huge masses of energy- filled matter. They are globes, some of them millions of miles in diameter and for comparison; this station is only one mile across. They seem so tiny because they are incredibly far off. The dots to which our energy beams are directed are nearer and much smaller. They are cold and hard and human beings like myself live upon their surfaces -- many billions of them. It is from one of these worlds that Donovan and I come. Our beams feed these worlds energy drawn from one of those huge incandescent globes that happens to be near us. We call that globe the Sun and it is on the other side of the station where you can't see it.[35]

However, as Marc Angenot, a Belgian-Canadian social theorist and literary critic notes, literary science fiction and, in particular, that of anticipation tales, avoids explaining every datum, as this would be inadvisable and tedious if not contrary to the rules of the genre. Angenot observes that science-fiction readers proceed from the particular to the general: "It induces from the particular some imagined, general rules that prolong the author's fantasies and confer on them plausibility. The reader engages in a conjectural reconstruction which "materializes" the fictional universe". The reason for this lies in the particular discursive organization of a science-fiction text, that involves narrative information in a complex textual game. Narrative texts are usually not told in the future tense, even though they refer to future events. So, there are historically two main modes of "telling the future":

a) The text places an eye witness in the scene, who somehow becomes aware of future events, and reports them at the present moment: it is the typical mode of prophetic texts and some early novels such as *The Time Machine* by H.G. Wells (1895).

b) More often, the text enacts a real enunciational fiction, simulating a situation in which an enunciator belonging to the future addresses an enunciatee also belonging to the future, recounting a series of events that happened in their past (near or remote), a past that is always our future.[36]

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[34] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.31.

[35] Ivi, p.32.

[36] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.56.

The second mode relates directly to the narrative of I. Asimov's character Susan Calvin. At the beginning of the story we assist at the conversation between a robopsychologist at US Robots and the interviewer, where Dr. Calvin recalls the past events from her past, so that we become familiar with her life. It should be stressed that we are in the year 2057 when Calvin narrates the stories, the year that we still perceive as a distant future. Calvin's memories belong to her past, even though for the reader and for the writer itself they represent the future, as Asimov produced his robot-stories in 1940-1950, and the events told by the psychologist happened at the end of the 90s' and the beginning of the 21st century:

Susan Calvin had been born in the year 1982, they said, which made her seventy-five now. Everyone knew that. Appropriately enough, U. S. Robot and Mechanical Men, Inc. was seventy-five also, since it had been in the year of Dr. Calvin's birth that Lawrence Robertson had first taken out incorporation papers for what eventually became the strangest industrial giant in man's history. Well, everyone knew that, too. At the age of twenty, Susan Calvin had been part of the particular Psycho-Math seminar at which Dr. Alfred Lanning of U. S. Robots had demonstrated the first mobile robot to be equipped with a voice. It was a large, clumsy unbeautiful robot, smelling of machine-oil and destined for the projected mines on Mercury. But it could speak and make sense.[37]

Susan Calvin accomplished her bachelor's degree at Columbia in 2003 and, later on, in 2008, she obtained her Ph.D.in cybernetics. Afterwards, Dr. Calvin joined United States Robots as a robopsychologist, and "for fifty years she watched the direction of human progress change and leap ahead."[38] The robot that is the first to be described in the book was manufactured in 1996 for a nursery purpose:

"Take the case of Robbie," she said. "I never knew him. He was dismantled the year before I joined the company -- hopelessly out-of-date. But I saw the little girl in the museum--" She stopped, but I didn't say anything. I let her eyes mist up and her mind travel back. She had lots of time to cover. "I heard about it later, and when they called us blasphemers and demon-creators, I always thought of him. Robbie was a non-vocal robot. He couldn't speak. He was made and sold in 1996. Those were the days before extreme specialization, so he was sold as a nursemaid."[39]

Besides, when recalling from distant memories, Dr. Susan Calvin says "robots have gone wrong on me. Heavens, how long it's been since I thought of it. Why, it was almost forty years ago. Certainly! 2021! And I was only thirty-eight."[40] As

[37] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.2
[38] *Ibidem.*
[39] Ivi, p.4.
[40] Ivi, p.58.

Wolf notes, "Audiovisual media such as movies have an advantage when it comes to world-building" as they can more easily depict a large number of details and have less problems related to the fictional instance. While a literary text has trouble justifying the description of a vehicle that is futuristic for the reader but actually belongs to the everyday reality of fictitious narratee, a film can show it without any problems. However, even in the movies, parts of encyclopaedic information, such as historical details, environmental information etc., cannot be revealed by the images and must be communicated (or suggested) otherwise. But, of course, the problem is less central than in written texts.[41] One of the greatest examples is Stanley Kubrick's HAL, the rogue computer whose red eye reflects what it sees while, behind it, his mind is full of dark and secret ideas. HAL's suave, slightly effeminate voice suggests a bruised heart beating under his circuitry. In the past fifty years, the talking machines have continued to evolve, but none of them have become as authentically malicious as HAL. The unbearable pathos of HAL's disconnection scene, one of the most mournful death scenes ever filmed, suggests that when we do end up with humanlike computers, we are going to have some wild ethical dilemmas on our hands. HAL is a child, around nine years old, as he tells Dave at the moment, he realizes he is finished. He is precocious, indulged, needy, and vulnerable. He is more human than his human overseers, with their stilted, near robotic delivery. The dying HAL, singing *Daisy*, the tune his teacher taught him, is quite a sentimental trope. Like *Ulysses*, or *The Waste Land*, or countless other difficult, ambiguous modernist landmarks, *2001* forged its own context. It is not that easy to comprehend film from the first time, but one can easily settle into its mysteries. *2001* is a science-fiction film trying not to be outrun by science itself. Kubrick was tracking NASA's race to the moon, which threatened to siphon some of the wonder from his production. He had one advantage over reality: the film could present the marvels of the universe in lavish color and sound, on an enormous canvas. If Kubrick could make the movie he imagined, the grainy images from the lunar surface shown on dinky TV screens would seem comparatively unreal.[42] Stanley Kubrick himself expressed once the idea about the importance of going beyond the text and putting together music, visual elements and, certainly, emotions:

Comunicare in modo visivo e tramite la musica significa superare le rigide classificazioni basate sul linguaggio verbale da cui la gente non riesce a staccarsi. Le parole hanno un significato molto soggettivo e altrettanto limitato, e circoscrivono subito l'effetto

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[41] P. Bertetti, "Building Science-Fiction Worlds" in M. Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.57.
[42] D. Chiasson, "2001: A Space Odyssey": What It Means, And How It Was Made", The New Yorker, 16.04.2018. https://www.newyorker.com/magazine/2018/04/23/2001-a-space-odyssey-what-it-means-and-how-it-was-made

denotativo che può avere un'opera d'arte a livello emotivo e subconscio. Il cinema è fortemente legato a quel tipo di espressione, perché di solito i contenuti più importanti di un film sono ancora affidati al veicolo delle parole. Poi c'è un'emozione che li sostiene, ci sono gli attori che generano sensazioni via dicendo. Ma sostanzialmente, è comunicazione verbale.[43]

2.6. THE ENLIGHTMENT ELEMENT IN ROBOT STORIES

Like many reformers of the new science who have been inspired by the methodological revolution of John Locke, Isaac Asimov never leaves his best ideas alone. On the contrary, he constantly elaborates and puts together new insights to hold on the assumption that accumulating knowledge is the only way to have valid knowledge. His continual moves toward the general can be seen both in the long-time schemes of his future history and in the conceptual ideas of his own, implicit throughout his writings. Furthermore, Asimov, along with other "hard" science fiction writers, seems to question the absolute insights of intuitive by affirming the Lockean methodology of gradual accumulation. This does not mean that the images in Asimov's fiction are completely transparent and logical. Despite himself, the coherent and clear rationalist contacts depths of meaning that are sometimes not obvious. However, the resonance in *I, Robot* from the 18th-century Enlightenment seems significant. According to Donald M. Hassler, US academic and scholar of science fiction genre, based at Kent State University, Ohio, Asimov's ideas on robotics and on history remind us of the main dilemmas originating from our Enlightenment heritage. These dilemmas always balance "truth" against method, so the followers of the Enlightenment continually discover that the most effective methodology often leads to the most undefined conclusions.[44] In fact, as often happens in most of Asimov's robotic stories, the solution comes when the matter is about to be of considerable menace. The story *Runaround* provides the solution just on the edge of the hazardous situation:

There's some sort of danger centering at the selenium pool. It increases as he approaches, and at a certain distance from it the Rule 3 potential, unusually high to start with, exactly balances the Rule 2 potential, unusually low to start with." Donovan rose to his feet in excitement. "And it strikes an equilibrium. I see. Rule 3 drives him back and Rule 2 drives him forward--" "So he follows a circle around the selenium pool, staying on the locus

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[43] St. Kubrick, *Non ho risposte semplici. Il genio del cinema si racconta*, a cura di G. D. Phillips, Roma, Minimum Fax, 2015, p.138.

[44] D. M. Hassler, "Some Asimov Resonances from the Enlightenment", Science Fiction Studies, Vol. 15, No. 1, 1988, p.36.

of all points of potential equilibrium. And unless we do something about it, he'll stay on that circle forever, giving us the good old runaround." Then, more thoughtfully: "And that, by the way, is what makes him drunk. At potential equilibrium, half the positronic paths of his brain are out of kilter. I'm not a robot specialist, but that seems obvious. Probably he's lost control of just those parts of his voluntary mechanism that a human drunk has."[45]

Also, in the story *Reason*, after numerous attempts to persuade a robot, the scientists manage to figure the whole situation out in quite unexpected way:

Look, Mike, he follows the instructions of the Master by means of dials, instruments, and graphs. That's all we ever followed. As a matter of fact, it accounts for his refusal to obey us. Obedience is the Second Law. No harm to humans is the First. How can he keep humans from harm, whether he knows it or not? Why, by keeping the energy beam stable. He knows he can keep it more stable than we can, since he insists he's the superior being, so he must keep us out of the control room. It's inevitable if you consider the Laws of Robotics.[46]

In addition, the story *Catch That Rabbit* shows another dangerous situation, when the two men end up being blocked in the cave, as the ceiling came down because of the powerful explosion. At the moment of the risky life-or-death situation, Powell finds the way out of the threatening situation:

It's just that all through we missed the obvious -- as usual. We knew it was the personal initiative circuit, and that it always happened during emergencies, but we kept looking for a specific order as the cause. Well, look, why not a type of order. What type of order requires the most initiative? What type of order would occur almost always only in an emergency? It's the six-way order. Under all ordinary conditions, one or more of the 'fingers' would be doing routine tasks requiring no close supervision -- in the sort of offhand way our bodies handle the routine walking motions. But in an emergency, all six subsidiaries must be mobilized immediately and simultaneously. Dave must handle six robots at a time and something gives. The rest was easy. Any decrease in initiative required, such as the arrival of humans, snaps him back. So I destroyed one of the robots. When I did, he was transmitting only five-way orders. Initiative decreases -- he's normal" [47]

One of the main principles of the 18th-century Enlightenment was clarity of vision. Some specific devices with resonance from the Enlightenment for *I, Robot* employ both the character of Dr. Susan Calvin and the Three Laws of Robotics. There has been worked out recently the "fixed-up" chronology for Calvin's life and spinster's career at US Robots and Mechanical Men, Inc. and how that scientific career as robopsychologist interacts with key product robots and other employees. Susan Calvin is a special character, as she provides not

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[45] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.26.
[46] Ivi, p.41.
[47] Ivi, p.56.

only the unity of *I, Robot* as a collection, but also part of the Enlightenment resonance that makes this an important book. The anthologist Groff Conklin notes in one of the articles: "[Miss Calvin's] name may have been chosen by the author with a wry eye on the significance of... Calvinism".[48] John Calvin, in fact, outlined a general framework, a time scheme and a theological set of assumptions that helped to permit the gradual evolvement of the secular Enlightenment and eventually the technological and moral experimentation that Susan Calvin devotes her life to mastering. Calvin's move to set an immensely long-time scheme, along with a built "uncertainty" about any particular judgment or "election" that God might give, did much to liberate thinkers for the gradual experimentation necessary in modern science. Some scholars make suggestions that Calvin, even more than Spengler, was likely to influence the large temporal frameworks attributed to both Enlightenment science and hard science fiction. This idea resonates perfectly in Asimov's works, although the theology itself is never his. The name Susan Calvin, moreover, reminds of the Puritan work ethic and we know she works hard. She has not arrived at any absolute truth at the age of 82, though, when she dies. Asimov has commented on numerous occasions how he loves this character and has her say finally, "I will see no more. My life is over. You will see what comes next".[49] Verbs for seeing are not accidental in the words of an Enlightenment heroine. What is more, the adjectives used to describe the robopsychologist whose presence does so much for unifying *I, Robot* complement what Asimov correctly illustrates at the beginning of the book as the "cold enthusiasm", "thin-lipped" and "frosty pupils".[50] Such ideological enthusiasm that she shares with the other workers of US Robots and, for sure, with the author himself underlines the virtues of predictability, pattern and control. The resonance we can see here is not only with complete control, the one of John Calvin, but also with the great idea at the end of the 18th century that belongs William Godwin. Taking away all theological aspects, English philosopher and novelist believed in the order and coherence that governed all systems. What he called "necessity," which many critics describe in the way that reminds Calvinistic determinism rather than a pure mechanistic determinism, seems to be echoed in Asimov's final story in *I, Robot*. In *The Evitable Conflict*, good-natured machines seem able to anticipate and control all events, which seems a lot like the completeness of necessity in Godwin. Susan Calvin's "enthusiasm" at the same time is obvious as she says finally:

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[48] D. M. Hassler, "Some Asimov Resonances from the Enlightenment", Science Fiction Studies, Vol. 15, No. 1, 1988, p.37.

[49] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.138.

[50] Ivi, p.123.

...it means that the Machine is conducting our future for us not only simply in direct answer to our direct questions, but in general answer to the world situation and to human psychology as a whole.... Think, that for all time, all conflicts are finally evitable. Only the Machines, from now on, are inevitable.[51]

It should be noted that Isaac Asimov's playing with the words "evitable" and "inevitable" will result as a more worldy-wise technique in the later novels where robotics role is highly important. Writer's appreciation of general and large systems and his realization that we need to keep systems open-ended and "indeterminate", can be observed in the cool wordplay that he puts into Susan phrase. In order to achieve the high levels of well-grounded generality, Dr. Calvin and her US Robots colleagues have to work out the simple calculus of the Three Laws of Robotics and afterwards try out the interaction and balancing of the laws in all the combinations and arrangements. Those frequent games of "if this, then the next" dominate the stories in *I, Robot* and resonate even more with Godwinian necessity. The general outcome of such element as necessity turns out to be fully determined and well founded. Besides, the on-going calculus and adjustments of the relations within the general picture are captivating. In the book, it seems frequently that both Susan Calvin and the author himself have nothing at stake and, at the same time, they have to work out the necessary adjustments to their system. The belief in necessity or in the general positive outcome sets the player free, in fact, to handle the calculus of the game.[52] Some examples can be provided. For instance, the story *Catch That Rabbit* describes the associates of Susan Calvin, Gregory Powell and Michael Donovan, who always end up doing the dangerous and dirty work with the robots and every time something repeatedly goes wrong with them. The challenge that they meet in this story consists in figuring out the strange behaviour of the robot Dave and its six subsidiary robots, that, when uncontrolled, make formation that looks a lot like a military march:

He watched the posturings of the robots on the visiplate. They were bronzy gleams of smooth motion against the shadowy crags of the airless asteroid. There was a marching formation now, and in their own dim body light, the roughhewn walls of the mine tunnel swam past noiselessly, checkered with misty erratic blobs of shadow. They marched in unison, seven of them, with Dave at the head. They wheeled and turned in macabre simultaneity; and melted through changes of formation with the weird ease of chorus dancers in Lunar Bowl.[53]

[51] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.137.
[52] D. M. Hassler, "Some Asimov Resonances from the Enlightenment", Science Fiction Studies, Vol. 15, No. 1, 1988, p.39.
[53] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.48.

The scientists in order to cope with the problem, offer some "if this, then the next" possibilities through a sort of trial and error method:

-I've been working it out, Greg. You know, Dave has a queer background for a robot. There are six others under him in an extreme regimentation. He's got life and death power over those subsidiary robots and it must react on his mentality. Suppose he finds it necessary to emphasize this power as a concession to his ego.
-Get to the point.
-It's right here. Suppose we have militarism. Suppose he's fashioning himself an army. Suppose -- he's training them in military maneuvers. Suppose—
-Suppose you go soak your head. Your nightmares must be in technicolor. You're postulating a major aberration of the positronic brain. If your analysis were correct, Dave would have to break down the First Law of Robotics: that a robot may not injure a human being or, through inaction, allow a human being to be injured. The type of militaristic attitude and domineering ego you propose must have as the end-point of its logical implications, domination of humans.[54]

Another example can be taken from the story *Reason*, where the team of roboticists try to explain to the robot Cutie about his robotic "being". After numerous attempts to convince the robot, the engineers decide to manufacture a robot themselves in front of Cutie. In the story, according to the rules, robots are usually manufactured on Earth, which placed upon Donovan and Powell the necessity of synthesis of complete robots, a quite complicated task:

Powell and Donovan were never so aware of that fact as upon that particular day when, in the assembly room, they undertook to create a robot under the watchful eyes of QT-1, Prophet of the Master. The robot in question, a simple MC model, lay upon the table, almost complete. Three hours' work left only the head undone, and Powell paused to swab his forehead and glanced uncertainly at Cutie. Donovan uncapped the tightly sealed container and from the oil bath within he withdrew a second cube. Opening this in turn, he removed a globe from its sponge-rubber casing. He handled it gingerly, for it was the most complicated mechanism ever created by man. Inside the thin platinum plated "skin" of the globe was a positronic brain, in whose delicately unstable structure were enforced calculated neuronic paths, which imbued each robot with what amounted to a pre-natal education.[55]

Through the hard work of Dr. Calvin in *I, Robot* resounds Godwin's key idea about the necessity when talking about the importance of individual moves in the calculus.

The Three Laws of Robotics seem remarkably profound and are considered to be a significant invention of the imagination. Over the decades they have pathed their own way out of the fiction. Usually they are referred to

[54] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.49.
[55] Ivi, p.39.

with kind of Godwinian flatness regarding their function and position. Furthermore, as both Godwin and Calvin continually insist, the follower of necessity usually works harder to make things happen, so Asimov's both scientists and robots are never tired of discussing and putting these three basic statements in relation to one another. This is an extraordinary example of Asimov's inventive nature and how complex and diverse the Three Laws are. Godwin's inclinations towards the clearness of analysis and the total control may seem inhuman, just as robotics itself, even when the Laws are benevolent for people. However, such acknowledgment of continuing calculus of complexity, keeps the author benevolent and "human" in his writing, particularly in the writing about the robots. He is always trying to educate and to make things clear, and the material itself represent layer upon layer of complexity.[56]

It should be noted that in *I, Robot* machines are often seen as self-sacrificing and human-worshipping. Asimov considered robots as inevitable part of people's life in the future. American author believed in a fruitful symbiose between the two. Asimov's positive attitude towards computers can be perceptible easily, for example, through his character Mr. Weston, who is struggling against his wife in order to keep the robot at their home, in the story "Robbie" at the beginning of *I, Robot*:

"Nonsense," Weston denied, with an involuntary nervous shiver. "That's completely ridiculous. We had a long discussion at the time we bought Robbie about the First Law of Robotics. You know that it is impossible for a robot to harm a human being; that long before enough can go wrong to alter that First Law, a robot would be completely inoperable. It's a mathematical impossibility. Besides I have an engineer from U. S. Robots here twice a year to give the poor gadget a complete overhaul. Why, there's no more chance of anything at all going wrong with Robbie than there is of you or I suddenly going loony -- considerably less, in fact.[57]

We also learn about the author's attitude towards machines through his child character Gloria who is so attached to her robotic friend. As we learn from the story, Robbie does everything that a little girl asks it to do. It is always present, faithful and trustworthy. In fact, at the end of the story, when Robbie and little girl reunite again, the robot turns out to be the only one who is capable to save Gloria's life so that proving just one more time the correct functioning of the Three Laws of Robotics and, perhaps most importantly, its faithfulness to its little mistress:

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[56] D. M. Hassler, "Some Asimov Resonances from the Enlightenment", Science Fiction Studies, Vol. 15, No. 1, 1988, p.40.

[57] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.8.

"Robbie!" Her shriek pierced the air, and one of the robots about the table faltered and dropped the tool he was holding. Gloria went almost mad with joy. Squeezing through the railing before either parent could stop her, she dropped lightly to the floor a few feet below, and ran toward her Robbie, arms waving and hair flying. And the three horrified adults, as they stood frozen in their tracks, saw what the excited little girl did not see, -- a huge, lumbering tractor bearing blindly down upon its appointed track. It took split-seconds for Weston to come to his senses, and those split-seconds meant everything, for Gloria could not be overtaken. Although Weston vaulted the railing in a wild attempt, it was obviously hopeless. Mr. Struthers signaled wildly to the overseers to stop the tractor, but the overseers were only human, and it took time to act. It was only Robbie that acted immediately and with precision. With metal legs eating up the space between himself and his little mistress he charged down from the opposite direction. Everything then happened at once. With one sweep of an arm, Robbie snatched up Gloria, slackening his speed not one iota, and, consequently, knocking every breath of air out of her. Weston, not quite comprehending all that was happening, felt, rather than saw, Robbie brush past him, and came to a sudden bewildered halt. The tractor intersected Gloria's path half a second after Robbie had, rolled on ten feet further and came to a grinding, long drawn-out stop.[58]

Later in the text, the robot's attachment to the little girl is described as gentle and loving:

Grace Weston considered. She turned toward Gloria and Robbie and watched them abstractedly for a moment. Gloria had a grip about the robot's neck that would have asphyxiated any creature but one of metal and was prattling nonsense in half-hysterical frenzy. Robbie's chrome-steel arms (capable of bending a bar of steel two inches in diameter into a pretzel) wound about the little girl gently and lovingly, and his eyes glowed a deep, deep red. "Well," said Mrs. Weston, at last, "I guess he can stay with us until he rusts."[59]

But, perhaps, the most attached to robots is undoubtfully Susan Calvin, as she "talked about Powell and Donovan with unsmiling amusement, but warmth came into her voice when she mentioned robots. It didn't take her long to go through the Speedies, the Cuties and the Daves…",[60] since she dedicated her whole life to these mechanical creatures. Besides, American science fiction writer often illustrates his robotic characters with pure human characteristics such as intuition, emotions, attachments and so on. Such example is a robot Cutie in the story *Reason*:

"Something made you, Cutie," pointed out Powell. "You admit yourself that your memory seems to spring full-grown from an absolute blankness of a week ago. I'm giving you the explanation. Donovan and I put you together from the parts shipped us." Cutie gazed upon his long, supple fingers in an oddly human attitude of mystification, "It strikes

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[58] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.16.
[59] Ivi, p.17.
[60] Ivi, p.58.

me that there should be a more satisfactory explanation than that. For you to make me seems improbable."

The Earthman laughed quite suddenly, "In Earth's name, why?"

Cutie: "Call it intuition. That's all it is so far. But I intend to reason it out, though. A chain of valid reasoning can end only with the determination of truth, and I'll stick till I get there."

And then later:

"I like you two. You're inferior creatures, with poor reasoning faculties, but I really feel a sort of affection for you. You have served the Master well, and he will reward you for that. Now that your service is over, you will probably not exist much longer, but as long as you do, you shall be provided food, clothing and shelter, so long as you stay out of the control room and the engine room."

Another striking example is Herbie, who is a mind-reading robot. As Alfred Lanning, the director of the US Robots notices, RD-34 is a unique robot in its kind:

We've produced a positronic brain of supposedly ordinary vintage that's got the remarkable property of being able to tune in on thought waves. It would mark the most important advance in robotics in decades, if we knew how it happened. We don't, and we have to find out.[61]

The book of Asimov's robot stories is not only a scientific and literary work that the author is best known for, but also one of the most obvious indicators of his preferences towards the general and, definitely, towards storytelling and towards the human.

2.7. UNCONVENTIONAL POINT OF VIEW

Isaac Asimov is famously known for his promoting the biggest good for all the humankind, which lots of scholars tend to consider as the utilitarian goal. His robots, as well, may personify utilitarian approach. Thus, one of the main questions in his writing is how best to achieve that greatest good. In the article "Ethical Evolving Artificial Intelligence: Asimov's Computers and Robots," Patricia Warrick explains what she means when talking about Asimov's "ethical technology." There she argues that Asimov's robots are created, in a Skinnerian behaviorist way, to regard "John Stuart Mill's concept of 'the greatest good for

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[61] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.59.

the greatest number'... [as] the essential element in the criteria for designing the [behaviorist] ideal".[62]

It is worth taking a brief insight into the theory of utilitarianism. Utilitarianism means rightness and wrongness regarding a certain conception of the good. This is known as consequentialist theory: "a theory that holds that the rightness and wrongness of actions depends solely upon the consequences of those actions. The consequences of an action, in turn, are evaluated in terms of the utilitarian conception of the good: happiness."[63] Consequently, for the utilitarian, the action is right as long as it produces a set of consequences that provides more happiness than any other action accessible to a person. This leads to what is generally known as the utilitarian central slogan: "The greatest good for the greatest number." In a broader explanation that belongs to Jeremy Bentham, usually considered as its founder, utilitarianism is formulated as: "By the principle of utility is meant that principle which approves or disapproves of every action whatsoever, according to the tendency which it appears to have to augment or diminish the happiness of the party whose interest is in question".[64] Bentham's main thought consists in the right action that seems most likely to provide the best set of consequences, considering all the circumstances. Generally, Isaac Asimov, as noticed before, is believed to share this benevolent idea. However, there have been some opposite views regarding the good intention of the robots' behavior in *I, Robot* and other author's stories.

There is a belief that *I, Robot* and several other robot stories in fact reinforce the Frankenstein complex. When describing scenarios of human fate at the hands of their technological creatures, these plots seem more frightening than those of M. Shelley or K. Capek. Good intention is not the issue here: as can be seen from the numerous dystopian novels, it is also possible to pave the "hell-on-earth" road with benevolent intentions.[65] This suggestion is proved by such novels as Huxley's *Brave New World*, Dostoevsky's *Grand Inquisitor*, Vonnegut's *Player Piano* and many others.

I, Robot offers at the beginning already discussed Three Laws of Robotics. According to Asimov's viewpoint, these Laws are helpful in providing safety and should be built into every robot. However, the first problem is: if a robot is only a machine produced by scientists, as the author states, why do we need to put the Three Laws into them at all? Laws, according to the sense of moral orders,

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[62] J. J. Miller, "The Greatest Good for Humanity: Isaac Asimov's Future History and Utilitarian Calculation Problems", Science Fiction Studies, Vol. 31, No. 2, 2004, p.190.
[63] *Ibidem.*
[64] *Ibidem.*
[65] G. Beauchamp, "The Frankenstein Complex and Asimov's Robots", Mosaic: An Interdisciplinary Critical Journal, Vol. 13, No. 3/4, 1980, p.85.

are made to regulate conscious beings in case they decide to choose how to act. Thus, if robots are considered to only machines, they would behave only according to their particular programming, not in violation of it and not in excess of it. It would be sufficient to avoid particular harmful actions in the technical programming in order to make people's life safe and secure, and therefore general laws, meaning moral principles, would be redundant for machines. Secondly, and probably more significantly, people need laws to regulate natural instincts: "one must be enjoined not to steal, not to commit adultery, to love one's neighbor as oneself"[66]— apparently because those are not activities that humans perform or do not by instinct. As a consequence, if Asimov's robots do not have a natural tendency to hurt humans, why do they have exactly this concept as a First and most important Law that prevents them from behaving like that? These robots, therefore, do have an instinctual indignation of humankind, which reminds us pretty much of the Frankenstein complex. In the story *Little Lost Robot* Dr. Calvin, who is considered to be the greatest robopsychologist, by the way, gives the explanation to the hazard caused by manufacturing robots with weakened impressions of the First Law:

> All normal life... consciously or otherwise, resents domination. If the domination is by an inferior, or by a supposed inferior, the resentment becomes stronger. Physically, and, to an extent, mentally, a robot—any robot—is superior to human beings. What makes him slavish, then? Only the First Law! Why, without it, the first order you tried to give a robot would result in your death.[67]

This explanation can be studied reversely, as all the presumptions about the Frankenstein complex is here, and author's intention to reduce it is perceptible as well: the term "normal life" is used here to describe machines that dislike being dominated by inferior creatures, or, in other words, human beings. Regarding Asimov's robots, even though violating their true nature, only the First Law can keep these subconsciously aggrieved machines submissive, and in such way prevent them from injure people who give them instructions, which is probably what they would like to do. The superior attitude towards humans is expressed almost explicitly through Susan Calvin's words in the story *Liar*:

> But Susan Calvin whirled on him [Robot RB-34] now and the hunted pain in her eyes became a blaze, "Why should I? What do you know about it all, anyway, you... you machine. I'm just a specimen to you; an interesting bug with a peculiar mind spread-eagled for inspection. It's a wonderful example of frustration, isn't it? Almost as good as your books".[68]

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[66] G. Beauchamp, "The Frankenstein Complex and Asimov's Robots", Mosaic: An Interdisciplinary Critical Journal, Vol. 13, No. 3/4, 1980, p.86.

[67] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.75.

[68] Ivi, p.61.

Thus, we encounter a crucial dilemma: if these robots are only the programmed machines as the author claims, then, theoretically speaking, the First Law should not be essential. On the other hand, if the First Law is not redundant, as we can see especially in *Little Lost Robot*, then Asimov's robots are not just the programmed machines, but creatures with instincts, emotions, wills, sometimes intuition and so on. Such creatures, not very different from Čapek's robots by the way, would be typically resistant to domination. Noticeably, the technological creations in *I, Robot* often go beyond their programming and sometimes directly violate it. They can surprisingly appear unexplainable in terms of their engineering pattern.[69] Such example is RB-34 or Herbie in the story *Liar* which unaccountably gain the ability to read human minds, and, eventually, hurt human feelings:

> Herbie backed away, "I want to help". The psychologist stared, "Help? By telling me this is a dream? By trying to push me into schizophrenia?" A hysterical tenseness seized her, "This is no dream! I wish it were!"

At the end of the story, when the robopsycologist managed to recover and return to her mental equilibrium, as before her mind was "full of pain and frustration and hate"[70], the only possible solution was to confront the machine with the irresolvable dilemma in order to break it down:

> It was minutes after the two scientists left that Dr. Susan Calvin regained part of her mental equilibrium. Slowly, her eyes turned to the living-dead Herbie and the tightness returned to her face. Long she stared while the triumph faded and the helpless frustration returned -- and of all her turbulent thoughts only one infinitely bitter word passed her lips. "Liar!"[71]

Another impressive example is the robot QT-1 or Cutie in the story *Reason*, the one that developed an independent theory about its genesis and was rigidly opposing to human control till the very end of the story. Cutie is a robot that was manufactured in order to keep a solar power station under control. Suddenly, it becomes curious about its own being. Donovan and Powell's explanation about its origins that it was designed from the components provided from their home planet Earth takes Cutie aback. Later, the robot claims this assumption is evidently ridiculous, since it is obviously superior to human engineers and assumes as a "self-evident proposition that no being can create another being superior to itself".[72] Instead, it comes to the conclusion

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[69] G. Beauchamp, "The Frankenstein Complex and Asimov's Robots", Mosaic: An Interdisciplinary Critical Journal, Vol. 13, No. 3/4, 1980, p.87.
[70] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.70.
[71] Ivi, p.71.
[72] Ivi, p.34.

that the Energy Converter of the station is a Master who gave it a birth. In addition, it comes up with a theory of evolution that downgrades a human to an intermediate step in the evolution of intelligent life that arrives, as a final point, at robots:

> The Master created humans first as the lowest type, most easily formed. Gradually, he replaced them by robots, the next higher step, and finally he created me to take the place of the last humans. From now on, I serve the Master.[73]

Although Cutie's reasoning in such unprogrammed and disobedient way ends well, as it manages to keep the energy-beam stable, as "deviations in arc of a hundredth of a millisecond - invisible to the eye - were enough to send the beam wildly out of focus - enough to blast hundreds of square miles of Earth into incandescent ruin",[74] it succeeds only because of keeping "all dials at equilibrium in accordance with the will of the Master",[75] as immediately after the robot is described as "unconcerned with beam, focus, or Earth, or anything but his Master was at the controls".[76] Cutie keeps the energy-beam stable not because of the First Law, since the robot rejects the existence of Earth, or because of the Second Law, since it goes directly against the scientists' instructions and even keeps them under custody for their sacrilegious assumption that the Master is just an L-tube. It should be underlined that all the other robots operating tasks at the station are eventually "converted" to this new religion and decide to participate in such refusal to obey: "They recognize the Master," Cutie explains, "now that I have preached the Truth to them".[77] Regarding the Second Law of Robotics, Gregory Powell offers an explanation for Cutie's deviant behaviour that the robot simply follows the instructions of the Master by means of dials, graphs and so on. Anyhow, since Cutie does not believe in the existence of human life on Earth, or the existence of planet itself, it is hard to believe that the robot performs in accordance with the First Law when violating the Second. Once Cutie's autonomous reasoning is perceived as a possibility that can be shared among other robots, its immediate distribution goes without saying, which results, consequently, in diminishing in importance the Three Laws of Robotics. Thereafter, some other robot can think things through and come to the conclusion in a quite different way, not in accidental accord with the First Law.[78]

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[73] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.35.
[74] Ivi, p.41.
[75] Ivi, p.42.
[76] Ivi, p.41.
[77] Ivi, p.36.
[78] G. Beauchamp, "The Frankenstein Complex and Asimov's Robots", Mosaic: An Interdisciplinary Critical Journal, Vol. 13, No. 3/4, 1980, p.88.

Last, but not least, the only character who is illustrated as the one who does not trust the robots is the roboticist Michael Donovan. On numerous occasions he is inclined to question the presumable obedience of machines. For instance, the story *Catch That Rabbit* has Donovan to say:

Listen, Dave and that imbecile 'finger' are both holding out on us. There is too much they don't know and don't remember. We've got to stop trusting them, Greg."[79]

To conclude, in this chapter we have seen the functioning of the literary genre science fiction. Such aspects as plot, necessary techniques and narrative information have been particularly covered. We have seen the two opposite views regarding Isaac Asimov's robots. Many scholars consider American science fiction writer as a purely utilitarian, with the general idea to bring as much good and happiness in people's life as possible. He is famously known for his rigid and positive position about helpful and fruitful collaboration between humans and robots. However, such assumptions are to be taken cautiously, since people keep designing and producing technologically advanced machines without deeply knowing how such machines perform tasks.

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[79] I. Asimov, *I, Robot*, New York, Harper Voyager, 2013, p.51.

3. HUMAN'S PLACE IN THE FUTURE WORLD THROUGH PHILIP K. DICK'S NARRATIVE

3.1. *NOVUM* IN SCIENCE FICTION

The nature of science fiction worlds strictly relates to Darko Suvin's definition of the genre: "SF is distinguished by the narrative dominance or hegemony of a fictional *novum* (novelty, innovation) validated by cognitive logic".[1] The *novum*, or cognitive novelty, is a kind of relationship that diverges from the norm of the author and that involves reader's reality. Science fiction text makes the *novum* almost omnipresent, in the sense that it requires a change of the whole universe in the book and appears to be central and to regulate the world's narrative logic. Besides, such concept is similar to structural differences offered by the Italian professor Umberto Eco. Regarding the dissimilarities between science fiction and fantasy, it should be noted that in science fiction the novum is "cognitively validated", while in fantasy it is not. "Cognitively validated" means that it is "postulated on and validated by Cartesian and post-Baconian scientific method"[2], and it functions according the adopted scientific logic. Thus, science fiction worlds do not disregard the epistemic foundations normally accepted in our culture, meanwhile the fantasy worlds create diverse foundations. The concept of novum can be define as "the whole set of properties that distinguish the possible world of the story from the actual world of reference."[3] This definition of the novum differentiates a little bit from Suvin's. Darko Suvin sees the novum as a single variation of the real world. However, as Csicsery-Ronay has noticed:

The model of a single novum is useful for reading narratively simple fictions, such as short stories and novels with relatively simple narrative arcs. [...] However, once fiction crosses a certain threshold of complexity it becomes more difficult to pin down exactly what

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[1] D. Suvin, *Metamorphosis of Science-Fiction. On the Poetic and History of a Literary Genre* in P. Bertetti, "Building Science-Fiction Worlds" in Marta Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.53.

[2] *Ibidem.*

[3] Ivi, p.54.

the novum premise is. [...] Once a Science Fiction has several interlayed narrative arcs, novums can become complex, ambiguous, and multiple.[4]

It is worth noticing that the experience of reading science fiction involves the ability to recognize data, as well recognize non-data. In the story such data is perceived through the new things given. These data represent an "elementary building-block" of science fiction, previously identified by D. Suvin. The novum performs as a "discrete piece of information recognizable as not-true, but also as not impossible".[5] There is a string of novums in science fiction, and in order to recognize them, the reader firstly should attempt to put them together. Dystopian worlds do not start with ground rules, they start with novums. To read any science fiction, the reader has to recognize its novums beforehand, and evaluate them afterwards. There is a visible and diverse pleasure at each stage, when you realize to what extent things are different and how they are similar, and go ahead on wondering and discovering, what are the causes for the changes. Also, such reasoning leads to identify the causes that have produced the effects of the real world. Without this type of thinking, we would not, probably, fully understand the effects that are so familiar to use that in most cases we never pay attention to them.[6] Lots of scholars consider science fiction as an inferior genre. The affirmations can be often heard that science fiction is quite abstruse to the many literate colleagues who have disliked it over the years. The matter is in the existence of the novum in science fiction, and the example of intellectual reasoning to be taken from it. According to another definition of genre by Darko Suvin it is:

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. [7]

"Estrangement" means recognizing the novum, while "cognition" stands for estimating and attempting to make sense of it. The reader needs both abilities to read science fiction. Some people want to do neither. Moreover, there is one another basic action that needs to be understood in order to read this literary genre. Science fiction is fundamentally a "high-information" literature, as it contains a high number of technical terms, novums, which are difficult to predict, and so on. Moving closely towards the novums, the science fiction

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[4] Jr. I. Csicsery-Ronay, *The Seven Beauties of Science Fiction* in P. Bertetti, "Building Science-Fiction Worlds" in Marta Boni, *World Building. Transmedia, Fans, Industries*, Amsterdam University Press, 2017, p.54.

[5] T. Shippey, *Hard Reading: Learning from Science Fiction*, Liverpool, Liverpool University Press, 2016, p.10.

[6] Ivi, p.12.

[7] D. Suvin in T. Shippey, *Hard Reading: Learning from Science Fiction*, Liverpool, Liverpool University Press, 2016, p.12.

reader usually appreciates the feeling of unpredictability. Apart from producing enormous curiosity, it turns out to be a powerful exercise of "cognition", of locating unknown data into some sort of mental reservoir, to analyze when and whether the different aspects begin to fit together. Science fiction sometimes may produce some type of feeling that rules might be altered. This requires being ready to accept the novum, the unexpected bounce of "high information". Probably, the most intense form in which such bounce may be delivered is the neologism. There are some words like "cyberspace" from William Gibson's *Neuromancer* that pass into general science-fictional use, because they express concepts too good to be left on the shelf. One the other hand, Ursula Le Guin's novel *The Left Hand of Darkness* offers such neologism as "shifgrethor" that means "shadow" and "an alien sense of honour" at the same time. This neologism, however, is connected too strictly to the world of the book that it has not been borrowed. Instead, words that have been borrowed from science fiction literature into everyday reality include, for instance, Philip K. Dick's "kipple" in *Do Androids Dream of Electric Sheep?*:

Kipple is useless objects, like junk mail or match folders after you use the last match or gum wrappers or yesterday's homeopape. When nobody's around, kipple reproduces itself. For instance, if you go to bed leaving any kipple around your apartment, when you wake up the next morning there's twice as much of it. it always gets more and more.[8]

Words like these have entered our everyday experience, recognized immediately as filling a gap. Thus, they are "high-information" units in terms of unpredictability. They make the reader aware of the hidden presuppositions, the latent information about the reader's own habits. In addition, they serve as an example that science fiction has its own hierarchy of figures, where the neologism occupies one of the lowest places. The distinguishing feature of such hierarchy is the ability to use contrasts between the real world and the imaginary, the new information and the "data" information.[9]

Taking a closer look to some new information words in Ph. K. Dick's novel *Do Androids Dream of Electric Sheep,* we run across Rick Deckard and his wife Iran in the opening passage who are arguing about the Penfield Mood Organ when they wake up in the morning. Such device contains a number of combinations that helps a human user to move from one mood to another. As a habit, Rick Deckard wires his Mood Organ in order to wake up in a cheerful mood and advises Iran to do the same. However, her argument is that people need to earn emotions and feelings. The woman dials daily a "six-hour self-accusatory depression" and when the protagonist wonders why anyone would

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[8] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.480.
[9] T. Shippey, *Hard Reading: Learning from Science Fiction*, Liverpool, Liverpool University Press, 2016, p.17.

schedule that, Iran opposes that it is essential to feel emotions that fit into the situation you find yourself in: in that case almost depopulated and infected world. In fact, the female character has programmed the organ to drive her into despair twice a month:

> -But a mood like that, Rick said, you're apt to stay in it, not dial your way out…
> -I program an automatic resetting for three hours later, his wife said sleekly. A 481. Awareness of the manifold possibilities open to me in the future: new hope that—
> -I know 481, he interrupted. He had dialed out the combination many times; he relied on it greatly.[10]

In Dick's invented world, the characters are carefully thought-through, which makes them to be perceived even more realistically. In real life, we often move from the comic to the tragic. Nowadays we have around us lots of incomprehensible and ridiculous things, and most of the time we do not even notice them. As to the Mood Organ passage, according to Chris Beckett, a university lecturer in Cambridge, the argument between Rick and Iran sets the scene for the whole book. Mood Organ does not exist in reality, but it justifies the fact that our general attitude in the world can be changed by such things as chemicals, by the weather, etc.[11] Another example of the new information in the novel is an empathy box. The remnants of human culture are held together by a religion called Mercerism, which is practiced through the empathic fusion with others via a technology called the empathy box. When Isidore asks Pris Stratton if she possess her empathy box, after an awkward pause she replies:

> -I didn't bring mine with me. I assumed I'd find one here.
> -But an empathy box, he said, stammering in his excitement, is the most personal possession you have! It's an extension of your body; it's the way you touch other humans, it's the way you stop being alone. But you know that. Everybody knows that. Mercer even lets people like me — He broke off.[12]

Thus, when for us the empathy box is an entirely new term that we do not possess in our real world, we learn that it represents the most common and usual thing that constitutes the everyday life of all the characters in Dick's novel. One more example of the new information in the book is hovercars or flying cars. While in our world the flying cars are still the future, in the novel people are used to drive their peculiar vehicles in the air and land them afterwards on the roof of the buildings:

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[10] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.437.
[11] Ch. Beckett, "The Penfield Mood Organ in Do Androids Dream of Electric Sheep?", TOR, 2015. https://www.tor.com/2015/05/21/that-was-awesome-the-penfield-mood-organ-in-do-androids-dream-of-electric-sheep/
[12] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.481.

Dressed and ready to go he left his apartment, ascended to the roof where his battered used hovercar lay parked….After parking the departments speedy beefed-up hovercar on the roof of the San Francisco Hall of Justice on Lombard Street, bounty hunter Rick Deckard, briefcase in hand, descended to Harry Bryant's office.[13]

The answer to the question whether science fiction is truly about modern problems that might be potentially serious may be given not only by analyzing the plot, but also by trying to figure out the influence of the novum and how it resonates in our real world. New information can encourage us to exercise our ability to think critically and, consequently, act strategically in response to some modern issues that once seemed a distant future.

3.2. HUMAN VS ANDROID: RELATIONSHIP BETWEEN PEOPLE AND TECHNOLOGY

Everywhere we remain unfree and chained to technology whether we passionately affirm or deny it.[14]

We have seen the shift of the attitude towards machines, from Asimovian practice in 1940-50s to Dick's narrative during 1960s. Philip K. Dick's 1968 novel *Do Androids Dream of Electric Sheep?* is set on post-apocalyptic Earth in California. World War Terminus has covered the world with clouds of radioactive dust, devastated the population of the whole planet and left it almost uninhabitable. Most of the population fled to Mars or other unnamed colonies, where everyone has its own android as a servant that performs dangerous and hard work. The androids are highly sophisticated and are almost indistinguishable from humans. To control their potentially hazardous behaviour, they have been forbidden to return to Earth. The novel not just explores the moral inferences of enslaving a biological automaton, but also centralizes the invention of a humanoid copy to define and critique the central constituent of humanity. It should be noted that the qualities that differentiate humankind from androids become the essential elements of this humankind. On several occasions, androids have killed their masters and fled to Earth. Bounty hunters are the employees at the remaining police officers who protect the small communities of people. They are part of those who have refused to emigrate for different reasons. There is another group of people who have been forbidden to emigrate because of the degenerative effects of the

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[13] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.495.
[14] M. Heidegger, *The Question Concerning Technology and Other Essays*, New York, Harper Perennial, 2013, p.4.

radioactive environment that affected them drastically and, consequently, lowered their IQs. The novel examines the psychology of bounty hunter Rick Deckard as he pursuits six escaped androids through the empty buildings of San Francisco and eventually "retires" them. Through the novel we can witness Deckard's realization that the creatures he must "disactivate" are much like himself.

According to some critics, *Do Androids Dream of Electric Sheep?* "registers its protest against the dehumanizing effects of bureaucracies and technology".[15] It is crucial to answer such questions here as: What is technology? And, most specifically, what is android? Regarding androids, we have seen a short definition for the term previously in the first chapter. Androids have been defined in different ways, however, they are commonly known as "constructed creatures that can pass as a human unless one accidentally peels back the rubber mask and reveals the gears and bolts beneath".[16] These creatures may be as well fictional objects of human sexual fears and desires. This topic is explored in Heinlein's novel *Friday* and in William Tenn's *Down among the Dead Men*. At the beginning of the second chapter in the novel, Philip K. Dick gives his brief description:

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 U.N. law each emigrant automatically received possession of an android subtype of his choice, and, by 1990, the variety of subtypes passed all understanding, in the manner of American automobiles of the 6os.[17]

Therefore, we can assume that K. Capek's robot has two offspring: robot and android that are perceived as servants first of all. The difference between them is that the first one is considered to be a probable economic threat, still is easy recognizable and distinguishable from humans. The second one, however, can pass as human and, consequently, can move unnoticed among us, which complicates the whole situation.

Most people would agree that, on the one hand, technology is the adaptation of accessible material or knowledge that provides humans with an advantage over their natural habitat. Technology can involve some structures such as mathematics and language as well. Both of them have always tried to organize human experience of reality, and both have become instruments that

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[15] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.67.

[16] M. Klass, "The Artificial Alien: Transformations of the Robot in Science Fiction", The Annals of the American Academy of Political and Social Science, Vol. 470, 1983, p. 178.

[17] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.445.

give humankind an advantage. The word "advantage" in this context implies an evolutionary structure, where all forms of life are struggling or using each other in order to secure their chances for successful survival. From this point of view, technology may be considered as an evolutionary modification that people have acquired and used to dominate the other forms of life or elements of nature in our rich planetary ecosystem. When technology is considered as an intellectual necessity for adaptation that can protect, expand or improve human life, it becomes indivisible from the concept of what it means to be a human. At the most primitive level, however, technology does not belong only to humanity. Lots of other species operate existing materials in the environment to obtain an advantage. Birds collect twigs in order to form nests, for example, beavers take wood to build dams, bees build hives and so on. Some animals also have the technology of language that they use in different forms. The main difference between the human usage of technology and that of other animals is that people have a constant dialogue about what technology represents, its possibilities and perspectives etc. It results in making modifications and refinements on previously existing forms of technology, which for other species is possible, but unusual, as they overall rely on the inborn instructions for the use of a basic technological equipment from inherited DNA memory. The human relationship to technology is unique because we can examine an instance of technology and locate potential flaws in the design, and through intellectual process modify it to conform to an imagined result and enhance its capabilities.[18]

Although we have become so close to technological advancement, it may be difficult to identify the line between human and artificial afterwards. For those lines sometimes turn out to be blurred, as *Do Androids Dream of Electric Sheep?* indicates. The social aspect of human life becomes some kind of connection between humans and androids. The novel states that people are able to feel empathy for all living things, meanwhile androids, as completely logical units, can only simulate empathy. Empathy is the primary doctrine of Mercerism, the newly accepted theology to which all survived people are connected. The Voigt-Kampff test that Deckard administers to suspicious androids estimates their emotional response to establish whether empathy is naturally present or is instead being simulated. The main point of this test is that the initial reaction to stimuli cannot be controlled and, therefore, emotional reactions in people are instinctual. Androids, on the other hand, in order to produce the imitation of empathy, should operate according to their programs, which require some kind of a pause, of a second fraction. Thus, this

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[18] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.68.

empathy test uses this variance to distinguish if the emotional reaction is genuine or artificial. Bounty hunters perform as arbiters who, by conducting the empathy test, are able to recognize a human from android. In the novel's conflict, a ship with escaped androids has landed on Earth. These androids have a new "Nexus-6" brain type and are believed to be the most advanced automata ever created. Rick has been sent to the Rosen Association's headquarters to examine if the Voigt-Kampff test can precisely determine the lack of empathy in the Nexus-6 androids, or whether they are too sophisticated to be checked by the test. In case of the failure of the test, there is no other possibility to distinguish the new model from humans other than a bone marrow analysis. Such analysis, however, is not a compulsory one, because of the court rules that protect humans from self-incrimination.

As the protagonist receives the task to test the androids of the Rosen Association, the system's biggest manufacturer of humanoid robots in a colonization program, superior police officer Inspector Bryant inquiries of the possibility of the Voigt-Kampff test failure while determine empathy in a human being. The result of such mistake would mean a murder, and the error would be identified only after a bone marrow analysis performed on the body. According to Rick, this is an entirely hypothetical situation that would never happen, but Bryant proceeds explaining:

> One day, a few weeks ago, I talked with Dave about exactly that. He had been thinking along the same lines. I had a memo from the Sovietpolice, W.P.O. itself, circulated throughout Earth plus the colonies. A group of psychiatrists in Leningrad have approached W.P.O. with the following proposition. They want the latest and most accurate personality profile analytical tools used in determining the presence of an android — in other words the Voigt-Kampff scaleapplied to a carefully selected group of schizoid and schizophrenic human patients. Those, specifically, which reveal what's called a 'flattening of affect'.[19]

According to some critics, Philip K. Dick was significantly influenced by reading the psychiatric writings of J.S. Kasanin on schizophrenia, and the Voigt-Kampff test is believed to derived from these works. Anthony W. Wolk, the professor from the Portland State University, notices that "the androids, by doing poorly on the test, resemble schizophrenics"[20]. It would definitely benefit the androids to be taken for human mental patients, within the novel, however, a failure to pass the test would result in retirement, not institutionalization. The schizophrenic humans would be especially endangered, since those who did not pass the Voigt-Kampff test, would be doubtlessly "retired". This aspect is the first of many difficulties with which the author distorts the clear lineament

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[19] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.460.
[20] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.74.

between androids and people in the novel. If empathy is considered to be the exclusively human quintessence that technology is not able to reproduce, does a human who fails to give the supposed emotional reply cease to be a human? Philip K. Dick probably draws our attention to the fact that the people's attitude towards androids looks a lot like the androids' relationship to animals. So, while humans are normally expected to hold such moral position, why do androids have to be destroyed for a similar viewpoint? Moreover, it is crucial to underline that such viewpoint is "installed" by human programming. When the protagonist arrives at the Rosen Association in Seattle, he is received by Eldon Rosen's niece Rachel, who is clearly concerned by the police inquiry in their operations. Attempting to calm Rachel down, Rick explains that "a humanoid robot is like any other machine; it can fluctuate between being a benefit and a hazard very rapidly. As a benefit it's not our problem".[21] This assumption shows explicitly the potential danger intrinsic in all technology, as well as Deckard's position towards androids. The implicit warning that almost every technological instrument contains can be realized by human intention and can be expressed in a basic statement about the nature of the whole humankind: there are both good and bad people. It should be noted that most people would indicate the human's superior intellect or some its outcome, if asked to differentiate the human race from other species. In *Do Androids Dream of Electric Sheep?* there exist human-like robots who are physically indistinguishable from humans and are provided with a composite intellect that gives them the ability to reason. Then, what features are especially human in this plot? The only way to determine what is human in this scenario is to investigate the dissimilarities between humans and androids. While theoretically there are many distinctions, the novel, first of all, inspects the human capacity for empathy. Empathy is not a rational feeling, this is something inborn and instinctual. A person does not gain an evident advantage by understanding and sharing the feelings of another. At least, not in the meaning that has been described before, if we understand advantages as behaviours or qualities that asset the individual's survival.[22] The Nexus-6 androids are illustrated as logically advanced machines that managed to overcome some people's ability in cognition. However, when it comes to such purely human feeling as empathy, the artificial beings are incapable to express it voluntary:

The Nexus-6 android types, Rick reflected, surpassed several classes of human specials in terms of intelligence. In other words, androids equipped with the new Nexus-6 brain unit had from a sort of rough, pragmatic, no-nonsense standpoint evolved beyond a major — but

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[21] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.462.
[22] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.76.

inferior — segment of mankind. For better or worse. The servant had in some cases become more adroit than its master. But new scales of achievement, for example the Voigt- Kampff EmpathyTest, had emerged as criteria by which to judge. An android, no matter how gifted as to pure intellectual capacity, could make no sense out of the fusion which took place routinely among the followers of Mercerism...[23]

Firstly, it is important to underline that human empathy constitutes the spiritual fusion of Mercerism, and, what is more, androids do not have this specific "requisite", which is necessary to participate in the religious gatherings. The narrator of the novel explains that this particular human ability is, in fact, useless for machines, as it would prevent predators (androids included) from survival:

Empathy, evidently, existed only within the human community, whereas intelligence to some degree could be found throughout every phylum and order including the arachnida. 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.[24]

Secondly, the key to human empathy then, as illustrated in the novel, is the group instinct, which androids do not possess. "Evidently the humanoid robot constituted a solitary predator"[25], while humanity lives together. The novel attempts to explore the meaning of loneliness and the psychology of a lonely human, pointing out that people in fact look for integration into the human society at the biological level and hypothetically rarely feel completely alone. In practice, though, a couple of characters in the novel do not feel to belong to the human community and question themselves whether they are connected to anybody or anything at all. This loneliness can be also observed in nature.

The paradox regarding this specific human condition that the novel highlights is that people can feel isolated and rejected from the human community even in the presence of other human beings. If our humanity has this biological disposition to be socially included, why do some individuals refuse or fail in the socialization process? In spite of the scientific cause of human isolation, several tormenting descriptions of loneliness in the novel considerably affect some characters' psychology. For instance, silence usually acts as a strong force that makes a person aware of himself/herself and the absence of other people. The character John R. Isidore, for example, is described as a special, who:

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[23] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.455.
[24] *Ibidem.*
[25] Ivi, p.456.

…had failed to pass the minimum mental faculties test, which made him in popular parlance a chickenhead. He had his job, driving a pickup and delivery truck for a false-animal repair firm; the Van Ness Pet Hospital and his gloomy, gothic boss Hannibal Sloat accepted him as human and this he appreciated.[26]

Isidore lives alone in "a giant, empty, decaying building which had once housed thousands, a single TV set hawked its wares to an uninhabited room".[27] The moment he switches off the television set he meets with:

Silence. It flashed from the woodwork and the walls; it smote him with an awful, total power, as if generated by a vast mill. It rose up from the floor, up out of the tattered gray wall-to-wall carpeting. It unleashed itself from the broken and semi broken appliances in the kitchen, the dead machines which hadn't worked in all the time Isidore had lived here. From the useless pole lamp in the living room it oozed out, meshing with the empty and wordless descent of itself from the fly specked ceiling. It managed in fact to emerge from every object within his range of vision, as if it - the silence - meant to supplant all things tangible. Hence it assailed not only his ears but his eyes; as he stood by the inert TV set he experienced the silence as visible and, in its own way, alive. Alive! He had often felt its austere approach before; when it came, it burst in without subtlety, evidently unable to wait. The silence of the world could not rein back its greed. Not any longer. Not when it had virtually won.[28]

The silence described in the quotation above is so stealthy that it grows into a living omnipresent force. Due to the language in this passage, we become aware of a typical comprehension of loneliness, by transforming the absence into a voracious power. The purpose of silence is to undervalue all human acquirements and to eliminate the human presence on the planet. For the remnants of World War Terminus living in a fractured society, isolation results in much more weight than the ordinary lack of company. Loneliness, thus, enforced by silence, produces such feeling as if the whole history of humanity is evaporating, any sign of our existence is vanishing. Thinking over his own experience of loneliness, J.R. Isidore starts to consider if other people sense it the same way:

He wondered, then, if the others who had remained on Earth experienced the void this way. Or was it peculiar to his peculiar biological identity, a freak generated by his inept sensory apparatus? Interesting question, Isidore thought. But whom could he compare notes with? He lived alone in this deteriorating, blind building of a thousand uninhabited apartments, which like all its counterparts, fell, day by day, into greater entropic ruin. Eventually everything within the building would merge, would be faceless and identical, mere pudding-like kipple piled to the ceiling of each apartment. And after that, the uncared-

[26] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.446.
[27] Ivi, p.444.
[28] Ivi, p.447.

for building itself would settle into shapelessness, buried under the ubiquity of the dust. By then, naturally, he himself would be dead, another interesting event to anticipate as he stood here in his stricken living room alone with the lungless, all-penetrating, masterful world-silence.[29]

Here we have the expanded definition of the silence by connecting it with the universal concept of entropy, "the tendency of the universe to unravel all complexities and all modes of organization".[30] The human existence does not necessarily have to be of big importance to the universe. It may probably be a target of entropy. The novel demonstrates that by destroying all that humanity has achieved, entropy will defeat the human effort to systemize reality into the identifiable human empire. The book, perhaps, suggests that this is fundamentally what human society worldwide is all about, trying to put in order the chaotic universe. If this is inescapable human destiny, then the major enemy of humankind would be entropy, because the realization of entropy in our world would make every single effort pointless.

One of the striking topics of the novel is the human resistance against futility. People tend to give purpose to life and the existence of reality as well. We often wonder: Do people in this world have to fulfill some task or achieve some success? How is it possible to believe in the human universal purpose, and yet, at the same time, treat entropy as the desired state of the universe? J.R. Isidore with his own concept of "kipple" offers the answer for these to some extent metaphysical and existential questions. When talking to Pris, Isidore explains that kipple is useless things, like "junk mail or match folders". There is the first law of kipple that states that "kipple drives out nonkipple".[31] When there is nobody to fight against kipple, it will completely take over a space. Isidore finishes his explanation of by stating that:

> No one can win against kipple..except temporarily and maybe in one spot, like in my apartment I've sort of created a stasis between the pressure of kipple and nonkipple, for the time being. But eventually I'll die or go away, and then the kipple will again take over. It's a universal principle operating throughout the universe; the entire universe is moving toward a final state of total, absolute kipple-ization...[32]

The obvious desperation that originates from the recognizing the universe's inclination towards entropy in this novel seems to be reduced by mentioning what may also be considered a technological evolution: a new religious doctrine Mercerism.

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[29] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.448.
[30] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.78.
[31] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.480.
[32] Ivi, p.481.

It should be pointed out that one of most captivating accomplishments in this novel is the way the religion is outlined. Ph. K. Dick introduces a new theology Mercerism that unites every single surviving individual, as all other major religions have just disappeared. The author does not mention how the general conversion has taken place. In order to explain the essence of Mercerism, J.R. Isidore points out that while the universe is moving towards "kipple-ization," there is a power that functions in opposition to this deterioration: "the upward climb of Wilbur Mercer".[33] Thus, Mercerism is a positive power that goes against the attitude of the universe. The best way to comprehend this new religion is through the description of the "fusion" experience in which every Mercerite participates using the "empathy box." In the passages provided earlier, Isidore is nearly defeated by the silence of his cut-off apartment building. To struggle against his anxiety, he decides at once to "grasp the handles" of his empathy box.[34] Holding on the handles and switching on the empathy box transfers the user into a spiritual realm and shifts the way in which the user encounters reality:

The visual image congealed; he saw at once a famous landscape, the old, brown, barren ascent, with tufts of dried-out bonelike weeds poking slantedly into a dim and sunless sky. One single figure, more or less human in form, toiled its way up the hillside: an elderly man wearing a dull, featureless robe, covering as meager as if it had been snatched from the hostile emptiness of the sky. The man, Wilbur Mercer, plodded ahead, and, as he clutched the handles, John Isidore gradually experienced a waning of the living room in which he stood; the dilapidated furniture and walls ebbed out and he ceased to experience them at all. He found himself, instead, as always before, entering into the landscape of drab hill, drab sky. And at the same time he no longer witnessed the climb of the elderly man. His own feet now scraped, sought purchase, among the familiar loose stones; he felt the same old painful, irregular roughness beneath his feet and once again smelled the acrid haze of the sky — not Earth's sky but that of some place alien, distant, and yet, by means of the empathy box, instantly available. He had crossed over in the usual perplexing fashion; physical merging — accompanied by mental and spiritual identification — with Wilbur Mercer had reoccurred. As it did for everyone who at this moment clutched the handles, either here on Earth or on one of the colony planets. He experienced them, the others, incorporated the babble of their thoughts, heard in his own brain the noise of their many individual existences. They — and he — cared about one thing; this fusion of their mentalities oriented their attention on the hill, the climb, the need to ascend. Step by step it evolved, so slowly as to be nearly imperceptible. But it was there. Higher, he thought as stones rattled downward under his feet. Today we are higher than yesterday, and tomorrow — he, the compound figure of Wilbur Mercer, glanced up to view the ascent ahead. Impossible to make out the end. Too far. But it would come.[35]

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[33] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.481
[34] Ivi, p.448.
[35] Ivi, p.449.

This new religious concept experienced through the empathy box is quite exceptional, because it converges the consciousnesses of all human users and places them into Wilbur Mercer's consciousness. However, the process of climbing is performed only by the prophet and does not involve followers. Besides, the whole group mind is not under Mercer's control, which makes it a complementary union: every participant, first of all, is mentally aware of oneself, and also becomes aware of all the others. This is the cure that people have invented for themselves to cope with the powerful demolition of civilization and the diffusion of the remaining planet's population. The demolition of every civilization globally implies the disintegration of all religious doctrines, and this eventually eliminates people's source of comfort when coming to the most tenacious metaphysical beliefs. Mercerism is the replacement created by Dick's humankind in order to content their souls, while in the novel's framework, because of the nature of the upcoming total disappearance, traditional religions provide no more satisfactory comfort.[36] Mercerism is different from previous religions because of the technological advancement of the empathy box and the psychological possibilities it supplies the followers. Whenever Mercer climbs the hill, he is constantly hit by the rocks thrown at him, and every follower feels pain as well, even though their physical bodies are not under Mercer's domain. As they are all united into the singularity of the prophet, considering the continuing persecution and the infinite climb, Isidore like everyone else starts to hesitate somewhere on his way about the whole situation:

He remembered the top, the sudden leveling of the hill, when the climb ceased and the other part of it began. How many times had he done this? The several times blurred; future and past blurred; what he had already experienced and what he would eventually experience blended so that nothing remained but the moment, the standing still and resting during which he rubbed the cut on his arm which the stone had left. God, he thought in weariness. In what way is this fair? Why am I up here alone like this, being tormented by something I can't even see? And then, within him, the mutual babble of everyone else in fusion broke the illusion of aloneness. You felt it, too, he thought. Yes, the voices answered. We got hit, on the left arm; it hurts like hell. Okay, he said. We better get started moving again. He resumed walking, and all of them accompanied him immediately.[37]

Therefore, the purpose of such experience of fusion consists in creating an empathetic amalgam of every human mind. Due to such unification every participant realizes that he/she is not staggering alone through the real life, but instead there is someone else with whom it is basically possible to connect and

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[36] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.79.

[37] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.450.

share sorrow. From this perspective, technology, instead of dehumanizing the characters in the book, humanizes them by reconstructing human nature that is inclined to social collectiveness and helps to relieve individuals' mindset in feeling completely alone. Empathy box, if understood in technological way, can be a means to collectivization and solidarity. Even though the reality that the empathy box produces is artificial, it brings humans back to what may be considered as a primordial state, where the togetherness of human beings becomes evident. When Mercer points out that the "illusion of aloneness" has been demolished, it is clear that the empathy box has in some way disclosed the true nature of the humanity existence, that part that defines us as humans: togetherness. World War Terminus broke out because the empathetic gift of humanity was neglected, and people behaved more like ordinary predators than a community. According to some critics, the main cause to such consequences is in the "fragmented individuality", the idea that every person should think and act individually, rather than unitedly.[38] If people thought and acted collectively instead of individually in the novel, they would be able to prevent the nuclear disaster, as they would not differentiate their opponent from themselves, because:

> …the emphatic gift blurred the boundaries between hunter and victim, between the successful and the defeated. As in the fusion with Mercer, everyone ascended together or, when the cycle had come to an end, fell together into the trough of the tomb world. Oddly, it resembled a sort of biological insurance, but double-edged. As long as some creature experienced joy, then the condition for all other creatures included a fragment of joy. However, if any living being suffered, then for all the rest the shadow could not be entirely cast off. A herd animal such as man would acquire a higher survival factor through this; an owl or a cobra would be destroyed.[39]

This is the main principle that Mercerism prescribes: every individual should be interested in advancing empathy, because a failure to express empathy consequently leads to the wariness of dealing with an android. Such religion on the whole seems like positive and valuable ideal, but does the novel truly support a religious institution like Mercerism? In order to clarify this question, it is worth taking a closer look at the prophet Wilbur Mercer.

Mercer is represented to the followers of the empathy box as an old man. He is not a god or divine creature that is placed in the simulated reality of the empathy box. However, there is something mysterious about him, and Isidore reflects that he "isn't a human being; he evidently is an archetypal entity from the stars, superimposed on our culture by a cosmic template. At least that's

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[38] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.81.

[39] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.456.

what I've heard people say".[40] Thus, Mercer is widely perceived a supernatural being even if he is an ordinary old man, and while such perception may look like mythologizing the man Wilbur Mercer, we learn about supernatural abilities when Mercer recollects his young years:

> Childhood had been nice; he had loved all life, especially the animals, had in fact been able for a time to bring dead animals back as they had been. He lived with rabbits and bugs, wherever it was, either on Earth or a colony world; now he had forgotten that, too.[41]

From the passage above, we can trace the similarity between Mercer and Christ: both of them have the ability for resurrection. Moreover, both have been persecuted because of their supernatural powers, because of not being "like others", which strengthens the idea about human tendency to reject differences rather than embracing them:

> The killers they had arrested him as a freak, more special than any of the other specials. And due to that everything had changed. Local law prohibited the time-reversal faculty by which the dead returned to life; they had spelled it out to him during his sixteenth year. He continued for another year to do it secret, in the still remaining woods, but an old woman whom he had never seen or heard of had told. Without his parents' consent they — the killers — had bombarded the unique nodule which had formed in his brain, had attacked it with radioactive cobalt, and this had plunged him into a different world, one whose existence he had never suspected. It had been a pit of corpses and dead bones and he had struggled for years to get up from it. The donkey and especially the toad, the creatures most important to him, had vanished, had become extinct; only rotting fragments, an eyeless head here, part of a hand there, remained. At last a bird which had come there to die told him where he was. He had sunk down into the tomb world. He could not get out until the bones strewn around him grew back into living creatures; he had become joined to the metabolism of other lives and until they rose he could not rise either. How long that part of the cycle had lasted he did not now know; nothing had happened, generally, so it had been measureless. But at last the bones had regained flesh; the empty eyepits had filled up and the new eyes had seen, while meantime the restored beaks and mouths had cackled, barked, and caterwauled. Possibly he had done it; perhaps the extra- sensory node of his brain had finally grown back. Or maybe he hadn't accomplished it; very likely it could have been a natural process. Anyhow he was no longer sinking; he had begun to ascend, along with the others.[42]

This part of the narrative gives the description to the Mercer who has been forced to surgeries in an attempt to destroy a specific brain part that has developed as a result of the radiation and gifted him the power of reanimating

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[40] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.484.
[41] Ivi, p.450.
[42] Ivi, p.451.

life. Some scholars see a trace of the Greek mythology in his infinite rising and falling:

> Wilbur Mercer is bound to an endless cycle of ascending and descending, climbing the hill and returning to the tomb world and having to climb out again, over and over forever. This endless cycle is reminiscent of the Greek myth of Sisyphus: participating in this infinite loop with Mercer is a model for individual human existence and the human ability to endure this endless struggle with no other purpose than persisting.[43]

So, Wilbur Mercer is an extraordinary being living in a realm that is accessible through the empathy box. The following questions that might rise are: can we trust such creature? Has he ever lived on this planet? And is he just a technological representation of a human in a virtual reality? Buster Friendly, the famous television personality in the book, on every occasion tries to openly question Mercer's true nature. Like with Mercerism, every remaining person follows the "Buster Friendly and his Friendly Friends" show on television or the radio. The show is broadcast twenty-three hours a day every day and nobody goes too deeply into the fact of how Buster manages to run the show without any repetition or break. People appear in the book to be rather entertained by his vivacious jokes than inquire in this kind of functional questions. During the novel Buster advances his "documented exposé"[44]. Everybody loves Buster Friendly, including J.R. Isidore, even though the "special" character is sometimes irritated by Buster because of one specific thing:

> In subtle, almost inconspicuous ways, Buster ridiculed the empathy boxes. Not once but many times. He was, in fact, doing it right now. " — no rock nicks on me," Buster prattled away to Amanda Werner. "And if I'm going up the side of a mountain I want a couple of bottles of Budweiser beer along!" The studio audience laughed, and Isidore heard a sprinkling of handclaps.[45]

Besides, Buster usually makes fun of Mercer directly. Later, there are some cinema experts who appear in Buster's exposé, and through enlarged video pictures, reveal that the landscape, which functions for background where Mercer moves, is artificial. The moon in the sky is said to be painted, and the stones thrown at Mercer are reported to be made of soft plastic. When the critics state that Mercer's world is in fact an old movie set, Buster remarks that Mercer does not suffer at all. The exposé keeps dismantling Mercerism by

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[43] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.82.
[44] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.488.
[45] Ivi, p.487.

representing the figure of Wilbur Mercer as the old, drunk, B-Movie star Al Jarry:

…the old man did in actuality make a series of short fifteen minute video films, for an employer whom he never met. And, as we had theorized, the 'rocks' did consist of rubber-like plastic. The 'blood' shed was catsup, and…the only suffering Mr. Jarry underwent was having to go an entire day without a shot of whisky.[46]

During the interview, Jarry says that he played this part in the film without real understanding of the whole matter. The mastermind behind Mercerism makes also Buster curious, who wonders about the origins of this new doctrine. As Mercerism remains unresolved in the novel, another crucial question comes up: what is Dick's philosophical purpose in undermining the religious solution he has created for his post-apocalyptic world?

Well, well. An old man who even in his prime never amounted to anything which either he or ourselves could respect. Al Jarry made a repetitious and dull film, a series of them in fact, for whom he knew not — and does not to this day. It has often been said by adherents of the experience of Mercerism that Wilbur Mercer is not a human being, that he is in fact an archetypal superior entity perhaps from another star. Well, in a sense this contention has proven correct. Wilbur Mercer is not human, does not in fact exist. The world in which he climbs is a cheap, Hollywood, commonplace sound stage which vanished into kipple years ago. And who, then, has spawned this hoax on the Sol System? Think about that for a time, folks.

A group of the escaped Nexus-6 androids, while hiding in Isidore's apartment, are watching the exposé and afterwards reveal that Buster is actually an android. This revelation gives the explanation to his ability to broadcast the show daily and nightly. However, it does not entirely explain his desire to demystify and mock at Wilbur Mercer. Buster declares that he wants to uncover Mercer because fusion gathers "men and women throughout the Sol System into a single entity. But an entity which is manageable by the so called telepathic voice of 'Mercer.' Mark that. An ambitious politically minded would-be Hitler could – ".[47] There is definitely a potential to use the empathy box as a means of control and, in some way, this is exactly what it is. However, Mercer is not a Nazi or a tyrant. The type of "control" that Mercer might have over his followers is in fact the predisposition of a certain moral system that prioritize in empathizing with all conscious beings, and therefore encourages its participants to share Mercer's philosophy in their individual meetings in real life. "Controlling" an assembly of followers with these intentions is hardly a

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[46] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.583.
[47] *Ibidem.*

deceitful foundation, and as a consequence there have been no murders on Earth or the colony planets since the emergence of Mercerism. The actual reason androids detest Mercer turns out to be that this religious dogma keeps them entirely out of its practice, as they do not have the most important prerequisite. Androids themselves see the Mercerism as "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."[48] The Rosen Association's and other android manufacturers' constant advancement of the android brain leads to the fact that androids are manufactured with all the human capacities, except empathy, and are considered to some extent human beings, but are not eventually included in the human society. This results in the identity crisis that causes some androids to kill their masters and emigrate to Earth, where they can temporally pass as ordinary humans. The reason why empathy is not extended towards androids may well be because of the logistical mark, as it would result morally complicated to have the androids as slaves on the colony planets. Philip K. Dick gives a great example of dehumanization being practiced to justify morally poor behaviours and actions.[49]

The major conflicts in the novel, however, originate in the cases where identities are violated, and boundary lines are blurred. In *Do Androids Dream of Electric Sheep?* there is a fundamental shift in the human relationship to technology. Luba Luft's example can be considered as the humanizing potential of technological achievement. Taking into consideration this particular case, we can analyze this assumption through Deckard's attitude towards her "retirement." As a bounty hunter, Rick Deckard is charged with the retirement of the reported Nexus-6 androids, which ship has recently landed within the area of his authority. Having dealt with the first android on his list, Polokov, he focuses on Luba Luft, who has been known as a German opera singer. The protagonist remains ethically and morally clean, as androids are not human beings and, what is more, these errant androids have killed their human masters in order to escape and therefor became what Mercer identifies as "killers." Mercer promotes empathy for all conscious beings, but those who keep throwing stones at him represent an absolute evil called the "killers". As Mercerite locates the presence of the killers where it is opportune according to the doctrine, it turns out to be quite convenient feature that the protagonist uses as an excuse for his job. Although Rick Deckard is ethically and morally ready to perform his duties, and his argument seems quite reasonable from a Mercerian perspective, the more he encounters the Nexus-6 androids, the less

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[48] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.584.
[49] Ch. A. Sims, "The Dangers of Individualism and the Human Relationship to Technology in Philip K. Dick's "Do Androids Dream of Electric Sheep?"", Science Fiction Studies, Vol. 36, No. 1, 2009, p.83.

he becomes certain of his moral position. When Rick Deckard enters the opera hall where Luba Luft is singing, he recognizes and enjoys Mozart's *The Magic Flute*. His appreciation of opera noticeably alleviates his attitude towards Luba. Later on, during the passage at the museum when Deckard and Resch, just before retiring Luba, stop to look at Edvard Munch's *Scream*, Resch expresses his admiration for the painting:

At an oil painting Phil Resch halted, gazed intently. The painting showed a hairless, oppressed creature with a head like an inverted pear, its hands clapped in horror to its ears, its mouth open in a vast, soundless scream. Twisted ripples of the creature's torment, echoes of its cry, flooded out into the air surrounding it; the man or woman, whichever it was, had become contained by its own howl. It had covered its ears against its own sound. The creature stood on a bridge and no one else was present; the creature screamed in isolation. Cut off by — or despite — its outcry.
-He did a woodcut of this, Rick said, reading the card tacked below the painting.
-I think, Phil Resch said, that this is how an andy must feet." He traced in the air the convolutions, visible in the picture, of the creature's cry.[50]

Phil's commentary can be considered as a masterful comparison for the android's experience in a Mercerian community. Deckard is able to feel empathy towards the figure in the painting, and probably because of his fellow's observation he starts to empathize with Luba as well. The protagonist begins to wonder whether androids have souls and further, reflecting on Luba Luft, he inquires "how can a talent like that be a liability to our society?"[51] After that Deckard perceives some female androids as creatures deserving empathy and wonders if he should leave the bounty hunting occupation. Although Iran and Bryant persuade him to continue, by the end of the novel Deckard reflects on the day he retired six Nexus-6 androids and concludes:

Dave would have approved what I did. But also he would have understood the other part, which I don't think even Mercer comprehends. For Mercer everything is easy, he thought, because Mercer accepts everything. Nothing is alien to him. But what I've done, he thought; that's become alien to me. In fact everything about me has become unnatural; I've become an unnatural self.[52]

Rick Deckard finds his behaviour unnatural because he proceeded on retiring androids even while realizing that "electric things have their lives, too."[53] His attitude towards the humanoid robots as a technological equipment has turned

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[50] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.528.
[51] Ivi, p.532.
[52] Ivi, p.598.
[53] Ivi, p.606.

into an attitude towards a conscious being, as for Deckard androids are no longer purely technological creatures.

When we begin to perceive technology as a revealer and as a potential to reveal, we see that androids can highlight the way technological object becomes a subject. Due to such revelations, we realize that constituent objects of our reality are operating and taking part in the creation of being just as human society. Another essential aspect regarding the relationship of humankind and androids in *Do Androids Dream of Electric Sheep?* is that it presumes that not only is technology an entirely human venture that leads people closer to their true nature, but also that technology itself is probably to become human.

3.3. DO HUMANS DREAM OF NATURAL SHEEP? RELATIONSHIP BETWEEN PEOPLE AND ANIMALS

Deckard outside the petshop in a dying world, dreaming of a real sheep.[54]

Great number of critics of *Do Androids Dream of Electric Sheep?* has focused on androids and ignored animals. The novel's ethical concerns can be best understood through animal studies, disclosing political deployments of the species boundary to deprive certain humans. The novel indicates another model of subjectivity that can be best learnt through Marx's "species being". What it means to be human turns out to be a central question to Philip K Dick's fiction human. Such question is generally explored through the opposition between "authentic" human being and an artificial being made to imitate people. *Do Androids Dream of Electric Sheep?*, whose popularity probably comes from the enormous influence of two movies *Blade Runner*, is Dick's best known novel in this mode. One specific aspect of the original text, which was neglected in both the film version and criticism, is the importance of animals, both electric and real. *Do Androids Dream of Electric Sheep?* advances the ideas about being human through two juxtapositions: not just androids, but also animals.

As we know, Dick's novel is set on our planet in the future that has been devastated by nuclear war. Most of the population has left the planet in order to occupy other places in our universe. Those left are either too poor to

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[54] Ch. Beckett, "The Penfield Mood Organ in *Do Androids Dream of Electric Sheep*?", TOR, 2015. https://www.tor.com/2015/05/21/that-was-awesome-the-penfield-mood-organ-in-do-androids-dream-of-electric-sheep/

emigrate or they are "special", who are not eligible for emigration. Androids are illegal on Earth, some of them have escaped slavery in the colonies and now they try to resemble humans. They are hunted and killed, or retired, by bounty hunters like the protagonist Rick Deckard. The remaining human beings are held together by a religion Mercerism. Animals, almost extinct, are sacred to the religion of Mercerism and the remaining human culture in general. Owning and caring about an animal is a sign of one's economic and social status and also an indication of one's humanity. Androids, on the contrary, do not take care of others, neither animals nor their "friends" androids. The inability to feel and express empathy separates them from people and justifies their execution and enslavement. Androids, being organic machines, can only be differentiated from people through the Voigt-Kampff test that measures involuntary emotional response to a number of questions, basically about exploitation and abuse of animals. The majority of scholars generally agree that the book's main concern is with technologized and modern life that makes people extremely cold and similar to machines. This argument usually come to conclusion that the protagonist is healed by reestablishing his connection with nature. However, most critics omit the crucial role of animals and a particular position of the animals' category in Western culture. According to one part of the critics, although animals play essential role in the definition of what is human, the book's topic is that "the technological simulation of animal life" is an adequate substitute for real animals.[55] On the other hand, there are critics, especially attentive to the animals, who argue that the animals' representation in the novel is central and can be studied through the critique of the Cartesian subject and commodity fetishism. Thus, the main idea is that only by accepting the centrality of animals we can understand all the inferences of Deckard's change. It is often argued that Deckard risks becoming android-like because of his work as a bounty hunter. The real risk that Deckard is facing alongside the other humans in the novel is rather in the absence of realization that they already behave and look like androids, as long as the human community define the subjectivity based on the rational and calculating part of human being.

The version of the human being that we have in the book can be found in Descartes's *cogito*, which contains a number of important differences that have designed modernity. Descartes separated the human being from nature, including the nature of the body. He was strongly convinced that there must be an absolute split between humans and animals, claiming that animals are solely mechanical creatures who are not deserving to be treated with empathy. Descartes based this idea on his deep belief that animals do not possess mental

[55] Sh. Vint, "Speciesism and Species Being in "Do Androids Dream of Electric Sheep?"", Mosaic: An Interdisciplinary Critical Journal, Vol. 40, No. 1, a special issue: THE ANIMAL, PART II, Manitoba, University of Manitoba, 2007, p.112.

capacities as people do, and consequently, while animals may feel some sort of commotion, they are unable to experience pain. According to French philosopher, animals react only to stimuli, acting based on the organization of their organs, rather than from understanding. The philosophical issue that concerned Rene Descartes was how to distinguish a human being from another, in his case, animals. This is exactly the same question with which Dick constantly struggles. Descartes's idea that animals are solely inferior designed machines is similar to the novel's concept of androids being positioned as peripherical creatures: they act pretty same as humans do but lack some non-material capacity that would put them at the entirely human level. Such capacity represents mind for Rene Descartes and empathy for Rick Deckard:

The second test is, that although such machines might execute many things with equal or perhaps greater perfection than any of us, they would, without doubt, fail in certain others from which it could be discovered that they did not act from knowledge, but solely from the disposition of their organs: for while reason is an universal instrument that is alike available on every occasion, these organs, on the contrary, need a particular arrangement for each particular action; whence it must be morally impossible that there should exist in any machine a diversity of organs sufficient to enable it to act in all the occurrences of life, in the way in which our reason enables us to act. Again, by means of these two tests we may likewise know the difference between men and brutes. For it is highly deserving of remark, that there are no men so dull and stupid, not even idiots, as to be incapable of joining together different words, and thereby constructing a declaration by which to make their thoughts understood; and that on the other hand, there is no other animal, however perfect or happily circumstanced, which can do the like.

…in place of which men born deaf and dumb, and thus not less, but rather more than the brutes, destitute of the organs which others use in speaking, are in the habit of spontaneously inventing certain signs by which they discover their thoughts to those who, being usually in their company, have leisure to learn their language. And this proves not only that the brutes have less reason than man, but that they have none at all: for we see that very little is required to enable a person to speak; and since a certain inequality of capacity is observable among animals of the same species, as well as among men, and since some are more capable of being instructed than others, it is incredible that the most perfect ape or parrot of its species, should not in this be equal to the most stupid infant of its kind or at least to one that was crack-brained, unless the soul of brutes were of a nature wholly different from ours. And we ought not to confound speech with the natural movements which indicate the passions, and can be imitated by machines as well as manifested by animals.[56]

Although there has been a large criticism on this idea in numerous publications and studies, and despite new developments in the study of animal consciousness since Descartes, Gary Francione states in *Animals, Property and*

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[56] R. Descartes, *Discourse on the Method*, The Project Gutenberg EBook, 2008.
https://www.gutenberg.org/files/59/59-h/59-h.htm

the Law that scientific practice concerning other species continues believe that animals do not feel pain as humans do.[57]

Descartes used this type of distinction to underline that the *cogito*, or thinking self, was distinct from all other types of life. Philip K. Dick, on the contrary, criticizes the *cogito* and stresses on the fragility of such separation. In chapter 18 of the book an android mistreats a spider in order to find out how many legs it can lose while still able to walk. This is the moment in the novel when the androids' inhuman nature comes to the light and there is no sympathy for them at all. This scene can be also interpreted the other way: not in the meaning of a torture, but as an experiment, repeating the technique of scientists who are able to operate abusive experiments on living creatures without any concern. Consequently, androids' subjectivity can be seen as similar to the Cartesian model of subjectivity, which is often used to justify the ill treatment of animals because of their mechanical nature and presumed absence of a soul. The Nexus-6 androids that are identified as "these progressively more human types"[58] represent in fact the limitations of the Cartesian concept. This concept is definitely not the only possible way to understand human subjectivity, but as it was established during posthumanism, this model lies in many of our suppositions about identity and technology. It is also central to the author's own concerns in terms of relationship between human and android identity. Even though the empathy is needed to be posited as the defining element of humanity in order to distinguish people from androids, the actions of most "normal" individuals in the book suggest that subjectivity is still influenced by the calculating, rational logic of the *cogito*.

It should be noted that animals have always occupied particular place in the history of definite civilizations. We know lots of cultures both ancient and new that have always worshiped and celebrated them. However, in Western philosophical and religious traditions they were considered as the others of humans. *Do Androids Dream of Electric Sheep?* often locates androids in the place that historically belonged to animals. They are categorized as less than human and any proof of the capacities they may have and that goes contrary to the ideology of supremacy, for instance, Luba's appreciation of art, is ignored. The explanation for treating androids as expandable are explicitly linked to human attitude towards free android labour. Nobody would have managed to escape the declining planet without machines' help. Such treatment of humanoid robots in the book, from this point of view, underlines human

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[57] Sh. Vint, "Speciesism and Species Being in "Do Androids Dream of Electric Sheep?'", Mosaic: An Interdisciplinary Critical Journal, Vol. 40, No. 1, a special issue: THE ANIMAL, PART II, Manitoba, University of Manitoba, 2007, p.113.

[58] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.472.

tendency to historical and current utilization of animals, and also the exploitation of those individuals who have been animalized and illtreated through the history of humankind, such as women, non-whites, the working classes, and especially slaves. The equivalent position of androids and animals suggests taking an insight into the topic of speciesism.

The term speciesism became popular thanks to Peter Singer's book *Animal Liberation*. The Australian moral philosopher states that the critical thing to discover about animals is whether they can suffer, rather than the more basic questions such as can they use tools, can they reason and so on. Singer attributes the capacity to suffer to the philosophical concept of experiencing an "interest" in one's welfare. The presence or absence of "interest" identifies diverse ethical classifications that humans and animals occupy. Singer's definition to as speciesist is "a prejudice or attitude of bias toward the interest of members of one's own species and against those of members of other species"[59], and claims that such attitude must be intended in analogy to racism and sexism. The matter of speciesism has long been and remains central to animal rights issue. It started to draw attention of philosophers of ethics, which gave the possibility to evolve to such discipline as animal studies. Some scholars point to the way the classification of "animal" operates ethically and politically and how it deprives some humans in the current political formations of this species boundary. There are a lot of reasons that make it vital nowadays to modernize not only the classification of "animal", but also our consumerist relationships with animals. The boundary between humans and animals has been built by genetics research such as xenotransplantation or heterologous transplant. The biodiversity of our planet is speedily vanishing as different kinds of organisms go extinct. Our society is founded on the utilization of animals for food and other purposes, and advancements in animal cognition indicate that animals do possess capacities that were once denied, like consciousness, emotions and so on. The philosophical significance of the classification of the animal is crucial for analyzing the novel *Do Androids Dream of Electric Sheep?*. The French philosopher Jacques Derrida argued that the issue of the animal is essential for such attitude, because Western subjectivity in fact is built on the idea of sacrifice and "carno-phallogocentrism" which advantages human over animal in the same way as it advantages man over woman:

Well, let us say of a certain "state," a certain situation-of the process, world, and life obtaining among these mortal living things that are the animal species, those other "animals" and humans. Its analogous or common traits are all the more dominant given that

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[59] P. Singer, *Animal Liberation* in Sh. Vint, "Speciesism and Species Being in "Do Androids Dream of Electric Sheep?"", Mosaic: An Interdisciplinary Critical Journal, Vol. 40, No. 1, a special issue: THE ANIMAL, PART II, Manitoba, University of Manitoba, 2007, p.114.

their formalization, that to which we are devoting ourselves here, will allow us to see appear in every discourse concerning the animal, and notably in the Western philosophical discourse, the same dominant, the same recurrence of a schema that is in truth invariable. What is that? The following: what is proper to man, his superiority over and subjugation of the animal, his very becoming-subject, his historicity, his emergence out of nature, his sociality, his access to knowledge and technics, all that, everything (in a nonfinite number of predicates) that is proper to man would derive from this originary fault, indeed from this default in propriety, what is proper to man as default in propriety-and from the imperative [*il faut*] that finds in it its development and resilience.[60]

Giorgio Agamben in a couple of publications points to the centrality of biopower in today's political life. According to the Italian scholar, political power is founded on the separation of pure biological life from the actual life of the citizen. It can be also seen as the division between "humanity" and "animality". He finishes one of his studies by stating that this issue is "the decisive political conflict, which governs every other conflict".[61] The main question within the field of animal studies, as well as the main leitmotif of Philip K. Dick's fiction, touch the ethics and ambivalences of what it means to be human.

Complex representation of the protagonist's work as a bounty hunter helps to reveal these complicated discussions. Rick Deckard is believed to rationalize his work like every bounty hunter would do, while at the same time he is theoretically expected to worship such human aspect as empathy. Deckard arrives at the point when he realizes that behaving in such way requires the sort of cognition breach that would make him both a true Cartesian subject and an android subjectivity. This is also explained by emotions that seem to be programmed, because expressed only when needed. The ethical standards that the protagonist is required to believe in are part of the new religion in the novel. One the one hand:

In retiring — i.e. killing — an andy he did not violate the rule of life laid down by Mercer. You shall kill only the killers, Mercer had told them the year empathy boxes first appeared on Earth. And in Mercerism, as it evolved into a full theology, the concept of The Killers had grown insidiously.[62]

On the other hand, though, Rick realizes that another side of such "rule of life" results to be quite ambiguous:

[60] J. Derrida, D. Wills, "The Animal That Therefore I Am (More to Follow)", Critical Inquiry, Vol. 28, No. 2, 2002, p.413

[61] G. Agamben, *Homo Sacer: Sovereign Power* in Sh. Vint, "Speciesism and Species Being in "Do Androids Dream of Electric Sheep?"", Mosaic: An Interdisciplinary Critical Journal, Vol. 40, No. 1, a special issue: THE ANIMAL, PART II, Manitoba, University of Manitoba, 2007, p.115.

[62] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.456.

In Mercerism, an absolute evil plucked at the threadbare cloak of the tottering, ascending old man, but it was never clear who or what this evil presence was. A Mercerite sensed evil without understanding it. Put another way, a Mercerite was free to locate the nebulous presence of The Killers wherever he saw fit. For Rick Deckard an escaped humanoid robot, which had killed its master, which had been equipped with an intelligence greater than that of many human beings, which had no regard for animals, which possessed no ability to feel emphatic joy for another life form's success or grief at its defeat — that, for him, epitomized The Killers.[63]

Consequently, like the empathy test individualizes humans among androids, the border line between human and nonhuman that approves the use of violence without ethical outcomes is present only when and where it is needed to be established. In spite of the centrality of the human versus android differentiation in the book, from the first pages it is demonstrated to be imagined and designed rather than being natural. At the beginning of the novel, when we first meet Deckard and his wife Iran, the simulation of emotions is considered to be a normal state of things and is preferable to the "natural" expression as the protagonist surprisingly points when feeling irritable "although he hadn't dialed for it" on the Penfield mood organ. Deckard struggles against Iran's plan to dial herself a depressive mood, which according to Iran resonates with the reality and so that keeps her human. This device dehumanizes because it makes her set the actual experience apart from her emotional response to the world:

-My schedule for today lists a six-hour self-accusatory depression.
-What? Why did you schedule that? It defeated the whole purpose of the mood organ. I didn't even know you could set it for that.
-At that moment…when I had the TV sound off, I was in a 382 mood; I had just dialed it. So although I heard the emptiness intellectually, I didn't feel it. My first reaction consisted of being grateful that we could afford a Penfield mood organ. But then I read how unhealthy it was, sensing the absence of life, not just in this building but everywhere, and not reacting — do you see? I guess you don't. But that used to be considered a sign of mental illness; they called it 'absence of appropriate affect.' So I left the TV sound off and I sat down at my mood organ and I experimented. And I finally found a setting for despair.[64]

It should be stressed that a degree of improper affect also results as the heritage of the Cartesian *cogito*. The advancements in modern science have been made owing to the ability to ignore the suffering of those whom performed as experimental models. Although nowadays analyses are conducted more carefully concerning the animals' suffering, most of Dick's

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[63] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.456.
[64] Ivi, p.436.

readers, however, would fail the Voigt-Kampff test. The principal questions, such as eating meat, using fur and so on, designate things that constitute an everyday life of most population, rather than being a breaking news.

There is a particular passage in the novel, when the protagonist has a lightning realization the moment Luba Luft is killed. Previously, Rick Deckard has met another bounty hunter, Phil Resch, who is not bothered by the disconnected state needed to retire an android. Deckard realizes that while he would not have difficulty retiring Resch, he does have difficulty "finishing" Luba, whose singing he appreciates. This pushes Deckard to understand that his work as a bounty hunter originates not from the dissimilarities between people and androids, but because there is no difference that would be valid enough to keep the economic utilization upon which the world relies. Deckard's exploration to feel empathy for humanoid robots is the first step of becoming a new type of human, one who does not set affect and cognition apart, and therefore has the possibility to avoid becoming like an android. The protagonist comes to conclusion that:

On tile stage Luba Luft sang, and he found himself surprised at the quality of her voice; it rated with that of the best, even that of notables in his collection of historic tapes. The Rosen Association built her well, he had to admit. And again he perceived himself *sub specie aeternitatis*, the form-destroyer called forth by what he heard and saw here. Perhaps the better she functions, the better a singer she is, the more I am needed. If the androids had remained substandard, like the ancient q-40s made by Derain Associates — there would be no problem and no need of my skill.[65]

Once this bounty hunter has this kind of illumination that his task is about setting rather than policing a boundary, Deckard cannot continue as he used to act before. An inadequately relationship with animals forms the core of the problem of androids' subjectivity. Lots of the passages in the novel containing animal creatures illustrate the animals as commodities rather than beings for the population in this world. Deckard is afraid of the fact that his neighbours may discover about his sheep being electric and not natural. Such fear is caused by the consequent loss of economic status this might imply. The death of his real sheep, notably, did not cause him any particular grief on a personal level. In the same way, when Isidore's directors converse about the fortuitous death of a real cat, which was considered to be artificial, they are not bothered about the passing away of a unique pet or the suffering that the animal experienced before dying. Instead, it was a "waste" for them, and they immediately decide either to pay the insurance or to replace the dead creature. The wife who used to take care of the cat opts for replacement in a secret way from her husband:

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[65] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.505.

Ed never got physically close to Horace, even though he loved him; I was the one who took care of all Horace's personal needs such as his sandbox. I think I would like to try a false animal, and if it didn't work then you could find us a real cat to replace Horace. I just don't want my husband to know…[66]

During the empathy test, when asked about a banquet where dog was served, the android Luba replies, "Nobody would kill and eat a dog… They're worth a fortune."[67] This undoubtfully non-empathic response spots her as an android, however, her answer is similar to the one shown by the human characters with some definite attitudes towards animals.

The only character who seems to treat animals as something different than commodities is Isidore, but as a special, he is blamed for his incapacity to distinguish between real animals and electric ones. Alongside the androids, Isidore receives a marginal position in the book. When Isidore transfers what he considers as an artificial cat in the hospital van, he finds himself worrying about the animal's agony even though he is quite sure that the agony is simulated. Although he attempts to convince himself that the animal's obvious pain is the sound of a false animal, he nevertheless feels this whole situation "ties the stomach in knots".[68] John Isidore would certainly fail to be a Cartesian scientist, as he is not able to reject the empathetic response, while logically he is convinced that this cat is electric, like Descartes and his followers were convinced that all animals were machines. Isidore comes to conclusion that his reaction is linked to his defective mental status as a special and decides that it would be "best to abandon that line of inquiry".[69] Although Isidore leaves the idea to examine further his reaction, it is crucial for the relationships among people, androids and animals in the novel. When the special sees another being suffering, Isidore cannot surpass his emotional reaction and tries to think it over logically. Being unable to personify the *cogito* model of subjectivity, Isidore suggests a possibility of constructing such subjectivity that would take the dissimilarities implied in Mercerism and recognition of animals. Rick Deckard gradually finds out that Mercerism do not recognize boundaries between self being and others and hegemony among living beings. Although the protagonist is expected to rationalize his work while still theoretically keeping his high esteem for empathy, he begins to realize that behaving in such way demands exactly the kind of cognition and affect break line that makes him both a true Cartesian subject and an android-like as well. According to

[66] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.493.
[67] Ivi, p.508.
[68] Ivi, p.486.
[69] *Ibidem.*

some critics, Deckard unlearns to draw this line by the end of the novel. What is particularly fascinating here is that Deckard arrives to this realization only through embracing animal being, refusing both the speciesist debate that tries to build divisions and hierarchies and a logic that rejects people like Isidore in the novel and animals in Western culture in general. The boundary between human and animal is used to dehumanize the society, so that ethics concerns do not have access to certain types of killing: butchery, bounty hunters, and concentration camps all functioned based on the similar logic. According to Cary Wolfe, the professor at the Rice University, as long as:

…humanist and speciesist structure of subjectivization remains intact, and as long as it is institutionally taken for granted that it is all right to systematically exploit and kill nonhuman animals simply because of their species, then the humanist discourse of species will always be available for use by some humans against other humans as well, to countenance violence against the social Other of whatever species - or gender, or race, or class, or sexual difference.[70]

Last but not least, a failure to appreciate the consequential relationship with animals and the restrictions of speciesism are linked to the critique to Marx's analysis of the separating effects of the commodity fetish. In comparison with Cartesian subjectivity, a slightly positive model of human unique nature can be found in Marx's materialist assumption of species being. Marx declares that people are separated from nature when they treat it as an object, rather than a part of their reality where both the human and the object have a social relation. Humankind loses the essential part of being when people treat nature in this way, as the nature in fact entirely connected to us in real life. According to the German philosopher, such separation results in commodity fetishism. The capitalist tendency to production and the dominion of the commodity turn people into means rather than ends, reducing an individual to a labour power and narrowing human existence to merely work. The androids, thus, can be also perceived as a new "target" of capital's drive to increase excess value.

Animals are perceived as commodities in the book rather than part of mother nature. Consequently, the relation between humans and animals becomes estranging. The owning an artificial animal is done on purpose in order to demonstrate to the society that one's capital affords to own an animal. It is done also to participate in the presumed care for valuable living beings. However, owning a real animal should be in terms of a social

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[70] C. Wolfe, *Animal Rites: American Culture, the Discourse of Species, and Posthumanist Theory* in Sh. Vint, "Speciesism and Species Being in "Do Androids Dream of Electric Sheep?"", Mosaic: An Interdisciplinary Critical Journal, Vol. 40, No. 1, a special issue: THE ANIMAL, PART II, Manitoba, University of Manitoba, 2007, p.118.

relationship, not from the perspective of commodity. Deckard's alienation from his species being and a social relationship with nature is suggested by his resentment toward the commodity animal:

> He thought, too, about his need for a real animal; within him an actual hatred once more manifested itself toward his electric sheep, which he had to tend, had to care about, as if it lived. The tyranny of an object, he thought.[71]

At the beginning, the protagonist constantly thinks about animals in terms of the prices in Sidney's catalogue. Deckard openly connects the retirement of androids to his ability to obtain this capital that would bring him an adequate number of android bounties in order to purchase a real animal. Before Luba Luft is retired, Deckard expresses his human attitude towards a female android on a different level from that of the commodity. Even though Luba is an android and will be eventually "finished", Rick buys her a book of pictures at the art gallery. Moreover, Deckard purchases the book with his own money, even though he knows that she can enjoy it for only a short period of time. When she is retired, he burns the book without any attempt to reuse it, which underlines one more time that Deckard's action was not on the level of commodity exchange:

> With his laser tube, Rick systematically burned into blurred ash the book of pictures which he had just a few minutes ago bought Luba. He did the job thoroughly, saying nothing; Phil Resch watched without understanding, his face showing his perplexity.[72]

Afterwards, Deckard hopes to find consolation in animals. He comes to the point when he understands he can no longer function as a bounty hunter, as for him the border line between humans and androids is about to be blurred. Deckard decides to buy a goat in order to "get my confidence, my faith in myself and my abilities, back"[73]. He informs his wife Iran that "Something went wrong today; something about retiring them. It wouldn't have been possible for me to go on without getting an animal"[74]. After retiring the last androids, the protagonist goes to the desert on his own and exactly this place helps him to form a different attitude towards the world. He finds a toad and contemplates:

> When he lifted the toad out he felt its peculiar coolness; in his hands its body seemed dry and wrinkled — almost flabby — and as cold as if it had taken up residence in a grotto miles under the earth away from the sun. Now the toad squirmed; with its weak hind feet it

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[71] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.464.
[72] Ivi, p.531.
[73] Ivi, p.554.
[74] Ivi, p.555.

tried to pry itself from his grip, wanting, instinctively, to go flopping off. A big one, he thought; full- grown and wise. Capable, in its own fashion, of surviving even that which we're not really managing to survive. I wonder where it finds the water for its eggs. So this is what Mercer sees, he thought as he painstakingly tied the cardboard box shut — tied it again and again. Life which we can no longer distinguish; life carefully buried up to its forehead in the carcass of a dead world. In every cinder of the universe Mercer probably perceives inconspicuous life. Now I know, he thought. And once having seen through Mercer's eyes I probably will never stop.[75]

Finally, Deckard can fully enter in the essence of Mercerism by realizing what Mercer sees and by observing the life that previously seemed to represent a dead world. The main point is that this is a world to which the protagonist and the whole society are connected directly. What matters is not if the animals are natural or artificial, but rather how people ethically treat the others and what use they make of any dissimilarities that can be found.

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[75] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.604.

CONCLUSION

To conclude, this dissertation attempts to analyze the perspective of Artificial Intelligence in science fiction literature mainly through Isaac Asimov and Philip K. Dick's narratives. Starting from the origins of this literary genre, we have taken a brief insight into the history of computers and the major differences between Natural and Artificial Intelligence. The conclusive picture on the Artificial Intelligence contributes to shaping our general idea about its advantages and downsides. Moreover, the second and the third chapters cover some specific narrative techniques used by writers. Besides, these two parts of the thesis tries to focus on different topics that can be summarized generally as how science fiction stories resonate and impact our reality. Specifically, the second chapter gives the definition to the plot, explores the world of uses that have yet to be realized, and discusses a speculative future where traditional ways of performing things are challenged and reimagined. Also, this chapter praises Isaac Asimov's enormous contribution to the science fiction literary genre. His positive promotion of science and technology can be perceived through his book *I, Robot*. The robot stories are believed to have some resonance with the Enlightenment period. On the other hand, there is an opposing view that denies such confidence in the automata. The third chapter introduces the concept of novum and its place in the "high-information" literature. Furthermore, the novel *Androids Dream of Electric Sheep?* written by the American author Philip K. Dick illuminates the way modern Western cultures differentiate the natural and the artificial. On the one hand, according to some scholars, Dick uses humanoid robots to demonstrate that while technology may be considered potentially dangerous, it may well be also a possible path to human salvation. The other critics, however, argue that the novel in fact focuses on ethical concerns regarding animal treatment overall. Last but not least, it worth noticing at the end that technology can play an important and advantageous role in human life, given the right prior understanding of what it is and what do we need it for. As Rick Deckard noticed in the novel, any technology can "fluctuate between being a benefit and a hazard".[1] The point is in the awareness and balance.

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[1] Ph. K. Dick, *Four Novels of the 1960s*, New York, The Library of America, 2007, p.462.

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