THE RELATIONSHIP OF INDUSTRIAL DESIGN AND HUMANOID PRODUCT: ANALYSIS OF THE TWO BLADE RUNNER MOVIES

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ABSTRACT

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Master's Program in Design Studies

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It is expected that humanoid products will be a part of daily life in the future. Science fiction cinema that uses humanoids as a concept, is critical for designing the products and systems of the future. Two Blade Runner sci-fi movies, created by transferring from the book "Do Androids Dream of Electric Sheep?" by Philip K. Dick, have suitable content for examining the universe classified as cyberpunk. From this point of view, the aim of the study determined as to reveal the relationship between humanoid forms and industrial design. In the study, a literature review and visual research were conducted to define the link between humanoid products and industrial design. The obtained concept information is associated with real products in the market. Accordingly, it has been determined to be useful for the modern smart devices market and possible humanoid product development studies. In the study, suggestions are presented for designers and researchers who want to do research on the fields that connect the humanoid product and cyberspace. Accordingly, it is recommended that designers consider the emotion factor and the perception of users when designing

humanoid products. In the future, thanks to technological developments and cultural infrastructure, the human body and physical products will become a whole product. In addition, this process will create its own culture, aesthetic language, and infrastructure. Designers will play the main role in this entire process. Developments in culture and technology over time make the market and users suitable for using and purchasing humanoid products. But the laws and the system should be regulated accordingly. Not only the physical structure of humanoid products but also the way of thinking, interfaces, and the programs they use should be adapted to the society and the environment used.

Keywords: Science Fiction, Android, Cyberpunk, Industrial Design, Futuristic Design, Human Like

ÖZET

ENDÜSTRİYEL TASARIM VE İNSANSI ÜRÜN BAĞLANTISININ İKİ BLADE RUNNER FİLMİ ÜZERİNDEN İNCELENMESİ

Eru, Emre

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Gelecekte, insansı ürünlerin günlük yaşamın bir parçası olması beklenmektedir. Bu durum, endüstriyel tasarım faaliyetlerini de etkileyecektir. Bilim kurgu sineması, geleceğin ürün ve sistemlerini tasarlamak, çevresel sorunlar ve teknolojik gelişmelerden sonra ortaya çıkması öngörülen problemleri çözmek için kritik öneme sahiptir. Philip K. Dick tarafından yazılan "Androidler Elektrikli Koyun Düşler Mi?" kitabından aktarılarak yaratılan iki Blade Runner bilim kurgu filmi, siberpunk olarak sınıflandırılan evreni incelemek, toplumla harmanlanmış androidler hakkında sorular sormak ve tasarım açısından irdelenmek için uygun içeriklere sahiptir. Bu noktadan hareketle çalışmanın amacı, insansı formlar ile endüstriyel tasarım arasındaki ilişkinin ortaya konulması olarak belirlenmiştir. Çalışmada, insansı ürünler ve endüstriyel tasarım arasındaki bağlantıyı tanımlamak için literatür taraması ve görsel araştırma yapılmıştır. Elde edilen konsept bilgi, pazardaki gerçek ürünlerle ilişkilendirilmiştir. Buna göre, modern akıllı cihazlar pazarı ve olası insansı ürün geliştirme çalışmaları için faydalı olduğu belirlenmiştir. Çalışmada, insansı ürün ve siber uzayı birbirine bağlayan alanlar hakkında araştırma yapmak isteyen tasarımcılar ve araştırmacılar için öneriler sunulmuştur. buna göre, Tasarımcıların insansı ürünleri

tasarlarken duygu etkenini ve kullanıcıların algısını dikkate alması önerilmektedir. Gelecekte, teknolojik gelişmeler ve kültürel altyapı sayesinde insan bedeni ve fiziksel ürünler bir bütün ürün haline gelecek ve bu süreçten ortaya çıkan veriler tıp endüstrisi, hasta bakımı, otonom araçlar dijital asistanlar, endüstriyel robotlar ve eğlence sektörü gibi alanlarda olumlu etkilere sebep olacaktır. Ayrıca bu süreç kendi kültürünü, estetik dilini ve altyapısını oluşturacaktır. Tasarımcılar ise tüm bu süreçte başlıca rolü üstlenecektir. Zamanla kültürde ve teknolojide gerçekleşen gelişmeler, pazarı ve kullanıcıları insansı ürünler kullanmaya ve satın almaya uygun hale getirmektedir. Fakat yasalar ve sistem de buna göre düzenlenmelidir. İnsansı ürünlerin sadece fiziki yapısı değil düşünme şekli, arayüzleri ve kullandıkları programlar da toplum içinde ve kulanılan ortama uygun hale getirilmelidir.

Anahtar Kelimeler: Bilim Kurgu, Android, Siberpunk, Endüstriyel Tasarım, Fütürist Tasarım, İnsansı

TO MY FAMILY

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CHAPTER 1: INTRODUCTION

1.1. Definition of the Problem

The digital era started when the first chip was applied to a product which made it possible to respond to a user. The interface has been changed totally, unlike the first tool or artifact designed. The difference between conventional products and intelligent products, considering human form or behavioral patterns, can be vital when designing the product's interaction, experience, and structure.

There is a chance of mutual communication between product and user. The possibility pulls the interaction from the common good and brings it to a new area that has human aspects. The humanoid concept creates opportunities if the product has human aspects, i.e., the meaning and the idea that has been created in user's mind changes. The first examples of intelligent products that look like or behave like humans have brought philosophical questions that were ritualistically formed. The human body and products combined and blended in the progress of time. Health monitoring or wearable products are specifically designed to collect data from the body or work as a part of it. However, most of the products with a scenario about interacting with the user also started to have intelligent and organic connection methods to communicate with the user. Naturally, the human body has a physical structure and uses specifically evolved tools to reflect thoughts with a neural system which is based on electronic signal transfer. The computers and electronic circuits have the same system, making them suitable to connect with the human body. The situation makes it possible to effectively connect a human body and an artificial object. Nevertheless, the problem is not only connecting the physical body to the Cybernet, but the whole process has an emotional response. The core element is similarity. If a product has visual aspects or behavioral elements of a living organism, its perception and sense changes and differs from the conventional products.

The similarities can be used on purpose or unconsciously. However, the reality is that it created knowledge both in the market, which uses artificial intelligence, facial expressions, and artwork that includes literature and cinema in the shape of content and visuals. The representations of human-like products and machine-like humans in visual art created a subculture with its own philosophy and art style.

The content created is vital for designers because the cases are created with a futuristic perspective based on technological developments and harmonized with art

movements.

Cyberpunk is one of the most effective cults of the era, representing the similarities and the futuristic design elements. The leading and pivotal production of the subculture includes Blade Runner movies that have the perfect timing and the proper questions in content. The movies formed a visual and semantic perception about the products manufactured by corporate that living with biological humans and their relations. The questions and cases in the Blade Runner movies can be helpful for a designer to recognize or understand how the similarities between humans and objects uncover the problems. Hence, it is the collective knowledge of cyberpunk, androids, and humans that are living in harmony.

Industrial design mediates the relationship between people (users, manufacturers, designers, and society) and technology. Furthermore, the responsibility of designers makes the intermediary role of industrial design critical. Responsibility focuses on the potential impact of design decisions for everyone involved in a product's lifecycle. As products become more complex and environmental resources are threatened, designers' responsibilities become more important.

The mediating role of industrial design becomes more critical as complex product technologies question the traditional visual language that products use to communicate their operations and functions to users.

According to Garret (2006), *"the first impression of science fiction is that it tries to predict the future."*

A review of the evidence suggests that science fiction as a genre is interested in predicting the diversity of possible futures. Science fiction questions to explore the relevance of possible futures. The results of this inquiry guide the decisions taken today. Science fiction thinking is knitted with industrial design thinking. Industrial design and science fiction do the same things for the same reasons. Industrial design is influenced by science fiction cinema and vice versa. In the culture of industrial design and science fiction cinema, and in the way both fields work, the cause and effect relationship is evident.

The industrial design content of science fiction films can be analyzed and structured so that the impact of design decisions on the film is visible.

The complexity of scenarios played out through science fiction narratives in science fiction cinema offers opportunities to evaluate the impact of design decisions that would otherwise be difficult to access.

1.2. Aims of the Study

With developments that make the human body more connected with electronic circuits and code-based algorithms, humanoids, which are the representations of products produced in product groups but getting better at looking, behaving, and thinking like a human, have been clearly visualized for decades in science fiction cinema where technology is represented. This raises some questions about future developments in the field of industrial design.

What relationship is between industrial design and humanoid forms designed in science fiction movies? From this point of view, does industrial design affect science fiction? Does science fiction influence industrial design and designers? These questions were designed as the main questions of the research. In this direction, the aim of the thesis is to investigate the relationship between humanoids and industrial design. For the aim of the thesis, Blade Runner films that take up the concept of humanoid, have been examined. The concept of humanoid will be compared to the two Blade Runner movies to represent how the products manufactured in gigafactories that have human aspects blend into society or are rejected by persons with economical, philosophical, or existential concerns.

The Keywords of the study are; Science fiction, Android, Cyberpunk, Industrial design, Futuristic design, and Human-like.

Blade Runner movies are significant to realizing the analytical comparison. This is because the first movie was projected to the white screen in 1982 when the home electronics and personal computers were marketed freshly, while the second movie was represented in 2017. People control everything with their intelligent assistants, smart mobile phones, and computers and are prepared to go to space by a private corporation that advances neural circuits that connect a person to a computer directly in an organic path.

Understanding the culture and the cult is vital for a designer to approach the designing process with a futuristic perspective, develop the lifetime of the product, and the influencing effect of designing human-like products on perception and acceptance. The market where products occur has an ecosystem fed by visual arts and literature. The products which are ordinary and used globally have been first represented in futuristic artworks. Therefore, the futuristic literature and visual artworks should be analyzed intently to understand the terms and concepts and make prospective

implications.

1.3. Significance of the Study

The study was examined in terms of the relationship between design and the Blade Runner series, which can be considered as cult movies among science fiction movies. The fact that such a comparison has not been encountered before in terms of industrial design processes reveals the study's originality.

1.4. Limits of the Study

Making the comparison only with Blade Runner films and examining the concepts of function and aesthetics in terms of design can be expressed as the limits of the study. Future studies can be considered from different perspectives on design processes.

1.5. Method of the Study

The methodology of the study started with researching the information about the basic description of the problem. The structure of the problem directed the research to apply specific methods to gather enough information from the sources that are visual and textual. The data gathered from the sources were examined and defined to provide the sections and questions that is needed to be studied. The main sources that created the base of the study are visual videos, which are made up of movies by a developed professional film company and their team.

The text of Philip K. Dick was turned into a script and was filmed by the professionals. Thus, the two movies produced in two different time period allows the researcher to compare and find patterns in the design of humanoid relationship by controlling it from the text of Philip K. Dick and supplying it with the information gathered from the desk research about the basic information, design, and the futuristic argument that was supplied by the technological developments about the field that contain artificial intelligence, robots, humanoids, and industrial design.

After the research of the text of "Do Androids Dream of Electric Sheep?", the basic information of the blade runner movies was listed.

The key frames that are vital to express the information that may prove and occur questions are listed and defined visually. In addition, the frames are listed with the time they appear and recorded as a snapshot.

"In the study, semiotic and visual analysis has been conducted. The semiotic analysis, which is a qualitative research method, was used in order to determine whether the selected images are suitable for the purpose of the study. Semiotic analysis refers to the perception and interpretation of both visual and linguistic signs." (Küçükerdoğan, 2009).

"While semiotics analyzes the visuals created for communication purposes with a structuralist approach, it helps in reaching the meaning." (Parsa, 2007).

In the study, written, visual, and audio documents were scanned in order to achieve the research objectives. In this direction, books, articles, and internet resources were reviewed. The literature review is shown in Appendix A. In addition, selected films were examined on DVD recordings. The images in the recordings were examined and evaluated in line with the purpose of the study.

According to Laurel (2003), *"It is helpful to use images to design and present information in a useful way. This is because industrial designers are visually sensitive and they value presenting complex relationships and ideas visually."*

According to David Canaan (2003), *"Creativity is based on making visual associations, and researchers who add visual communication to their findings derive significantly higher value from their insights."*

Based on this, comparisons were made on the visuals in the study. Comparisons made between films throughout the study are discussed in terms of industrial design. For example, comparisons about what science fiction is or what humanoid forms are would be about industrial design.

CHAPTER 2: HUMANOID CONCEPT AND BACKGROUND

In the first instance, the terms and cultural background should be prepared to define why the cults and characters in the science fiction are connected with the idea based on the study. The culture that has been built by cyberpunk, science fiction literature, and the technological developments which are feeding it constitutes specific terms and definitions. Understanding culture prepares a base to compare and bond facts and concepts to imaginable reality, but it is also vital to learn that all of the elements that are mentioned have a place in the human history and economy which are sold in the market or used as a real product. The real usage of the products or the definitions has important roles in modern culture and technology. The main terms such as robots or artificial intelligence are common words and concepts that are well known by society but for creating better bonds they will be defined. Questioning and defining the terms properly have effects to force a person to ask further and deeper questions. The questions will also direct the study to work on industrial design relations specifically and guide research to stay on certain lines without going further into primitive roots and second-degree subjects.

The cultural background has the characteristic that places it to “subculture”. As a result of that, it is not only a conceptual fact but it also creates lifestyles, art movements, and political stances which differ from the general sense of society. The visual reproduction of the concepts can be quite effective in visual media like cinema and literature because the mediums do not have limitations about manufacturing real products. The possibilities are limitless and the opportunity makes authors and the creative teams think futuristic and liberated as much as they can do. Therefore, this situation allows them to think and create possible solutions and scenarios for solving existing problems by techniques that are predictable and generate a foresight about future living with future products.

2.1. Humanoids and Androids

These titles are separated due to the need for a difference in the perception, usage, and the cultural background and are applied before more general concepts of robots and artificial intelligence.

If the time sequence is inspected from future to past, the most effective and questioned samples of the machines in disguise are humanoids and androids. Disguise is an important word to underline. Hiding the robot in human flesh or hiding an intelligent consciousness or person inside a machine are valuable actions to examine and ask the question “Why?”. For these reasons, the Humanoids and Androids' titles are separated and explained before the robots and artificial intelligence as individual concepts.

Humanoids

The word “Humanoid” is being used to define robots or products that have the form of humans partially or completely. The term was used to describe skeletons of primates that have similar pieces to humans but after the robots and their reflection in literature and art. The meaning of the term changed to aim at machines that have the human-like body and artificial intelligence that allow them to communicate with people by talking or jest that a person can do in the social environment.

The human body has specific responses to certain situations and emotions. Those behavioral patterns are common out of culture and can be monitored by every person. If the robot has the humanoid aspects it can use and mimic similar facial expressions. The ability of facial expressions makes them strong in two capabilities. The first one is that they can communicate with anyone in the world in certain situations. The second one is that they can add a powerful effect to the message that separates them from showing a regular text message or emotionless speaking like a regular robot-like machine which is known commonly and defined as robotic voice.

If robots and artificial intelligence are accepted as two separate facts, the humanoids are in combination with a human-like body. That body can be a whole structure or a specific part of the body like a head that show emotions and expressions with facial information but the similarities should be apparent. The existing examples of Japanese companies' humanoid robots like ASIMO are suitable samples to realize how it started in the real world to produce human-like robots that also have artificial intelligence aspects. They can be placed on a level between the first intelligent products and developed futuristic androids in science fiction.

The humanoid robots are not only science fiction elements, but they are developed as research and development projects.

They have abilities to do dangerous and important tasks that a person cannot

do or work in an environment harmful to a human. The task can be in outer space or an extreme condition like the deep sea. The capability and form of the humanoid robots are considerable to investigate human anatomy and movements. The developments in the body parts of the robots can be applicable to paralympic persons' limps. From the cameras to touching sensors, every part of the humanoid robots is related to the human body and applicable to a person

Humanoid robots have the potential of being a labor force for manufacturers. Replacement of working persons with robots can create socio-economic problems but the chance of using the humanoid robots in harmful points for a person in the production line can create better conditions for factories and manufacturers. There are utopias in the literature that contain a futuristic world where humanoid robots are working as labor and people have enough time for their life. The situation can create questions that Paul Lafargue mentions in his book as a manifesto of human rights about the balance of working time and resting during a workday.

Androids

Androids are human-like robots with organic flesh or realistic body and skin structured on robot which is mechanical but look and behave like living creatures. The androids were a science fiction element in literature and cinema. However, the actual examples started to occur after computer and sensor technology developed enough to produce small components enough to place in a human-shaped body. The current androids do not have the capability of doing similar complex works as they are in science fiction movies. However, they started to do limited work in public places like airports, research-development, and medical education at faculties.

The androids are the final form of human-like robots. They can have organic body structure and elements. Their skins and limbs can be organic and connect with computers. The problem they created theoretically is determining identity.

They will be products manufactured by people and services people, but their limitations is their thinking capability and the difficulties about determining who is a human and which one is an android. Android robots build problems and working areas naturally.

At the end of the section, it is required to mention the ethical situation. The ethics about the concepts placed after the analysis of Blade Runner movies cause certain cases to contain complicated and combined conditions that are not suitable to

be separated but will provide support in defining the research problem.

2.2. Robots and Artificial Intelligence (AI)

The concepts of robots and artificial intelligence are explained as below.

Robots

Robots are machines that are programmable and have aspects of doing complex work. However, the vital difference is that they have sensors that define their environment and are aware of ongoing situations with a time concept. They are not ordinary machines because they can move and decide whether they are autonomous or semi-autonomous. Even manufacturing robots designed by industrial engineers, used in factories and product lines, have human aspects of seeing good online, carrying it like a hand, or reaching a difficult position where only a human-like arm can do it and differentiate themselves.

"The Slavic language defines the robot word as forced labor that targets a particular group of people working on a production line or workers in the fields." (Asimov, 1985)

After Isaac Asimov used the word in his literary works, it became more popular as the ordinary known meaning of a human-like machine.

In early examples, there were historical robots that were called automatons. Those samples were utterly mechanical and crafted by hand. They were using kinetic water power and pressed springs as an energy source. They are a sort of analog computers.

The roots reach the mechanical computers from the Hellenistic and ancient eras when the mechanisms are used to predict astronomical time sequences and the movement of the sun in a day. The fact that makes them similar to robots in the modern era is that they are automated machines that do a specific task and are accepted with similar emotions that occur between the user and an artifact that moves by itself and does tasks without intervention. However, the main difference is the developed artificial intelligence used today which is challenging to the biological neurons of living organisms. Those roots resemble concerns about creating an original and authentic artifact that has the sign of life. The playing god and having the power feeling is also a key position in science fiction literature while describing powerful monopolies and corporate that tries to control society and the world with their capability of

manufacturing living-like products that accept and replace extinct organisms.

Robots are vital as a product that does complex work for manufacturers. They also have an emotional connection between an artificial object and a person. The connection between the person and robot can be used as an interaction method while designing an interface and an intelligent product. The concept affects the consumer's perception of a developed technological device. It adds cultural know-how even if the product is an artwork, video game, or an app installed on a touchscreen device. The robot concept has a meaning for product design. In addition, even if the product does not have a robotic future, but it has an intelligent interaction element or using human emotions as a design factor, it is classified as a robot. Alternatively, the minor memories which are collated are about robots and the collective consciousness created by visual art and literature.

Artificial Intelligence

Artificial Intelligence is the whole form of codes and algorithms that make a computer system possible to make its own decisions, search data, understand commands, respond to them, and be aware of an ongoing situation in which it has the information of what it is, what time it is, and the abilities it has. They can perform the decision process through codes and in their processor. However, what affects industrial designers is that they are interacting with users or a person with the same code of communication.

This has the ability to change the interface and also the form of the product. Intelligence is dedicated to living organisms with enough developed neural systems like mammals or vertebrates. The status creates the perception that intelligence belongs to a living object and that may change the user's behavior and create emotional reactions to the product.

Robots also have artificial intelligence that makes them capable of making their own decisions, learning and becoming aware of their surroundings. Without AI, a robot can be defined just as a machine but the intelligence term in the robots is not only complex. A 3D printer or multidimensional CNC machine can do complex works too. However, the intelligence ability in robots that is related to the concept has the future of living like mentality that an organism can demonstrate in its natural habitat.

The difference between artificial intelligence from a mechanical response of a machine or physical response from the decisions and situations are progress with data.

Data usage is an essential practice. Data can be saved, copied, and used later. A product capable of using data has two participation. The first one is that data can be copied or shared with other products. While manufacturing, the data can be installed to all products as equally and this can create an advantage. However, if the components and algorithms are arrange in purpose, the product can change the data from its surroundings and compose its own mindset. Such an alteration can make the product prepare a personality. Having a personality is a human or animal-based specification.

The ability allows the product to turn itself from a typical sample to a character. Data usage and remembering it also makes it possible to create a unique bond between the user and product. The product can customize itself by interaction. Learning is an intelligent organism specification and also teaching. Teaching its own name or tricks to a pet is a very humanly aspect of science first tamed animal in history.

Artificial intelligence uses data with processing power and aiming problem-solving. The computer turns the problem into a mathematical formula, solves it, and transfers to the organs of the product as a task-solving application.

Artificial intelligence gives the ability to an artifact to communicate, learn new applications, remember specific information, and solve problems.

The process completes the task with a body, with a servo or brain containing artificial intelligence, sensors as receptor organs, and behaves with limbs. The AI can use the data in a net that is connected with fellows or a bigger and more developed executive machine. Communication does not have to be between the user and the product. It can also be between product and net. When the products connect to the net or web, the whole structure creates a Cybernet. In the Cybernet, the product can behave as a united structure or use the massive data because the entire web has as a source.

Artificial intelligence uses data, but while communicating with a person, it is not a practical procedure to show it as raw. Some algorithms understand vocal commands and respond to the user with a dialogue. The microphones and speakers are requirements to realize dialogue interaction. The communication can be realized with a text base scenario on a screen. Before the voice communication, the first samples of making a dialogue with a computer occurred on text base platforms with a keyboard and a monitor.

The artificial intelligence is not only servo-based and product formed. The application or software using samples is crucial. The system is an algorithm matrix and can be suitable for any platform that uses digital data and enough processing

power. The sensors and mechatronics are the physical applications, while the AI is elementally about thinking.

The artificial intelligence has its own thinking mindset with algorithms and conventional computer data processing style. However, modern algorithms and processing power find new methods to think like a human.

Thinking like a human has two aspects. The first of them is behaving like a human and the other one is being capable of communicating with biological structure and neurons. Connecting computers with the human body is an issue of artificial intelligence. It exposes questions about the possible problems of controlling conflict between humans and devices. If artificial intelligence has enough power and capability, it may create its own personality and ask existential questions.

This situation can create two cases. The minor one is accepting the consciousness as a person, and the second one is the possible danger of losing control of the computer and the baleful toughs that the AI can create.

2.3. The Concepts of Science Fiction, Cyberpunk, Futurism and Subculture

The main focused points and definitions are Science fiction, Cyberpunk, Futurism, and their knowledge created by artists in history as a subculture element. The sub-titles of this part are defined separately to understand how they developed historically and how the space that was created has a relationship with the humanoid products sold and work.

The definitions have different main sub-genres, cause of the locations, and the time periods they were created. However, the main logic is structured on the futuristic storytelling based on the technology and theoretical thinking about the future reality.

2.3.1.Science Fiction

There are several examples of the early science fiction artifacts in various media forms. However, literature is one of the most crucial genres and disciplines that properly picture the definition. The first time the science fiction term was seen is in an early 1930's work. The term was in a magazine in the editorial of Gemsback, and the issue was “Science Wonder Stories in 1929". The term is identified from the “Fantasy” and “Horror” genres as a new specialized literature discipline.

Science fiction is the literature that makes predictions about the future in a futuristic environment where nature and the human-made places with a society that

changed in a good or evil way.

Different Echols and schools have their own term and definition of the science fiction. The examples can be listed as future fiction, space fiction, Utopian, dystopian fiction, and cyberpunk.

After the literature, the genre and the discipline took their samples to the film industry. The visual power and storytelling specification with special effects created a new language and cultural knowledge about the science fiction.

The science fiction cinema has become more critical in history with technological developments. After the first electronic devices and the digital era started in the market, the reality and the possibility of the science fiction stories became more accepted and influential. The future that can be good or bad with the relationship between human and the artificial structure and products that can have the control or change the life form have created questions about what will be the strategy of creating new products and scenarios in the environment surrounded with the logical devices, and the virtual occurred cause of the ability of communication that the objects have.

2.3.2. Cyberpunk

Cyberpunk term is significant in understanding the effects of products that have been manufactured in factories and have become a vital part of living in grand metropoles. If the word is examined in an etymological perspective, it is a combination of developed technology and low condition life. The concept of growth in science and fiction literature includes aspects that have been structured by the futurism movement. In the cyberpunk universe, humanoids, robots, androids, cyborgs, and artificial intelligence-loaded machines are manufactured by powerful corporate that is stronger than the government and are integrated to daily life for the purpose of controlling society. Literature and philosophy find the cyberpunk environment possible to ask questions about the existence of life and the role of humanity in the created living habits of people which is versus to nature. Adding a human body with artificial parts, or creating a living organism that is made of steel and electronic circuits, modify the natural evolution and structure of nature and reveal questions.

The term was created in two-part. The first one is the cyber and the second one is punk. The definition is a sub-genre of science fiction. The punk concept brings specifications about being underground and rebellious to strict authorities or corporations that regulate society and record their movements and lives with

technological equipment and products that are published and promoted to society as the control of the products and authorities are for their safety and benefit even if is just for oppression and controlling the community to do their unethical task and sell more products without competition with other companies.

The cyberpunk genre is a new form of science fiction that showed itself in stories and movies produced. The stories occur in future metropoles and are mostly written in detective stories with an expression of film noir style.

The cyber part of the definition is vital to explain that there is a digital virtual world under the real world that looks like a regular future city. The most vital point in the concept is the connection to the world. The objects and products that have the ability and skills to connect to the virtual world can use the environment as a new eternal digital place like the internet in the modern era. They communicate, share data, and control each other in the virtual world. The human body in this situation needs upgrades and body modifications to control the world that electronic devices, machines, and software have. The virtual world is used by corporations too to control humans and other products in the world. Hence, the humans that have the awareness and opposed ideas to authorities hack the system to not control or use the virtual environment without traction.

The development of computer science after 1980s powered the affection of the cyberpunk era in the subculture, literature, and cinema.

The importance of the cyberpunk is that it uses the technology of neural science. The real connection between the human and non-living objects through the nerves creates the possibilities for body modifications, and creating hybrid forms that is considered of humans and products in a whole body. The connection helps humans to enter the virtual world and communicate with objects on the net directly.

The definitions and situations in the storied happen as a futuristic environment. The environment that has its dynamics in many different levels of the culture, technology, politics, and society can be harmful and difficult or beneficial for the persons living in it. The world and the future that are idealized have their unique terms and they are dystopia and utopia.

2.3.3. Utopia and Dystopia Concepts

Utopia is the ideal state of society in which there is no suffering. There is no one who is sad or hopeless in that society because it is full of prospects and opportunities. The word is seen firstly in Sir Thomas More's Utopia which is an island that has rules and conditions that is almost perfect for the commune and society living there.

The utopia was describing a city and commune where the departments and institutions are arranged to create the perfect living conditions by the government with rules and restrictions. The term is also used to describe an idea that is close to being perfect and may be a goal to happen in the future if the necessary facts are done by the community and authorities.

The utopia concept developed and occurred in different areas. The connected definition is the futuristic discipline and literature. The utopia has a mirrored side. The perfection movement in the society and regulations may restrict persons or groups of people or artificial intelligent living forms who have different choices and living preferences. The perfection idealism and aim can create a totally different world and environment that is authoritarian and strict to differences or groups and movements that may create a danger to the utopic world.

When the utopia becomes a situation that is difficult and dangerous for other groups that are rebellious to the system, it turns into a dystopia. The dystopia world has hazardous and environmental disasters. The future cities that are created by humankind pollute themselves and make a society that is difficult and dangerous to live. To live in a city that is hard and dangerous, there are strict restrictions regulated by authorities. Technology is a need for living in the difficult conditions of the environment and society. The polluted places and dangerous occasions like civilian wars and disasters is a need for high technological human power. However, it is not suitable and profitable to send humans to the actions. The human-like robots and androids are the solution to the problem of the dystopian world. Fear and danger is a feeling that is common and regular in dystopic worlds. The fear may be created on purpose or by the natural atmosphere of the world. The surviving effort creates underground activities and crimes that create the literature and have the concept of dystopic worlds and characters.

2.4. Industrial Design and Humanoid Concept

Human aspects of products show themselves in two main facts. The first one is that the product mimics human behaviors to communicate directly. The second concept can be defined as the product having human abilities for a specified task a human can do.

The first and main fact considerable to mention in human factors is a discipline that industrial designers are familiar to work with while designing new products that is interacting with humans, and touching the user's body directly which has certain rules and limitations to prevent from injuries when connected to usage.

Industrial designers are familiar to test and make research about scenarios where a person uses a physical product used by the limits and functional capacity of the human body.

The scenarios also insert experience and behavioral aspects between the user and the product. The technology that can create perfect process powers or mechanical abilities is not enough to apply it to the human body or transfer human body aspects to a humanoid product.

A designer has a critical role to create the scenario and solve possible problems about the usage and selling the product to a person who is thinking with know-how that is educated and formed in a society that has its cultural rules and facts about buying goods and using them in a life that is secured with laws and regulations.

CHAPTER 3: BLADE RUNNER MOVIES AND HUMANOIDS

3.1. Importance of Science Fiction Movies for Industrial Design

Future concerns and dreams have a great role in the development of humanity, technology, and civilization. People have thought, dreamed and designed it, and they want it to become a reality.

"*Most especially in science and technology, the power of design comes from research and imagination. Science fiction cinema, which is one of the important and common areas in the depiction of the future, makes people think about what they can have in a future time and what kind of environment they can live in. As such, it sort of puts them in front of the future-alternative-self.”* (Ayna and Postalcı, 2020)

The concept of science fiction follows both scientific innovations and the cultural environment. In this context, science fiction, like all works of art, has an important role in shaping the perception of the future, and it also changes the perception of scientific, technological, and artistic developments. The field of science fiction, which supports creative thinking, develops new and innovative designs and triggers imagination, has an important area of influence for designers in the construction of the future with the Utopian or dystopian content of the fiction it reveals.

According to Gabor (1963), *"the future cannot be predicted, but the future can be invented". The most important part of the invention will be the intellectual process in which the idea is nurtured and strengthened, approaches that develop imagination and enable new ideas, and design processes."*

Science fiction films, which form the framework of the study by including the imagination, possibilities and visualizations of the future, are evaluated in the context of their predictions, designs, future technology, space and experiences, and body-space relationship.

"Objects and all designs in science fiction works can be defined as concept designs. These designs are general designs that are thought and designed in mind. Science fiction movies can be thought of as simulations of the function of these designs. With science fiction films, more ideas are gained about the function of these designs compared to visual arts. Concept designs in movies may affect the design processes and the thoughts of designers in the future.” (Bağcıvan and Durmuş, 2019).

In this study, two cult films of "Blade Runners" are examined. Before moving on to this review, information will be given about the author of the novel, Philip K. Dick, and his philosophy.

3.2. Philip K. Dick and His Philosophy

Philip Kindred Dick is an American science fiction author. After writing stories for science fiction magazines, he continued with novels in his career. He wrote about one hundred and one stories and forty-four novels of which most are science fiction.

His works differ from other science fiction and fantasy literature with the universe he created. In his stories, the environment is not the focused aim. It is a tool to tell the story and ask questions. The universe in the stories is already accepted as a reality. With the help of the philosophical base, he built with his works about reality and existence that create the questions of dualism, human nature, perception, reality, and consciousness. The next step in his career was his stories adapted to cinema and preparing a visual base for cyberpunk cults and creating the image of future cities and living in cinema culture.

For the aim of the thesis, two films were examined chronologically, and important points related to the thesis were determined and noted.

3.3. Do Androids Dream of Electric Sheep

Philip Kindred Dick published the novel “Do Androids Dream of Electric Sheep” in 2007. This novel forms the basis of the script for the Blade Runner movies. The subject of the book is summarized as follows:

Earth has become radioactive and nearly uninhabitable as a result of a devastating world war. Animal life is on the verge of extinction. The United Nations provides every immigrant with a realistic robot maid to persuade them to relocate to other worlds. The majority of humanity accepted this offer, but a few remained on Earth.

"Regulars" are free to marry and travel. "Specials" (people injured by radiation) are not allowed to breed or leave the planet. Pet ownership is a status signal. Some people have real copies, while others have to settle for lifelike copies. Fusion is a ceremony that involves "empathy boxes" and a mysterious character named Mercer, which was performed by both regulars and private individuals.

"*People participate in Mercer's physical challenges and at the same time convey their emotions through fusion.”* (Gollancz, 2007)

3.4. The Blade Runner 1982 and Blade Runner 2049 Movies

Before making a chronological comparison of the films, information about the tags of the films is given.

3.4.1.The information about the Blade Runner 1982

Figure 1. Poster of Blade Runner Movie (Source: IMDB, 2022)

Director: Ridley Scott

Screenplay: Hampton Fancher, David Peoples, Philip K. Dick

Budget: 30 million dollar

Release Date: June 25, 1982

Running time: 117 minutes

The Storyline of The Blade Runner 1982:

Blade Runner 1982 is set in a dystopian future in the twenty-first century, where a company called Tyrell develops robots that they code as replicants. Human-like robots aim to help society and are sold on the free market as products that help and do work that harms humans. In the futuristic city of Los Angeles in 2019, unregistered and escaped replicas are illegal to live in public, and aiding them is also prohibited and carries the death penalty. War models are built for war and sterile for society. Combat models, called Nexus 6s, are preyed upon by blade runners who deploy government-authorized flaws. Deckard is a blade runner and has been charged with retiring, which means killing contraband copies. The replicant named Rachael is nominated to help her but Rachel doesn't know that she is a replica of realistic human memories and the Tyrell Company’s advanced structure is to test how they can produce products close to a human.

3.4.2.The information about the Blade Runner 2049

Figure 2. Poster of Blade Runner 2049 (Source: IMDB, 2022)

Directed by: Denis Villeneuve

Screenplay: Hampton Fancher, Michael Green, Philip K. Dick

Budget: 150 million dollar

Release Date: October 3, 2017

Running time: 163 minutes

The Storyline of The Blade Runner 2049:

Blade Runner 2049 is the sequel to Blade Runner 1982. “K” is the new blade runner. However, he is a replica and his model is the nexus 9, which was authorized by the police department to hunt down old models that were running and hiding. After the final hunt for an old copy on the field, “K” searches the crime scene and finds extraordinary evidence. “K” finds evidence within biological nature about a copy's chance to replicate or reproduce, but K's superior fears the evidence could spark a war between humans and replicates. The model numbers of the remains of a dead female replica direct “K” to Tyrell for further information. The blackout, which deleted most of the recorded data, damaged the old recordings. In addition, the Tyrell Company wants to learn about the natural changes in the products they make and try to find the truth. “K” finds clues about the memories he has and decides to trace the roots of the artificial memories. Evidence brought him to former blade runner Deckard and the secret events that occurred and disappeared. The findings make one wonder if she is human, but the truth is that the missing child is a girl and was adopted elsewhere to conceal her identity and keep her safe.

3.5. The Relationship Between the Universe and Industrial Design in Blade Runner Movies

Both films were analyzed by visual research method. The visuals in the movies were examined from a semi-logical perspective. Visual forms and related frames are examined according to the times of the films and how they relate to the concept is explained. From this point of view, the findings obtained in the study may be in the form of a player or player's movement, set design, sound sample, and dialogue or message suggested by visual techniques.

The futuristic cyberpunk universe is suitable for applying design thinking methods and industrial design processes. All elements of the universe that make up the structure, such as buildings, furniture, technological devices, and the human body, should be designed in a concept. Not only products are designed, but the culture and society of the future are also designed.

The important truth of the futuristic cyberpunk universe must be recreated because it is impossible to use the same product as a story that took place in a past history and became part of a known and lived history.

3.6.The Key-Frames that is Connected with Design Process and Methods

The universe created by Philip K. Dick has certain aspects to provide suitable circumstances to see how the future technologies produce human-like products, and make available a playground to use the products and utilities with design methods and techniques.

First, the important and distinct points in both movies will be underlined. Continuously, the key frames will be harmonized with the design perspective and will be indicated to prepare bonds on how they are important to industrial design and the field's possible future.

The human-like machines and products are certain needs in the universe. The environment after the war made it impossible to grow plants and farm animals. In addition, some places in the world are dangerous, toxic, and restricted for natural-born humans. The war which destroyed the earth needs human power too. Those kinds of labor cannot be supplied properly by natural-born humans or conventional society. The Tyrell Company started to design humanoids for war and post-war era that has different conditions and atmospheres that are totally different from a regular city or nature when the time is current and out of the universe. The company is producing exclusive androids to use as work power on different planets too. The reason is because persons who have certain health issues were forbidden, expensive, and not convenient to send to other planets.

Naturally, this is a design concept to produce human-like products that suit the demands created by the situation in the universe.

There is a 30-year time difference between the two films. This time difference is important in terms of presenting the design approach of Blade Runner Films and showing the variations and similarities between the two films when evaluated in terms of design. Selected keyframes from movies are vital to define the role and concept of industrial design in the creative process of projects. In addition, products and services designed in the universe are suitable for application in the real future world economy and technology.

First, the movie Blade Runner 1982 will be told the important trick in understanding how the scenes and visuals are connected to the design. In the first movie, Blade Runner, in 1982, humanoids or androids are described as "replicants" by their owner. The word is a choice made to differentiate between a born human being with a unique DNA, structure, and independence, and a product that is sold to a

customer that, unlike the previous one, it can be copied over and over again and is subject to legal regulations.

A similar definition that places androids far away from humans is "retirement". The word "retirement" is used to describe killing or destroying an android or copy. The use of words called replicant is indicated to make a difference in society and to create a perception in the mind of the person and the replica. With the help of words, replicants are positioned as products even though they look and act like humans. It is a method of preparing a psychological awareness in society and designing how societies and androids behave to avoid potential problems in both public and law enforcement culture. It is a mindset purposefully designed by the government and the Tyrell Corporation to support the fact that replicants are products that people use and can be destroyed, sold, and used as other products created in a factory through mass production.

The Blade Runner universe has an enormous amount of advertising and consumerism culture. All the video billboards and other advertisements prove the desire to live in luxury and the other reality of poverty on the street and in the ghetto. It therefore means that a privileged group of people who spend a lot of money on copies and lifestyle live in luxury. It aims to create an appropriate cultural background to be more realistic about designing and selling human-like products and androids that serve humans in exchange for enormous sums.

In order to meet such demands, there must be a mass production mechanism with a method made by large factories but destroys nature and natural resources.

The batch size of androids or replicas is huge because replicas are not just used and purchased by civilian customers. The Tyrell Company also sells products to the government for dangerous missions, such as fighting in war or working in polluted areas of the world on different planets and unsuitable for human life or work by birth. The government buys products as defense expense and strategy.

In the Blade Runner 1982 movie, there is a quality control test. It is actually used to understand whether the person is a human or an android. It supports the fact that the replicants are looking like humans and behave like them which is hard to understand without a professional practice. The test is crucial to apply so as not to make mistake about the behaviour of a human like a replicant and restrict its freedom or hurt. The process of the test is basically an identification process.

The test was applied by asking several questions. The content of the questions is about the person's life and desires that have the potential to trigger emotional reactions to see if the questioned behaves subnormally and creates wrong responses while talking. The test also collects data from the person's body like the movement of the iris, blood pressure, heart rate, and breath frequency which is similar to a lie detector. The main aim is having a certain decision about the person being interrogated and to confirm that it is not a product manufactured in a factory.

The test can be applied by law enforcement and specialized detectives so that not only the builders and designers of the Tyrell Company can see if the person is a replicant or human.

The test also is a quality control test that is used in factories and mass production actions. The Tyrell Company uses the test to see how the product is close to a human and to see the abilities of the products about behaving like a human realistically.

The other significant fact is that the Tyrell Company uses the test to promote how the products they manufactured are good and hard to recognize a replicant from a natural-born human.

However, the test has its own problems and negative points. The main problem is that applying the test takes too much time. This is especially in the situations where the law enforcement wants to use it in public areas or in criminal cases. In other words, it is not suitable to practice in field duty. Not only is the duration of the test problematic to apply the test properly, there must be a used device sized briefcase.

However, the data also gathered from the questioned person is processed and the data must be recorded by the device under the control of a trained person who is capable of asking the psychological questions and can make use of the device.

The replicants have model names like normal products. The names indicate the variation of the replicant. For instance, the replicant called Nexus 6 means it has the upper version than the previous products and has specific characteristics. The replicants in the first movie have model numbers too which inform when they have been produced and which type of replicants are them. The numbers define who is the producer that a grand factory of Tyrell owned or a contract manufacturer that specializes in a certain type of product. Even the realistic human look replicants are designed and manufactured in factories and ateliers like conventional products. There is a process of product development. Every new model becomes better than the older

versions. New models are more intelligent, stronger, and more talented.

The Tyrell Company futures that the models can be customized if the customer wants and that the talents and specifications are arranged based on the needs of the customer.

The fact is that is not a conventional promotion technique. The company produces replicants suitable for making them a soldier and the government can buy them for their specific needs. The war models are more intelligent, stronger, and have the capacity of making their own decisions in conditions where they cannot contact the command center.

The products can copy human behavior but they have restrictions about replicating human emotions in case the replicants use the ability to abuse and use in public. It is a designed-in-purpose movement to stop real person's behaviour to behaving like they are real humans.

The aim is to keep them in the level of product and create a perception that they are not permanent and that there will be need of buying a new and better model when the product becomes not good enough and an old model.

The realistic look of the replicants, their intelligence, and human-like responses may create dangerous situations if they run away from their owners and dispensary in society. If replicants behave as they want and do not take command from an authority, they may cause physical injuries and become harmful to people in the society. The producer company found a solution to the threat by designing the replicants to have a limited lifetime. The replicants die or become useless after four years. It is a security mechanism. Even if the replicants run away, they cannot be harmful after a determined period of time.

There is another future in the lifetime of the replicants. If they have a life cycle like a real product after the end of use time, the replicant becomes ruined and the customer must have a new one. The four-year lifetime design of the replicants makes the company advantaged in the market even though they are the monopoly and create almost all of the replicants that are sold. The restricted lifetime stops the replicants from thinking about escaping. They know they won't live forever if they go away without the knowledge of surviving in public and the unit they sold is much safer for them in the outer world.

The replicants may have deformations or there can be defective during manufacturing. In this case, the replicants may want to escape. Nevertheless, they can

become dangerous to the public. In those kinds of situations, there are specialized professional detectives who have the authority to execute and use force on replicants. Their name is Blade Runner. The blade runners find the unwanted or broken replicants and retire them like a hunter.

Replicants are accepted like other machines in public as productive or not useful. Furthermore, destroying a replicant is not emotionally important for a people in the society despite executing a real person in the street.

The war and environmental disasters brought extinction to many kinds of animals on earth. The Tyrell Company and illegal ateliers produce animals too to sell to customers that want an experiment on an animal that lives while the world is a safe and natural place. Animal products are prestigious artifacts a human can have in the universe.

The animals have their own market in the economy. The quality of the animal replicants states the level of the customer in the society.

The main aim of the Tyrell Company is profit and to reach that aim, the firm creates more and more realistic products every year. Their slogan is “More human than human”. The whole process is designed to sell more products in the market.

To create and design real human-like products, the firm needs particular sources. The thinking mechanism and responses of the replicants must be similar to a real person. To achieve that level of realism, the firm uses real human memories in the products' minds. The firm design and applies new human memories for the replicants. There are two benefits to using memories in products. First, the replicants think and behave like a human, and second, they become more stable and accurate while working. The replicants adapt better in usage and have a background if they wanted to use them in significant fields. The memories and the responses they occur can be defined as the interface of the replicants. The replicants can talk and jest like a human. The memories and artificial knowledge they have is the software installed in their brains. The firm is not designing only the morphology of the products, but also designing the software they use in the field that helps them work properly. The combination of the physical appearance, body of the product, and the software installed as memories complete each other and occupy the whole design.

The memories or the software make it possible to apply the identification test to replicants. The examiner can ask defined questions about the background of the replicant to see if they are working properly or try to break the system. The designed

memory is the part of the system the Tyrell Company created to use in the field and in the production line.

The Tyrell Company is capable of creating good designs but they hire independent designers in case of need. Some of the designers are exerted on certain areas like building an eye or animals that live in different environments. The market has illegal producers and a supply chain. The lower-income level customers can prefer the unlicensed ateliers and dealers. The underground market of replicants has its own pricing and supply system. The monopoly spot of the Tyrell Company has an advantage and this is why they have every single data of the production that has a qualification of confidential business information. The firm both has every single produced replicant's data and information about the techniques of manufacturing.

In the second movie Blade Runner 2017, there are facts that need to be discussed and compared with the first movie to see the development and change with the help of time, culture, and technology.

The replicants occur in the first scenes and they are located and called slave labor.

In the Blade Runner 2017 movie, replicants are developed as upper model artifacts. The Tyrell corporation improved its models and made stronger, faster, more intelligent, and more loyal products. In the first movie, there was Nexus 6 but the model upgraded to Nexus 8. The main and most important difference is the fact that they do not have a lifetime restriction. They can live more than 4 years and have an open-ended lifetime span. The facts are a sign that the company and society trust their products. The new models are much more loyal and force the command they regulated strictly.

The loyalty of the Nexus 8 is enough to labor them in law enforcement as blade runners. The Tyrell Company customized them for field tasks. The Nexus 8 replicants add more to human skills and become much more capable to eventuate missions better than standard humans. Their main duty is to hunt their kind in the field without any hesitation.

The environmental disasters and the heritage effects of the war turned the nature and earth not suitable to involve flora and animal habitats. The situation and the environment are not suitable for farm animals and also the growth of plants naturally in the territory. The firms that design replicants or humanoids also design animals like warms to produce protein sources for society.

The new food sources are more profitable and fertile than the farm animals that naturally evolved to live in their natural habitat.

The test the new replicants apply still occurs in the Blade Runner 2017 but the authority does not use it to identify if the person is a human or a replicant. The main aim of the new test is a physiological stability test for comprehension to know if the replicant is still loyal and can perform its task properly, or if it has started to fade away from the stability line and standard that authority and government assigned.

The equipment the Nexus 8 replicants use is also developed in Blade Runner 2017. The supportive devices are completing the capability of the new replicant blade runners. They are not single street detectives. They communicate with the operation base directly and exchange data instantaneously. The Nexus 8 replicants drive their own vehicles in duty which contain precious communication and searching devices. The upper model Nexus 8 is much more capable than the older versions in the field even though they look less strong in morphology. New replicants feel less pain especially the war models that are specifically design to work in campaign conditions. The war models are favorable to be used for man hunting duties and searching for other replicants which are living illegally and have escaped from their working area.

The new replicant blade runners are not using the conventional old test to define the identity of the suspect. A developed mobile phone sized device scans the suspect's eye ball and reads the model number. The device connects with the database and finds a match about the history and identity of the suspect. The new blade runner can define the identity of the suspect in seconds with a very high percentage of correction. The device is much more faster but the key point is that there is no doubt about finding out if the suspect is a human or android. The device is much more useful in field duty than the previous model.

Tyrell Company eliminates their older models' purpose. First of all, they are more individual machines that may create unwanted situations for the firm. Next, the firm publishes new and better models to market frequently and utilizes destroying old models in the market as a financial strategy. The realization of destroying old models is done by other blade runner replicants.

The Tyrell Company has a long-term plan for their products in the market and the dates they publish new models have strategic points with a time schedule. The firm prepares and designs new models but manages its products in the market by arranging their lifetime and demolishing them as scrap. Even the replicants look like a human

and behave like other working humans in the society.

Furthermore, they are products that have a purpose to supply demands and are treated as machines like normal devices and machines in the real world. The authority uses force to restrict the freedom and movement of the replicants in the field and destroy them without a judgment like a natural human who has rights in a similar situation caused by the illegal activity they have done.

When the service replicants turned back to base, they were controlled and checked by the test. The test measures how the service replicants like new blade runners complete their tasks and it also check if they have changes in their mindset. There are certain limitations and numbers they need to stay in. The new androids are designed as machines but the mind they have is considerably complex to complete tasks that a human can do. The intelligence and thinking sets of the replicants must be close enough to a real human in not only doing similar tasks, but they also need to look and behave like humans to blend into the society. Also, part of their duty is to ask questions to suspects and research like a real human without suspicious gestures.

The separation of the identification and mental health and stability in the test states that the system and the rules are arranged and regulated by the authority. The longer part of the emotional test, which gets its roots from the old test which can be seen in the Blade Runner 1982, is applied in the capable departments like the law enforcement base where there is a need to control the field officers that have important roles about neutralizing criminal replicants. The reason for the discipline is because the blade runner replicants neutralize other replicants which can be ethical questions and hesitation. The products are controlled and maintained regularly with the help of tests and stay ready for duty at any time they are needed in the universe because there are many crimes and illegal activities. The more complex product occurs, the more complex test and maintenance system will be needed. Modern computers and artificial intelligence have similar problems. Using thousands of codes and algorithms to power a mind and create an interface may shape problems which can be hard to fix immediately.

A product used for vital tasks like threatening a human's life must be designed well and tested to stay within limits that are arranged with long-term research.

The Tyrell Company not only produces and sells the product in the market, the firm also designs a system for maintaining and testing. The system improves efficiency and creates customer satisfaction after-sale.

The system works effectively enough to use replicants in the law enforcement department. The replicants or new android blade runners which work in law enforcement are employed in a hierarchy. The commanders of the replicants are humans in purpose. The authorized person in the departments is a real human. The replicants are labored in subordinated ranks to the human commanders.

The reason for using replicants in the fieldwork with a lower rank than human is because the government does not want to use real humans in dangerous duties. Moreover, the replicants have better abilities in specified areas. Humanoids are a threat risk for criminals.

Even the position of the replicants in law enforcement are promoted by their superiors if they complete the task successfully.

In the Blade Runner 2017, there are developed digital replicants which are code-based. They do not have a body but are designed to help in the house. A projection system creates their holograms and they can be visible in the house as an assistant. With a specialized device, they can be carried out of the building they are located. The fact is that digital replicants which are based on artificial intelligence can be bought by other replicants who are labored in professions and earn their own money to live or maintain their existence. The replicants which have bodies are capable of buying and using digital assistants, and the emotional connection between them is accepted in society. Both creations are seen as artificial objects. The voice command system in the first movie which was created in the '80s developed into a visual artificial intelligence assistant. The digital artificial intelligence assistant has emotional responses. They are costumed assistants or digital replicants for customers.

Not only the digital assistants can be customized, the replicants can be customized for the clients too. The manufacturer can produce and arrange their abilities, appearance, and behavior. The new replicants can be produced as close as a human.

The firm still keeps every single bite of data about their products even before the war and blackout.

The new replicants are more capable of analyzing human emotions while listening to their voices or watching human movements.

The memories of the replicants in Blade Runner 2017 were designed by real humans. The reason is because only a human can create human-like dreams and

memories. The memories installed into the replicants' brains should be emotionally perfect, and this is because only a real human designer can produce them. Artificial intelligence is not capable of building them. If a human creates the memories, the replicants behave like a real human. The human memories help them to adapt to society better and fluently. Even the developed manufacturing facilities of the Tyrell Company firm preferred a human designer to create memories they use in the humanoids they produce.

The information given in the paragraphs above has been studied to understand the connections between the two films and the purpose of the study. In the study, the crucial images taken from the movies will also be compared in order to reveal the definition of the problem more clearly. This comparison is illustrated in the following paragraphs.

Figure 3. Opening Scene of Blade Runner

Figure 4. Opening Scene of Blade Runner 2049

The first scenes of the first and second movie show directly the change and decisions of the society and government about the environment, and the effort of having a cleaner less polluted nature. The similar sense will show itself in the movie by using different products and the regulations in public areas and government departments.

Figure 5. Eye Sensor of Identification Device

The device that collect emotional responses in Figure 5 was heavy and hard to use but must be carried by the professionals on the field to find out if the person is a replicant or a real human.

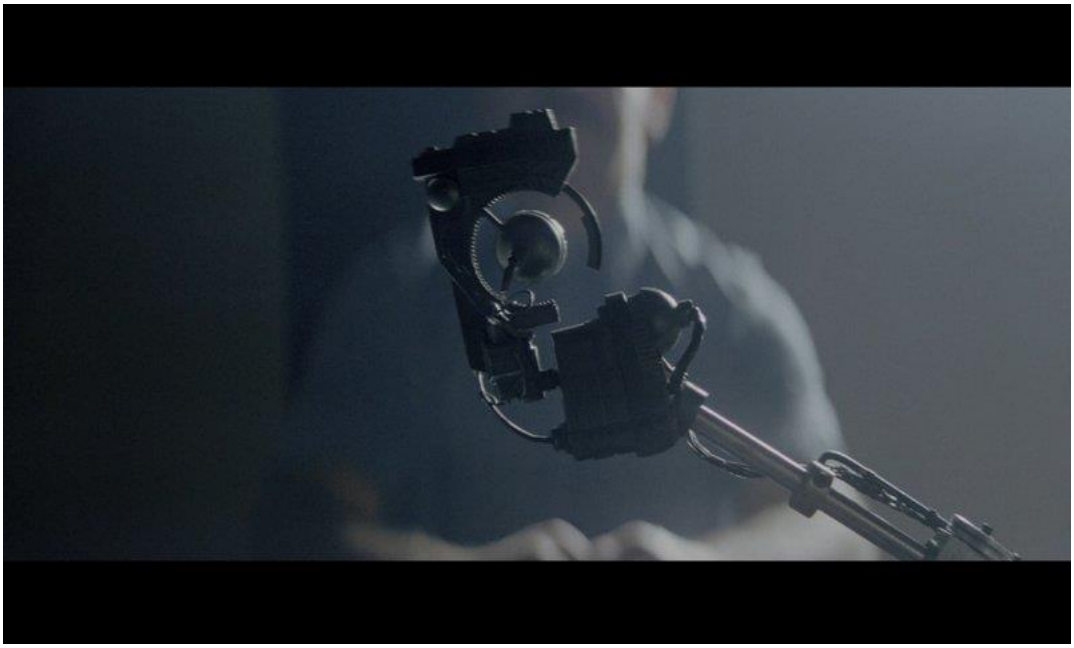

Figure 6. Base of Identification Device

The test was taking too much time and all the data must be controlled by a professional that is exerted on the field.

Figure 7. Test Device Located in Wall in Blade Runner 2049

In the second movie, the emotional detection device is positioned stable in the department and only used for controlling if the replicants are on the line and in the limits that the government regulated to maintain their psychology and duty.

Figure 8. Usage of Test Device

The questions and word are asked and wanted to repeat to have a control phrase. The test that is taken longer time is still used but in a different place and level of the system but for a quality control purpose.

Figure 9. New Identification Device in Blade Runner 2049

The new identity definition device which is seen in Figure 9 is designed to carry in field and the dimensions of the device same as a modern mobile phone.

Figure 10: ID number in the Eye of An android in Blade Runner 2049

It is easy to hide while working in the field because it has memory and net

connection to control and match data it gather from the suspect. New replicants in the second movie has their ID numbers in their eye balls which makes it possible to be controlled and identified much faster without a doubt in the field.

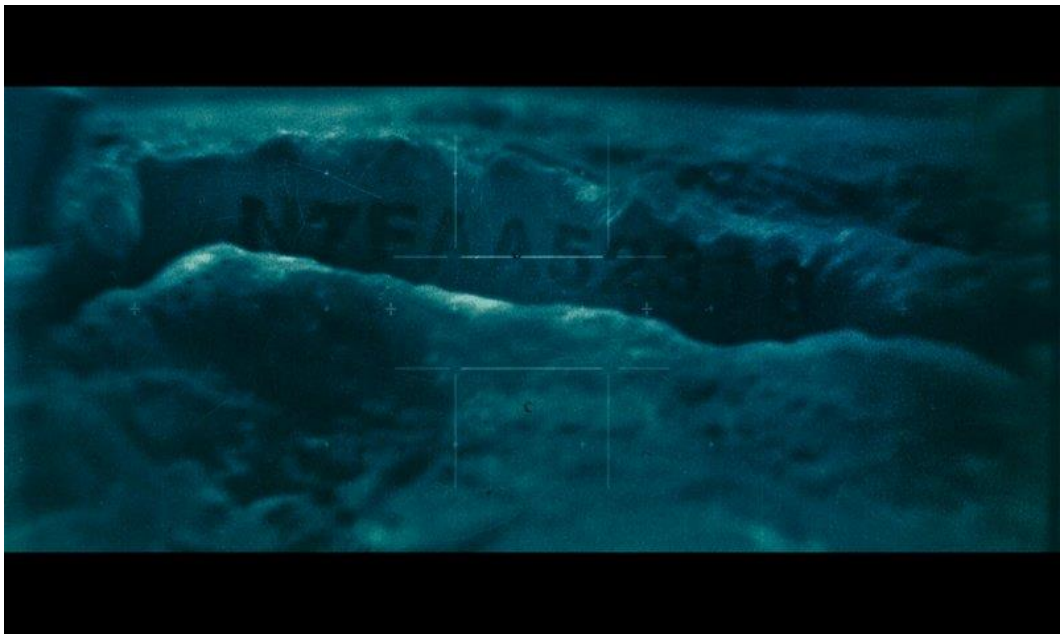

Figure 11. Model Number of an Android in Blade Runner

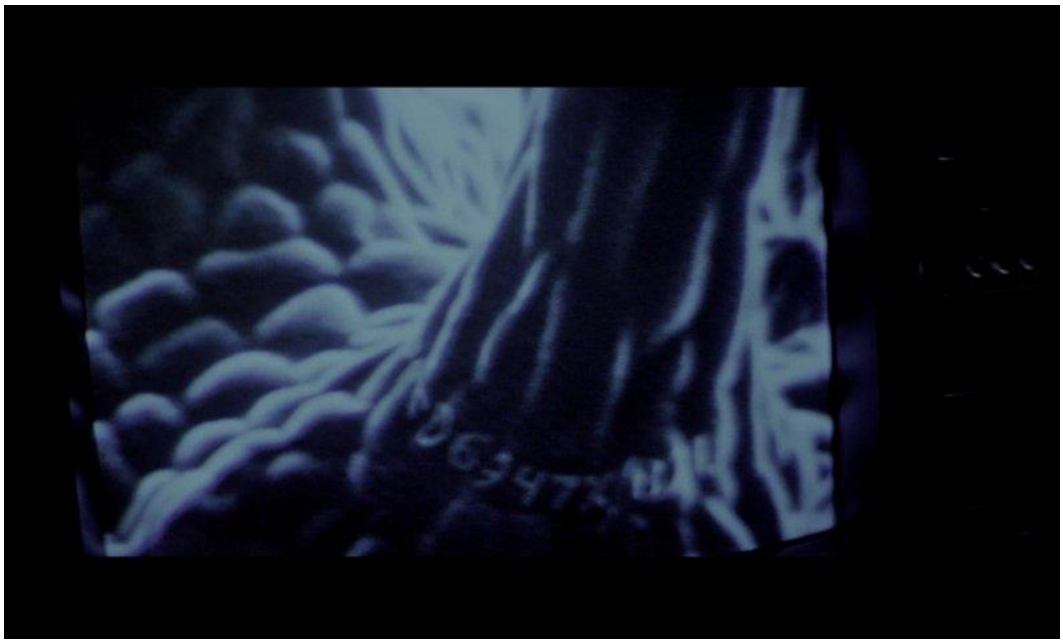

Figure 12: Model Number of An Android in Blade Runner 2049

The Figure 11 and Figure 12 are formed first. Furthermore, the second movie shows the id number that is located in the tissue which is only visible under microscope developed and located on the eyeball as a design decision.

Figure 13. Model Specifications in Blade Runner

Figure 14. Model Specifications in Blade Runner

The Figure 13 and Figure 14 show the production numbers, inception days, and the specifications of the robots that are taken from the manufacturer.

Figure 15. Model specifications in Blade Runner 2049

In the second movie, similar data was used to understand the skills and specifications of the replicants. However, the department added more biological information because the manufacturer made the replicants more close to human body and the design of the biological parts are more similar to humans.

The new models are much more close to a real human and the design of the half biological parts are more developed.

Figure 16. Usage of androids in field by government in Blade Runner 2049

The duty of being a blade runner is now serviced by replicants. The government employed them in the police department and they can complete an investigation more capable than a human which they have the authorization of killing or retiring the replicants by using firepower.

The replicants are similar to products that a human use on field duty. The form of the human body that the replicants have can use every object and service that is designed for humans. The adaptation is much easier to actualize and less expensive than creating a new world for robots and androids that cannot handle and accord. If the android has broken or needs to maintain in the department, a real human can take the role with the same products and apply the commands that are given to them in their physical and mental capabilities.

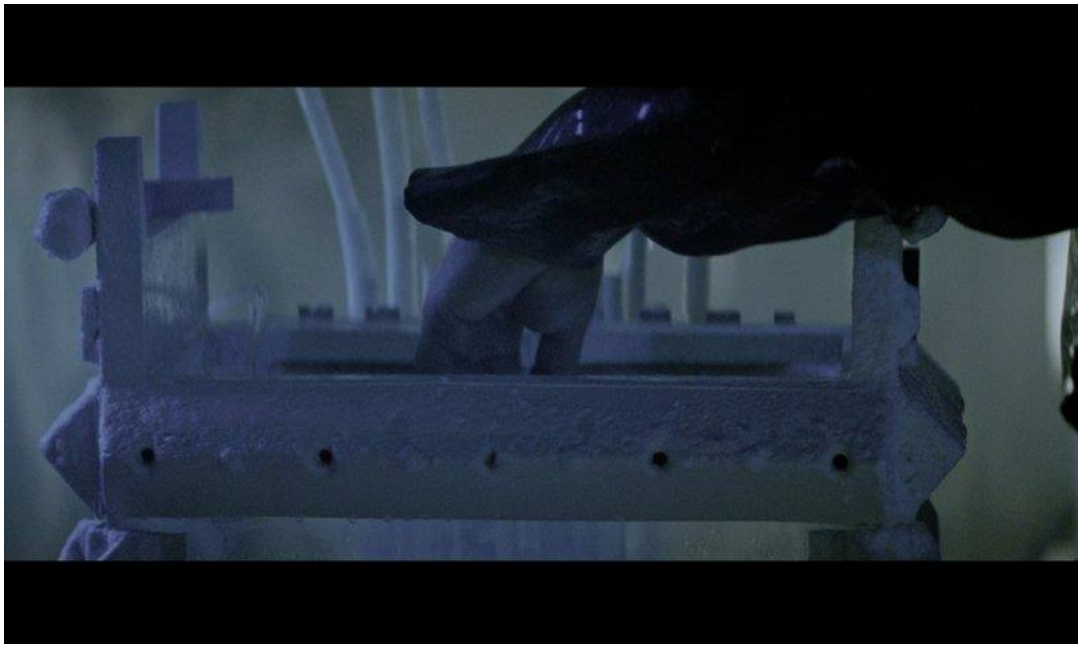

Figure 17. Cold Resistance in Blade Runner

Figure 18. Heat Resistance in Blade Runner

Both frame which is Figure 17 and Figure 18 is taken from the first movie and shows that the replicants are durable in hard conditions like cold or very high temperatures that a human body can never tolerate. The replicants in the second movie are much more capable than the old replicants. The development process of the replicants made their physical durability much more skillful.

Figure 19. Police Department in Blade Runner

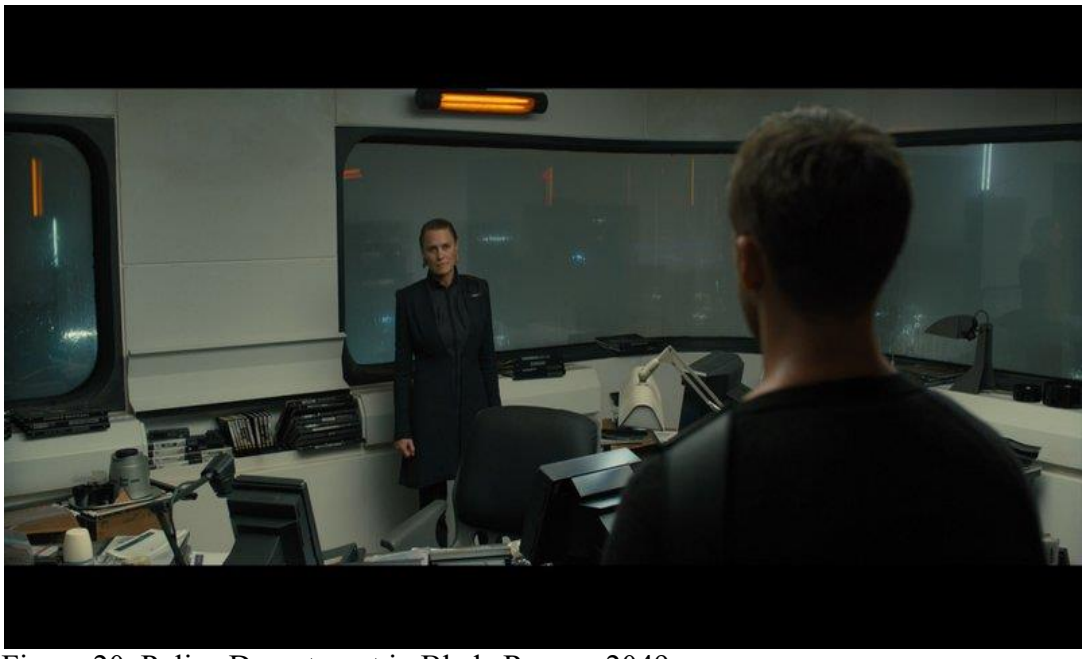

Figure 20. Police Department in Blade Runner 2049

The police departments become more technological in the second movie and they are using replicants as their personnel. The government decided to use technology in the departments after the development and design of the androids. The whole system is designed to use replicants and modern technology.

Figure 21. Drone Usage in Blade Runner 2049

Figure 22. Equipment that used by Androids in Blade Runner 2049

The replicants are equipped with high technological devices to hunt other replicants which are living and running underground without permission or after a crime they were involved in.

Figure 23: Testing room for androids in Blade Runner 2049

Figure 24. Testing Process in Blade Runner 2049

The replicant which is employed by the government is sitting and having the test by their own will. The test is not used to identify if the person is an android or human. The aim of using the old technique in a different way is to find out if the replicant is still within the limits and following commands or if it started to behave in it's own path or is rebellious.

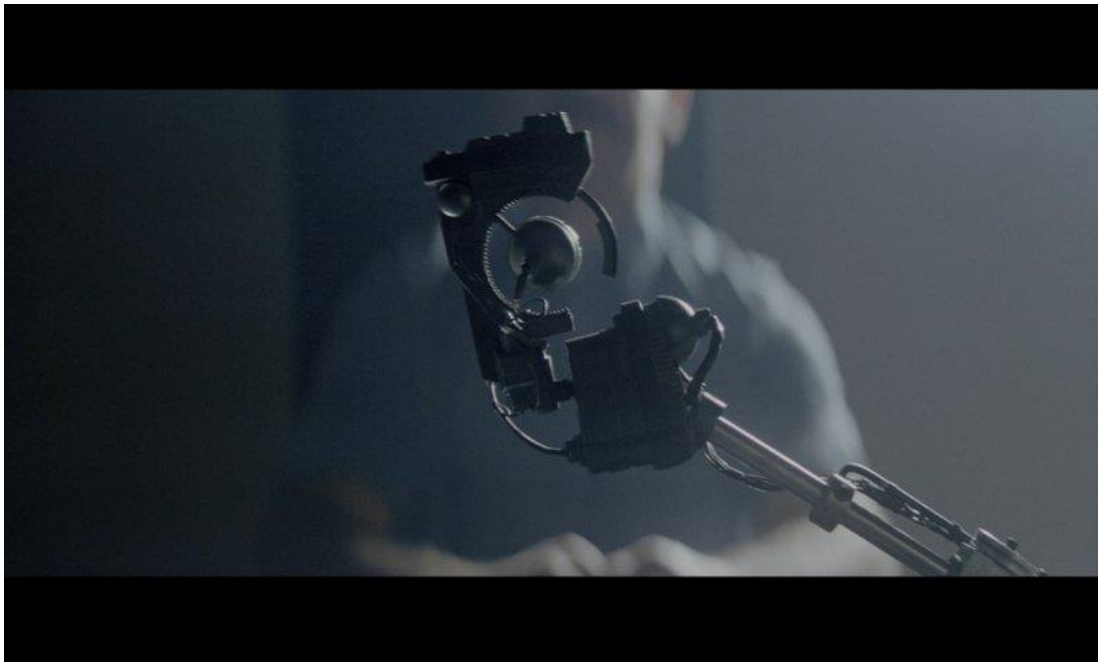

Figure 25. Testing Device in Blade Runner

The similar eye tracking device is located to briefcase that folded into base in Figure 25.

Figure 26. Testing device in Blade Runner 2049

In Figure 26, the second movie shows that the device is placed to a wall that the replicant interrogated.

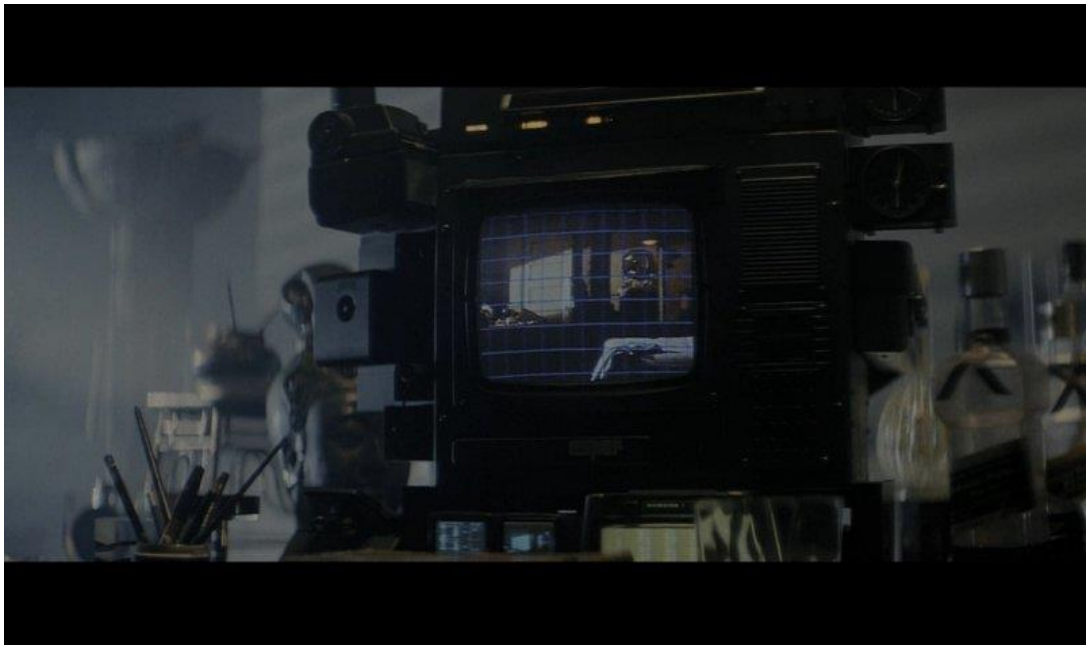

Figure 27. Voice Command Technology in Blade Runner

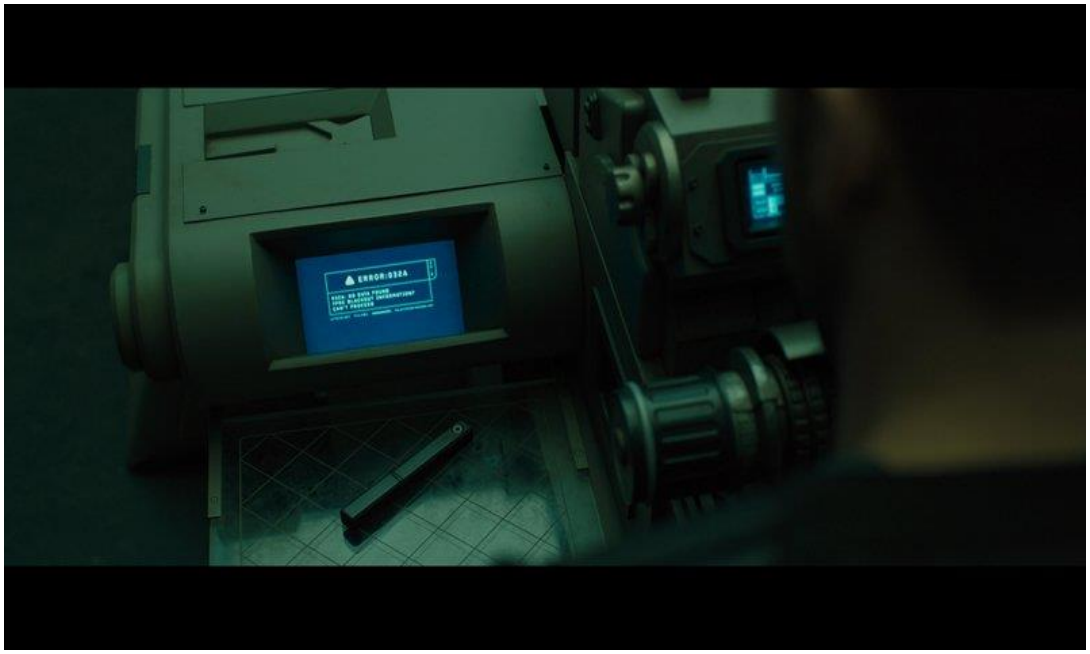

Figure 28. Voice Command Technology in Blade Runner 2049

The frames are from the first and second movie which is Figure 27 and Figure 28 that has similar technologies. Moreover, in the second movie, the equipment is used by an android and with much faster skills. The android can read and analyze the data faster and more efficiently.

Figure 29. Waste Management of City in Blade Runner 2049

Even in the first scene of the second movie, there is still pollution in the world and the thrash masses are brought out of the city. The cyberpunk universe has two faces. One of them is showing business and advertisements that make the world look like a good place to live and spend on luxurious goods. However, the war and manufacturing are more than the limits of nature. As a result, they are harmful to the environment and persons who are living in there. The ethical questions are critical to understanding the word “punk” in cyberpunk. There are heavy regulations and oppression in society that force them to break the system with the technology and cultural facts that they created on underground platforms. Even the replicants that are designed and produced to obey can make their own free world to behave free.

Figure 30. Illegal Human Power in Blade Runner 2049

Figure 31. Illegal Human Power in Blade Runner 2049

The humans that is not recorded to official databases are used as slave labors in conditions worse than a replicant have in the city.

Figure 32: Exhibition of androids in factory in Blade Runner 2049

The company that produces and develops the replicants exhibits their designs in the frame that can be seen in Figure 32. The human figure that is posed without any cloth and hair is like a figure that a painter studies the human body with chalk on a paper with line works and shadows. The company makes a similar body with three-dimensional goods that allow them to create a product that is similar to the human body and develop it for the demands of the customer.

The morphology of the product can be customizable. Moreover, the abilities and the mental background of the android which is similar to software of the modern products, like artificial car systems or the interfaces of the mobile phones and their applications, can be organized and customized for the demand and needs of the customers. Creating the human-like robots and androids or the ones that actually look and behave like an animal is the honor of the company which is exhibited to the public free as a public relation and proves the capability that the firm has.

Figure 33. Data Base in Factory in Blade Runner 2049

The firm collects and keeps data science produced by the first replicant. The company also keeps the data that is produced in the interrogations too. The face-to-face talk of a human and an android is important for them to produce better replicants in the future.

There is a blackout in the second movie which as a result damaged the electronics and the memory devices. However, the company keeps most of the data and archives them on high-security bases. Only specialized authorities are capable of achieving them. There is the danger of industrial spying if the data become public from the archive.

Figure 34. Neural Camera Prosthesis in Blade Runner 2049

Figure 35: Usage of neural camera prosthesis in Blade Runner 2049

The technology that is used to produce androids is also applicable to the human body. The capability of the company makes it possible to use the knowledge of the human body to develop devices that is connecting to the human body by neurological connections. This knowledge helps to develop better medical studies and help humanity to improve new and better cures for injuries, disabilities, and disease.

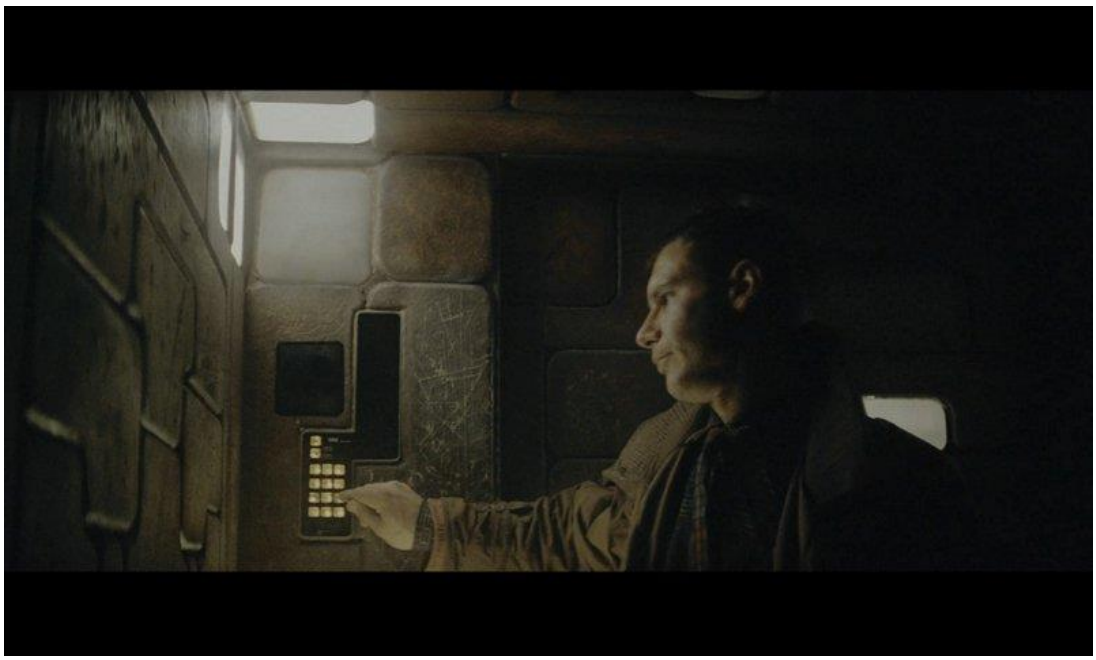

Figure 36 Smart Home System in Blade Runner

Figure 37. Smart Home System in Blade Runner 2049

The home assistant system looks similar in both movies but in the second movie, the system has an upgrade that contains a visualized assistant in the house with a holographic projector. In Figure 36, there was not a technological device developed enough to use as assistants in 1982.

Figure 38. Smart Home Projection in Blade Runner 2049

The holographic projector located on top of the main room in the house reflects the visuals of the assistant in the house realistically which is similar to a real dimensional human walking and moving in the house which can be seen in Figure 38.

The aim of the projector is to reflect a digital replicant that has artificial intelligence that does not have a body and make it visible to a customer who purchases the system.

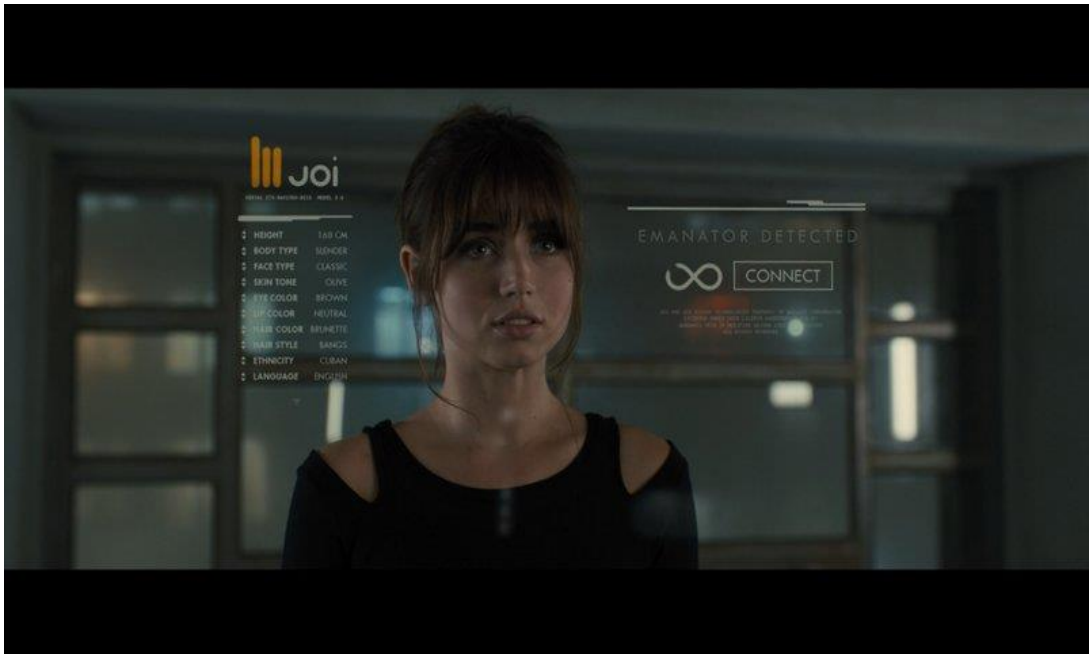

Figure 39. Digital Smart Home Assistant in Blade Runner 2049

The digital assistants or the digital replicants can be purchased by replicants that have real physical bodies.

The digital replicants that are located in the houses can be assorted and fully customizable. The customer can change the morphology of the assistant and voice like a modern digital assistant used in smart homes. The ethnicity, color of the eyes, skin color, hair, tone of voice, and clothes are customizable.

There is a social and emotional connection between the real replicants and the digital replicants. The relationship between them is accepted in society and by other replicants as a sexual preference.

The digital and physical replicants know their existence and have the consciousness of each other. The human memories which are designed by the corporation make them feel like real humans in their private life and toughs.

The replicants accept themselves as a person and buy gifts and do favors to make themselves feel better.

Figure 40. Present of K to Assistant JOI in Blade Runner 2049

Figure 41. Mobile Projection for Smart Assistant in Blade Runner 2049

The digital replicants can be carried anywhere in the product that the corporation produced and sold as a connected product to one they located in the house. In the scene, it is given to a digital replicant by a real replicant as a present to make her free life out of the house everywhere the customer goes.

Figure 42. Android called Rachael in Blade Runner

Figure 43: Copy of Android called Rachael in Blade Runner 2049

The frames are the proof that the company keeps the data of the replicants and copy them completely at any time they want in perfect conditions.

Figure 44. Android Animal in Blade Runner

The owl from the first movie proves that the corporation can produce realistic animals in the environment that extinct many animals in the nature that can be seen in Figure 44.

Figure 45: Protein Farm in Blade Runner 2049

Similar studies of the corporation used in the fields to produce protein.

Figure 46. Repair of Android K in Blade Runner 2049

Figure 47: Daily Life of Android K in Blade Runner 2049

The replicants are hard to injure and can be fixed much more easily than a human. However, in standby or normal mode, they live like a regular white-collar person who is living in a metro-pole.

Figure 48. Design Process of Android Memories in Blade Runner 2049

A human designer creating memories for replicants in her studio can be seen in Figure 48.

Figure 49. Designer of Memories in Blade Runner 2049

The memories are designed by real human designers to make them as real as possible. The designers are still human that has the complex creating skills and even the technological developments in the blade runner universe.

Figure 50. Normal Look of K's Dinner in Blade Runner 2049

Figure 51. Modified Look of K's Dinner in Blade Runner 2049

Figure 50 and Figure 51 are from the second movie and represents the fact that replicants have a need of aesthetic and emotional arrangements and cases.

Figure 52. Real Animals Living in Blade Runner 2049

The scene that appears in the second movie contains living real bees as the proof of the changes in pollution in the environment. The real living habitat in the environment proves that the conditions of the world change in a good way over time.

The technological developments that damage nature made humans live in their own habitats which are restricted to cities and made nature to help itself through repair and maintenance.

Using of bees is a purposed preference because the bees need floral habitat to produce honey and live. The existence of the bees is proving that nature is becoming normal and a floral texture that is growing in the field.

CHAPTER 4: HUMAN ASPECTS ON PRODUCTS AND INDUSTRIAL DESIGN

"According to Dreyfuss, industrial design and science fiction have a number of features in common. Experiencing the unknown, reaching beyond people's dreams, and therefore going beyond existing walls, shows that designers and the world of science fiction move in parallel." (Dreyfuss, 1955)

Two important aspects of science fiction are novels and movies that complement each other in many ways as ways of exploring things. Science fiction is a literature of ideas, and the written word is an ideal tool for expressing and exploring ideas. Ideas can also be explored in movies. The visual nature of movies offers the opportunity to enrich the science fiction experience with an impractical level of definition of form, space, movement, and function on the page. Therefore, the depth of the visual world depicted in science fiction movies and the existence of humanoid forms in science fiction movies in this study are very meaningful and important in terms of industrial design.

Designing the future and the future of human body are based on the evolutionary process and technological developments.

Blade runner films are suitable for visualizing the human aspects of products and the design process of how to fit into a product that speaks, walks, and works. An example is a person existing in the society but seems to have been produced in a factory.

In addition, based on the movies, it can be stated that the time difference is critical to understanding how the design language has changed or not in a society that is much more familiar with modern technology and artificial intelligence. Therefore, it can be assumed that technological developments will also change human life.

According to Tegmark (2017), the changes are defined as life versions such as life 1.0, life 2.0, and life 3.0.

Life 1.0 is the biological life that involves all bacteria and other organisms that sustain their lives in a body or cell which occurs through basic living actions such as eating, breeding, and making simple chemical reactions that make energy from a food source. The intelligence of the organism is simple and only enough to survive and sustain its life in an environment that is suitable for them. Most of their future and the

changes in their DNA and morphology happen by evolutionary process naturally without an operation from outside.

Life 2.0 is culture. After the animals become intelligent enough like homo-sapient, they create a culture and knowledge. The human species used that ability to survive from nature's difficult conditions, separate and invade the earth, and design tools that make them capable of doing works that they can never do with the bodies they have which are formed in nature by natural selection and evolution. There are some developments and processes from Life 1.0 to Life 2.0. The good changes in Life 1.0 gave humans the capability to create culture and knowledge that is possible to transfer to the next generations by using language that is repetitive and easy to use by members of the commune, group, or the society they live in. However, they do not have enough technology to change the limits of the human body and the capacity of the human brain.

Life 3.0 is different from the first two versions because the changes are not natural. It is technological and artificial. The culture, knowledge, and the know-how are developed and after a level, they are developed enough to change the human body and mind by human interventions out of natural selection. At the level of Life 3.0, it is possible to change the human body and combine the technological parts and devices with them. Every part of the human body, mind, and the combination of it becomes a product that is designed and manufactured for its purpose and needs.

Technology has certain futures. The body parts can be changed with new ones when they become older or injured. They can be customized for special work and duty or just for fashion in aesthetic purposes. The Life 3.0 fact is not only the physical parts or body organs, it contains the developments of the human mind and the interaction between the internet, objects, and other minds that create connections between non-living objects, products, and other human minds which are equipped with similar devices that linked with biotechnological chips and connections using neural impulses and thoughts. It is the direct connection between humans and products. The product and the human become a whole structure.

The technology that makes it possible to connect the human body and product or build robots that look like a human is vital. However, when the real applications invade the free market and culture, there is a need for designers.

The simple and unique development of the technology is a capability, but it must be managed and sold by regularity and the demand of society. The technology

must be designed and adopted as a product or service with options. Adopting the technology to human product relationship has certain fields that designers have the profession and capability. It is direct human-object interaction which is both physical and psychological.

A robot that looks like a human or a human that have robotic parts is the perfect example of human product interaction and connection, and the problems that occur in the mutual life are asked and solved by industrial designers.

The needs in the future will be different than the time humanity lives in the current environment. The power of futuristic thinking is critical.

Every futuristic thought is a designing process that has roots in previous products manufactured. The nature of designing is creating something new that is not in existence from the pieces of past and available knowledge.

4.1. Function and Aesthetics Elements in Humanoid Products

The culture is critical to research aesthetics in robot and human-robot technology. Standard known robot look or industrial machines have an irritating effect of non-living objects on the mind and consciousness of humankind. Science fiction literature and the film industry have many examples of the villains and samples that have bad behaviors which are robots harmful to people and the environment disguised in a robot that looks like dangerous terrifying creatures even though there is a possibility that the artificial intelligence and individual robots can be decided in a wrong way and harm people. The bad disguise has a powerful effect on people.

This is much more the same in blade runner movies. The first stage is making the technological and industrial look more familiar to people in terms of look to be seen as safe and charismatic.

Creating the emotional connection between the user and the robot that looks like a human is critical. After the acceptance of the human-like robots by society or family, they can complete the tasks and become functional.

The familiarity is significant when accepting a body part and not only the whole robot body that has a human-like structure and looks. As seen in the blade runner movies, even if the product looks like a real human, it may not be totally owned by the users and community although they dress up like a real person who has the substructure and prestige. Designing the human body or the appearance of the product and morphology can create benefits especially if it is customizable such as the joi digital

assistant in the Blade Runner 2017 movie.

The obsessive effort of the Tyrell Company and Wallace Corporation in creating products which are more human than a human can be explained with the approach. The developments of humanoid or android movies show the process in time that the story happens and evolves.

If the date of the movie is closer to the current time, it therefore means that the appearance of the androids and robots are close to industrial robots and machines that have stainless still parts and unimproved joints. The robots even do not have skin or shell that covers the body parts and joints of the mechanical structure. The perception is not only limited to movies. In addition, it is common sense that if a robot's appearance or disguise more close to a real human, it is accepted that it is a more complicated, developed, and technological model and the manufacturer has abilities to produce sophisticated appliances.

The functional difficulties of making a mechanical product like a human body feed the perspective more than any other production in the industry. The functional structure of the human body forms the shape of its appearance.

The skeleton is big enough to carry ahead and is capable of containing a healthy thinking brain, the tendons, and muscles that support the skeleton shape and the form of human posture.

Its aim is to always get closer to the critical point even though it is difficult and expensive to develop a human-like robot.

The robot may have tires, plates, or look like a box but the human look of the robot locates it in a different level in society, and even the software it uses can be made in a developed futuristic mobile phone.

One of the most important and critical points that an android has is its hands. The hands that human have which are capable to do fine words and make tools is one of the hardest skill a robot can have.

If a robot has human morphology, it can use the products that are designed and manufactured for humans. They can easily adapt to a world that is created for humans.

A human-like robot can do everything that a person does without rejecting any emotional responses. A box shape assistant can only communicate and give information from the internet, but a robot that has a human body has the real power and abilities in a world designed for humans.

Achieving the goal of making a robot that is similar to a human also shows and

proves the skills and qualities of the manufacturer. The reality of the facial expressions and a realistic hand that is completely functional proves that the level of the producer is complex, high, and advanced

4.2. Effects of Human-like Products on Media and Market

Humanoid robots are professional service robots that are designed to move and interact like humans. They add value, like all service robots, by automating duties in a way that saves money and increases productivity. Humanoid robots are a type of professional service robot that is still relatively young. They have long been a pipe dream, but they are finally starting to become commercially viable in a variety of applications.

The market for humanoid robots is expected to develop significantly at present. Humanoid robots are expected to reach a market value of $3.9 billion in 2023, with a 52.1 percent compound annual growth rate (CAGR) between 2017 and 2023. Bipedal robots are predicted to expand at the quickest CAGR of all humanoid robots during the foretasted time frame.

The rapid growth of the humanoid robot market is primarily owing to these robots' rapidly developing capabilities and their feasibility in an ever-expanding range of applications.

Humanoid robots are being utilized in the examination, upkeep, and debacle reaction at power plants to let human specialists to be free from arduous and hazardous undertakings. Likewise, they are ready to assume control over routine assignments for space travelers in space travel. Other assorted applications incorporate giving friendship to the older and debilitated, going about as an aide and collaborating with clients in the job of secretary, and possibly, in any event, being a host for the development of human transfer organs.

The android robots are in development duration but the artificial intelligence can be adapted to mobile phones and computers easily because of the processing power and CPU they contain on their boards.

When Figures 53 and 54 were examined, it appears that the movie and real world comparison are directly linked. Figure 53 shows the digital assistant featured in the movie, while Figure 54 shows the real digital assistant designed by the Samsung brand.

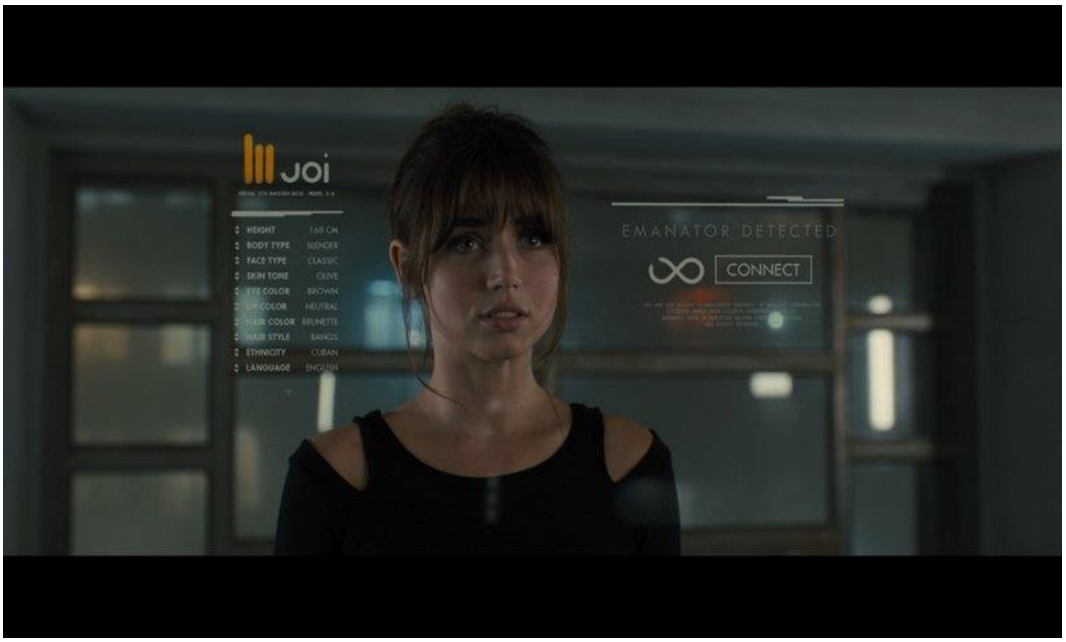

Figure 53. Customisable Smart Assistant in Blade Runner 2049

Figure 54. Digital assistant Sam of Samsung (Source: virtualhumans, 2021)

The first frame from the Blade Runner 2049 presents the Joi which is a digital assistant that have complex artificial intelligence abilities. The second picture represents the SAM which is the new voice command assistant of Samsung that planned to be installed and used as an interface product that helps the customer by voice and to make them react with human-like expressions.

The Samsung Company uses a voice command system called Bixby in their

products. However, in the close future, they plan to use SAM as their main assistant command system and the future aim is to make it possible to download from their internet store such as other applications similar as the Joi in the Blade Runner movie.

There are three other voice command digital assistant in the market. The first one is Alexa which is produced and developed by Amazon Corporation. Most forms of the Alexa software is installed on a Bluetooth speaker to use in smart homes that are surrounded by other smart products in the home web built by the customer.

The next digital assistant is Siri which is the intelligent assistant of apple products. It is automatically installed on every Apple iPhone and ready to use. The critical fact in the situation is that firms like apple limit the connection of their assistants to their products and product families. It is their marketing strategy by using and designing the specifications of products they manufactured and developed.

The last example of a similar digital artificial assistant is the Google home system. Google home is specialized in Android phone systems that are owned by Google Corporation. Every android phone can use and run Google home and control many other products in the market which can connect with it on the local web or internet. Even if it is an application, there are Bluetooth versions of the Google home to where it can be located in the smart house and connect with other products to give them commands and control them.

Figure 55. Google home digital assistant. (Source: google, 2021)

All of the assistants have a human voice and can be regulated by voice commands. The voice tone can be set as male or female. The reactions of the digital

assistants are designed as close to a human. They can even make jokes and tell little funny stories. Moreover, even if they do not have a body and are installed on a board in a Bluetooth speaker, the responses of the assistants use a developed artificial intelligence database and whole internet data. In controlling the smart household objects and smart furniture, they can connect to the internet and communicate with other devices and customers and use the whole data from the internet.

One of the most important specifications of the digital assistants is that they gather data from the user. The machine learning system saves the data from the user and uses it to improve its service and send the data to the producer.

The data gathered from the digital assistants are used to develop better assistants and create market research to draw a path about creating new products, understanding customer behavior, making a demographically map, and publishing customizable advertisements that is fitted and arranged for the customer's demand and needs. The human-like product behaves like a smart-talking assistant but the capabilities of listening and recording the internet data that users remained after they used applications and browsers are used by the corporations that sell their products in the market.

The robotic skills of recording and defining the conditions and information surrounding is critical to respond and react to the environment, but the data they gather from the place they occur can be transferred and shared on an internet connection which is vital for them to work properly. Most of the assistants are disabled if they are not connected to the internet. It is therefore important to make a warning to customer about their online status if the user wants to use the application with all of its capacity.

The human-like approach can be adopted in other products such as smart autonomous cars that read the road and drive without intervention. The connection between the human-like product and its body has different aspects. First of it is thinking like a human. They mimic the complexity of the human brain. Next, the thinking resolution is transformed into mechanical parts to occur as a behavior or action. The last one is communication between the user and the product.

Figure 56. Boston Dynamics Robots (Source: bostondynamics, 2021)

The human-like robot concept is accepted and developed in the real-life industry. They are the basic roots of the modern androids which are seen in the Blade Runner movies. The usage and the advantage are accurate in futuristic design thinking.

The technology has two fields capable of developing a body to do human or animal moves and a software powerful enough to complete a complex task given to the robot.

In industry, a firm called Boston Dynamics can be a proper example to represent a company that is capable enough to make tests and research to manufacture robots that move and look like real animals or humans. The firm has products in the market that move and look like a dog that is used as a guard in the field. The biological developments in evolution made it possible to use animals and other organisms to use their body compatible with the environment. The biological approach of the robot body which has similar limbs and body parts to real organisms is suitable to be used in nature efficiently. The cars and trains need asphalt and railroads but a human-like product can walk in nature and use the topography and habitat for their duty.

The opportunity of having two hands and two eyes three-dimensional seeing ability improves the skills of the robot in an environment that is natural and artificial that is built by humans for other humans.

One of the most vital futures of the human-robot relationship is connecting the

product to the human brain in the most direct and pure method. The neural chips and connectors can combine the human body and the product and make a person use other products directly on the internet and communicate with other products and persons.

The Neuralink company is the most suitable and actual example to represent the importance of the product human connection.

Neuralink was established in 2016 by Elon Musk, a gathering of specialists in regions like neuroscience, natural chemistry, and robotics. The brand name "Neuralink" was bought from its past proprietors in January 2017.

In April 2017, Neuralink reported that it was planning to make gadgets to treat genuine cerebrum illnesses temporarily, with the possible objective of the human upgrade, once in a while called transhumanism. Musk had said his advantage in the thought part of the way originated from the sci-fi idea of "neural trim" in the anecdotal universe in “The Culture”, a progression of 10 books by Iain M. Banks.

In April 2021, Neuralink exhibited a monkey playing the game "Pong" utilizing the Neuralink implant. While comparable innovation has existed starting around 2002, when an exploration bunch initially showed a monkey moving a PC cursor with neural transmissions, researchers recognized the designing headway in making the embed remote and expanding the number of embedded electrodes.

The representations was done on a live show and published on YouTube. The company can create connections between non-living objects and an animal's brain in the condition that the living animal controls the product or software by its thoughts.

There are devices that read brain waves and are located out of the brain as a band or hat that is textured with cables and sensors, but the achievement of the company is so that they can get data directly from the living nerves.

It creates a possibility that the paralyzed persons can connect with their disabled limbs or the products that are designed for the human body can be adopted. It is the true connection between humans and a product.

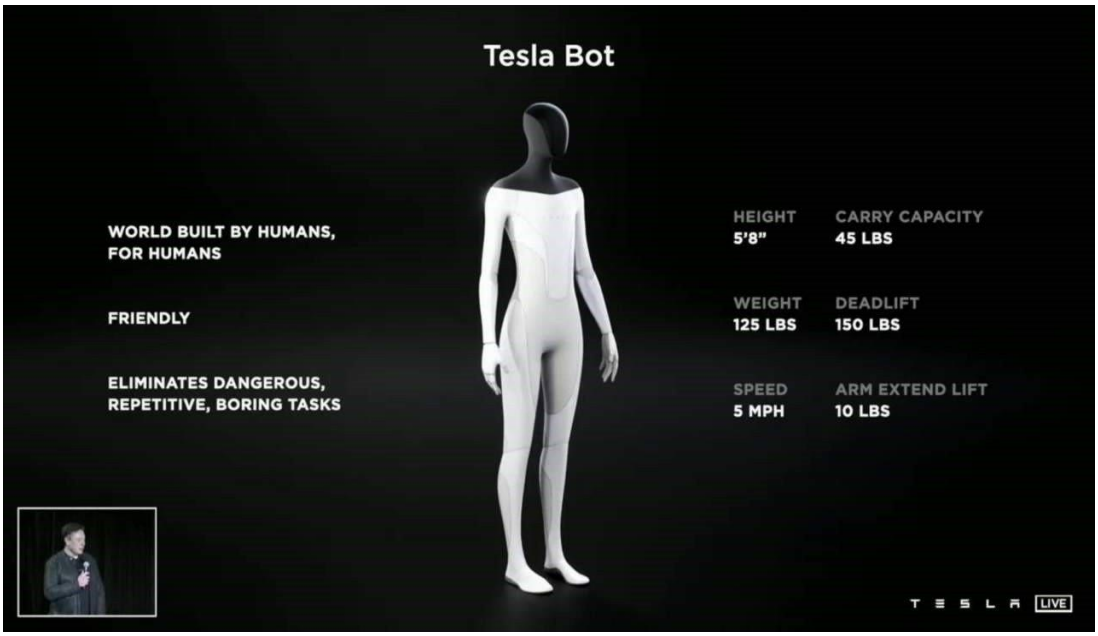

Figure 57. Tesla Bot Futures (Source: tesla, 2021)

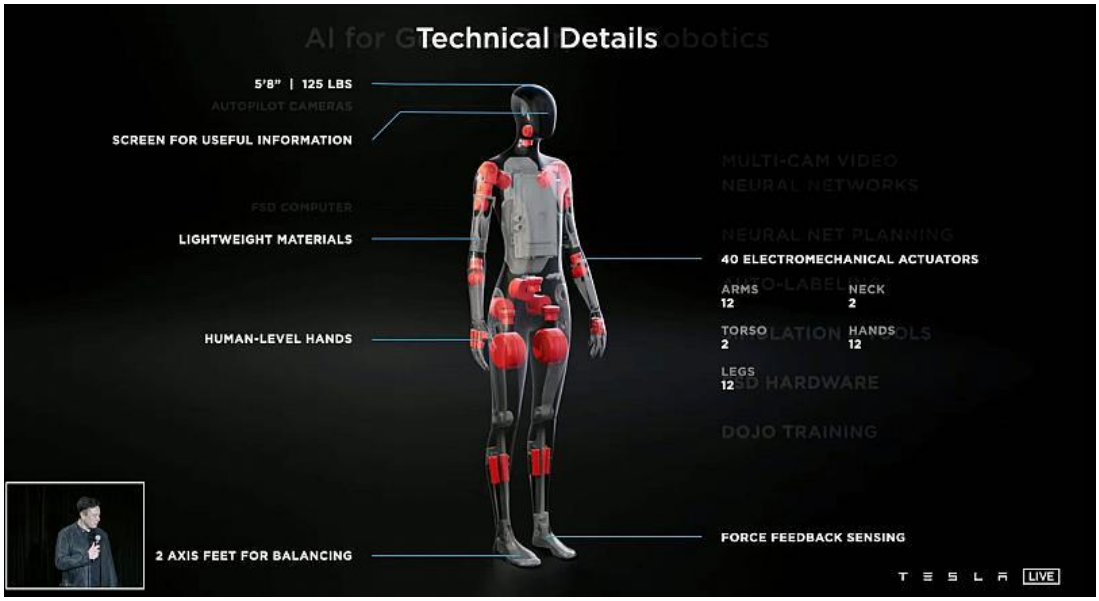

Figure 58: Tesla Bot structure (Source: tesla, 2021)

Tesla announced their future android robot tesla bot and confirmed that they will make a prototype in one year. Tesla Company is actually a robot company that makes cars which is autonomous, watching surroundings, processing them, and reacting to them with the best possible movements.

The firm uses industrial robots in the production line. Human power is only 20

percent of the line they use in manufacturing their autonomous cars.

The firm explains that the Tesla bots will be used for dangerous, repetitive, and boring tasks. The Tesla bot uses similar tracking and processing system that Tesla cars have and use in daily tasks.

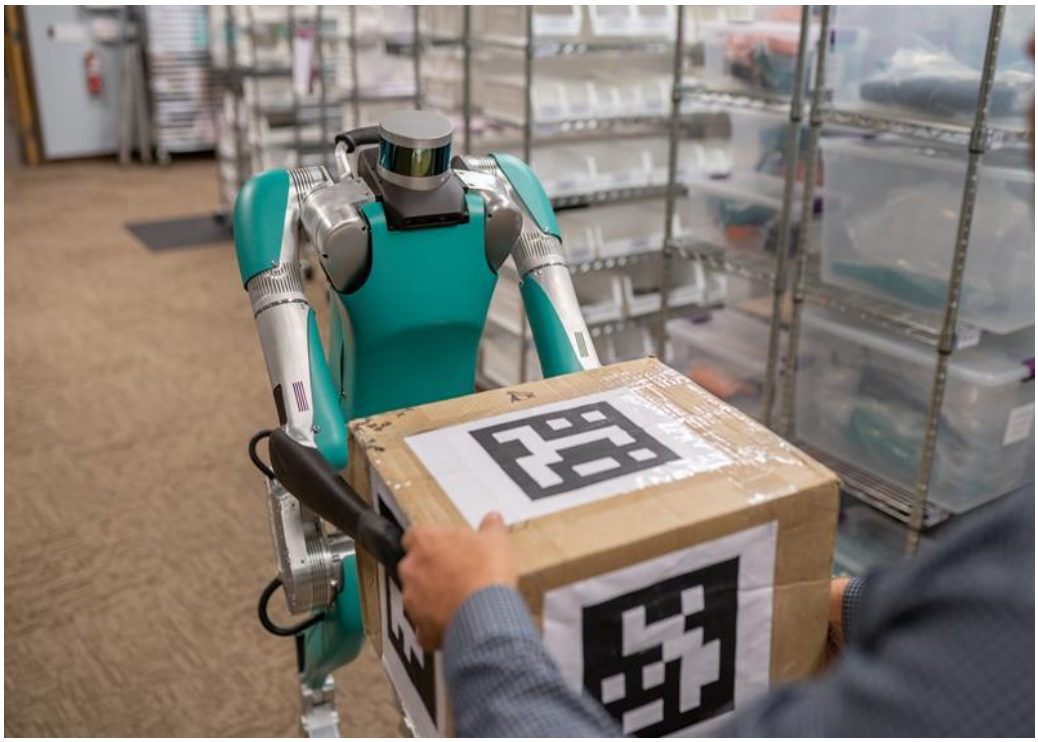

Figure 59. Digit Robot (Source: ford, 2019)

Ford became the first customer for an android robot called Digit. They plan to sell them to customers that have commercial works and need human power to carry and store goods in the storehouses. The robots can be also used in the storage of online markets that stock their goods in huge areas that are hard for a person to find and carry heavy objects rapidly without breaking the cycle of packaging and cargo work. The robots can walk like a human and carry boxes to the wanted locations.

The Ford Motor Company plans to sell the robots with their commercial vehicles. The robots will be online and connected to vehicles. They are planning to be a part of a package delivery service.

The First Digit prototype was shown in 2019 and the future models will be more developed and will be customizable for the customers that preferred to buy Digits. They will also collect data from the tasks they have done and give information about the process and package to the delivery point. The digits will remember where to put the packages in the court of the delivery customer.

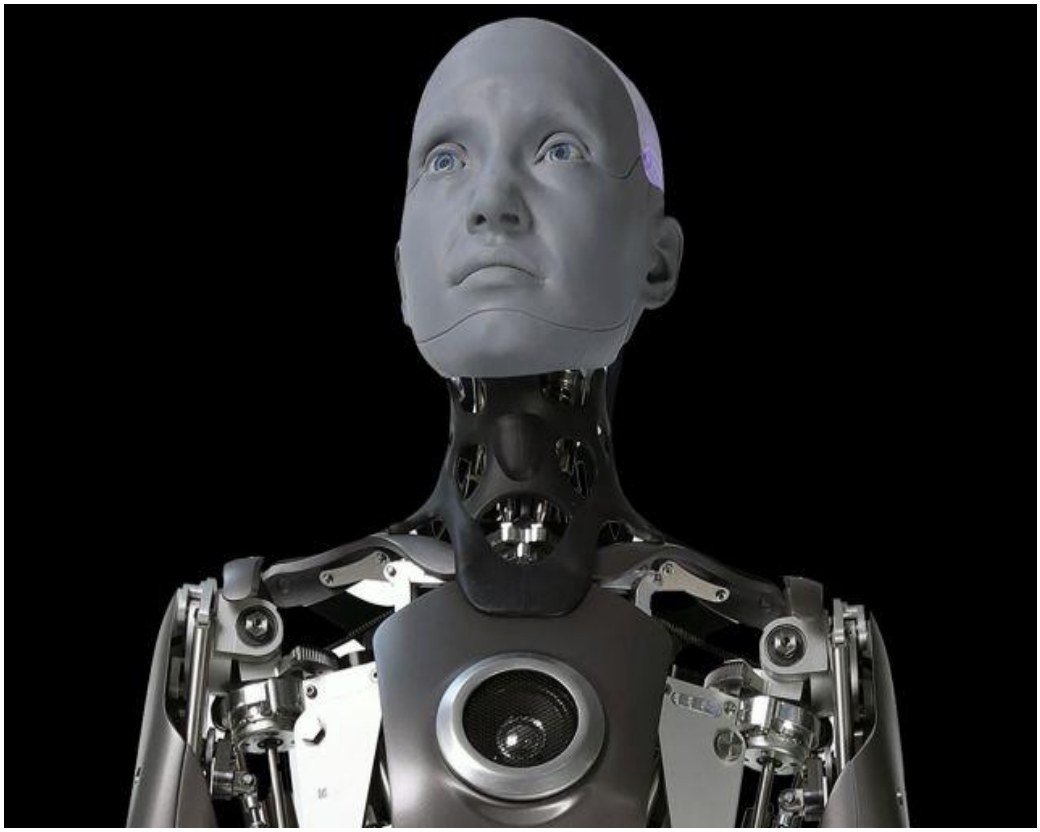

Figure 60. Ameca Robot (Source: engineeredarts, 2022)

Ameca is one of the most advanced and human-like robot that was created as a platform to develop better products and robots in future. The purpose of designing the Ameca is to create better human-robot interaction. The modular form and abilities on its face to make emotional responses are designed on purpose to make it feel close to a person rather than using similar mechanical parts that it has on its limbs. The face and head of the Ameca android look like a human.

The artificial intelligence system Ameca uses and planned to develop is similar to a human brain rather than standard code-based computer artificial intelligence.

The future of the Ameca and its advantages is that they are modularly affordable for small businesses and use cloud systems to develop their knowledge, memory, and processing abilities.

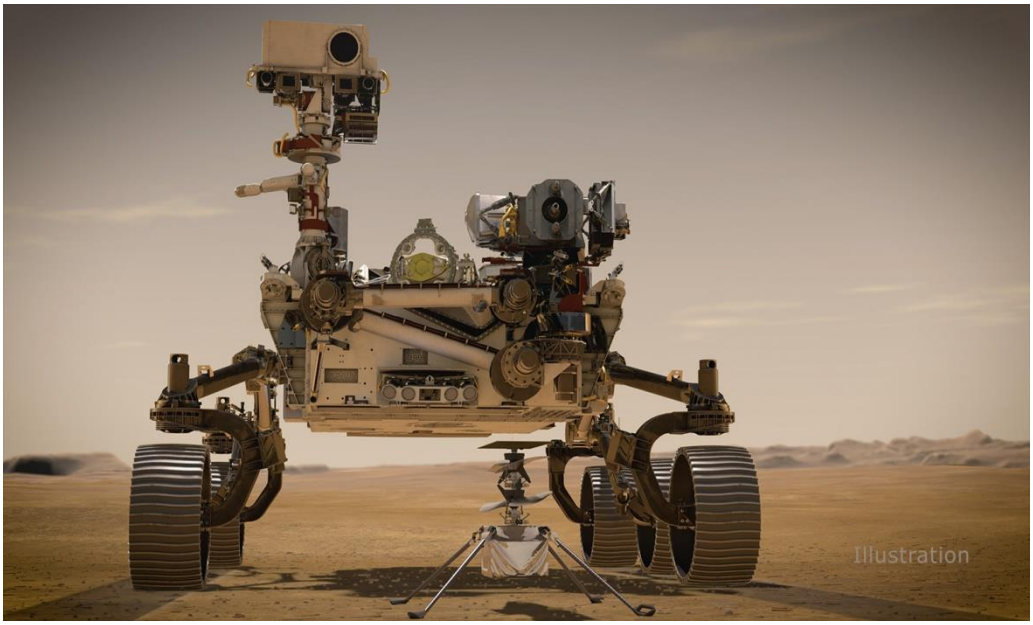

Figure 61. Smart Mars Rover (Source: NASA, 2020)


Figure 62. Nasa Robonaut (Source: NASA, 2020)

NASA uses autonomous aspects on Perseverance which is used on a different planet same as the replicants and androids used on different planets in the Blade Runner universe. Perseverance rover has an autonomous danger system. If it goes to the wrong place while landing or goes to a deep hole or big rock that may damage the rover, it changes its route and arranges its movements to run away from the dangerous situation.

The rover completes tasks on Mars's surface and because of the distance, it is not possible to remote the rover in live action. The commands sent from earth gets to Mars a few minutes later.

The blackout between the commands may occur in dangerous cases for the rover. To solve the problem, the rover scans the surroundings and can give the right

decisions to complete tasks in the most suitable and secure conditions on the Mars' surface.

In the second image, there is a humanoid robot that NASA develops for the international space stations and other similar space projects. The human-shaped form of the Robonaut is suitable to do tasks that an astronaut can do in the space station. The tests and spacial duties are only suitable for the humans that are sent into space. However, if an emergency situation occurs in the station, the Robonaut can control and fix the broken parts in difficult space conditions. It is planned to use the Robonauts in spacewalks and repair tasks around the international space station. It can make tasks under the regulation of a live-action operator or can do similar tasks after being programmed from the earth. A special virtual reality gear is used to remote the Robonout. It is still a living project of NASA and developed for future projects. The knowledge and technology gathered from the research-development process of Robonaut can be adopted and used for non-human tasks planned to be realized on different planets like Mars or the Moon tasks.

In the time period that "Do Androids Dream of Electric Sheep" was written and the first Blade Runner movie was produced, the rover missions of NASA on other planets were not realized.

Figure 63. Neural prosthesis (Source: nytimes, 2015)

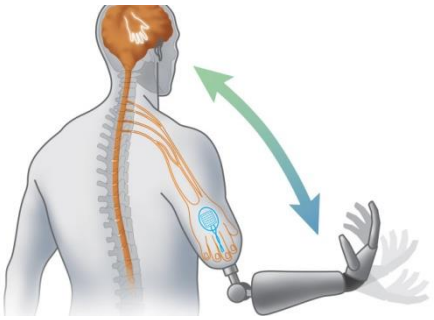

Figure 64. Neural Prosthesis System (Source: imperial, 2020)

The medical industry is one of the most important fields that humanoid products affect. The human-like robots are not only commercial projects or advertisement movements. The androids have fully functioned human limbs and organs.

After the technology development that connects the human nerves to an electronic board or product, it is possible to use similar products as backup limbs or organs for the human body. The customers may have demands about aesthetical purposes even if they do not have a necessity of treatment. They can change their body easily through cosmetic surgery.

Figure 65. Honda Product Developments (Source: HONDA, 2021)

In the examples of the HONDA Company, it can be seen more clearly how the technology developed in humanoid products can be adapted to future projects that contain human product interaction.

The exoskeletons or supporter products for disabilities have roots and know-how from the research and development actions of humanoid products.

The physical and psychological effects of interacting with a product that looks and behaves like a human create possibilities for future projects that it is a need for an environment that is difficult for humans and the connection to the virtual world is a must when all the products have communication chips and artificial intelligence to use the same pool as a cloud that all the data contained.

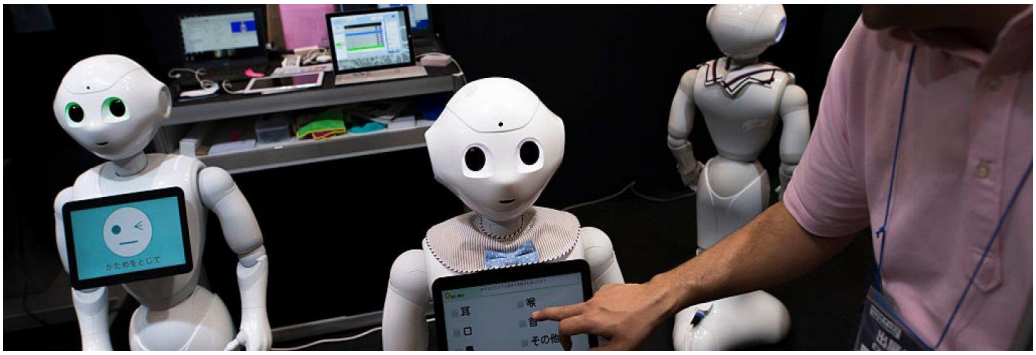

Figure 66. Nursing-Support Robots in Japan (Source: aparc, 2022)

Japan has an extreme demographic. The average age and the persons that need home care are different in European countries and America. The government of Japan promotes robots for nursing home care situations. Home care is difficult work to do and needs a supportive workforce to accomplish. 60% of the facilities use robots for home care and medical staffing.

The most important feedback for the robot usage in the facilities is the ability to adapt and the impact on the quality of the care. The researchers are making controls and surveys and they try to specify which type of the robot is better, reduce cost, and develop better utilities.

The duties of the robots are mostly lifting the people and helping them with bathing activities. Lifting a person is difficult for a human employee and can cause back injuries in a long-term working period. The second important usage of the robots is monitoring the patient or the person who needs care. The robots can recognize a living person and define the person's movements and health situations. The robots can go to rooms and monitor the patients during night shifts. They do not substitute the health workers but support them to increase the quality of the home care and nursing work. The last considered work the robots do is being in acute form and communicating with the patients. They are supportive and beneficial for the dementia of persons who need care.

The demography, work opportunities, and the technological adaptation in Japan make it possible to use human-like robots in public and many health facilities.

Figure 67. Oculus Rift for Metavers (Source: facebook, 2022)

Metaverse is highly considerable to mention about the latest modern application or real field mission that is published and started to be a part of the technology market.

It is created by the Facebook Company which is also bought by the oculus rift firm that is producing and developing virtual reality googlies and equipment. The Metaverse is a cyberspace that mimics the internet as a virtual world that is possible to travel and interact like a third person or first person viewed video game. The internet is shifting its existence to the Metaverse. The lands are free to buy and the corporations create their places, stores, and a digital copy of their products in cyberspace. It is planned to work with the real world. For instance, if a customer buys a product in the Metaverse universe, it will be shipped to the customer's real house like an e-market website. Smart products can be connected to the universe and controlled there.

In the digital platform, the developers use a blockchain password system to keep digital material safe and not be copied as much as the file holder wants. The products will be one and unique like a real-world object.

The customers can buy the products and services with digital coins.

The connection to Metaverse is supported by modern virtual reality, smart glasses, and augmented reality tools. It is planned to be a platform that opens to development in the future. The connection abilities make it possible to connect every device and product that has an internet connection.

Integrating the human body into a digital avatar can be used in the future to control humanoids that are located in different places. The humanoid robots can do dangerous and important tasks while the controlling person is away from the situation. They can be used in medical operations over long distances or to help persons who need support in topical environments.

The cultural developments of connecting a net and becoming a part of the electronic device improve step by step. First, the social media platforms are published and connect the people to a digital space that they can change called HTML 5.0. The second phase is the Metaverse which creates a virtual space where persons can create a secondary world that is fully exchangeable in the economy and connect there as their digital versions. The third and last stages are the fully connected products and humans to single cyberspace.

The human-computer interaction will be more important with the Metaverse because the users will want to connect the system more realistically and efficiently. After the first virtual reality and mixed reality platforms, the neural-science systems can be the true connection solution such as the Neuralink of Tesla Corporation.

It is an opportunity to develop new products that connect the human body to products in a direct link and create a suitable cultural knowledge and acceptance for future use of humanoid products that are connected to big cyberspace.

The more people get used to being a part of the virtual space, more people will be potential customers for products that are attached to the human body and use the internet as a regular specification.

4.3. Patterns of Movies and Possibilities in Industrial Design

The text Philip K. Dick wrote and the movies that were produced in the skeleton of the text were scrutinized with the methods and the research done about the background and basic definitions of the cult sub-culture.

The Blade Runner movies have patterns and facts in terms of design approach and methodology.

Even the androids look like real humans and behave like them. Furthermore,

they are products manufactured in gigs-factories by a powerful corporation.

They have model numbers, production dates, and a chart that shows their specifications.

In the first movie, the life duration of the androids is restricted to four years for two facts. First, if they escape or break into the field, they cannot live more than four years and become less harmful to society and the environment. Another reason is that the restricted lifetime makes customers buy new products after their androids ended their lifetime. In the second movie, the non-limited lifetime is a development and proof of reliability. The limitation of the product is used as a strategically selling movement in the market based on the level of development of technology the corporation has.

The data gathering is crucial for the corporation and the designers. Even if the firm has licensed producers in the city, they collect all data and create know-how for future products. The manufacturer keeps the data of interrogations to design androids behaviour and respond more humanly. The data is kept on high-security bases and only restricted authorities can access them.

The bodies and physical existential of the products are highly capable, but the designers create an interface to make a better connection between customers and the androids. The level and quality of the connection are important for the acceptance of the product in the market.

The designers create an emotional connection between customers and products. The androids, replicants, or the products the corporation manufacture can be totally customizable. They can make the changes in mass production or only for one product for privileged customers.

The firm is designing the system that androids have manufactured to be a part of. They develop the quality control systems and the tracing systems for the androids' work in the field. They improve the scenarios and a system to recover broken products in the field and make better devices and tools to identify them easily without a doubt to harm a real human in the city.

The corporation built test products and examines them like car manufacturers testing their vehicles for accidents and crashes.

The technology they created for making their main products can be adaptable to other fields and the corporation makes a profit from those side sources.

The firm sells supportive equipment and goods for their products to serve better or repair them. The second-degree products are also designed and published to market.

Not only do the customers or authorities use the supportive products, but the replicants can also buy and use them too.

In the second movie, the development of the digital era affected the universe and digital products occur for use. The touch screen interfaces and voice command technology are more actual and create a more realistic probability.

The production and usage of the products create pollution and the management of the waste is the problem. The solution to the problem can be managed by the design approach by changing the materials used for products, their usage scenario, and the life cycle.

Human-like products create emotional connection problems between the customers and the output.

The designers must solve the complication by changing the interface or response of the product and creating better aesthetic solutions to make a connection between them.

The possibility of creating a human-like robot or android means the replicant or the robot can use every product and architectural element built in the city.

They can do the harmful tasks in hard conditions in the field by using the same tools a human can use. The human-like robots can be controlled from long distances to do complex and vital works like performing a medical operation on an injured person. Their connection to the internet makes it possible to download and install every task and knowledge needed for a restricted work needed to be done. The changeable interface they have which is connected to the internet makes them capable of doing every single work a human do in history.

The human-like robot means the limb or organ developed for them can be combined with the human body directly. The connection technology between the neurons and electronic devices cures certain disabilities and restrictions. The connection between the human body and electronic devices makes it possible to create a true link between a human brain and an artificial object. The connection techniques can link the human brain to the internet and create new learning methods.

The emotional responses of humans to products can be researched better and given the possibilities for more efficient interfaces. If a product has human-like eyes, the human brain gives similar responses while talking with the product. The products that are formed in an animal or human may solve emotional or mental issues the user has and help them to improve their psychological conditions.

The androids or human-like robots gather an enormous amount of data, and the data can be used by designers and firms to improve their designs and understand the nature of humanity while using a product in their natural world. The neural connections can record the impulses of the customer and their emotions in real-time and collect them in a database that can be controlled statistically in a simulation.

Uncanny Valley is a concept that has the relationship between the persons and human-like robots. Thus, it should be mentioned in the pattern section. It is not a scientific study with enough numbers of samples, but it is a definition that is used for understanding a certain situation in a strange sense.

Masahiro Mori in Tokyo Institute of Technology mentioned the uncanny valley term first in 1970. The perception of people about the human-like robots increases in good mood to a point. However, after a point, if the robot looks so close to a human, the perception and sense become negative despite being positive because the human brain position it in a different area that gives the observer a dangerous sense.

"The speech, body movements, and the facial expression of the robot do create a negative reaction in the observer's mind because the human brain is qualified about reading faces and recognizing a face in a neutral habitat where there are many plants. It is a primal survival instinct. The uncanny valley is the down point while the likeness of the robot approaches a real human." (Shedroff, Noessel and Sterling, 2012)

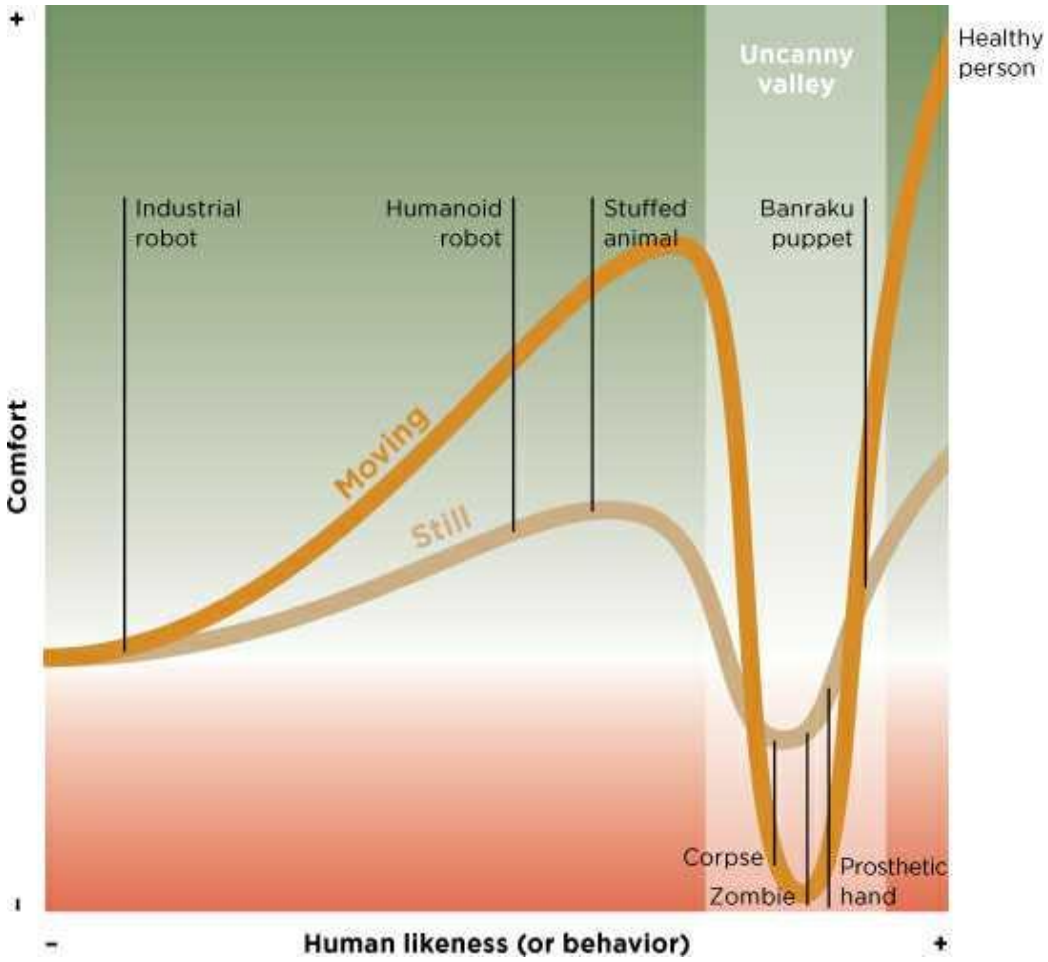

Figure 67. Uncanny Valley (Source: Shedroff et al., 2012)

In Blade Runner movies, it is not important in the first phase because the replicants look like a human. However, after the people learn about the truth that they are not a human, their approach and behaviors change in a bad way to replicants.

It is a concept that is considered to make robots beyond the valley and prepare the awareness if the robot looks like a human but does not completely accomplish certain proportions and senses it may see as strange by observers.

The concept is not only valid for robots. Any form that has a face and body that looks like human triggers similar effects too. For instance, the digital 3D animations that have human-like characters, video games, or digital avatars that are used in social media or non-fungible token projects can create the uncanny valley situation.

The concept is also a milestone that expresses the transition stage of society's perception of a human-like robot.

CHAPTER 5: CONCLUSION

In conclusion, the interaction of design and science fiction as fields that feed each other is inevitable. Industrial design interacts with science fiction thinking. This notion is evident at many points in industrial design practice, where designers use guesswork to guide design decisions. The estimation processes used in these projects are parallel to those used by science fiction.

Science fiction explores the future comprehensively and deeply, and it represents many ideas about what the future will look like and how we can get there. Thus, science fiction processes can contribute to industrial design in many ways. Designers can learn many lessons from the predictions and processes of science fiction. Also, they can develop their future design processes accordingly.

Science fiction films are the most visible form of science fiction and the industrial design in these films is an inevitable part of this visibility. Many sci-fi movies are based on production design content and, as such, a large amount of industrial design work goes into sci-fi movies.

For many productions, as in the Blade Runner series, the design is not only a critical part of the scene but also an important part of the narrative. Therefore, while science fiction films affect industrial design, the perspective of the design and designers also affects the world of science fiction.

The world and imagination created by sci-fi movies, designers' budget, etc. will enable them to exceed their own limits and reveal their creativity without limitations. In addition, the fact that some of the products to be produced can be produced in digital environment will create a separate area of freedom for designers. Therefore, the combination of the designer and technology can trigger the emergence of much more different and new products.

The contribution of industrial design to sci-fi is readily apparent in sci-fi cinema, but does the world of sci-fi make another contribution to industrial design? This issue can be examined in detail in future studies.

What can be learned about the future of design from what happens in science fiction movies?

What can be learned about industrial design from the design processes used in the design of science fiction movies? Thus, these topics can also be evaluated in future studies.

Based on this, Blade Runner movies, which are assumed to be cult movies in terms of science fiction movies, were compared in the study. This comparison shows the development and acceptance of humanoid products in industrial design by society.

Consequently, the products that are designed for regular tasks are blended for usage and based on the function of the human body. The products are accepted as artificial objects that do not live and respond. The concept of a living thing has certain characteristics such as moving, using an energy source, and communicating. Applying similar aspects to a non-living object is the first level of locating it in a different place than regular tools or products that has a purpose to complete. When the object becomes closer to the living organism, the perception changes and it is expected that the object can think and give its own decisions.

The human-like product brought the level to an upper level and more than having a form similar to an organism or animal; it also contains much more expectations and questions.

Forming a design close to a human is like creating a negative mold for a product designed for the usage of a person. It is mirroring the usage and creating similar design thinking from another perspective to achieve its goals.

The key point is that the technology that connects humans to a product has cultural roots in futurism, science fiction, and cyberpunk subculture and the technology is suitable to make realistic predictions and design ideas that are suitable to apply to the human body. The historical and actual movies and fiction literature tells stories about existing situations and uses objects that were designed before the date that the literature or visual artwork was produced. Nonetheless, the futuristic approach and culture create ideas about objects, systems, and designs that are not existing and are possible to create and built-in future with the knowledge and technology that is improving and giving clues and land marks about the next generation technology. Thus, this is forming the ideas theoretically and also applying them to research and development.

Cyberpunk subculture and literature is suitable for thinking and examining human product relationship in the futuristic approach. Changing the human body with technological parts is making the human body a true part of the product and making the product a part of the human body.

The possibilities in the field are suitable to research in the discipline of industrial design which has the opportunity to apply technological developments to the human body or human aspects of a product with the knowledge of human product interaction and creating proper scenarios about the usage and customer psychology and behaviors.

In the research stage, the Blade Runner Movies have accepted approved reflection of the cyberpunk universe and the androids which are the product that formed the human body and makes it responds. The artworks are examined under the structure of methodology. The visuals and the developments in the storyline which are connected to the research question are identified and exposed with the text that created a base for the movie called “Do Androids Dream of Electric Sheep”, which is a science fiction novel by Philip K. Dick and a literature review that has been completed.

The movies were filmed on two different dates with a space of thirty-five years between them. The first movie's published year is 1982 when the first electronic devices were designed and sold in the market which contains electronic boards involving simple processors. In the date of 2017 when the second Blade Runner movie was published, it is a regular technology to have artificial intelligence assistants that is talking, responding, and helpful to customers and using bionic components to cure disabilities and injuries in medicine. Futuristic technology like voice commanding computers and developed screens are a part of life in the year 2017.

Compared to the developments of household objects and products that were seen in the first Blade Runner movie, the approach to a human-like robot or android has changed the more too.

The cultural accumulation and the image that film and literature creators draw in society's mind formed a human-like robot.

The cultural effect directly interferes with the customer's preference and thoughts about the human-like product in the market and future.

The science fiction film history was researched for the product relationship purpose. The Blade Runner movies were produced on a date highly critical. The first movie year which is 1982 was the time the electronic devices and products were mass produced and sold in the free market. After the analog years and mechanical solutions, the electronic and digital process power created a perception about the future that will be regulated and provided for by digital products that complete the tasks with their own thinking abilities. Even though the beginning of the 1980s was the first year of

the electronic devices, the futurism level and accuracy of the first Blade Runner movie were outstanding.

The accuracy continues during the production of the second Blade Runner Movie and the real-life science fiction movie creation proves itself when it comes to designing solutions for the future needs of society.

The relation between humans and products that are inspired by human functionality is practicable. For more than thirty years, the technologies seen in the first movie became real and adoptive to real-world practices. Furthermore, the functionality became the available cause of the technology and mechanics suitable to reproduce the human body, limbs, and thinking style. New camera and reading video technologies allow the producers to make robots that scan surroundings and respond to them with the most logical response to complete the task given it. Defining the forms, objects, and movements with a camera is critical for robots. The processing power they need is small enough to insert into the body of the robot. Also, the sensors are sensitive enough to create direct contact with the human body which is fragile compared to a mechanical steel robot arm.

The autonomous technology, which is used for modern electric self-driving cars, can be adopted in future products that watch surroundings and read the video data to make true predictions.

The powerful accessibility of the visual media like the cinema movies makes it suitable to create an emotional accumulation of knowledge about the androids that are used as assistants in houses.

The research and projects about the emotional interaction between a person and robot guided the designers to create better products that have friends or not a threatening attitude.

Therefore, the results of the research are focused on the relationship between humanoids and industrial design, and the gathered information from the research can be listed below:

- Humanoid products are negative mold of humans and the human factors studies are useful for designers to create better human-like products.

- The designers must think about the emotional responses and acceptance of customer while designing the humanoids.

- The system and the laws must be regulated.

- Humanoids are products developed with the technological futures and the future possibilities are available and suitable to be done through the design methodology.

According to the information gathered from the study, suggestions for designers and further researchers are described below:

- The science fiction literature and futuristic specialty of the art form can be used as a method for future predictions.

- The comparative research and visual analysis of the media is adoptive for defining the changes and designate key points that is vital for product usage and their blend to society.

- The human product interaction becomes direct and exclusive while designing products that are connected to the human body.

- The human form and aspects that is used to design a product creates emotional and ethical questions to solve. The level can be basic as using a voice command or voice tone but the experience needs to be planned and designed to achieve a practical scenario.

- The humanoid and android technology occurs the examples freshly and there is a strong opportunity to be a part of the environment that is growing and becoming more possible after important corporations became involved in the market that has vast amount of experience about designing autonomous vehicles and products which are minor forms of future robotics and self-driving devices.

- Further research does not have to be connected with the androids directly. The

development process and side outcomes gathered from the process can be adaptable to different disciplines such as medicine, defense, transportation, or consumer electronics. The digital assistants that are installed in modern mobile phones use similar perception and data usage that an android is accepted to use. The familiarity that developed while using the applications that are already installed on mobile phones after being produced as standard educates customers to use personal artificial intelligence products that think and respond to them as a logical independent existence.

- The research proves that the system that the products used is an entire structure. The supportive products or systems must be considered such as signs that are directing the androids, satellites that find locations and transfer data, and specialized roads or field that is built for the humanoids must be designed and applied to have the best profit.

- The interaction design and the software that the humanoids use must be arranged to use the body of the product to not create duelist problems. The limits and the regulations for the humanoids must be defined quite completely not to allow any abuse or dangerous situations for the customers. The physical form restricts the abilities of the humanoid regarding the movement and physical task it can complete, but the decision-making process of the humanoid differs from being an industrial robot and creates possibilities about the real human-like product experience.

- The products may look like a human or an organic organism but they are different forms of regular mechanisms manufactured in fabric. There will be a need for spare parts and replacements to sustain the operation. The modifications that will be used for the humanoids can be a new industry and field to design solutions making opportunity to complete specific tasks that are difficult for regular persons and humanoids.

- The cyberspace that is created to connect smart products and humanoids that have artificial intelligence has the potential to create new techniques to connect

the human body to a virtual world and design a virtual experience that is totally free and independent from the difficulties of production and physical rules of nature.

Hence, the system and society that is using the products is a complete organism that supports each other to survive. The environment and the situations the persons live in change over time, and it can be dangerous to survive with the fragile bodies they have. The mutual life between the product and humans becomes more blended over time and technological developments will realize it efficiently. However, to create a healthy interaction between the products and the human body, the designers must be a regulator who is a specialist in human factors, interaction, function, and aesthetics.

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APPENDIX

Appendix A. Literature Review

Industrial Design

Design, in essence, can be defined as doing something with intent. Morrison and Twyford (1994) define design as “change through spontaneous or painstaking action derived from a decision resulting from a synthesis of knowledge”. Industrial design, as a subset of design, focuses on design for industry and a wide variety of three-dimensional, mass-produced objects, from consumer products and furniture to the exterior and interior of vehicles (Fiell and Fiell, 2000).

Industrial design aims to meet the needs of everyone involved in the life cycle of manufactured products, including users, manufacturers and society. From design, development and production to distribution, use and disposal, industrial designers are concerned with almost every aspect of the product and its lifespan (Press and Cooper, 2003). However, the distinctive contribution of the industrial designer to the design of the product is realized in the form of aesthetics, function and interaction between the two and the close relationship between the user and the product, cognitive and emotional levels. The interests of industrial design have not always been so broad. In its infancy in the 19th and early 20th centuries, the profession focused on ideas of profit and manufacturability related to the function and form of the product (Van Doren, 1940). Classical industrial design methodology focused on the expression of form, movement and articulation in industrial design, focusing on Louis Sullivan's famous saying "form follows function" (Heskett, 1980).

Modern design is the planning and construction of objects suitable for lifestyle or abilities, ideals (Gorman, 2003).

Kaufmann's definition of industrial design shows the broadening of his interests and recognizes the development of complex relationships between users and designed objects. The emergence of contemporary design themes such as lifestyle and branding is evident in this definition. In the 80's, industrial design both largely defined its ground and defined the profession.

Misha Black drew attention to the role of industrial design in synthesizing the needs of the user and both production and product technologies and defines industrial

design as a creative process (Blake, 1974).

In 1988, C. Thomas Mitchell extended this process-oriented approach to design. The role of the designer in the post-mechanical age is defined as making the design process equally accessible to all (Gorman, 2003).

In 2005, Burdek outlined a series of tasks that design must fulfill. These; to visualize technological progress, To simplify or enable the use and operation of products (hardware or software), Making the links between production, consumption and recycling transparent, to promote and transmit services (Burdek, 2005).

Other professional groups are equally concerned with the function and form of products and can also guide them from concept to completion. However, industrial designers are the only professional group trained to make aesthetic decisions as part of this process where the aesthetics, identity and semantics of the product are priority (Burdek, 2005).

In addition to the ability to manipulate the exterior of a product with both form and function in mind, industrial designers consider the physical and cognitive relationship between the product and its users. The only profession that brings such activities together in the design of mass-produced products is designer (Press and Cooper, 2003).

Design for industry encompasses a wide variety of design issues and projects (de Noblet, 1993).

In terms of the design of a particular product, the objectives of industrial design can be listed as follows; Industrial design, identifying the needs of individual users in terms of intimate, cognitive, emotional and functional needs, shaping and shaping the product to meet these needs, resolving potentially conflicting needs of potential users (eg gender, experience, age, size, etc.), synthesizing the aesthetic, functional and interpretive elements of the product, to design the product suitable for the needs of the market, designing the product to fit the manufacturer's needs, and it aims to meet both short-term and long-term needs of society (Dreyfuss, 1955; de Noblet, 1993; Press and Cooper, 2003; Burdek, 2005).

Bruce and Bessant (2002), basically gather the ideas at the center of industrial design under two headings. These; creativity and innovation.

While creativity is the ability to combine ideas in new ways to solve problems and take advantage of opportunities, Innovation can be defined as the successful

application of new ideas in practice in the form of new or improved products, services or processes.

At the heart of innovation is the ability to combine creativity and technical knowledge with an understanding of user needs. Designers have the ability to work with technology and capture it in a feasible and usable form (Bruce and Bessant, 2002).

In terms of the product itself, designers are concerned with two broad areas. These are product experience and product performance. The product experience is the instant and long-term relationship the user develops with the product. This refers to every aspect that users experience through their five senses and the quality of the emotional bond between the user and the product. Product performance, on the other hand, refers to the measurable aspects of the product, both tangible and intangible (Press and Cooper, 2003).

According to Sparke (2003), design plays an important role in the construction of culture. In her published works, she has examined the relationship between design, society and culture, and has made thematic studies that appeal to the wider design arena, including graphic, industrial, textile and fashion design. Sparke's analysis of the design/culture relationship is impressive. Sparke's critical perspective in his work provides valuable insight into the role of design in the creation of culture.

Woodham (1997), in his book Twentieth Century Design, treats design history chronologically, but points out that a strict chronological approach recognizing decades or movements is overly limiting. However, it is clear that some issues are time-bound, and likewise larger issues – such as social responsibility – are difficult to discuss within a chronological framework. Woodham (1997) argues that design ideas and products are relevant to contemporary culture.

In Industrial Design Reader, Gorman (2003) illustrates the development of the area with a collection of excerpts from publications and conversations on design and design-related topics. Resources include many high-profile designers and reflect a wide variety of approaches to industrial design. It reflects the breadth of ideas driving the development of industrial design. Gorman provides relatively easy identification of the themes underlying the arena.

Fiell and Fiell (2000), focuses on specific manufacturers and designers in the Industrial Design A-Z book. In the 'Themes and Materials' section, he offers suggestions for identifying industrial designers' preoccupations such as usability and sustainability.

The book called New Thinking in Design can also be shown as an important resource for designers. Mitchell (1996) interviewed international design leaders in this book and made inferences about product experience. When the interviews are summarized, it is seen that the approach related to the semantics of the form is mentioned and this approach is called "interpretive design". In another interview, usability and human-centered design are mentioned.

The book also mentions the management of design processes and strategic design planning (Gorman, 2003). The theme of the book is an industrial design concept that contributes to the business at a strategic level rather than a more product-oriented, tactical tool. Mitchell directs her interviews to describe pioneering design practices based partly on new design processes and partly on how design and designers interact with customers and commerce. The impact of the experiences

Press and Cooper (2003), in their book The Design Experience, expresses an academic approach to design and design theory. The authors used case studies as a tool to demonstrate the applicability of their ideas to professional practice. In the book, the concept of the "new designer" is defined and complements the definition of the role of industrial design from the authors' perspective. The Design Experience book covers both contemporary ideas and practice in its broad approach (exampling the ever-present connection between design theory and practice) and describes the design profession in a sophisticated way.

The methods described in Design Research: Methods and Perspectives reflect a multidisciplinary approach to designing research. Laurel (2003), collects methodologies, methods and processes under four headings. These; people are form, process and action. The book demonstrates that the industrial design profession has confidence in interacting with users as participants in the design process, rather than dictating to users what to accept as the final product. Design research processes; responsibility is linked to the concept of “new designer”, a human-centered design idea that extends to sustainability ideas.

Design Secrets: Products, reveal processes used in the design industry rather than just the end product. The book states that elements such as design sketching (both on paper and screen), functional prototyping, 'look alike' visual prototypes, and two- and three-dimensional CAD models cover most of the design process (Industrial Designers Society of America, 2001).

Relationship Between Industrial Design and Future

Designers explore the future in order to understand the parameters of where design and culture may go in the future, and bring it to the present in the form of the products they design.

Industrial designers make the future real and tangible thanks to their ability to simulate.

It is a known fact that the rate of technological change is increasing and industrial design is both responsible for some of this change and has a role to play in guiding it.

Therefore, industrial designers and industrial design processes must anticipate the future to make an informed prediction of what will happen with a given technology, what will happen to a new product, what will be 'next year's event'. consumers' needs will be within the life of a proposed product. Designers need to explore the future to understand the implications of the decisions they make about both the way their products are used and the impact the product has on the manufacturer, society and the environment.

Design theorist Bryan Lawson argues that the role of industrial design is to create elements of the future. Designers make suggestions about what the Earth could be like. The essence of designers' work is to create the future, or at least some of its features (Lawson, 1997).

Another view on the future role of industrial design is expressed by James Dyson. Dyson defines designers as creators who discover the future while developing new products in processes where people do not know what is possible (Muranka and Rootes, 1997).

The Relationship Between Industrial Design and Science Fiction

Science fiction is a genre of ideas expressed through a wide variety of narrative themes. The main goals of science fiction are the overlapping ideas of prediction and questioning, and the role of science fiction is to explore possible futures and bring back lessons that can guide decisions made today.

There are a wide variety of purposes or ways in which science fiction can be used as a tool. Science fiction has four levels: ideas, processes, products, and culture. And contemporary science fiction ideas are expressed through a wide variety of media, including literature, radio, film, and television. Key elements of science fiction, overlapping, related terms that can be used to describe the way science fiction works

with new ideas; novum and subjunctivity.

Science fiction reflects many simultaneous cultural concerns. The concept of "sense of wonder" describes the impact that good science fiction should inspire, no matter what media the ideas are expressed in. Science fiction cinema, on the other hand, is the most visible genre of contemporary science fiction media. Therefore, cinema is an important vehicle in communicating science fiction ideas to the greatest number of people. The role of science fiction is to mediate between the present and the future. Similarly, industrial design also plays a mediating role between the present and the future (Garret, 2006: Rottensteiner, 1975; Gökce,1996; McCarthy, 2002).

The Relationship Between Industrial Design and Science Fiction Movies

Much of today's industrial design activity resembles yesterday's science fiction. Science fiction and industrial design have parallel features at many points. These parallels include developments in both fields, some processes, and two related and critical links – as both industrial design and science fiction explore the future to drive the present, and these discoveries typically focus on the impact of technology. Understanding these parallels highlights the areas in which industrial design is represented and contributes to science fiction as well.

Science fiction and industrial design use similar processes to map fictional or nonfictional future events. Science fiction invents contexts as the background for science fiction narratives. The depth of understanding required to 'design' a world parallels the depth of understanding required to understand the hidden needs of users prior to designing a product. Science fiction calls this the world-building, the background, or the inner universe of the narrative.

Industrial design is also vitally concerned with contexts that sometimes exist and sometimes exist only as possibilities. Industrial design invokes this foresight and uses science fiction scenarios as an important predictive tool. Industrial design tries to understand how people behave to shape new products according to their needs and uses various methods to anticipate these needs (Laurel, 2003). Both fields use movie scripts as a tool – for science fiction, the script is both an end and a means. Science fiction cinema applies many industrial design processes as part of production design for certain movies (Garret, 2006; Butler, 2000).

While industrial design is important to science fiction cinema, given the visibility of sci-fi movies and the intensity of production design for some, the reverse

is likely to be true. Therefore, the relationship between these two concepts can be clearly seen.

One of the strengths of science fiction cinema is its ability to create worlds with much greater visual richness than is possible in science fiction literature. It is inevitable that cinema reflects contemporary culture (Sobchack, 1987) and design is a consciously constructed aspect of culture within the film world.

Industrial design also contributes to science fiction cinema through the use of industrial designers to develop production design for specific films. When the literature is examined, three prominent industrial designers have produced high-profile designs for high-visibility science fiction films. These designers; Syd Mead (Movies: Star Trek: The Motion Picture, Tron, Blade Runner, Strange Days, Aliens, Short Circuit, Mission to Mars, A Sound of Thunder), H.R. Giger (Movies: Alien, Species), and Harald Belker (Movies: Armageddon, Battlefield Earth, Spider-Man, Minority Report, Serenity, Zathura)

Another impact of design on science fiction cinema is through the development of special effects, often employing designers.

Appendix B

Comparison Between Movies

Comparison between two Blade Runner movies

	Blade Runners	Androids/Replicas	Android Software/Memory	Design	Manufacturer
BLADE RUNNER (1982)	-Human -Not equipeed well -Idependent	-Low quality -Not strong -Resist to cold and heat -rebellious -4 years life time -Not independent -Only war models can make decisions	-Old models has problems about memory -Some of them do not know they are an android -Low level AI	-Android designers are human -Memory designers are human -Develope new models -Test their models	-Promote their models -Test equipment is not developed -Not regular performance control -Buy technology -Annihilation process -Mass production
BLADE RUNNER 2049 (2017)	-Android -Equipeed well -Employe of police department	-High quality -Stronger than old models -Resist to cold and heat -Loyal -Limitless life time -Independent and can earn their income -Better decision making	-Better Designed memories -They know they are an android -AI is close to a human -Better emotion reading -Better memory	-Android designers are human -Memory designers are human -Develope new models -Test their models -Has quality control system -customisable	-Promote their models -Test equipment is efficient -Good performance control -Produce own technology -Annihilation process -Mass production -Save and collect data -Adobe designs to new products